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IDENTIFICATION

PRODUCT CODE: AC-7875D-MC
PRODUCT NAME: CCKTFDO MEM MGMT ABT TSTS
PRODUCT DATE: 6-FEB-1979
MAINTAINER: DIAGNOSTIC ENGINEERING

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1.0 ABSTRACT

PROGRAM CCKTF TESTS THE MEMORY MANAGEMENT ABORT LOGIC. THE PROGRAM IS WRITTEN TO CAUSE A MEMORY MANAGEMENT ABORT AT EVERY PDP11/45 MICRO STATE WHERE A MEMORY REFERENCE (BUST) IS INITIATED. THE PROGRAM ALSO TESTS MEMORY MANAGEMENT ABORTS USING FLOATING POINT INSTRUCTIONS. ABORTS ARE IN ALL CASES TRAPPED TO THE KERNEL, HOWEVER, THE INSTRUCTIONS CAUSING THE ABORT ARE EXECUTED IN ALL MODES (KERNEL, SUPERVISOR, AND USER).

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11/45 WITH KT11-C (MEM. MGMT) INSTALLED

OPTIONAL FP11-A (FLOATING POINT PROCESSOR)

2.2 STORAGE

PROGRAM STORAGE - THE ROUTINE USES MEMORY 0-17777

2.3 PRELIMINARY PROGRAMS

TESTS DCKTA-DCKTE

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 ON COMPLETION.

PASS COUNT MAY BE MONITORED IN THE DISPLAY REGISTER.

4.0 SWITCH SETTINGS

SW8 = 1 OR UP LOAD PDP11/45 MICRO BREAK REGISTER

SW7-SW0..... VALUE TO BE LOADED

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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 SUPERVISORY/USER MODE. IF A HLT (HALT) INSTRUCTION IS EXECUTED IN THESE MODES THE TRAP IS TAKEN AND THE PROGRAM HALTS AT LOCATION 176 IN KERNFL MODE. PRESSING CONTINUE RESTARTS THE TEST. NOTE: THE SUPERVISORY/USER STACK POINTERS ARE NOT AFFECTED. TO DETERMINE 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 CONTINUOUSLY 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 KERNFL MODE. THE SCOPE ROUTINE ALSO CONTAINS INSTRUCTIONS TO LOAD THE MICRO BREAK REGISTER (SEE SEC 4.0 FOR SWITCH SETTINGS). ALL TESTS MAY BE RESTARTED AT THE PREVIOUS SCOPE.

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 CONTINUOUSLY LOOP THE TEST REPLACE THE BEQ .+4 PRECEDING THE HLT WITH THE BRANCH.

7.0

RESTRICTIONS

7.1 STARTING RESTRICTION

NONE

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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
SUPERVISOR = 700
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 AT THE TTY. THE PASS COUNT MAY BE OBSERVED BY TURNING THE SWITCH TO THE DISPLAY POSITION, AND IS STORED IN LOC 1000 THE PASS THE COUNT SHOULD BE MONITORED IN THE EVENT THAT THE PROGRAM ENTERS AN UNDEFINED LOOP.

8.4 DEBUGGING TIPS

WHEN THE FAILING SUBTEST HAS BEEN ISOLATED, REPLACE THE FIRST WORD OF THE INSTRUCTION PRECEDING 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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210
211
212

```
.NLIST SEQ  
.LIST ME  
.ABS  
.TITLE CCKTFDO MEM MGMT ABT TSTS  
;THIS TEST CHECKS MEMORY MANAGEMENT ABORTS AT ALL 'BUST' MICRO STATES.  
;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  
000000 R10=%0  
000001 R11=%1  
000002 R12=%2  
000003 R13=%3  
000004 R14=%4  
000005 R15=%5
```

;FLOATING POINT REGISTERS

```
000000 AC0=%0  
000001 AC1=%1  
000002 AC2=%2  
000003 AC3=%3  
000004 AC4=%4  
000005 AC5=%5
```

