KT11-D

KT11-D ABORT

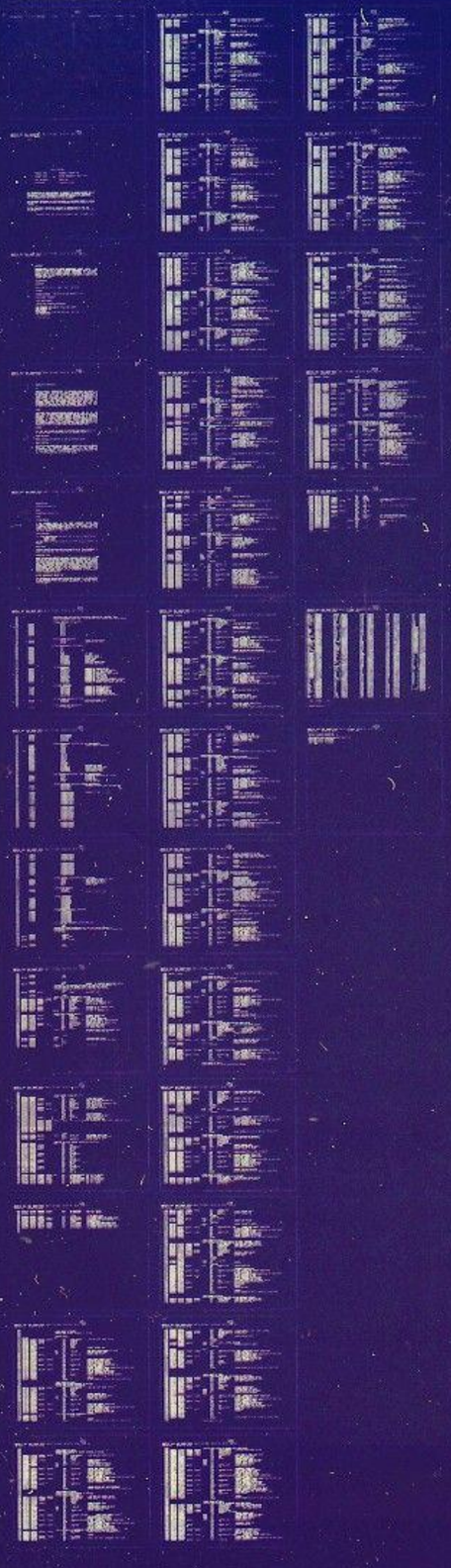
MD-11-DBKTF-D

EP-DBKTF-D-DL-B APR 1977

FICHE 1 OF 1

digital

MADE IN USA



B01

EOF1DBKTDCSEQ	00010000	770323	PDP10 411	HDR1DBKTFDSEQ	00010000	770323

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.REM    %
```

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DBKTF-D-D
PRODUCT NAME:	MEMORY MANAGEMENT ABORT TESTS
DATE RELEASED:	MARCH,1977
MAINTAINER:	DIAGNOSTIC GROUP

1.0 ABSTRACT

PROGRAM DBKTF TESTS THE MEMORY MANAGEMENT ABORT LOGIC. THE PROGRAM IS WRITTEN TO CAUSE A MEMORY MANAGEMENT ABORT AT EVERY PDP11/40 MICRO STATE WHERE A MEMORY REFERENCE IS INITIATED. ABORTS ARE IN ALL CASES TRAPPED TO THE KERNEL, HOWEVER, THE INSTRUCTIONS CAUSING THE ABORT ARE EXECUTED IN BOTH MODES (KERNEL AND USER).

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11/40 WITH KT11-D (MEM. MGMT) INSTALLED

2.2 STORAGE

PROGRAM STORAGE - THE ROUTINE USES MEMORY 0-17777

2.3 PRELIMINARY PROGRAMS

TESTS DBKTA-DBKTD

3.0 LOADING AND STARTING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER
LOAD ADDRESS 200
PRESS START.
THE PROGRAM WILL LOOP AND RING BELL AND TYPE '*' ON PASS COMPLETION.

4.0 SWITCH SETTINGS

5.0 SUBROUTINE ABSTRACTS

5.1 HLT

THE HLT (HALT) INSTRUCTION IS EXECUTED WHEN AN ERROR IS DETECTED NOTE THAT THE HLT (HALT) INSTRUCTION TRAPS TO LOC 4 IN USER MODE. IF A HLT (HALT) INSTRUCTION IS EXECUTED IN THESE MODES THE TRAP IS TAKEN AND THE PROGRAM HALTS AT LOCATION 176 IN KERNEL MODE. PRESSING CONTINUE RESTARTS THE TEST. NOTE: THE USER STACK POINTER IS NOT AFFECTED. TO DETRMINE WHICH TEST THE PROGRAM WAS EXECUTING WHEN THE HLT OCCURRED REFER TO R1 WHOSE CONTENTS ARE THE LAST TEST SUCCESSFULLY EXECUTED AND ALSO THE KERNEL STACK THE TOP WORD OF WHICH IS THE VIRTUAL PC OF THE HLT INSTRUCTION +2.

5.2 SCOPE

THE SCOPE (EMT) SERVICE ROUTINE STORES IN R1 THE PC OF THE LAST TEST SUCCESSFULLY EXECUTED AND MAY BE USED AS AN AID IN DEBUGGING IF THE PROGRAM 'BOMBS' BECAUSE OF A HARDWARE FAILURE. A BRANCH INSTRUCTION MAY BE INSERTED AT THE SCOPE LOCATION TO THE PREVIOUS SCOPE (EMT) INSTRUCTION TO CONTINOUSLY LOOP A TEST. ADDITIONALLY THE SCOPE ROUTINE SETS ALL STACK POINTERS TO THEIR INITIAL SETTINGS (SEE SEC 8.2) AND ENTERS EACH TEST IN KERNEL MODE, PREVIOUS KERNEL MODE.

6.0 ERRORS

THE TEST HALTS WHEN AN ERROR IS DETECTED AND DISPLAYS THE PC+2 OF THE HLT (HALT) INSTRUCTION IN THE ADDRESS LIGHTS.

6.1 ERROR RECOVERY

PRESS CONTINUE OR RESTART AT 200 OR PREVIOUS SCOPE.

6.2 ERROR LOOPING

TO LOOP ON AN ERROR REPLACE THE HLT INSTRUCTION WITH A BRANCH BACK TO THE PREVIOUS SCOPE. NOTE: IF THE ERROR IS INTERMITTENT THE TEST WILL DROP THROUGH THE HLT AND CONTINUE TO THE NEXT TEST. TO CONTINUOSLY LOOP THE TEST REPLACE THE BEQ .+4 PRECEEDING THE HLT WITH THE BRANCH.

7.0 RESTRICTIONS

7.1 STARTING RESTRICTION

NONE

7.2 OPERATIONAL RESTRICTION

NONE

8.0 MISCELLANEOUS

IF THE PROGRAM HALTS IN THE TRAP INTERRUPT VECTOR AREA (0-1000) EXAMINE REGISTER 6 (THE KERNEL STACK PTR). REGISTER 6 CONTAINS THE ADDRESS WHERE THE PC OF THE INSTRUCTION THAT CAUSED THE TRAP IS STORED. EXAMINE ALSO R1 (R1 SPECIFIES THE LAST TEST SUCCESSFULLY COMPLETED)

8.2 STACK POINTER

THE STACK POINTERS ARE INITIALLY SET TO THE FOLLOWING VALUES
KERNEL =1060
USER = 600
AND ARE RESET TO THESE VALUES AT THE START OF EACH SUBTEST (BY SCOPE).

8.3 PASS COUNT

1000(8) PASSES ARE REQUIRED FOR COMPLETION OF THIS PROGRAM; AT WHICH TIME THE BELL WILL RING AND AN '*' WILL BE PRINTED.

8.4 DEBUGGING TIPS

WHEN THE FAILING SUBTEST HAS BEEN ISOLATED, REPLACE THE FIRST WORD OF THE INSTRUCTION PRECEEDING THE INSTRUCTION THAT CAUSES THE ABORT WITH A BR SELF (000777), AND RESTART THE PROGRAM. WHEN THE PROGRAM EXECUTES THE BR SELF STOP THE PROGRAM USING SINGLE INSTRUCTION, RESTORE THE INSTRUCTION, AND USING THE MAINTENANCE CARD SINGLE STEP THE PROGRAM THROUGH EACH MICRO STATE OBSERVING THE FLOW IN THE DATA/ADDRESS LIGHTS. THIS PRACTICE HAS BEEN FOUND TO BE SUCCESSFUL IN FINDING MOST MEMORY MANAGEMENT ERRORS.

8.5 MEMORY MANAGEMENT MEMORY MAP

THE MAPPING OF THE MEM MGMT REGISTERS IS DONE AT THE BEGINNING OF THE PROGRAM BEFORE ANY TESTING IS STARTED. THE USER SHOULD ACQUAINT HIMSELF WITH THE MEMORY MANAGEMENT MAP BEFORE USING THIS PROGRAM.

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                        %
                                        ;COPYRIGHT 1972,1977 DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.