;STACK POINTER REGISTERS

```
000006 KSP=%6 ;KERNEL STACK POINTER  
000006 SSP=%6 ;SUPERVISOR 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  
000340 PRTY7=340 ;'P' BIT  
000200 PRTY4=200 ;PRIORITY LEVEL 7  
004000 REG=4000 ;PRIORITY LEVEL 4  
000000 KM=000000 ;SELECTS R10-R15  
040000 SM=040000 ;KERNEL MODE  
140000 UM=140000 ;SUPERVISORY MODE  
000000 PKM=000000 ;USER MODE  
010000 PSM=010000 ;PREVIOUS KERNEL MODE  
030000 PUM=030000 ;PREVIOUS SUPERVISORY MODE  
004000 REG=004000 ;PREVIOUS USER MODE  
;SELECT R10-R15
```

```
000004      :VECTOR ADDRESSES      ERRVEC=4      ;ADDRESS OF ERROR VECTOR
000010      RESVEC=10      ;ADDRESS OF RESERVED INST. TRAP 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
000240      PIRVEC=240      ;ADDRESS OF PIRQ VECTOR
000244      FPVEC=244      ;ADDRESS OF FLOATING POINT INT. VECTOR
000250      MMVEC=250      ;ADDRESS OF MEMORY MGMT ERROR TRAP VECTOR

177776      :REGISTER ADDRESSES      PSW=177776      ;ADDRESS OF STATUS REGISTER
177774      SLR=177774      ;ADDRESS OF STACK LIMIT REGISTER
177772      PIRQ=177772      ;ADDRESS OF PROGRAM INTERRUPT REQUEST
177770      UBREAK=177770      ;ADDRESS OF MICRO BREAK 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
177570      DISPLAY=177570      ;ADDRESS OF CONSOL DISPLAY REGISTER

001060      :INITIAL STACK POINTER SETTINGS      KPTR=1060      ;BOTTOM OF KERNEL STACK
000700      SPTR=700      ;SUPERVISORY STACK SETTING
000600      UPTR=600      ;USER STACK SETTING
000740      REDPTR=740      ;RED STACK PTR

100000      :MISCELLANEOUS BIT ASSIGNMENTS      BIT15=100000
040000      BIT14=40000
020000      BIT13=20000
000400      BIT8=400
000100      BIT6=100
010000      PIR4=10000      ;LEVEL 4 PROGRAM INT. RQST.

000001      :MEMORY MANAGEMENT REGISTER SRO BIT ASSIGNMENTS      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
000020      DS=20
000000      IS=00
000140      UPG=140
000040      SPG=40
000000      KPG=000
000200      IC=200      ;INSTRUCTION COMPLETE
```

```
000400          DM=400          ;DESTINATION MODE
001000          TE=1000         ;TRAP ENABLE
004000          OST=4000        ;OST ABORT FLAG
010000          MMT=10000       ;MEMORY MANAGEMENT TRAP
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
000200          A=200          ;'A' BIT IN PDR
000100          W=100         ;'W' BIT IN PDR

;SR1 BIT ASSIGNMENTS
000010          S1=10
000020          S2=20
000040          S4=40
000060          S6=60
000100          S8=100
000370          SM1=370
000360          SM2=360
000340          SM4=340
000320          SM6=320
000300          SM8=300
000000          D0=0
004000          D1=4000
010000          D2=10000
174000          DM1=174000
170000          DM2=170000
000000          DR0=000
000400          DR1=400
001000          DR2=1000
001400          DR3=1400
002000          DR4=2000
002400          DR5=2400
003000          DR6=3000
003400          DR7=3400

;SR3 BIT ASSIGNMENTS
000001          UDE=1          ;USER 'D' SPACE ENABLE
000002          SDE=2          ;SUPERVISOR 'D' SPACE ENABLE
000004          KDE=4          ;KERNEL 'D' SPACE ENABLE

;MEMORY MANAGEMENT REGISTER ADDRESS ASSIGNMENTS
177572          SR0=177572     ;ADDRESS OF MEMORY MGMT REGISTER SR0
177574          SR1=177574     ;" " " " " " " " SR1
177576          SR2=177576     ;" " " " " " " " SR2
172516          SR3=172516     ;ADDRESS OF MEMORY MGMT REGISTER SR3

177600          UIPDR0=177600  ;ADDRESS OF USER 'I' PDR'S
177602          UIPDR1=177602
177604          UIPDR2=177604
177606          UIPDR3=177606
177610          UIPDR4=177610
```


177612
177614
177616

UIPDR5=177612
UIPDR6=177614
UIPDR7=177616

177620
177622
177624
177626
177630
177632
177634
177636

UDPDR0=177620
UDPDR1=177622
UDPDR2=177624
UDPDR3=177626
UDPDR4=177630
UDPDR5=177632
UDPDR6=177634
UDPDR7=177636

;ADDRESS OD USER 'D' PDR'S

177640
177642
177644
177646
177650
177652
177654
177656

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

177660
177662
177664
177666
177670
177672
177674
177676

UDPAR0=177660
UDPAR1=177662
UDPAR2=177664
UDPAR3=177666
UDPAR4=177670
UDPAR5=177672
UDPAR6=177674
UDPAR7=177676

172200
172202
172204
172206
172210
172212
172214
172216

SIPDR0=172200
SIPDR1=172202
SIPDR2=172204
SIPDR3=172206
SIPDR4=172210
SIPDR5=172212
SIPDR6=172214
SIPDR7=172216

172220
172222
172224
172226
172230
172232
172234
172236

SDPDR0=172220
SDPDR1=172222
SDPDR2=172224
SDPDR3=172226
SDPDR4=172230
SDPDR5=172232
SDPDR6=172234
SDPDR7=172236

172240
172242
172244
172246
172250
172252
172254

SIPAR0=172240
SIPAR1=172242
SIPAR2=172244
SIPAR3=172246
SIPAR4=172250
SIPAR5=172252
SIPAR6=172254

172256	SIPAR7=172256
172260	SDPAR0=172260
172262	SDPAR1=172262
172264	SDPAR2=172264
172266	SDPAR3=172266
172270	SDPAR4=172270
172272	SDPAR5=172272
172274	SDPAR6=172274
172276	SDPAR7=172276
172300	KIPDR0=172300
172302	KIPDR1=172302
172304	KIPDR2=172304
172306	KIPDR3=172306
172310	KIPDR4=172310
172312	KIPDR5=172312
172314	KIPDR6=172314
172316	KIPDR7=172316
172320	KDPDR0=172320
172322	KDPDR1=172322
172324	KDPDR2=172324
172326	KDPDR3=172326
172330	KDPDR4=172330
172332	KDPDR5=172332
172334	KDPDR6=172334
172336	KDPDR7=172336
172340	KIPAR0=172340
172342	KIPAR1=172342
172344	KIPAR2=172344
172346	KIPAR3=172346
172350	KIPAR4=172350
172352	KIPAR5=172352
172354	KIPAR6=172354
172356	KIPAR7=172356
172360	KDPAR0=172360
172362	KDPAR1=172362
172364	KDPAR2=172364
172366	KDPAR3=172366
172370	KDPAR4=172370
172372	KDPAR5=172372
172374	KDPAR6=172374
172376	KDPAR7=172376

000000
000001
000002
000003
000004
000005
000006
000007

;ACCESS CONTROL FIELD DEFINITIONS (IN PDR)
NR0=0 ;NON-RESIDENT ABORT ALL REFS.
RDOT=1 ;TRAP ON READ,ABORT ON WRITE
RDO=2 ;READ,ABORT ON WRITE
NR3=3 ;UNUSED ABORT ALL
RWT=4 ;TRAP ON READ & WRITE
RWIW=5 ;READ,TRAP ON WRITE
RW=6 ;READ & WRITE
NR7=7 ;ABORT ALL

```

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

;VIRTUAL ADDRESSES
001100      KD0=1100
016700      KI0=16700
140000      KD6=140000
040000      SI2=40000
020000      SD1=20000
120000      UI5=120000
100000      UD4=100000

;CORRESPONDING PHYSICAL ADDRESSES
016600      PKI0=16600
016700      PKD6=16700
017000      PSI2=17000
017100      PSD1=17100
017200      PUI5=17200
017300      PUD4=17300
              .LIST ME
              .NLIST MC,MD,SEQ

;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.

              .NLIST MC,SEQ
              .=ERRVEC
              WORD SHLT
              .=EMTVEC
              .WORD SCOPEA
              .=45
              LOGICAL
              .=52
              40000

              .=176
000176      HALT
000000      ;ERROR! TO IDENTIFY WHICH TEST FAILED
              ;EXAMINE R1(R11), THE CONTENTS OF WHICH IS THE PC OF THE LAST TEST SUC-
              ;CESSFULLY COMPLETED. THE TOP WORD ON THE KERNEL STACK CONTAINS THE VIRTUAL
              ;ADDRESS OF THE HLT INSTRUCTION IN THE TEST THAT FAILED.
              .=200
000200      JMP      START          ;GO START TEST
              000167 000704

              .=400
000400      ;SUPERVISOR/USER HLT (HALT) TRAP SERVICE ROUTINE
042737      SHLT: BIC      #1,@#SR0      ;TURN MEM MGMT OFF
000406      162716 000002      SUB      #2,(KSP)      ;POINT PC TO TRAPPING INST.
000412      005776 000000      TST      @(KSP)      ;WAS IT A HLT (HALT)
000416      001404      BEQ      SHLTA
000420      062716 000002      ADD      #2,(KSP)      ;RESTORE PC TO TRAPPING INST.