                                        ;MEMORY MANAGEMENT ABORT TEST. THIS PROGRAM TESTS MEMORY MGMT ABORT ERRORS

                                        ;GENERAL REGISTER ASSIGNMENTS
000000                                          R0=%0
000001                                          R1=%1
000002                                          R2=%2
000003                                          R3=%3
000004                                          R4=%4
000005                                          R5=%5
000006                                          SP=%6
000007                                          PC=%7

                                        ;STACK POINTER REGISTERS
000006                                          KSP=%6                  ;KERNEL STACK POINTER
000006                                          USP=%6                  ;USER STACK POINTER

                                        ;STATUS REGISTER BIT ASSIGNMENTS
000001                                          C=1
000002                                          V=2
000004                                          Z=4
000010                                          N=10
000020                                          T=20                    ;'T' BIT
000340                                          PRTY7=340               ;PRIORITY LEVEL 7
000200                                          PRTY4=200               ;PRIORITY LEVEL 4
000000                                          KM=000000               ;KERNEL MODE
140000                                          UM=140000               ;USER MODE
000000                                          PKM=000000              ;PREVIOUS KERNEL MODE
030000                                          PUM=030000              ;PREVIOUS USER MODE

                                        ;VECTOR ADDRESSES
000010                                          ERRVEC=10               ;ADDRESS OF ERROR VECTOR
000014                                          TBITVEC=14              ;ADDRESS OF 'T' BIT TRAP VECTOR
000020                                          IOTVEC=20               ;ADDRESS OF IOT TRAP VECTOR
000024                                          PFVEC=24                ;ADDRESS OF POWER FAIL TRAP VECTOR
000030                                          EMTVEC=30               ;ADDRESS OF EMT VECTOR
000034                                          TRAPVEC=34              ;ADDRESS OF TRAP VECTOR
000064                                          TPVEC=64                ;ADDRESS OF TTY PRINTER INTERRUPT VECTOR
000244                                          FPVEC=244               ;ADDRESS OF FLOATING POINT INT. VECTOR
000250                                          MMVEC=250               ;ADDRESS OF MEMORY MGMT ERROR TRAP VECTOR

                                        ;REGISTER ADDRESSES
177776                                          PSW=177776              ;ADDRESS OF STATUS REGISTER
177560                                          TKS=177560              ;ADDRESS OF KEYBOARD CSR
177562                                          TKB=177562              ;ADDRESS OF KEYBOARD BUFFER
177564                                          TPS=177564              ;ADDRESS OF TELEPRINTER CSR
177566                                          TPB=177566              ;ADDRESS OF TELEPRINTER BUFFER
177570                                          SWR=177570              ;ADDRESS OF CONSOL SWITCH REGISTER

                                        ;INITIAL STACK POINTER SETTINGS
001100                                          KPTR=1100               ;BOTTOM OF KERNEL STACK
000600                                          UPTR=600                ;USER STACK SETTING

                                        ;MISCELLANEOUS BIT ASSIGNMENTS
100000                                          BIT15=100000
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                        040000                  BIT14=40000
                        020000                  BIT13=20000
                        000400                  BIT8=400
                        000100                  BIT6=100

                                        ;MEMORY MANAGEMENT REGISTER SR0 BIT ASSIGNMENTS
                        000001                  ENMM=1                  ;ENABLE MEMORY MANAGEMENT
                        000000                  VS0=0
                        000002                  VS1=2
                        000004                  VS2=4
                        000006                  VS3=6
                        000010                  VS4=10
                        000012                  VS5=12
                        000014                  VS6=14
                        000016                  VS7=16
                        000000                  IS=00
                        000140                  UPG=140
                        000000                  KPG=000
                        000400                  DM=400                  ;DESTINATION MODE
                        020000                  AVA=20000               ;ACCESS VIOLATION ABORT
                        040000                  PLA=40000               ;PAGE LENGTH ABORT
                        100000                  NRA=100000              ;NON-RESIDENT ABORT

                                        ;PAGE DESCRIPTOR REGISTER (PDR) BIT ASSSIGNMENTS
                        000010                  ED=10                   ;EXPANSION DIRECTION BIT IN PDR
                        000000                  UP=0                    ;EXPAND UP
                        000010                  DWN=10                  ;EXPAND DOWN
                        000100                  W=100                   ;'W' BIT IN PDR

                                        ;MEMORY MANAGEMENT REGISTER ADDRESS ASSIGNMENTS
                        177572                  SR0=177572              ;ADDRESS OF MEMORY MGMT REGISTER SR0
                        177574                  SR1=177574              ;    "    "       "          "   SR1
                        177576                  SR2=177576              ;    "    "       "          "   SR2

                        177600                  UIPDR0=177600           ;ADDRESS OF USER 'I' PDR'S
                        177602                  UIPDR1=177602
                        177604                  UIPDR2=177604
                        177606                  UIPDR3=177606
                        177610                  UIPDR4=177610
                        177612                  UIPDR5=177612
                        177614                  UIPDR6=177614
                        177616                  UIPDR7=177616

                        177640                  UIPAR0=177640
                        177642                  UIPAR1=177642
                        177644                  UIPAR2=177644
                        177646                  UIPAR3=177646
                        177650                  UIPAR4=177650
                        177652                  UIPAR5=177652
                        177654                  UIPAR6=177654
                        177656                  UIPAR7=177656

                        172300                  KIPDR0=172300
                        172302                  KIPDR1=172302
                        172304                  KIPDR2=172304
                        172306                  KIPDR3=172306
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                        172310                  KIPDR4=172310
                        172312                  KIPDR5=172312
                        172314                  KIPDR6=172314
                        172316                  KIPDR7=172316

                        172340                  KIPAR0=172340
                        172342                  KIPAR1=172342
                        172344                  KIPAR2=172344
                        172346                  KIPAR3=172346
                        172350                  KIPAR4=172350
                        172352                  KIPAR5=172352
                        172354                  KIPAR6=172354
                        172356                  KIPAR7=172356

                                        ;ACCESS CONTROL FIELD DEFINITIONS (IN PDR)
                        000000                  NRO=0                   ;NON-RESIDENT ABORT ALL REFS.
                        000002                  RDO=2                   ;READ,ABORT ON WRITE
                        000004                  RWT=4                   ;TRAP ON READ & WRITE
                        000006                  RW=6                    ;READ & WRITE

                                        ;INSTRUCTION EQUATES
                        000000                  HLT=HALT
                        104000                  SCOPE=EMT               ;SCOPE IS AN EMT TRAP


                                        ;VIRTUAL ADDRESSES
                        016700                  KIO=16700
                        140000                  KI6=140000
                        120000                  UI5=120000
                        100000                  UI4=100000
                        040000                  UI2=40000
                        020000                  UI1=20000
                        060000                  UI3=60000
                                        ;CORRESPONDING PHYSICAL ADDRESSES
                        016600                  PKIO=16600
                        016700                  PKI6=16700
                        017200                  PUI5=17200
                        017300                  PUI4=17300
                        017400                  PUI3=17400
                        017000                  PUI2=17000
                        017100                  PUI1=17100
                                        ;FILL TRAP AND INTERRUPT VECTOR AREA WITH
                                                ;.+2
                                                ;HALT
                                        ;UNEXPECTED TRAPS/INTERRUPTS WILL HALT AT VECTOR ADDRESS +2
                                        ;AND DISPLAY VECTOR ADDRESS+4 NOTE: LISTING DOES NOT SHOW LOADING THE
                                        ;VECTOR AREA.

                        000010                  .=ERRVEC
000010  000010  000400                  .WORD   SHLT
                        000030                  .=EMTVEC
000030  000030  000442                  .WORD   SCOPEA

                        000046                  .=46
000046  000046  007204                  $ENDAD
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        000052                              .=52
000052  040000                              40000
        000176                              .=176
000176  000000                              HALT                          ;ERROR!  TO IDENTIFY WHICH TEST FAILED
                                    ;EXAMINE R1, THE CONTENTS OF WHICH IS THE PC OF THE PRESENT TEST
                                    ;THE TOP WORD ON THE KERNEL STACK CONTAINS THE VIRTUAL
                                    ;ADDRESS OF THE HLT INSTRUCTION IN THE TEST THAT FAILED.
        000200                              .=200
000200  000167  001012                      JMP     START                 ;GO START TEST
        000400                              .=400
                                    ;USER HLT (HALT) TRAP SERVICE ROUTINE
000400  042737  000001  177572      SHLT:   BIC     #1,@#SR0              ;TURN MEM MGMT OFF
000406  042737  140000  177776              BIC     #140000,@#PSW         ;RETURN TO KERNEL
000414  162716  000002                      SUB     #2,(KSP)              ;POINT PC TO TRAPPING INST.
000420  005776  000000                      TST     @(KSP)                ;WAS IT A HLT (HALT)
000424  001404                              BEQ     SHLTA
000426  062716  000002                      ADD     #2,(KSP)              ;RESTORE PC TO TRAPPING INST.
000432  000137  000012                      JMP     @#ERRVEC+2            ;GO HALT AT 6
000436  000137  000176              SHLTA:  JMP     @#176                 ;GO HALT AT ADDRESS 176
                                    ;SCOPE (EMT) SERVICE ROUTINE
000442  005037  177572              SCOPEA: CLR     @#SR0                 ;DISABLE MEMORY MGMT
000446  011601                              MOV     (KSP),R1              ;SAVE PC IN R1
000450  012706  001100                      MOV     #KPTR,KSP             ;SET KERNEL STACK PTR
000454  005046                              CLR     -(KSP)                ;SET UP FOR KERNEL MODE ON RETURN
000456  010146                              MOV     R1,-(KSP)             ;RETURN IN LINE
000460  012746  000600                      MOV     #UPTR,-(KSP)          ;USER STACK PTR ON KERNEL STACK
000464  012737  030000  177776              MOV     #PUM,@#PSW            ;PREVIOUS USER MODE
000472  106606                              MTPD    USP                   ;SET USER STACK PTR
000474  001400                              BEQ     SCOPEX
000476  000006                      SCOPEX: RTT                           ;RETURN TO NEXT TEST IN KERNEL MODE
                                                                          ;WITH ALL STACK PTRS SET UP
        001200                              .=1200
                                    ;TAGS
001200  000000                      ICNT:   0                             ;CONTAINS PASS COUNT
001202  000000                      SROT:   0                             ;CONTAINS SR0 CONTENTS ON ERROR
        001204                              TEMP=.
        001212                              .=.+6
001212  000000                      FTITLE: 0                             ;TITLE FLAG
001214  000000                      PASCNT: 0
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                                        ;START MEMORY MANAGEMENT TEST.
001216  000240                  START:  NOP
001220  005067  177754                  CLR     ICNT            ;CLEAR PASS COUNT
001224  005767  177762                  TST     FTITLE          ;HAS TITLE BEEN PRINTED YET?
001230  001047                          BNE     BEGIN           ;YES, SKIP TITLE
001232  023737  000042  000046          CMP     @#42,@#46       ;ARE WE IN ACT11 AUTOMATIC MODE?
001240  001443                          BEQ     BEGIN           ;YES, SKIP TITLE
001242  012700  001274                  MOV     #TITLE,R0       ;GET MESSAGE ADDRESS
001246  012767  000001  177736          MOV     #1,FTITLE       ;SET FLAG
001254  105767  176304          1$:     TSTB    TPS
001260  100375                          BPL     1$
001262  105710                          TSTB    (0)             ;END OF MESSAGE?
001264  001431                          BEQ     BEGIN           ;YES, GET OVER THE ASCII
001266  112067  176274                  MOVB    (0)+,TPB        ;PRINT CHARACTER
001272  000770                          BR      1$              ;GO DO THE NEXT ONE
001274  005015  046577  046505  TITLE:  .ASCIZ  <15><12><177>/MEMORY MANAGEMENT ABORT TESTS, DBKTF-D/<15><12>
001302  051117  020131  040515
001310  040516  042507  042515
001316  052116  040440  047502
001324  052122  052040  051505
001332  051524  020054  041104
001340  052113  026506  006504
001346  000012
                                        .EVEN
001350  012706  001100          BEGIN:  MOV     #KPTR,KSP       ;SET KERNEL STACK PTR
001354  104000                          SCOPE                   ;SCOPE SETS ALL STACK PTRS
001356  005037  000252                  CLR     @#MMVEC+2       ;KERNEL MODE ON ABORT

                                        ;ROUTINE TO CLEAR MEMORY MANAGEMENT REGISTERS.
001362  000240                  MMO:    NOP
001364  005067  176202                  CLR     SR0
001370  012702  177600                  MOV     #UIPDR0,R2
001374  012703  000010                  MOV     #8.,R3
001400  005022                          CLR     (R2)+
001402  077302                          SOB     R3,.-2
001404  012702  177640                  MOV     #UIPAR0,R2
001410  012703  000010                  MOV     #8.,R3
001414  005022                          CLR     (R2)+
001416  077302                          SOB     R3,.-2
001420  012702  172300                  MOV     #KIPDR0,R2
001424  012703  000010                  MOV     #8.,R3
001430  005022                          CLR     (R2)+
001432  077302                          SOB     R3,.-2
001434  012702  172340                  MOV     #KIPAR0,R2
001440  012703  000010                  MOV     #8.,R3
001444  005022                          CLR     (R2)+
001446  077302                          SOB     R3,.-2

001450  012737  073006  172300  MMK:    MOV     #73006,@#KIPDR0 ;RW, UP 167 BLOCKS
001456  012737  000006  172314          MOV     #6,@#KIPDR6     ;RW, UP 1 BLOCK
001464  012737  077406  172316          MOV     #77406,@#KIPDR7 ;RW, UP 200 BLOCKS
001472  012737  073006  177600          MOV     #73006,@#UIPDR0 ;RW, UP 167 BLOCKS
001500  012737  000006  177604          MOV     #6,@#UIPDR2     ;RW, UP 1 BLOCK
001506  012737  000006  177602          MOV     #6,@#UIPDR1     ;RW, UP 1 BLOCK
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   452  001514  012737  000006  177610          MOV     #6,@#UIPDR4     ;RW, UP 1 BLOCK
   453  001522  012737  000006  177612          MOV     #6,@#UIPDR5     ;RW, UP 1 BLOCK
   454
   455  001530  005067  170604                  CLR     KIPAR0          ;VA=PA=0000-16677
   456  001534  012767  000167  170612          MOV     #167,KIPAR6     ;VA=140000-140077;PA=16700-16777
   457  001542  012767  007600  170606          MOV     #7600,KIPAR7    ;VA=160000-177776,PA=760000-777776
   458  001550  005067  176064                  CLR     UIPAR0          ;VA=PA=0-16677
   459  001554  012767  000170  176062          MOV     #170,UIPAR2     ;VA=40000-40077/PA=17000-17077
   460  001562  012767  000171  176052          MOV     #171,UIPAR1     ;VA=20000-20077/PA=17100-17177
   461  001570  012767  000172  176054          MOV     #172,UIPAR5     ;VA=120000-120077/PA=17200-17277
   462  001576  012767  000173  176044          MOV     #173,UIPAR4     ;VA=100000-100077/PA=17300-17377
   463
   464
   465
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                                        ;CHECK ABORT AT SRC00
                                        ;ABORTS WHEN SOURCE OPERAND IS FETCHED

                                        ;SOURCE MODE=1
001604                                  T0:
001604  012737  001640  000250          MOV     #T0C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
001612  005067  176434                  CLR     MMVEC+2
001616  012703  016700                  MOV     #KIO,R3
001622  010302                          MOV     R3,R2
001624  005013                          CLR     (R3)
001626  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
001632  000277                          SCC
001634  011302                  T0A:    MOV     (R3),R2         ;MEM MGMT LENGTH ABORT AT SRC00
001636  000000                  T0B:    HLT                     ;ERROR! DID NOT ABORT
001640  022706  001074          T0C:    CMP     #KPTR-4,KSP     ;CHECK STACK PTR
001644  001401                          BEQ     .+4
001646  000000                          HLT
001650  022766  000017  000002          CMP     #17,2(KSP)      ;CHECK THAT CORRECT STATUS
001656  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
001660  000000                          HLT                     ;ERROR! INCORRECT STATUS
001662  022767  040001  175702          CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
001670  001401                          BEQ     .+4             ;& FAILING PAGE #)
001672  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001674  022767  001634  175674          CMP     #T0A,SR2        ;CHECK CONTENTS OF SR2
001702  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
001704  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
001706  020203                          CMP     R2,R3           ;CHECK THAT INSTRUCTIONS AS ABORTED
001710  001401                          BEQ     .+4
001712  000000                          HLT                     ;ERROR!
001714  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT SRC01
                                        ;ABORTS WHEN SOURCE OPERAND IS FETCHED
                                        ;SOURCE MODE=2,BYTE INSTRUCTION
001716  012737  001744  000250          MOV     #T1C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
001724  012702  016700                  MOV     #KIO,R2
001730  010204                          MOV     R2,R4
001732  005012                          CLR     (R2)
001734  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
001740  122202                  T1A:    CMPB    (R2)+,R2        ;SEG LENGTH ABORT AT SRC01
001742  000000                  T1B:    HLT                     ;ERROR! DID NOT ABORT
001744  022706  001074          T1C:    CMP     #KPTR-4,KSP     ;CHECK STACK PTR
001750  001401                          BEQ     .+4
001752  000000                          HLT
001754  022767  040001  175610          CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
001762  001401                          BEQ     .+4             ;& FAILING PAGE #)
001764  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001766  022767  001740  175602          CMP     #T1A,SR2        ;CHECK CONTENTS OF SR2
001774  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
001776  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
                                        ;CHECK THAT REGISTER INCREMENTED PROPERLY
002000  022702  016701                  CMP     #KIO+1,R2
002004  001401                          BEQ     .+4
002006  000000                          HLT                     ;ERROR!
002010  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
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                                        ;CHECK ABORT AT SRC13
                                        ;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
                                        ;SOURCE MODE=3
002012  012737  002040  000250          MOV     #T2C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
002020  012705  016700                  MOV     #KI0,R5
002024  010504                          MOV     R5,R4
002026  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
002032  000277                          SCC                     ;PRESET CC'S
002034  153504                  T2A:    BISB    @(R5)+,R4       ;NON-RES ABORT AT S13.10
002036  000000                  T2B:    HLT                     ;ERROR! FAILED TO ABORT
                                T2C:
002040  022766  000017  000002          CMP     #17,2(KSP)      ;CHECK THAT CORRECT STATUS
002046  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
002050  000000                          HLT                     ;ERROR! INCORRECT STATUS
002052  022767  040001  175512          CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
002060  001401                          BEQ     .+4             ;& FAILING PAGE #)
002062  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002064  022767  002034  175504          CMP     #T2A,SR2        ;CHECK CONTENTS OF SR2
002072  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002074  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
002076  022705  016702                  CMP     #KI0+2,R5
002102  001401                          BEQ     .+4
002104  000000                          HLT                     ;ERROR! R5 DID NOT AUTO-INCREMENT
002106  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT SRC02
                                        ;ABORTS WHEN SOURCE OPERAND IS FETCHED
                                        ;SOURCE MODE=4,USER MODE
002110  012737  002144  000250          MOV     #T3C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
002116  012767  170000  175652          MOV     #UM+PUM,PSW     ;USER MODE!!!, PREV USER MODE
002124  012702  100000                  MOV     #UI4,R2
002130  010203                          MOV     R2,R3
002132  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
002136  000277                          SCC                     ;PRESET CC'S
002140  064203                  T3A:    ADD     -(R2),R3        ;NON-RESIDENT ABORT AT SRC02
002142  000000                  T3B:    HLT                     ;ERROR! FAILED TO ABORT
002144  022706  001074          T3C:    CMP     #KPTR-4,KSP     ;CHECK STACK PTR
002150  001401                          BEQ     .+4
002152  000000                          HLT
002154  022766  170017  000002          CMP     #UM+PUM+17,2(KSP)       ;CHECK THAT CORRECT STATUS
002162  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
002164  000000                          HLT                     ;ERROR! INCORRECT STATUS
002166  022767  140147  175376          CMP     #NRA+PLA+UPG+VS3+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
002174  001401                          BEQ     .+4             ;& FAILING PAGE #)
002176  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002200  022767  002140  175370          CMP     #T3A,SR2        ;CHECK CONTENTS OF SR2
002206  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002210  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
                                        ;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (UIPDR2)
002212  032767  000100  175364          BIT     #W,UIPDR2       ;CHECK CONTENTS OF REFERENCED PDR
002220  001401                          BEQ     .+4
0[illegible]2  000000                   HLT                     ;ERROR!
0[illegible]4  042767  000100  175352  BIC     #W,UIPDR2
0[illegible]2  022702  077776          CMP     #UI4-2,R2       ;CHECK THAT AUTO- DECREMENT TOOK PLACE
0[illegible]6  001401                  BEQ     .+4
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                                                HLT                     ;ERROR! R2 FAILED TO AUTO-DECREMENT
002242  022703  100000                          CMP     #UI4,R3         ;CHECK THAT R3 WAS NOT CHANGED
002246  001401                                  BEQ     .+4
002250  000000                                  HLT                     ;ERROR!
002252  104000                                  SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT SRC13
                                        ;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
                                        ;SOURCE MODE=5,USER MODE
002254  012737  002314  000250                  MOV     #T4C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
002262  012767  170000  175506                  MOV     #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE!!
002270  012704  120002                          MOV     #UI5+2,R4
002274  010405                                  MOV     R4,R5
002276  012737  177777  017200                  MOV     #-1,@#PUI5
002304  005237  177572                          INC     @#SR0           ;ENABLE MEMORY MGMT
002310  145405                        T4A:      BICB    @-(R4),R5       ;NON-RESIDENT ABORT AT SRC13
002312  000000                        T4B:      HLT                     ;ERROR! FAILED TO ABORT
002314  022706  001074                T4C:      CMP     #KPTR-4,KSP     ;CHECK STACK PTR
002320  001401                                  BEQ     .+4
002322  000000                                  HLT
002324  022767  140157  175240                  CMP     #NRA+PLA+UPG+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
002332  001401                                  BEQ     .+4             ;& FAILING PAGE #)
002334  000000                                  HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002336  022767  002310  175232                  CMP     #T4A,SR2        ;CHECK CONTENTS OF SR2
002344  001401                                  BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002346  000000                                  HLT                     ;ERROR! INCORRECT PC IN SR2
                                        ;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (UIPDR5)
002350  032767  000100  175234                  BIT     #W,UIPDR5       ;CHECK CONTENTS OF REFERENCED PDR
002356  001401                                  BEQ     .+4
002360  000000                                  HLT                     ;ERROR!
002362  042767  000100  175222                  BIC     #W,UIPDR5
002370  022704  120000                          CMP     #UI5,R4 ;CHECK AUTO-DECREMENT
002374  001401                                  BEQ     .+4
002376  000000                                  HLT                     ;ERROR! FAILED TO AUTO-DECREMENT R4
002400  022705  120002                          CMP     #UI5+2,R5       ;CHECK THAT R5 WAS UNCHANGED
002404  001401                                  BEQ     .+4
002406  000000                                  HLT                     ;ERROR!
002410  104000                                  SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT SRC08
                                        ;ABORTS WHEN SOURCE OPERAND IS FETCHED
                                        ;SOURCE MODE = 6
002412  012737  002436  000250                  MOV     #T6C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
002420  012702  177777                          MOV     #-1,R2
002424  005237  177572                          INC     @#SR0           ;ENABLE MEMORY MGMT
002430  016702  014244                T6A:      MOV     KI0,R2          ;SEG LENGTH ABORT AT SRC08
002434  000000                        T6B:      HLT                     ;ERROR! FAILED TO ABORT
002436                                T6C:
002436  022767  040001  175126                  CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
002444  001401                                  BEQ     .+4             ;& FAILING PAGE #)
002446  000000                                  HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002450  022767  002430  175120                  CMP     #T6A,SR2        ;CHECK CONTENTS OF SR2
002456  001401                                  BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002460  000000                                  HLT                     ;ERROR! INCORRECT PC IN SR2
002462  005202                                  INC     R2              ;CHECK THAT R2 WAS NOT CHANGED
002464  001401                                  BEQ     .+4
```

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                                        HLT                     ;ERROR!
                                        SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT SRC13
                                ;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
                                ;SOURCE MODE = 7, PC
002472  012737  002514  000250        MOV     #T7C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
002500  005004                       CLR     R4
002502  005237  177572               INC     @#SR0           ;ENABLE MEMORY MGMT
002506  067404  016700        T7A:    ADD     @K10(R4),R4     ;SEG LEN ABORT AT SRC13
002512  000000                T7B:    HLT                     ;ERROR! FAILED TO ABORT
002514                        T7C:
002514  022767  040001  175050        CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
002522  001401                       BEQ     .+4             ;& FAILING PAGE #)
002524  000000                       HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002526  022767  002506  175042       CMP     #T7A,SR2        ;CHECK CONTENTS OF SR2
002534  001401                       BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002536  000000                       HLT                     ;ERROR! INCORRECT PC IN SR2
002540  005704                       TST     R4
002542  001401                       BEQ     .+4
002544  000000                       HLT
002546  104000                       SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT SRC15
                                ;ABORTS WHEN SOURCE OPERAND IS FETCHED
                                ;SOURCE MODE = 3,PC
002550  012737  002572  000250        MOV     #T10C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
002556  005003                       CLR     R3
002560  005237  177572               INC     @#SR0           ;ENABLE MEMORY MGMT
002564  013703  016700        T10A:   MOV     @#K10,R3        ;SEG LEN ABORT AT SRC15
002570  000000                T10B:   HLT                     ;ERROR! FAILED TO ABORT
002572                        T10C:
002572  022767  040001  174772        CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
002600  001401                       BEQ     .+4             ;& FAILING PAGE #)
002602  000000                       HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002604  022767  002564  174764       CMP     #T10A,SR2       ;CHECK CONTENTS OF SR2
002612  001401                       BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
002614  000000                       HLT                     ;ERROR! INCORRECT PC IN SR2
002616  005703                       TST     R3
002620  001401                       BEQ     .+4
002622  000000                       HLT                     ;ERROR!
002624  104000                       SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS


                                ;CHECK ABORT AT RTI.00
                                ;ABORTS WHEN TOP WORD OFF STACK (PC) IS FETCHED
002626  012737  002674  000250        MOV     #T13C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
002634  012767  170000  175134        MOV     #UM+PUM,PSW     ;USER MODE!!! PREV USER MODE!!