```



```

000424 000137 000006      JMP      @#ERRVEC+2      ;GO HALT AT 6
000430 000137 000176      SHLTA:  JMP      @#176      ;GO HALT AT ADDRESS 176

;SCOPE (EMT) SERVICE ROUTINE
SCOPEA:
000434 005037 177572      CLR      @#SRO      ;DISABLE MEMORY MGMT
000440 011601      MOV      (KSP),R1      ;SAVE PC IN R1
000442 012706 001060      MOV      #KPTR,KSP      ;SET KERNEL STACK PTR
000446 005046      CLR      -(KSP)      ;SET UP FOR KERNEL MODE ON RETURN
000450 010146      MOV      R1,-(KSP)      ;RETURN IN LINE
000452 012746 000700      MOV      #SPTR,-(KSP)      ;SUPER STACK PTR ON KERNEL STACK
000456 012746 000600      MOV      #UPTR,-(KSP)      ;USER STACK PTR ON KERNEL STACK
000462 012737 030000 177776      MOV      #PUM,@#PSW      ;PREVIOUS USER MODE
000470 106606      MTPD     USP      ;SET USER STACK PTR
000472 006237 177776      ASR      @#PSW      ;PREV SUPER MODE
000476 106606      MTPD     SSP      ;SET SUPER STACK PTR
000500 032737 000400 177570      BIT      #BIT8,@#SWR      ;LOAD MICRO BREAK REG?
000506 001403      BEQ      SCOPEX
000510 113737 177570 177770      MOVB     @#SWR,@#UBREAK      ;LOAD SRO-7 INTO MICRO BREAK REG.
000516 000006      SCOPEX:  RIT      ;RETURN TO NEXT TEST IN KERNEL MODE
;WITH ALL STACK PTRS SET UP

001000 001000      . =1000
;TAGS
ICNT:  0      ;CONTAINS PASS COUNT
SROT:  0      ;CONTAINS SRO CONTENTS ON ERROR
001004      TEMP=.
001012      . =.+6

001110 001110      . =1110
;START MEMORY MANAGEMENT TEST.
START:  NOP
001112 005067 177662      CLR      ICNT      ;CLEAR PASS COUNT
001116 016737 177656 177570      BEGIN:  MOV      ICNT,@#DISPLAY      ;DISPLAY PASS COUNT
001124 012706 001060      MOV      #KPTR,KSP      ;SET KERNEL STACK PTR
001130 104000      SCOPE
001132 012737 000400 177774      MOV      #400,@#SLR      ;SCOPE SETS ALL STACK PTRS
001140 005037 000252      CLR      @#MMVEC+2      ;SET STACK LIMIT = 1000
001144 012737 000007 172516      MOV      #KDE+SDE+UDE,@#SR3      ;KERNEL MODE ON ABORT

```

:ROUTINE TO CLEAR MEMORY MANAGEMENT REGISTERS.

001152 000240
001154 005067 176412
001160 012702 177600
001164 012703 000040
001170 005022
001172 077302
001174 012702 172200
001200 012703 000100
001204 005022
001206 077302

MMO: NOP
CLR SRO
MOV #UIPDR0,R2
MOV #40,R3
CLR (R2)+
SOB R3,.-2
MOV #SIPDR0,R2
MOV #100,R3
CLR (R2)+
SOB R3,.-2

001210
001210 012737 073006 172300
001216 012737 004006 172320
001224 012737 000006 172334
001232 012737 077406 172336
001240 012737 073006 172200
001246 012737 004006 172220
001254 012737 000006 172222
001262 012737 000006 172204
001270 012737 073006 177600
001276 012737 004006 177620
001304 012737 000006 177630
001312 012737 000006 177612

MMK: MOV #167*256.-400+UP+RW,@#KIPDR0 ;SET KIPDR0=RW UP 167 BLOCKS
MOV #11*256.-400+UP+RW,@#KDPDR0 ;SET KDPDR0=RW UP 11 BLOCKS
MOV #1*256.-400+UP+RW,@#KDPDR6 ;SET KDPDR6=RW UP 1 BLOCKS
MOV #200*256.-400+UP+RW,@#KDPDR7 ;SET KDPDR7=RW UP 200 BLOCKS
MOV #167*256.-400+UP+RW,@#SIPDR0 ;SET SIPDR0=RW UP 167 BLOCKS
MOV #11*256.-400+UP+RW,@#SDPDR0 ;SET SDPDR0=RW UP 11 BLOCKS
MOV #1*256.-400+UP+RW,@#SDPDR1 ;SET SDPDR1=RW UP 1 BLOCKS
MOV #1*256.-400+UP+RW,@#SIPDR2 ;SET SIPDR2=RW UP 1 BLOCKS
MOV #167*256.-400+UP+RW,@#UIPDR0 ;SET UIPDR0=RW UP 167 BLOCKS
MOV #11*256.-400+UP+RW,@#UDPDR0 ;SET UDPDR0=RW UP 11 BLOCKS
MOV #1*256.-400+UP+RW,@#UDPDR4 ;SET UDPDR4=RW UP 1 BLOCKS
MOV #1*256.-400+UP+RW,@#UIPDR5 ;SET UIPDR5=RW UP 1 BLOCKS

001320 005067 171014
001324 005067 171030
001330 012767 000167 171036
001336 012767 007600 171032

CLR KIPAR0 ;VA=PA=0000-16677
CLR KDPAR0 ;VA=PA=0-1077
MOV #167,KDPAR6 ;VA=140000-140077;PA=16700-16777
MOV #7600,KDPAR7 ;VA=160000-177776,PA=760000-777776
;(I/O PAGE)