002642  012706  040100                MOV     #UI2+100,USP    ;USER STACK PTR IS NON-RES
002646  012737  002672  017100        MOV     #T13D,@#PUI2+100        ;LOAD 'NEW' PC
002654  005037  017102                CLR     @#PUI2+102
002660  005237  177572                INC     @#SR0           ;ENABLE MEMORY MGMT
002664  000277                       SCC
002666  000002                T13A:   RTI                     ;NON-RES ABORT AT RTI.00
002670  000000                T13B:   HLT                     ;ERROR! FAILED TO ABORT
002672  000000                T13D:   HLT                     ;ERROR! RTI FAILED & DID NOT ABORT
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690  002674  022706  001074          T13C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
691  002700  001401                         BEQ     .+4
692  002702  000000                         HLT
693  002704  022766  170017  000002          CMP     #UM+PUM+17,2(KSP)       ;CHECK THAT CORRECT STATUS
694  002712  001401                         BEQ     .+4                     ;WAS SAVED ON THE STACK
695  002714  000000                         HLT                             ;ERROR! INCORRECT STATUS
696  002716  022767  040145  174646          CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
697  002724  001401                         BEQ     .+4                     ;& FAILING PAGE #)
698  002726  000000                         HLT                             ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
699  002730  022767  002666  174640          CMP     #T13A,SR2               ;CHECK CONTENTS OF SR2
700  002736  001401                         BEQ     .+4                     ;(PC OF ABORTED INSTRUCTION)
701  002740  000000                         HLT                             ;ERROR! INCORRECT PC IN SR2
702  002742  106506                         MFPD    USP                     ;PUSH USER STACK PTR ONTO KERNEL STACK
703  002744  022716  040102                 CMP     #UI2+102,(KSP)          ;CHECK THAT USER STACK PTR WAS POPPED
704  002750  001401                         BEQ     .+4
705  002752  000000                         HLT                             ;ERROR!
706  002754  104000                         SCOPE                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
707
708                                  ;CHECK ABORT AT RTI.01
709                                  ;ABORTS WHEN SECOND WORD ON STACK (STATUS) IS FETCHED
710  002756  012737  003022  000250          MOV     #T14C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
711  002764  012737  170000  175004          MOV     #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE!!
712  002772  012706  100076                  MOV     #UI4+76,USP
713  002776  012737  003020  017376          MOV     #T14D,@#PUI4+76 ;LOAD USER STACK (PHYS ADRS.)
714  003004  005037  017400                  CLR     @#PUI4+100      ;AND 'NEW' STATUS
715  003010  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
716  003014  000006                  T14A:   RTT                     ;SEG LEN ABORT AFTER FIRST POP RTI.01
717  003016  000000                  T14B:   HLT                     ;ERROR! FAILED TO ABORT
718  003020  000000                  T14D:   HLT                     ;ERROR!
719  003022                           T14C:
720  003022  022767  040151  174542          CMP     #PLA+UPG+VS4+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
721  003030  001401                         BEQ     .+4                     ;& FAILING PAGE #)
722  003032  000000                         HLT                             ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
723  003034  022767  003014  174534          CMP     #T14A,SR2               ;CHECK CONTENTS OF SR2
724  003042  001401                         BEQ     .+4                     ;(PC OF ABORTED INSTRUCTION)
725  003044  000000                         HLT                             ;ERROR! INCORRECT PC IN SR2
726  003046  106506                         MFPD    USP                     ;PUSH USER STACK PTR ONTO KERNEL STACK
727  003050  022716  100102                 CMP     #UI4+102,(KSP)          ;CHECK THAT USER STACK PTR POPPED TWICE
728  003054  001401                         BEQ     .+4
729  003056  000000                         HLT
730  003060  104000                         SCOPE                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
731
732                                  ;CHECK ABORT AT RTS.02
733                                  ;ABORTS WHEN TOP WORD ON USER STACK (RETURN PC) IS FETCHED
734  003062  012767  170000  174706          MOV     #UM+PUM,PSW     ;USER MODE!!! PREV USER MODE!!
735  003070  012706  020100                  MOV     #UI1+100,USP
736  003074  012737  003120  000250          MOV     #T16C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
737  003102  012705  003116                  MOV     #T16D,R5
738  003106  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
739  003112  000205                  T16A:   RTS     5               ;ABORTS AT RTS.02 (STACK IS NON-RES)
740  003114  000000                  T16B:   HLT                     ;ERROR! RTS& ABORT FAILED
741  003116  000000                  T16D:   HLT                     ;ERROR! RTS ABORT FAILED
742  003120  022706  001074          T16C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
743  003124  001401                         BEQ     .+4
744  003126  000000                         HLT
745  003130  022767  040143  174434          CMP     #PLA+UPG+VS1+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
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746  003136  001401                          BEQ     .+4             ;& FAILING PAGE #)
747  003140  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
748  003142  022767  003112  174426          CMP     #T16A,SR2       ;CHECK CONTENTS OF SR2
749  003150  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
750  003152  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
751  003154  022705  003116                  CMP     #T16D,R5        ;CHECK THAT R5 DID NOT CHANGE
752  003160  001401                          BEQ     .+4
753  003162  000000                          HLT                     ;ERROR!
754  003164  106506                          MFPD    USP             ;PUSH USER STACK PTR ONTO KERNEL STACK
755  003166  022716  020102                  CMP     #UI1+102,(KSP)  ;CHECK THAT USER STACK WAS POPPED
756  003172  001401                          BEQ     .+4
757  003174  000000                          HLT                     ;ERROR! INCORRECT USER STACK PTR
758  003176  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
759                           ;CHECK ABORT AT SRC07
760                           ;ABORTS WHEN SOURCE INDEX IS FETCHED
761                           ;SOURCE MODE = 6, PC
762  003200  012737  003242  000250          MOV     #T20C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
763  003206  012702  177777                  MOV     #-1,R2          ;PRESET DEST REG
764  003212  012737  016702  016675          MOV     #16702,@#KIO-2  ;16702,000000 IS A MOV .+4,R2
765  003220  005037  016700                  CLR     @#KIO           ;INSTRUCTION
766  003224  005037  016702                  CLR     @#KIO+2
767  003230  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
768  003234  000277                          SCC                     ;PRESET CC'S
769  003236  000137  016676                  JMP     @#KIO-2         ;GO TO MOV INST.
770          003242                          RETURN=.
771                           ;************************ NOTE PC CHANGE ***********************************
772          016676                          .=KIO-2
773  016676  016702  000000          T20A:   MOV     .+4,R2          ;SEG LEN ABORT WHEN INDEX VALUE IS FETCHED
774  016702  000000          T20B:   HLT                             ;ERROR! FAILED TO ABORT
775                           ;************************ RETURN PC ************************************
776          003242                          .=RETURN
777  003242  022706  001074          T20C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
778  003246  001401                          BEQ     .+4
779  003250  000000                          HLT
780  003252  022766  000017  000002          CMP     #17,2(KSP)      ;CHECK THAT CORRECT STATUS
781  003260  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
782  003262  000000                          HLT                     ;ERROR! INCORRECT STATUS
783  003264  022767  040001  174300          CMP     #PLA+IS+VSO+1,SR0       ;CHECK SR0 (ABORT CONDITIONS
784  003272  001401                          BEQ     .+4             ;& FAILING PAGE #)
785  003274  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
786  003276  022767  016676  174272          CMP     #T20A,SR2       ;CHECK CONTENTS OF SR2
787  003304  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
788  003306  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
789  003310  005202                          INC     R2
790  003312  001401                          BEQ     .+4
791  003314  000000                          HLT
792  003316  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
793
794                           ;CHECK ABORT AT SRC10
795                           ;ABORTS WHEN SOURCE INDEX IS FETCHED
796                           ;SOURCE MODE = 7
797  003320  012737  003362  000250          MOV     #T21C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
798  003326  012737  177777  016700          MOV     #-1,@#PKI6
799  003334  012702  140000                  MOV     #KI6,R2         ;LOAD INDEX REGISTER
800  003340  012737  017202  016676          MOV     #017202,@#KIO-2 ;017202,000000 IS A MOV  @0(R2),R2
801  003346  005037  016700                  CLR     @#KIO           ;INSTRUCTION
```

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                                        INC     @#SR0           ;ENABLE MEMORY MGMT
                                        JMP     @#KI0-2
                                        RETURN=.
                                ;*************************** NOTE PC CHANGE ****************************
                                        .=KI0-2
                                T21A:   MOV     @0(R2),R2       ;SEG LEN ABORT AT SRC10
                                T21B:   HLT                     ;ERROR! FAILED TO ABORT
                                        .=RETURN
                                ;************************ RETURN PC ************************************

                                T21C:
                                        CMP     #PLA+IS+VS0+1,SR0       ;CHECK SR0 (ABORT CONDITIONS
                                        BEQ     .+4             ;& FAILING PAGE #)
                                        HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
                                        CMP     #T21A,SR2       ;CHECK CONTENTS OF SR2
                                        BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
                                        HLT                     ;ERROR! INCORRECT PC IN SR2
                                        CMP     #KI6,R2 ;CHECK THAT R2 IS UNCHANGED
                                        BEQ     .+4
                                        HLT                     ;ERROR!
                                        SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT FET03
                                ;ABORTS WHEN INST FOLLOWING SOB IS FETCHED
                                        MOV     #1,%3
                                        MOV     #077302,@#KI0-2 ;077302=SOB  R3,.-2
                                        CLR     @#KI0-4         ;CLEAR INST. PRECEDING SOB (.-2)
                                        CLR     @#KI0           ;PUT HLT FOLLOWING SOB
                                        MOV     #T22C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
                                        INC     @#SR0           ;ENABLE MEMORY MGMT
                                        SCC                     ;PRESET CC'S
                                        JMP     @#KI0-2         ;GO TO SOB INST.

                                        RETURN=.
                                        .=KI0-4
                                T22:    HLT                     ;ERROR! SOB BRANCHED & FAILED TO ABORT
                                T22A:   SOB     R3,.-2          ;ABORTS WHEN NEXT INST. IS FETCHED
                                T22AA:  HLT                     ;ERROR! FAILED TO ABORT
                                T22B:   0
                                        .=RETURN

                                T22C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
                                        BEQ     .+4
                                        HLT
                                        CMP     #17,2(KSP)      ;CHECK THAT CORRECT STATUS
                                        BEQ     .+4             ;WAS SAVED ON THE STACK
                                        HLT                     ;ERROR! INCORRECT STATUS
                                        CMP     #PLA+VS0+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
                                        BEQ     .+4             ;& FAILING PAGE #)
                                        HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
                                        CMP     #T22A,SR2       ;CHECK CONTENTS OF SR2
                                        BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
                                        HLT                     ;ERROR! INCORRECT PC IN SR2
                                        TST     R3              ;CHECK THAT R3 DECREMENTD
                                        BEQ     .+4
                                        HLT                     ;ERROR! R3 WAS NOT DECREMENTED BY SOB
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                                                SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT MOV16
                                        ;ABORTS WHEN DEST OPERAND IS FETCHED
003540  012767  030000  174230                  MOV     #KM+PUM,PSW
003546  012737  003570  000250                  MOV     #T24C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
003554  012702  040000                          MOV     #UI2,R2
003560  005237  177572                          INC     @#SR0           ;ENABLE MEMORY MGMT
003564  106542                        T24A:     MFPD    -(R2)           ;NON-RESIDENT ABORT AT MOV16
003566  000000                        T24B:     HLT
003570  022706  001074                T24C:     CMP     #KPTR-4,KSP     ;CHECK STACK PTR
003574  001401                                  BEQ     .+4
003576  000000                                  HLT
003600  022767  040143  173764                  CMP     #UPG+PLA+VS1+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
003606  001401                                  BEQ     .+4             ;& FAILING PAGE #)
003610  000000                                  HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003612  022767  003564  173756                  CMP     #T24A,SR2       ;CHECK CONTENTS OF SR2
003620  001401                                  BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
003622  000000                                  HLT                     ;ERROR! INCORRECT PC IN SR2
003624  022702  037776                          CMP     #UI2-2,R2       ;CHECK THAT R2 AUTO-DECREMENTED
003630  001401                                  BEQ     .+4
003632  000000                                  HLT                     ;ERROR! R2 DID NOT AUTO-DECREMENT
003634  104000                                  SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT DST00
                                        ;ABORTS WHEN DEST OPERAND IS FETCHED
003636  012737  003666  000250                  MOV     #T25C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
003644  012702  177572                          MOV     #SR0,R2
003650  012767  170000  174120                  MOV     #UM+PUM,PSW
003656  005237  177572                          INC     @#SR0           ;ENABLE MEMORY MGMT
003662  005012                        T25A:     CLR     (R2)            ;ABORT AT DST00
003664  000000                        T25B:     HLT                     ;ERROR! FAILED TO ABORT
003666  022706  001074                T25C:     CMP     #KPTR-4,KSP     ;CHECK STACK PTR
003672  001401                                  BEQ     .+4
003674  000000                                  HLT
003676  022767  140157  173666                  CMP     #NRA+PLA+UPG+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
003704  001401                                  BEQ     .+4             ;& FAILING PAGE #)
003706  000000                                  HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003710  022767  003662  173660                  CMP     #T25A,SR2       ;CHECK CONTENTS OF SR2
003716  001401                                  BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
003720  000000                                  HLT                     ;ERROR! INCORRECT PC IN SR2
003722  104000                                  SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT DST01
                                        ;ABORTS WHEN DEST OPERAND IS FETCHED
003724  012737  003754  000250                  MOV     #T30C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
003732  012703  016677                          MOV     #KI0-1,R3
003736  012737  177777  016700                  MOV     #-1,@#KI0
003744  005237  177572                          INC     @#SR0           ;ENABLE MEMORY MGMT
003750  142323                        T30A:     BICB    (R3)+,(R3)+     ;SEG LENGTH ABORT AT DST01
003752  000000                                  HLT                     ;ERROR! FAILED TO ABORT

003754                                  T30C:
003754  022767  040001  173610                  CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
003762  001401                                  BEQ     .+4             ;& FAILING PAGE #)
003764  000000                                  HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
```

```
  914  003766  022767  003750  173602          CMP     #T30A,SR2       ;CHECK CONTENTS OF SR2
  915  003774  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
  916  003776  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
  917  004000  005037  177572                  CLR     @#SR0           ;DISABLE MEMORY MGMT
  918  004004  022703  016701                  CMP     #KI0+1,R3       ;CHECK AUTO-INC TWICE
  919  004010  001401                          BEQ     .+4
  920  004012  000000                          HLT                     ;ERROR!
  921  004014  005237  016700                  INC     @#KI0
  922  004020  001401                          BEQ     .+4
  923  004022  000000                          HLT                     ;ERROR!
  924  004024  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
  925
  926                                  ;CHECK ABORT AT DST04
  927                                  ;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
  928  004026  012737  004076  000250          MOV     #T31C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
  929  004034  012702  040000                  MOV     #UI2,R2
  930  004040  012703  017100                  MOV     #PUI1,R3
  931  004044  012713  177777                  MOV     #-1,(R3)
  932  004050  011337  017000                  MOV     (R3),@#PUI2
  933  004054  012703  020002                  MOV     #UI1+2,R3       ;R3= USER VIRTUAL ADDRESS
  934  004060  012767  170000  173710          MOV     #UM+PUM,PSW
  935  004066  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
  936  004072  114332                  T31A:   MOVB    -(R3),@(R2)+    ;NON-RESIDENT ABORT AT DST04
  937  004074  000000                  T31B:   HLT                     ;ERROR! FAILED TO ABORT
  938
  939  004076                          T31C:
  940  004076  022767  140157  173466          CMP     #NRA+PLA+UPG+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
  941  004104  001401                          BEQ     .+4             ;& FAILING PAGE #)
  942  004106  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
  943  004110  022767  004072  173460          CMP     #T31A,SR2       ;CHECK CONTENTS OF SR2
  944  004116  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
  945  004120  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
  946  004122  022702  040002                  CMP     #UI2+2,R2       ;CHECK AUTO-INC
  947  004126  001401                          BEQ     .+4
  948  004130  000000                          HLT                     ;ERROR!
  949  004132  022703  020001                  CMP     #UI1+1,R3       ;CHECK AUTO DECREMENT OF R3
  950  004136  001401                          BEQ     .+4
  951  004140  000000                          HLT                     ;ERROR! R3 NOT AUTO-DECREMENTED
  952  004142  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
  953
  954                                  ;CHECK ABORT AT MOV03
  955  004144  012737  004210  000250          MOV     #T32C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
  956  004152  012767  170000  173616          MOV     #UM+PUM,PSW
  957  004160  012706  000600                  MOV     #UPTR,USP
  958  004164  005016                          CLR     (USP)
  959  004166  012702  060000                  MOV     #UI3,R2
  960  004172  012737  177777  017400          MOV     #-1,@#PUI3
  961  004200  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
  962  004204  006632                  T32A:   MTPI    @(R2)+          ;NON-RESIDENT ABORT AT MOV03
  963  004206  000000                  T32B:   HLT                     ;ERROR! FAILED TO ABORT
  964  004210                          T32C:
  965  004210  022767  100147  173354          CMP     #NRA+UPG+VS3+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
  966  004216  001401                          BEQ     .+4             ;& FAILING PAGE #)
  967  004220  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
  968  004222  022767  004204  173346          CMP     #T32A,SR2       ;CHECK CONTENTS OF SR2
  969  004230  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
```

```
                                                HLT                             ;ERROR! INCORRECT PC IN SR2
                                                MFPD    USP                     ;PUSH USER STACK PTR ONTO KERNEL STACK
                                                CMP     #UPTR+2,(KSP)           ;CHECK THAT USER STACK PTR POPPED
                                                BEQ     .+4
                                                HLT                             ;ERROR!
                                                CMP     #UI3+2,R2               ;CHECK AUTO-INC
                                                BEQ     .+4
                                                HLT                             ;ERROR!
                                                SCOPE                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT MOV11
                                        ;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
                                                MOV     #T33C,@#MMVEC           ;LOAD MEM MGMT ERROR VECTOR
                                                MOV     #KM+PUM,PSW
                                                MOV     #UI5-2,-(KSP)           ;NON-RES ADDRESS
                                                MOV     #KI6,-(KSP)             ;ADDRESS POINTER
                                                INC     @#SR0                   ;ENABLE MEMORY MGMT
                                        T33A:   MTPD    @(KSP)+                 ;NON-RESIDENT ABORT AT MOV11 WHEN MTPD
                                                                                ;ADDRESSES FINAL ADDRESS
                                        T33B:   HLT                             ;ERROR! FAILED TO ABORT
                                        T33C:
                                                CMP     #PLA+UPG+VS4+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
                                                BEQ     .+4                     ;& FAILING PAGE #)
                                                HLT                             ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
                                                CMP     #T33A,SR2               ;CHECK CONTENTS OF SR2
                                                BEQ     .+4                     ;(PC OF ABORTED INSTRUCTION)
                                                HLT                             ;ERROR! INCORRECT PC IN SR2
                                                MFPD    KSP                     ;GET KERNEL STACK PTR
                                                CMP     #KPTR-2,(KSP)           ;CHECK THAT KERNEL STACK PTR POPPED TWICE
                                                BEQ     .+4
                                                HLT                             ;ERROR!
                                                SCOPE                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                        ;CHECK ABORT AT MOV15
                                        ;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
                                        ;DM=5
                                                MOV     #T35C,@#MMVEC           ;LOAD MEM MGMT ERROR VECTOR
                                                MOV     #KI0+2,R4
                                                MOV     #20000,#KI0-2
                                                INC     @#SR0                   ;ENABLE MEMORY MGMT
                                                SCC
                                        T35A:   MOVB    #-1,@-(R4)              ;SEG LENGTH ABORT AT MOV15
                                        T35B:   HLT                             ;ERROR! FAILED TO ABORT
                                        T35C:
                                                CMP     #17,2(KSP)              ;CHECK THAT CORRECT STATUS
                                                BEQ     .+4                     ;WAS SAVED ON THE STACK
                                                HLT                             ;ERROR! INCORRECT STATUS
                                                CMP     #PLA+VS0+1,SR0          ;CHECK SR0 (ABORT CONDITIONS
                                                BEQ     .+4                     ;& FAILING PAGE #)
                                                HLT                             ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
                                                CMP     #T35A,SR2               ;CHECK CONTENTS OF SR2
                                                BEQ     .+4                     ;(PC OF ABORTED INSTRUCTION)
                                                HLT                             ;ERROR! INCORRECT PC IN SR2
                                                CMP     #KI0,R4
                                                BEQ     .+4
                                                HLT                             ;ERROR!
```

```
1026  004456  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1027
1028                                  ;CHECK ABORT AT DST15
1029                                  ;ABORTS WHEN DEST OPERAND IS FETCHED
1030                                  ;DM=4
1031  004460  012737  004512  000250          MOV     #T36C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1032  004466  012704  140002                 MOV     #KI6+2,R4
1033  004472  012703  016702                 MOV     #KI0+2,R3
1034  004476  012713  177777                 MOV     #-1,(R3)
1035  004502  005237  177572                 INC     @#SR0           ;ENABLE MEMORY MGMT
1036  004506  154443                  T36A:  BISB    -(R4),-(R3)     ;SEG LENGTH ABORT AT DST15
1037  004510  000000                  T36B:  HLT                     ;ERROR! FAILED TO ABORT
1038
1039  004512                          T36C:
1040  004512  022767  040001  173052          CMP     #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1041  004520  001401                          BEQ     .+4             ;& FAILING PAGE #)
1042  004522  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1043  004524  022767  004506  173044          CMP     #T36A,SR2       ;CHECK CONTENTS OF SR2
1044  004532  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1045  004534  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1046  004536  022703  016701                 CMP     #KI0+1,R3       ;CHECK AUTO-DEC
1047  004542  001401                          BEQ     .+4
1048  004544  000000                          HLT                     ;ERROR!
1049  004546  022704  140001                 CMP     #KI6+1,R4       ;CHECK AUTO-DEC
1050  004552  001401                          BEQ     .+4
1051  004554  000000                          HLT                     ;ERROR! AUTO-DEC FAILED
1052  004556  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1053
1054
1055                                  ;CHECK ABORT AT MOV08
1056                                  ;WHEN INSTRUCTION FETCHES DESTINATION INDEX VALUE
1057  004560  012737  004626  000250          MOV     #T40C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1058  004566  012767  170000  173202          MOV     #UM+PUM,PSW
1059  004574  012737  113767  017074          MOV     #113767,@#PUI2+74       ;113767,020001,177776
1060  004602  012737  020001  017076          MOV     #20001,@#PUI2+76        ;IS A MOVB  @#20001,.+4
1061  004610  012737  177776  017100          MOV     #177776,@#PUI2+100      ;INSTRUCTION
1062  004616  005237  177572                 INC     @#SR0           ;ENABLE MEMORY MGMT
1063  004622  000137  040074                 JMP     @#UI2+74
1064          004626                          RETURN=.
1065          017074                          .=PUI2+74
1066  017074  113767  020001  177776  T40A:  MOVB    @#20001,.+4     ;SEG LENGTH ABORT WHEN INST. FETCHES
1067                                                                  ;DEST INDEX WORD AT MOV08
1068  017102  000000                  T40B:  HLT                     ;ERROR! FAILED TO ABORT
1069          004626                          .=RETURN
1070
1071  004626                          T40C:
1072  004626  022767  040145  172736          CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1073  004634  001401                          BEQ     .+4             ;& FAILING PAGE #)
1074  004636  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1075  004640  022767  040074  172730          CMP     #UI2+74,SR2     ;CHECK CONTENTS OF SR2
1076  004646  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1077  004650  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1078  004652  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1079
1080                                  ;CHECK ABORT AT MOV17
1081                                  ;WHEN INSTRUCTION FETCHES DESTINATION OPERAND
```

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1082  004654  012737  004722  000250          MOV     #T41C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1083  004662  012767  170000  173106          MOV     #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE!!
1084  004670  012703  100000                  MOV     #UI4,R3
1085  004674  012704  100102                  MOV     #UI4+102,R4
1086  004700  012737  010344  017200          MOV     #010344,@#PUI5  ;012344 = MOV  R3,-(R4)
1087  004706  005037  017202                  CLR     @#PUI5+2
1088  004712  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1089  004716  000137  120000                  JMP     @#UI5
1090          004722                          RETURN=.