001344 005067 170670
001350 005067 170704
001354 012767 000170 170662
001362 012767 000171 170672

CLR SIPAR0 ;VA=PA=0-16677
CLR SDPAR0 ;VA=PA=0-1077
MOV #170,SIPAR2 ;VA=40000-40077/PA=17000-17077 (SUPER I SPACE)
MOV #171,SDPAR1 ;VA=20000-20077/PA=17100-17177 (SUPER D SPACE)

001370 005067 176244
001374 005067 176260
001400 012767 000172 176244
001406 012767 000173 176254

CLR UIPAR0 ;VA=PA=0-16677
CLR UDPAR0 ;VA=PA=0000-1077
MOV #172,UIPAR5 ;VA=120000-120077/PA=17200-17277 (USER I SPACE)
MOV #173,UDPAR4 ;VA=100000-100077/PA=17300-17377 (USER D SPACE)

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;CHECK ABCRT AT S13.00
;ABORTS WHEN SOURCE OPERAND IS FETCHED

;SOURCE MODE=1
TO:
001414 001414 012737 001450 000250 MOV #TOC,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
001422 001422 005067 176624 CLR MMVEC+2
001426 001426 012703 016676 MOV #K10-2,R3
001432 001432 010302 MOV R3,R2
001434 001434 005013 CLR (R3)
001436 001436 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
001442 001442 000277 SCC
001444 001444 011302 TOA: MOV (R3),R2 ;MEM MGMT LENGTH ABORT AT S13.10
001446 001446 000000 TOB: HLT ;ERROR! DID NOT ABORT

TOC:
001450 001450 022706 001054 CMP #KPTR-4,KSP ;CHECK STACK PTR
001454 001454 001401 BEQ .+4 ;AFTER ABORT
001456 001456 000000 HLT ;ERROR! INCORRECT STACK PTR
001460 001460 022766 000017 000002 CMP #17,2(KSP) ;CHECK THAT CORRECT STATUS
001466 001466 001401 BEQ .+4 ;WAS SAVED ON THE STACK
001470 001470 000000 HLT ;ERROR! INCORRECT STATUS
001472 001472 022767 040021 176072 CMP #PLA+DS+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS)
001500 001500 001401 BEQ .+4 ;& FAILING PAGE #)
001502 001502 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001504 001504 022767 000000 176062 CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
001512 001512 001401 BEQ .+4
001514 001514 000000 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
001516 001516 022767 001444 176052 CMP #TOA,SR2 ;CHECK CONTENTS OF SR2
001524 001524 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
001526 001526 000000 HLT ;ERROR! INCORRECT PC IN SR2
001530 001530 020203 CMP R2,R3 ;CHECK THAT INSTRUCTIONS AS ABORTED
001532 001532 001401 BEQ .+4
001534 001534 000000 HLT ;ERROR!
001536 001536 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE=2,BYTE INSTRUCTION
T0:
001540 001540 012737 001566 000250 MOV #T1C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
001546 001546 012702 016700 MOV #K10,R2
001552 001552 010204 MOV R2,R4
001554 001554 005012 CLR (R2)
001556 001556 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
001562 001562 122202 T1A: CMPB (R2)+,R2 ;SEG LENGTH ABORT AT S13.10
001564 001564 000000 T1B: HLT ;ERROR! DID NOT ABORT