1091          017200                          .=PUI5
1092  017200  010344                  T41A:   MOV     R3,-(R4)        ;ABORT AT MOV17
1093  017202  000000                  T41B:   HLT                     ;ERROR! FAILED TO ABORT
1094          004722                          .=RETURN
1095
1096  004722                          T41C:
1097  004722  022767  040151  172642          CMP     #PLA+UPG+VS4+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1098  004730  001401                          BEQ     .+4             ;& FAILING PAGE #)
1099  004732  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1100  004734  022767  120000  172634          CMP     #UI5,SR2        ;CHECK CONTENTS OF SR2
1101  004742  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1102  004744  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1103  004746  022704  100100                  CMP     #UI4+100,R4
1104  004752  001401                          BEQ     .+4
1105  004754  000000                          HLT
1106  004756  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1107
1108                                  ;CHECK ABORT AT MOV16
1109                                  ;(WHEN INSTRUCTION FETCHES ADDRESS OF DESTINATION OPERAND)
1110  004760  012737  005016  000250          MOV     #T42C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1111  004766  012767  030000  173002          MOV     #KM+PUM,PSW
1112  004774  012703  140102                  MOV     #KI6+102,R3
1113  005000  012737  177777  017000          MOV     #-1,@#PKI6+100
1114  005006  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1115  005012  106653                  T42A:   MTPD    @-(R3)          ;SEG LENGTH ABORT AT MOV16
1116  005014  000000                  T42B:   HLT                     ;ERROR! FAILED TO ABORT
1117
1118  005016  022706  001076          T42C:   CMP     #KPTR-2,KSP     ;CHECK STACK PTR ( 1 POP, 2 PUSHES)
1119  005022  001401                          BEQ     .+4
1120  005024  000000                          HLT                     ;ERROR! INCORRECT STACK PTR
1121  005026  022767  040015  172536          CMP     #PLA+VS6+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1122  005034  001401                          BEQ     .+4             ;& FAILING PAGE #)
1123  005036  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1124  005040  022767  005012  172530          CMP     #T42A,SR2       ;CHECK CONTENTS OF SR2
1125  005046  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1126  005050  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1127  005052  022703  140100                  CMP     #KI6+100,R3     ;CHECK AUTO-DECREMENT
1128  005056  001401                          BEQ     .+4
1129  005060  000000                          HLT                     ;ERROR! DID NOT AUTO-DEC
1130  005062  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1131
1132                                  ;CHECK ABORT AT DST04
1133                                  ;ABORTS WHEN ADDRESS TO JUMP TO IS FETCHED
1134  005064  012737  005132  000250          MOV     #T43C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1135  005072  012737  000137  017076          MOV     #137,@#PUI2+76  ;000137,T43D =JMP  @#T43D
1136  005100  012737  005130  017100          MOV     #T43D,@#PUI2+100
1137  005106  005037  017102                  CLR     @#PUI2+102
```

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1138  005112  012767  170000  172656          MOV     #UM+PUM,PSW
1139  005120  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1140  005124  000137  040076                  JMP     @#UI2+76        ;GO DO INSTRUCTION
1141          005130                          RETURN=.
1142          017076                          .=PUI2+76
1143  017076  000137  005130          T43A:   JMP     @#T43D
1144  017102  000000          T43B:   HLT                             ;ERROR! JMP FAILED
1145          005130                          .=RETURN
1146  005130  000000          T43D:   HLT                             ;ERROR! FAILED TO ABORT
1147  005132                  T43C:
1148  005132  022767  040145  172432          CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1149  005140  001401                          BEQ     .+4             ;& FAILING PAGE #)
1150  005142  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1151  005144  022767  040076  172424          CMP     #UI2+76,SR2     ;CHECK CONTENTS OF SR2
1152  005152  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1153  005154  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1154  005156  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1155
1156                          ;CHECK ABORT AT DST12
1157                          ;WHEN INSTRUCTION FETCHES ADDRESS OF DEST. OPERAND. (UI5+4)
1158  005160  012737  005230  000250          MOV     #T44C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1159  005166  012767  170000  172602          MOV     #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE!!
1160  005174  012706  000600                  MOV     #UPTR,USP       ;SET USER STACK PTR
1161  005200  012703  120006                  MOV     #UI5+6,R3
1162  005204  012737  177776  017204          MOV     #-2,@#PUI5+4
1163  005212  012737  004753  017200          MOV     #4753,@#PUI5    ;004753 = JSR 7,@-(R3)
1164  005220  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1165  005224  000137  120000                  JMP     @#UI5           ;GO DO INST.
1166          005230                          RETURN=.
1167          017200                          .=PUI5
1168  017200  004753          T44A:   JSR     7,@-(R3)
1169  017202  000000          T44B:   HLT                             ;ERROR!
1170          005230                          .=RETURN
1171  005230  022706  001074          T44C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
1172  005234  001401                          BEQ     .+4
1173  005236  000000                          HLT                     ;INCORRECT STACK PTR
1174  005240  022767  140157  172324          CMP     #NRA+PLA+UPG+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1175  005246  001401                          BEQ     .+4             ;& FAILING PAGE #)
1176  005250  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1177  005252  022767  120000  172316          CMP     #UI5,SR2        ;CHECK CONTENTS OF SR2
1178  005260  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1179  005262  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1180  005264  106506                          MFPD    USP             ;GET USER STACK PTR (ON KERNEL STACK)
1181  005266  022716  000576                  CMP     #UPTR-2,(KSP)   ;CHECK THAT USER STACK DID NOT
1182  005272  001401                          BEQ     .+4             ;GET PUSHED
1183  005274  000000                          HLT                     ;ERROR!
1184  005276  022703  120004                  CMP     #UI5+4,R3       ;CHECK AUTO-DEC
1185  005302  001401                          BEQ     .+4
1186  005304  000000                          HLT                     ;ERROR!
1187  005306  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1188
1189                          ;CHECK ABORT AT DST10
1190                          ;WHEN INSTRUCTION FETCHES DESTINATION OPERAND (UIPDR5)
1191  005310  012737  005362  000250          MOV     #T45C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1192  005316  012767  170000  172452          MOV     #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE!!
1193  005324  012706  000600                  MOV     #UPTR,USP       ;SET USER STACK PTR
```

```
1194  005330  005016                          CLR     (USP)
1195  005332  012737  012667  017200          MOV     #012667,@#PUI5  ;012667,057606 = MOV  (USP)+,UIPDR5
1196  005340  012737  057606  017202          MOV     #57606,@#PUI5+2 ;INSTRUCTION
1197  005346  005037  017204                  CLR     @#PUI5+4
1198  005352  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1199  005356  000137  120000                  JMP     @#UI5
1200          005362                          RETURN=.
1201          017200                          .=PUI5
1202  017200  012667  057606          T45A:   MOV     (USP)+,UIPDR5-UI5+PUI5
1203  017204  000000          T45B:   HLT                             ;ERROR! FAILED TO ABORT
1204          005362                          .=RETURN
1205
1206  005362                          T45C:
1207  005362  022767  140157  172202          CMP     #NRA+UPG+PLA+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1208  005370  001401                          BEQ     .+4             ;& FAILING PAGE #)
1209  005372  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1210  005374  022767  120000  172174          CMP     #UI5,SR2        ;CHECK CONTENTS OF SR2
1211  005402  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1212  005404  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1213  005406  005037  177572                  CLR     @#SR0           ;DISABLE MEMORY MGMT
1214  005412  005737  177612                  TST     @#UIPDR5
1215  005416  001001                          BNE     .+4
1216  005420  000000                          HLT
1217  005422  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1218
1219
1220
1221                                  ;CHECK ABORT AT JSR01
1222                                  ;ABORTS WHEN REGISTER (R5) IS PUSHED ON USER STACK
1223  005424  012737  005474  000250          MOV     #T50C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1224  005432  012767  170000  172336          MOV     #UM+PUM,PSW     ;USER MODE!!! ,PREV USER MODE!!
1225  005440  012706  100000                  MOV     #UI4,USP        ;SET USER STACK PTR
1226  005444  005037  017276                  CLR     @#PUI4-2
1227  005450  005005                          CLR     R5
1228  005452  012767  005472  173524          MOV     #T50D,TEMP
1229  005460  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1230  005464  004577  173514          T50A:   JSR     5,@TEMP         ;NON-RES ABORT AT JSR01
1231  005470  000000          T50B:   HLT                             ;JSR FAILED & DID NOT ABORT
1232  005472  000000          T50D:   HLT                             ;ERROR! FAILED TO ABORT
1233  005474                  T50C:
1234  005474  022767  140147  172070          CMP     #NRA+PLA+UPG+VS3+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1235  005502  001401                          BEQ     .+4             ;& FAILING PAGE #)
1236  005504  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1237  005506  022767  005464  172062          CMP     #T50A,SR2       ;CHECK CONTENTS OF SR2
1238  005514  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1239  005516  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1240  005520  106506                          MFPD    USP             ;PUSH USER STACK PTR ONTO KERNEL STACK
1241  005522  022716  077776                  CMP     #UI4-2,(KSP)    ;CHECK THAT USER STACK PTR DEC-
1242  005526  001401                          BEQ     .+4             ;REMENTED
1243  005530  000000                          HLT                     ;ERROR!
1244  005532  005705                          TST     R5
1245  005534  001401                          BEQ     .+4
1246  005536  000000                          HLT
1247  005540  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1248
1249                                  ;CHECK ABORT AT TRP11
```

```
                                                ;ABORTS WHEN STATUS IS PUSHED ONTO USER STACK
005542  012737  005606  000250                    MOV     #T52C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
005550  012767  140000  172244                    MOV     #UM,IOTVEC+2
005556  012767  005604  172234                    MOV     #T52D,IOTVEC
005564  012767  170000  172204                    MOV     #UM+PUM,PSW     ;USER MODE!!! PREV USER MODE!!
005572  005006                                    CLR     USP             ;SET USER STACK PTR
005574  005237  177572                            INC     @#SR0           ;ENABLE MEMORY MGMT
005600  000004                          T52A:     IOT                     ;NON-RESIDENT ABORT AT TRP11
005602  000000                          T52B:     HLT                     ;ERROR! IOT & ABORT FAILED
005604  000000                          T52D:     HLT                     ;ERROR! ABORT FAILED
005606  022706  001074                  T52C:     CMP     #KPTR-4,KSP     ;CHECK STACK PTR
005612  001401                                    BEQ     .+4
005614  000000                                    HLT                     ;INCORRECT STACK PTR
005616  012766  170000  000002                    CMP     #UM+PUM,2(KSP)  ;CHECK THAT CORRECT STATUS
005624  001401                                    BEQ     .+4             ;WAS SAVED ON THE STACK
005626  000000                                    HLT                     ;ERROR! INCORRECT STATUS
005630  012767  140157  171734                    CMP     #NRA+UPG+PLA+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
005636  001401                                    BEQ     .+4             ;& FAILING PAGE #)
005640  000000                                    HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005642  022767  005600  171726                    CMP     #T52A,SR2       ;CHECK CONTENTS OF SR2
005650  001401                                    BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
005652  000000                                    HLT                     ;ERROR! INCORRECT PC IN SR2
005654  122737  000060  177777                    CMPB    #60,@#PSW+1     ;CHECK FOR CORRECT PSW ON ABORT
005662  001401                                    BEQ     .+4             ;(KM+PUM IN HIGH BYTE)
005664  000000                                    HLT                     ;ERROR! INCORRECT PSW AFTER ABORT
005666  012737  030000  177776                    MOV     #KM+PUM,@#PSW   ;KERNEL MODE!!! PREV SUPER MODE!!
005674  106506                                    MFPD    USP             ;PUSH USER STACK PTR ONTO KERNEL STACK
005676  022716  177776                            CMP     #0-2,(KSP)      ;CHECK PUSHES
005702  001401                                    BEQ     .+4
005704  000000                                    HLT                     ;ERROR!