T1C:
001566 001566 022706 001054 CMP #KPTR-4,KSP ;CHECK STACK PTR
001572 001572 001401 BEQ .+4 ;AFTER ABORT
001574 001574 000000 HLT ;ERROR! INCORRECT STACK PTR
001576 001576 022767 040021 175766 CMP #PLA+DS+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS)
001604 001604 001401 BEQ .+4 ;& FAILING PAGE #)
001606 001606 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001610 001610 022767 000012 175756 CMP #S1+R2,SR1 ;CHECK SR1 (REGISTER CHANGES)
001616 001616 001401 BEQ .+4
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001620 000000          HLT          ;ERROR. INCORRECT REGISTER CHANGES RECORDED IN SR1
001622 022767 001562 175746  CMP      #T1A,SR2      ;CHECK CONTENTS OF SR2
001630 001401          BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
001632 000000          HLT          ;ERROR. INCORRECT PC IN SR2
;CHECK THAT REGISTER INCREMENTED PROPERLY
001634 022702 016701  CMP      #K10+1,R2
001640 001401          BEQ      .+4
001642 000000          HLT          ;ERROR!
001644 104000          SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
;SOURCE MODE=3
001646 012767 004000 176122  MOV      #REG,PSW      ;KERNEL MODE.!! ,PREV KERNEL MODE.!
001654 012737 001702 000250  MOV      #T2C,@MMVEC  ;LOAD MEM MGMT ERROR VECTOR
001662 012705 016700  MOV      #K10,R15
001666 010504  MOV      R5,R14
001670 005237 177572  INC      @SR0          ;ENABLE MEMORY MGMT
001674 000277  SCC          ;PRESET CC'S
001676 153504  T2A:  BISB   @(R15)+,R14 ;NON-RES ABORT AT S13.10
001700 000000  T2B:  HLT          ;ERROR! FAILED TO ABORT
;
001702  T2C:
001702 022766 004017 000002  CMP      #REG+17,2(KSP) ;CHECK THAT CORRECT STATUS
001710 001401          BEQ      .+4          ;WAS SAVED ON THE STACK
001712 000000          HLT          ;ERROR! INCORRECT STATUS
001714 022767 040021 175650  CMP      #PLA+DS+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
001722 001401          BEQ      .+4          ;& FAILING PAGE #)
001724 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001726 022767 000025 175640  CMP      #S2+R5,SR1   ;CHECK SR1 (REGISTER CHANGES)
001734 001401          BEQ      .+4
001736 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
001740 022767 001676 175630  CMP      #T2A,SR2     ;CHECK CONTENTS OF SR2
001746 001401          BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
001750 000000          HLT          ;ERROR! INCORRECT PC IN SR2
001752 052767 004000 176016  BIS      #REG,PSW
001760 022705 016702  CMP      #K10+2,R15
001764 001401          BEQ      .+4
001766 000000          HLT          ;ERROR. R15 DID NOT AUTO-INCREMENT
001770 104000          SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
;CHECK ABORT AT S45.10
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE=4,SUPERVISORY MODE
001772 012737 002026 000250  MOV      #T3C,@MMVEC  ;LOAD MEM MGMT ERROR VECTOR
002000 012767 050000 175770  MOV      #SM+PSM,PSW  ;SUPER MODE.!! ,PREV SUPER MODE.!
002006 012702 040002  MOV      #S12+2,R2
002012 010203  MOV      R2,R3
002014 005237 177572  INC      @SR0          ;ENABLE MEMORY MGMT
002020 000277  SCC          ;PRESET CC'S
002022 064203  T3A:  ADD      -(R2),R3 ;NON-RESIDENT ABORT AT S45.10
002024 000000  T3B:  HLT          ;ERROR. FAILED TO ABORT
;
002026  T3C:
002026 022706 001054  CMP      #KPTR-4,KSP  ;CHECK STACK PTR
002032 001401          BEQ      .+4          ;AFTER ABORT
002034 000000          HLT          ;ERROR. INCORRECT STACK PTR

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002036 022766 050017 000002    CMP    #SM+PSM+17,2(KSP)    ;CHECK THAT CORRECT STATUS
002044 001401                    BEQ    .+4                  ;WAS SAVED ON THE STACK
002046 000000                    HLT                                ;ERROR! INCORRECT STATUS
002050 022767 100065 175514    CMP    #NRA+SPG+DS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
002056 001401                    BEQ    .+4                  ;& FAILING PAGE #)
002060 000000                    HLT                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002062 022767 000362 175504    CMP    #SM2+R2,SR1         ;CHECK SR1 (REGISTER CHANGES)
002070 001401                    BEQ    .+4
002072 000000                    HLT                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002074 022767 002022 175474    CMP    #T3A,SR2           ;CHECK CONTENTS OF SR2
002102 001401                    BEQ    .+4                  ;(PC OF ABORTED INSTRUCTION)
002104 000000                    HLT                                ;ERROR! INCORRECT PC IN SR2
;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (SDPDR2)
002106 032767 000300 170110    BIT    #A+W,SDPDR2        ;CHECK CONTENTS OF REFERENCED PDR
002114 001401                    BEQ    .+4
002116 000000                    HLT                                ;ERROR.
002120 042767 000300 170076    BIC    #A+W,SDPDR2
002126 022702 040000            CMP    #SI2,R2 ;CHECK THAT AUTO- DECREMENT TOOK PLACE
002132 001401                    BEQ    .+4
002134 000000                    HLT                                ;ERROR! R2 FAILED TO AUTO-DECREMENT
002136 022703 040002            CMP    #SI2+2,R3          ;CHECK THAT R3 WAS NOT CHANGED
002142 001401                    BEQ    .+4
002144 000000                    HLT                                ;ERROR!
002146 104000                    SCOPE                       ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
;SOURCE MODE=5,USER MODE
002150 012737 002210 000250    MOV    #T4C,@#MMVEC       ;LOAD MEM MGMT ERROR VECTOR
002156 012767 170000 175612    MOV    #UM+PUM,PSW        ;USER MODE.!! ,PREV USER MODE!!
002164 012704 120002            MOV    #UI5+2,R4
002170 010405                    MOV    R4,R5
002172 012737 177777 017200    MOV    #-1,@#PUI5
002200 005237 177572            INC    @#SR0              ;ENABLE MEMORY MGMT
002204 145405                    T4A: BICB @-(R4),R5      ;NON-RESIDENT ABORT AT S45.10
002206 000000                    T4B: HLT                  ;ERROR! FAILED TO ABORT