005706  104000                                    SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                                ;CHECK ABORT AT TRP14
                                                ;ABORTS WHEN RETURN PC IS PUSHED ONTO USER STACK
005710  012737  005756  000250                    MOV     #T53C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
005716  012767  170000  172052                    MOV     #UM+PUM,PSW     ;USER MODE, PREV. USER MODE
005724  012706  040002                            MOV     #UI2+2,USP              ;SET USER STACK PTR
005730  012767  005754  172062                    MOV     #T53D,IOTVEC
005736  012767  140340  172056                    MOV     #UM+PRTY7,IOTVEC+2
005744  005237  177572                            INC     @#SR0           ;ENABLE MEMORY MGMT
005750  000004                          T53A:     IOT                     ;NON-RESIDENT ABORT AT TRP14
005752  000000                          T53B:     HLT                     ;ERROR! IOT & ABORT FAILED
005754  000000                          T53D:     HLT                     ;ERROR! ABORT FAILED
005756  022706  001074                  T53C:     CMP     #KPTR-4,KSP     ;CHECK STACK PTR
005762  001401                                    BEQ     .+4
005764  000000                                    HLT                     ;INCORRECT STACK PTR
005766  022716  005752                            CMP     #T53B,(KSP)     ;CHECK RETURN PC
005772  001401                                    BEQ     .+4
005774  000000                                    HLT
005776  012766  170000  000002                    CMP     #UM+PUM,2(KSP)  ;CHECK THAT CORRECT STATUS
006004  001401                                    BEQ     .+4             ;WAS SAVED ON THE STACK
006006  000000                                    HLT                     ;ERROR! INCORRECT STATUS
006010  012767  040143  171554                    CMP     #PLA+UPG+VS1+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
006016  001401                                    BEQ     .+4             ;& FAILING PAGE #)
006020  000000                                    HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006022  022767  005750  171546                    CMP     #T53A,SR2       ;CHECK CONTENTS OF SR2
```

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1306  006030  001401                        BEQ     .+4                 ;(PC OF ABORTED INSTRUCTION)
1307  006032  000000                        HLT                         ;ERROR! INCORRECT PC IN SR2
1308  006034  012767  030000  171734        MOV     #KM+PUM,PSW
1309  006042  106506                        MFPD    USP                 ;PUSH USER STACK PTR ONTO KERNEL STACK
1310  006044  022716  037776                CMP     #UI2-2,(KSP)        ;CHECK THAT USER STACK PTR WAS
1311  006050  001401                        BEQ     .+4                 ;DECREMENTED BY 4
1312  006052  000000                        HLT                         ;ERROR!
1313  006054  005067  171742                CLR     IOTVEC+2
1314  006060  012767  000022  171732        MOV     #IOTVEC+2,IOTVEC
1315  006066  104000                        SCOPE                       ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1316
1317                                ;CHECK ABORT AT FET03
1318  006070  012737  006132  000250        MOV     #T56C,@#MMVEC       ;LOAD MEM MGMT ERROR VECTOR
1319  006076  012767  170000  171672        MOV     #UM+PUM,PSW
1320  006104  012706  000600                MOV     #UPTR,USP
1321  006110  012746  140000                MOV     #UM,-(USP)
1322  006114  012746  040100                MOV     #UI2+100,-(USP)
1323  006120  005037  017100                CLR     @#PUI2+100
1324  006124  005237  177572                INC     @#SR0               ;ENABLE MEMORY MGMT
1325  006130  000002                T56B:   RTI
1326          006132                        RETURN=.
1327          017100                        .=PUI2+100
1328  017100  000000                T56A:   HLT                         ;ERROR! FAILED TO ABORT AT FET03
1329          006132                        .=RETURN
1330  006132  022706  001074        T56C:   CMP     #KPTR-4,KSP         ;CHECK STACK PTR
1331  006136  001401                        BEQ     .+4
1332  006140  000000                        HLT
1333  006142  022767  040145  171422        CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1334  006150  001401                        BEQ     .+4                 ;& FAILING PAGE #)
1335  006152  000000                        HLT                         ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1336  006154  022767  006130  171414        CMP     #T56B,SR2           ;CHECK CONTENTS OF SR2
1337  006162  001401                        BEQ     .+4                 ;(PC OF ABORTED INSTRUCTION)
1338  006164  000000                        HLT                         ;ERROR! INCORRECT PC IN SR2
1339  006166  104000                        SCOPE                       ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1340
1341                                ;CHECK ABORT AT FET02
1342  006170  012767  170000  171600        MOV     #UM+PUM,PSW
1343  006176  012737  006230  000250        MOV     #T60C,@#MMVEC       ;LOAD MEM MGMT ERROR VECTOR
1344  006204  012737  000005  017076        MOV     #5,@#PUI2+76        ;5 IS A RESET INSTRUCTION
1345  006212  005037  017100                CLR     @#PUI2+100
1346  006216  005005                        CLR     R5
1347  006220  005237  177572                INC     @#SR0               ;ENABLE MEMORY MGMT
1348  006224  000137  040076                JMP     @#UI2+76            ;GO EXECUTE RESET
1349          006230                        RETURN=.
1350          017076                        .=PUI2+76
1351  017076  000005                T60A:   RESET                       ;ABORTS WHEN NEXT INST. FETCHED
1352  017100  000000                        HLT                         ;ERROR! FAILED TO ABORT
1353          006230                        .=RETURN
1354
1355  006230                        T60C:
1356  006230  022767  040145  171334        CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1357  006236  001401                        BEQ     .+4                 ;& FAILING PAGE #)
1358  006240  000000                        HLT                         ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1359  006242  022767  040076  171326        CMP     #UI2+76,SR2         ;CHECK CONTENTS OF SR2
1360  006250  001401                        BEQ     .+4                 ;(PC OF ABORTED INSTRUCTION)
1361  006252  000000                        HLT                         ;ERROR! INCORRECT PC IN SR2
```

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1362  006254  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1363
1364
1365                                  ;CHECK ABORT AT
1366                                  ;ABORTS WHEN INST FOLLOWING MARK IS FETCHED
1367  006256  012767  170000  171512          MOV     #UM+PUM,PSW
1368  006264  012737  006314  000250          MOV     #T63C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1369  006272  012746                          MOV     (PC)+,-(USP)    ;PUSH MARK INST ON USER STACK
1370  006274  006401                          MARK    1               ;PUSH THIS  INST ON USER STACK
1371  006276  012705  040100                  MOV     #UI2+100,R5     ;AFTER MARK EXECUTE INST AT T63A
1372  006302  005037  017100                  CLR     @#T63A          ;WHICH IS A HALT
1373  006306  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1374  006312  000116                          JMP     (USP)           ;GO EXECUTE MARK AT SPTR-2
1375          006314                          RETURN=.
1376          017100                          .=PUI2+100
1377  017100  000000                  T63A:   HLT                     ;SEG ABORT WHEN THIS INST. FETCHED AT
1378          006314                          .=RETURN
1379  006314  022706  001074          T63C:   CMP     #KPTR-4,KSP     ;CHECK STACK PTR
1380  006320  001401                          BEQ     .+4
1381  006322  000000                          HLT
1382  006324  022767  040145  171240          CMP     #PLA+UPG+VS2+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
1383  006332  001401                          BEQ     .+4             ;& FAILING PAGE #)
1384  006334  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1385  006336  022767  000576  171232          CMP     #UPTR-2,SR2     ;CHECK CONTENTS OF SR2
1386  006344  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1387  006346  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1388  006350  106506                          MFPD    USP             ;PUSH USER STACK PTR ONTO KERNEL STACK
1389  006352  022716  000604                  CMP     #UPTR+4,(KSP)   ;CHECK USER STACK PTR
1390  006356  001401                          BEQ     .+4
1391  006360  000000                          HLT                     ;ERROR! INCORRECT USER STACK PTR
1392  006362  023705  ,000602                 CMP     @#UPTR+2,R5     ;CHECK CONTENTS OF R5
1393  006366  001401                          BEQ     .+4
1394  006370  000000                          HLT                     ;ERROR!
1395  006372  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1396
1397                                  ;CHECK ABORT AT TST.10
1398                                  ;ABORTS WHEN INST FOLLOWING TST IS FETCHED
1399  006374  012737  006430  000250          MOV     #T64C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1400  006402  012702  177777                  MOV     #-1,R2          ;R2=STATUS WORD ADDRESS (ODD BYTE)
1401  006406  012737  105722  016676          MOV     #105722,@#KI0-2 ;105722=TSTB (R2)+
1402  006414  005037  016700                  CLR     @#KI0
1403  006420  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1404  006424  000137  016676                  JMP     @#KI0-2         ;GO EXECUTE INSTRUCTION
1405          006430                          RETURN=.
1406          016676                          .=KI0-2
1407  016676  105722                  T64A:   TSTB    (R2)+           ;ABORTS WHEN NEXT INST. IS FETCHED
1408  016700  000000                  T64B:   HLT                     ;ERROR! FAILED TO ABORT
1409          006430                          .=RETURN
1410  006430                          T64C:
1411  006430  022767  040001  171134          CMP     #PLA+VS0+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1412  006436  001401                          BEQ     .+4             ;& FAILING PAGE #)
1413  006440  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1414  006442  022767  016676  171126          CMP     #T64A,SR2       ;CHECK CONTENTS OF SR2
1415  006450  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1416  006452  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1417  006454  005702                          TST     R2              ;CHECK AUTO-INC
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1418  006456  001401                          BEQ     .+4
1419  006460  000000                          HLT                             ;ERROR! AUTO-INC FAILED
1420  006462  104000C                         SCOPE                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1421
1422                                  ;CHECK ABORT AT D00.90
1423                                  ;ABORTS WHEN INSTRUCTION FOLLOWING MOVB IS FETCHED
1424  006464  012737  006522  000250          MOV     #T66C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1425  006472  012703  016700                 MOV     #KIO,R3
1426  006476  005013                         CLR     (3)             ;SET UP CODE (HALT)
1427  006500  012743                         MOV     (7)+,-(R3)
1428  006502  114203                         MOVB    -(R2),R3        ;THIS INSTRUCTION IS NOT EXECUTED
1429  006504  012702  001204                 MOV     #TEMP,R2
1430  006510  012722  100000                 MOV     #100000,(R2)+
1431  006514  005237  177572                 INC     @#SR0           ;ENABLE MEMORY MGMT
1432  006520  000113                         JMP     (R3)            ;GO EXECUTE MOVB INSTRUCTION
1433          006522                         RETURN=.
1434          016676                         .=KIO-2
1435  016676  114203                 T66A:   MOVB    -(R2),R3        ;ABORTS WHEN THE NEXT INST IS FETCHED
1436  016700  000000                 T66B:   HLT                     ;ERROR! FAILED TO ABORT HERE
1437          006522                         .=RETURN
1438  006522                         T66C:
1439  006522  022767  040001  171042          CMP     #PLA+VSC+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1440  006530  001401                         BEQ     .+4             ;& FAILING PAGE #)
1441  006532  000000                         HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1442  006534  022767  016676  171034          CMP     #T66A,SR2       ;CHECK CONTENTS OF SR2
1443  006542  001401                         BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1444  006544  000000                         HLT                     ;ERROR! INCORRECT PC IN SR2
1445  006546  022703  177600                 CMP     #177600,R3      ;MOVB TO A REGISTER EXTENDS
1446  006552  001401                         BEQ     .+4             ;THE SIGN
1447  006554  000000                         HLT                     ;ERROR! INCORRECT RESULT IN R3
1448  006556  104000                         SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1449
1450                                  ;CHECK ACCESS VIOLATION ABORT
1451                                  ;ABORTS WHEN SOURCE DATA IS FETCHED USING DATIP WITH DEST ADDRESS READ ONLY
1452  006560  012737  006612  000250          MOV     #T72C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1453  006566  112737  000002  172314          MOVB    #RD0,@#KIPDR6   ;SET KERNEL ADDRESS 140000-140077
1454                                                                  ;READ ABORT ON WRITE
1455  006574  005037  016700                 CLR     @#PKI6          ;CLEAR CORRESPONDING PHYSICAL ADDRESS
1456  006600  005237  177572                 INC     @#SR0           ;ENABLE MEMORY MGMT
1457  006604  000261                         SEC                     ;SET 'C'
1458  006606  005537  140000          T72A:   ADC     @#KI6           ;ABORTS WHEN DATA IS FETCHED USING DATIP
1459
1460  006612                         T72C:
1461  006612  022767  020015  170752          CMP     #AVA+VS6+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1462  006620  001401                         BEQ     .+4             ;& FAILING PAGE #)
1463  006622  000000                         HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1464  006624  022767  006606  170744          CMP     #T72A,SR2       ;CHECK CONTENTS OF SR2
1465  006632  001401                         BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1466  006634  000000                         HLT                     ;ERROR! INCORRECT PC IN SR2
1467  006636  022766  000001  000002          CMP     #C,2(KSP)       ;CHECK THAT CORRECT STATUS
1468  006644  001401                         BEQ     .+4             ;WAS SAVED ON THE STACK
1469  006646  000000                         HLT                     ;ERROR! INCORRECT STATUS
1470  006650  005037  177572                 CLR     @#SR0           ;DISABLE MEMORY MGMT
1471  006654  005737  016700                 TST     @#PKI6          ;CHECK THAT ADDRESS WAS NOT WRITTEN
1472  006660  001401                         BEQ     .+4
1473  006662  000000                         HLT                     ;ERROR! DATA WRITTEN INTO READ ONLY ADDRESS
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1474  006664  104000                          SCOPE
1475
1476                                  ;CHECK ACCESS VIOLATION ABORT
1477                                  ;ABORTS WHEN SOURCE DATA IS FETCHED FROM READ ONLY SPACE USING A DATIP.