T4C:
002210 022706 001054            CMP    #KPTR-4,KSP        ;CHECK STACK PTR
002214 001401                    BEQ    .+4                  ;AFTER ABORT
002216 000000                    HLT                                ;ERROR! INCORRECT STACK PTR
002220 022767 100173 175344    CMP    #NRA+UPG+DS+VS5+1,SRO ;CHECK SRO (ABORT CONDITIONS
002226 001401                    BEQ    .+4                  ;& FAILING PAGE #)
002230 000000                    HLT                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002232 022767 000364 175334    CMP    #SM2+R4,SR1        ;CHECK SR1 (REGISTER CHANGES)
002240 001401                    BEQ    .+4
002242 000000                    HLT                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002244 022767 002204 175324    CMP    #T4A,SR2           ;CHECK CONTENTS OF SR2
002252 001401                    BEQ    .+4                  ;(PC OF ABORTED INSTRUCTION)
002254 000000                    HLT                                ;ERROR! INCORRECT PC IN SR2
;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (UDPDR5)
002256 032767 000300 175346    BIT    #A+W,UDPDR5        ;CHECK CONTENTS OF REFERENCED PDR
002264 001401                    BEQ    .+4
002266 000000                    HLT                                ;ERROR.
002270 042767 000300 175334    BIC    #A+W,UDPDR5
002276 022704 120000            CMP    #UI5,R4 ;CHECK AUTO-DECREMENT
002302 001401                    BEQ    .+4
    
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002304 000000          HLT          ;ERROR! FAILED TO AUTO-DECREMENT R4
002306 022705 120002  CMP          #UI5+2,R5      ;CHECK THAT R5 WAS UNCHANGED
002312 001401          BEQ          .+4
002314 000000          HLT          ;ERROR!
002316 104000          SCOPE        ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT MTU.10
;ABORTS WHEN DATA IS POPPED OFF THE SUPER STACK
002320 012767 050000 175450  MOV          #SM+PSM,PSW      ;SUPER MODE.!! ,PREV SUPER MODE!!
002326 012737 002360 000250  MOV          #T5C,@MMVEC      ;LOAD MEM MGMT ERROR VECTOR
002334 012706 040000          MOV          #SI2,SSP          ;SUPER STACK PTR IS NON-RESIDENT
002340 012737 177777 017000  MOV          #-1,@PSI2
002346 005002          CLR          R2
002350 005237 177572          INC          @SR0              ;ENABLE MEMORY MGMT
002354 106602          T5A: MTPD          R2          ;NON-RES ABORT AT MTU.10
002356 000000          T5B: HLT          ;ERROR! FAILED TO ABORT

002360          T5C:
002360 022706 001054          CMP          #KPTR-4,KSP      ;CHECK STACK PTR
002364 001401          BEQ          .+4              ;AFTER ABORT
002366 000000          HLT          ;ERROR! INCORRECT STACK PTR
002370 022767 100065 175174  CMP          #NRA+SPG+DS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
002376 001401          BEQ          .+4              ;& FAILING PAGE #)
002400 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002402 022767 000026 175164  CMP          #S2+SP,SR1       ;CHECK SR1 (REGISTER CHANGES)
002410 001401          BEQ          .+4
002412 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002414 022767 002354 175154  CMP          #T5A,SR2         ;CHECK CONTENTS OF SR2
002422 001401          BEQ          .+4              ;(PC OF ABORTED INSTRUCTION)
002424 000000          HLT          ;ERROR! INCORRECT PC IN SR2
002426 005702          TST          R2              ;CHECK THAT R2 WAS NOT CHANGED
002430 001401          BEQ          .+4
002432 000000          HLT          ;ERROR!
002434 106506          MFPD          SSP            ;PUSH SSP ONTO KERNEL STACK
002436 022716 040002          CMP          #SI2+2,(KSP)     ;CHECK THAT SUPER STACK PTR POPPED
002442 001401          BEQ          .+4
002444 000000          HLT          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
002446 104000          SCOPE

;CHECK ABORT AT S67.20
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE = 6
002450 012737 002474 000250  MOV          #T6C,@MMVEC      ;LOAD MEM MGMT ERROR VECTOR
002456 012702 177777          MOV          #-1,R2
002462 005237 177572          INC          @SR0              ;ENABLE MEMORY MGMT
002466 016702 014206          T6A: MOV          K10,R2      ;SEG LENGTH ABORT AT S67.20
002472 000000          T6B: HLT          ;ERROR! FAILED TO ABORT