1478  006666  012737  006712  000250          MOV     #T73C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
1479  006674  005037  016700                  CLR     @#PKI6          ;PRESET ADDRESS
1480  006700  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1481  006704  000261                          SEC                     ;SET 'C'
1482  006706  106037  140001          T73A:   RORB    @#KI6+1         ;ABORTS WHEN RESULT IS WRITTEN
1483  006712                          T73C:
1484  006712  022767  020015  170652          CMP     #AVA+VS6+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1485  006720  001401                          BEQ     .+4             ;& FAILING PAGE #)
1486  006722  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1487  006724  022767  006706  170644          CMP     #T73A,SR2       ;CHECK CONTENTS OF SR2
1488  006732  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1489  006734  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1490  006736  022766  000001  000002          CMP     #C,2(KSP)       ;CHECK THAT CORRECT STATUS
1491  006744  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
1492  006746  000000                          HLT                     ;ERROR! INCORRECT STATUS
1493  006750  005037  177572                  CLR     @#SR0           ;DISABLE MEMORY MGMT
1494  006754  005737  016700                  TST     @#PKI6
1495  006760  001401                          BEQ     .+4
1496  006762  000000                          HLT                     ;ERROR! ADDRESS WAS WRITTEN
1497  006764  012737  000006  172314          MOV     #6,@#KIPDR6     ;SET KDPDR R/W
1498  006772  104000                          SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
1499
1500
1501                                  ;CHECK ABORT AT SVC.80 USING 'T' BIT TRAP
1502                                  ;CHECK ABORT WHEN PSW IS NON-RESIDENT
1503  006774  012737  007030  000250          MOV     #T102C,@#MMVEC  ;LOAD MEM MGMT ERROR VECTOR
1504  007002  005002                          CLR     R2              ;PRESET DESTINATION
1505  007004  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
1506  007010  012746  140017                  MOV     #UM+17,-(KSP)   ;'NEW' STATUS ON STACK
1507  007014  012746  007022                  MOV     #.+6,-(KSP)     ;RETURN PC
1508  007020  000002                          RTI                     ;SET STATUS AND EXECUTE NEXT INST.
1509  007022  013702  177776          T102A:  MOV     @#PSW,R2        ;PSW IS NON-RESIDENT IN USER MODE
1510  007026  000000                          HLT                     ;ERROR! FAILED TO ABORT
1511  007030                          T102C:
1512  007030  022767  140157  170534          CMP     #NRA+PLA+UPG+VS7+1,SR0  ;CHECK SR0 (ABORT CONDITIONS
1513  007036  001401                          BEQ     .+4             ;& FAILING PAGE #)
1514  007040  000000                          HLT                     ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
1515  007042  022767  007022  170526          CMP     #T102A,SR2      ;CHECK CONTENTS OF SR2
1516  007050  001401                          BEQ     .+4             ;(PC OF ABORTED INSTRUCTION)
1517  007052  000000                          HLT                     ;ERROR! INCORRECT PC IN SR2
1518  007054  022766  140017  000002          CMP     #UM+17,2(KSP)   ;CHECK THAT CORRECT STATUS
1519  007062  001401                          BEQ     .+4             ;WAS SAVED ON THE STACK
1520  007064  000000                          HLT                     ;ERROR! INCORRECT STATUS
1521  007066  005702                          TST     R2              ;CHECK THAT R2 WAS NOT LOADED
1522  007070  001401                          BEQ     .+4
1523  007072  000000                          HLT                     ;ERROR! DEST (R2) WAS CHANGED
1524  007074  104000                          SCOPE
1525
1526  007076  005767  172112          END:    TST     PASCNT          ;FIRST PASS?
1527  007102  001410                          BEQ     DONE            ;YES, SKIP ITERATIONS THIS TIME
1528  007104  005267  172070                  INC     ICNT
1529  007110  022767  005000  172062          CMP     #5000,ICNT
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1530  007116  001402                          BEQ     DONE
1531  007120  000167  172224                  JMP     BEGIN
1532  007124  005267  172064          DONE:   INC     PASCNT          ;TO ENABLE ITERATIONS ON LATER PASSES
1533  007130  012767  000007  170430          MOV     #7,TPB          ;RING THE BELL
1534  007136  105767  170422                  TSTB    TPS
1535  007142  100375                          BPL     .-4
1536  007144  012767  000052  170414          MOV     #52,TPB         ;PRINT '*' FOR PASS INDICATION
1537  007152  105767  170406                  TSTB    TPS
1538  007156  100375                          BPL     .-4
1539  007160  012767  000000  170400          MOV     #0,TPB
1540  007166  105767  170372                  TSTB    TPS
1541  007172  100375                          BPL     .-4
1542  007174  013702  000042                  MOV     @#42,%2         ;GET MONITOR RETURN ADDRESS
1543  007200  001405                          BEQ     DONE1           ;DO NOT RETURN TO MON IF (42)=0
1544  007202  000005                          RESET
1545  007204  004712                  $ENDAD: JSR     7,(2)           ;RETURN TO MONITOR
1546  007206  000240                          NOP                     ;ACT11
1547  007210  000240                          NOP                     ;OVERLAY
1548  007212  000240                          NOP                     ;AREA
1549  007214  000167  171776          DONE1:  JMP     START
1550
1551          000001                          .END
```

```
AVA    = 020000
BEGIN    001350
BIT13  = 020000
BIT14  = 040000
BIT15  = 100000
BIT6   = 000100
BIT8   = 000400
C      = 000001
DM     = 000400
DONE     007124
DONE1    007214
DWN    = 000010
ED     = 000010
EMTVEC= 000030
END      007076
ENMM   = 000001
ERRVEC= 000010
FPVEC  = 000244
FTITLE   001212
HLT    = 000000
ICNT     001200
IOTVEC= 000020
IS     = 000000
KIPAR0= 172340
KIPAR1= 172342
KIPAR2= 172344
KIPAR3= 172346
KIPAR4= 172350
KIPAR5= 172352
KIPAR6= 172354
KIPAR7= 172356
KIPDR0= 172300
KIPDR1= 172302
KIPDR2= 172304
KIPDR3= 172306
KIPDR4= 172310
KIPDR5= 172312
KIPDR6= 172314
KIPDR7= 172316
KI0    = 016700
KI6    = 140000
KM     = 000000
KPG    = 000000
KPTR   = 001100
KSP    =%000006
MMK      001450
MMVEC  = 000250
MMO      001362
N      = 000010
NRA    = 100000
NR0    = 000000
PASCNT  001214
PFVEC  = 000024
PKI0   = 016600
PKI6   = 016700
PKM    = 000000
PLA    = 040000
PRTY4  = 000200
PRTY7  = 000340
PSW    = 177776
PUI1   = 017100
PUI2   = 017000
PUI3   = 017400
PUI4   = 017300
PUI5   = 017200
PUM    = 030000
RDO    = 000002
RETURN= 006522
RW     = 000006
RWT    = 000004
SCOPE  = 104000
SCOPEA  000442
SCOPEX  000476
SHLT    000400
SHLTA   000436
SR0    = 177572
SROT    001202
SR1    = 177574
SR2    = 177576
START   001216
SWR    = 177570
T      = 000020
TBITVE= 000014
TEMP   = 001204
TITLE   001274
TKB    = 177562
TKS    = 177560
TPB    = 177566
TPS    = 177564
TPVEC  = 000064
TRAPVE= 000034
T0      001604
T0A     001634
T0B     001636
T0C     001640
T1A     001740
T1B     001742
T1C     001744
T10A    002564
T10B    002570
T10C    002572
T102A   007022
T102C   007030
T13A    002666
T13B    002670
T13C    002674
T13D    002672
T14A    003014
T14B    003016
T14C    003022
T14D    003020
T16A    003112
T16B    003114
T16C    003120
T16D    003116
T2A     002034
T2B     002036
T2C     002040
T20A    016676
T20B    016702
T20C    003242
T21A    016676
T21B    016702
T21C    003362
T22     016674
T22A    016676
T22AA   016700
T22B    016702
T22C    003462
T24A    003564
T24B    003566
T24C    003570
T25A    003662
T25B    003664
T25C    003666
T3A     002140
T3B     002142
T3C     002144
T30A    003750
T30C    003754
T31A    004072
T31B    004074
T31C    004076
T32A    004204
T32B    004206
T32C    004210
T33A    004310
T33B    004312
T33C    004314
T35A    004402
T35B    004406
T35C    004410
T36A    004506
T36B    004510
T36C    004512
T4A     002310
T4B     002312
T4C     002314
T40A    017074
T40B    017102
T40C    004626
T41A    017200
T41B    017202
T41C    004722
T42A    005012
T42B    005014
T42C    005016
T43A    017076
T43B    017102
T43C    005132
T43D    005130
T44A    017200
T44B    017202
T44C    005230
T45A    017200
T45B    017204
T45C    005362
T50A    005464
T50B    005470
T50C    005474
T50D    005472
T52A    005600
T52B    005602
T52C    005606
T52D    005604
T53A    005750
T53B    005752
T53C    005756
T53D    005754
T56A    017100
T56B    006130
T56C    006132
T6A     002430
T6B     002434
T6C     002436
T60A    017076
T60C    006230
T63A    017100
T63C    006314
T64A    016676
T64B    016700
T64C    006430
T66A    016676
T66B    016700
T66C     006522
T7A      002506
T7B      002512
T7C      002514
T72A     006606
T72C     006612
T73A     006706
T73C     006712
UIPAR0= 177640
UIPAR1= 177642
UIPAR2= 177644
UIPAR3= 177646
UIPAR4= 177650
UIPAR5= 177652
UIPAR6= 177654
UIPAR7= 177656
UIPDR0= 177600
UIPDR1= 177602
UIPDR2= 177604
UIPDR3= 177606
UIPDR4= 177610
UIPDR5= 177612
UIPDR6= 177614
UIPDR7= 177616
UI1    = 020000
UI2    = 040000
UI3    = 060000
UI4    = 100000
UI5    = 120000
UM     = 140000
UP     = 000000
UPG    = 000140
UPTR   = 000600
USP    =%000006
V      = 000002
VS0    = 000000
VS1    = 000002
VS2    = 000004
VS3    = 000006
VS4    = 000010
VS5    = 000012
VS6    = 000014
VS7    = 000016
W      = 000100
Z      = 000004
$ENDAD   007204
.      = 007220

. ABS.   017206      000

 ERRORS DETECTED:  0
```

```
 DEFAULT GLOBALS GENERATED:  0

 DSKZ:DBKTFD,DSKZ:DBKTFD/SOL=DSKZ:DBKTFD.P11
 RUN-TIME:  5 10 .8 SECONDS
 RUN-TIME RATIO:  43/17=2.5
 CORE USED:  5K  (9 PAGES)
```