002474          T6C:
002474 022767 040021 175070  CMP          #PLA+DS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
002502 001401          BEQ          .+4              ;& FAILING PAGE #)
002504 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002506 022767 000000 175060  CMP          #0,SR1           ;CHECK SR1 (REGISTER CHANGES)
002514 001401          BEQ          .+4
002516 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002520 022767 002466 175050  CMP          #T6A,SR2         ;CHECK CONTENTS OF SR2

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002526 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
002530 000000      HLT              ;ERROR! INCORRECT PC IN SR2
002532 005202      INC      R2       ;CHECK THAT R2 WAS NOT CHANGED
002534 001401      BEQ      .+4
002536 000000      HLT              ;ERROR!
002540 104000      SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
;SOURCE MODE = 7, PC
002542 012737 002564 000250      MOV      #T7C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
002550 005004      CLR      R4
002552 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
002556 067404 016700      T7A:    ADD      @K10(R4),R4 ;SEG LEN ABORT AT S67.20
002562 000000      T7B:    HLT              ;ERROR! FAILED TO ABORT

002564      T7C:
002564 022767 040021 175000      CMP      #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
002572 001401      BEQ      .+4      ;& FAILING PAGE #)
002574 000000      HLT              ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002576 022767 000000 174770      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
002604 001401      BEQ      .+4
002606 000000      HLT              ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002610 022767 002556 174760      CMP      #T7A,SR2 ;CHECK CONTENTS OF SR2
002616 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
002620 000000      HLT              ;ERROR! INCORRECT PC IN SR2
002622 005704      TST      R4
002624 001401      BEQ      .+4
002626 000000      HLT
002630 104000      SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT S13.30
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE = 3, PC
002632 012737 002654 000250      MOV      #T10C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
002640 005003      CLR      R3
002642 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
002646 013703 016700      T10A:   MOV      @K10,R3 ;SEG LEN ABORT AT S13.30
002652 000000      T10B:   HLT              ;ERROR! FAILED TO ABORT

002654      T10C:
002654 022767 040021 174710      CMP      #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
002662 001401      BEQ      .+4      ;& FAILING PAGE #)
002664 000000      HLT              ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002666 022767 000027 174700      CMP      #S2+PC,SR1 ;CHECK SR1 (REGISTER CHANGES)
002674 001401      BEQ      .+4
002676 000000      HLT              ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002700 022767 002646 174670      CMP      #T10A,SR2 ;CHECK CONTENTS OF SR2
002706 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
002710 000000      HLT              ;ERROR! INCORRECT PC IN SR2
002712 005703      TST      R3
002714 001401      BEQ      .+4
002716 000000      HLT
002720 104000      SCOPE          ;ERROR!
;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

; ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE 5

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002722 012737 002752 000250      MOV      #T11C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
002730 012703 140002      MOV      #KD6+2,R3
002734 012737 016700 016700      MOV      #K10,@#PKD6
002742 005237 177572      INC      @#SR0              ;ENABLE MEMORY MGMT
002746 155303      T11A:   BISB      @-(R3),R3      ;SEG LENGTH ABORT AT S13.30
002750 000000      T11B:   HLT
                                           ;ERROR! FAILED TO ABORT

002752      T11C:
002752 022767 040021 174612      CMP      #PLA+DS+VS0+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
002760 001401      BEQ      .+4                  ;& FAILING PAGE #)
002762 000000      HLT
                                           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002764 022767 000363 174602      CMP      #SM2+R3,SR1          ;CHECK SR1 (REGISTER CHANGES)
002772 001401      BEQ      .+4
002774 000000      HLT
                                           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
002776 022767 002746 174572      CMP      #T11A,SR2           ;CHECK CONTENTS OF SR2
003004 001401      BEQ      .+4                  ;(PC OF ABORTED INSTRUCTION)
003006 000000      HLT
                                           ;ERROR! INCORRECT PC IN SR2
003010 022703 140000      CMP      #KD6,R3
003014 001401      BEQ      .+4
003016 000000      HLT
003020 104000      SCOPE
                                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                           ;ABORTS WHEN SOURCE OPERAND IS FETCHED
                                           ;SOURCE MODE=7,PC
003022 012737 003062 000250      MOV      #T12C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
003030 012767 050000 174740      MOV      #SM+PSM,PSW        ;SUPER MODE!!!,PREV SUPER MODE!!
003036 012737 040000 017100      MOV      #SI2,@#PSD1
003044 005237 177572      INC      @#SR0              ;ENABLE MEMORY MGMT
003050 000277      SCC
                                           ;PRESET CC'S
003052 167737 014722 017100      T12A:   SUB      @SD1,@#PSD1    ;NON-RES ABORT
003060 000000      T12B:   HLT
                                           ;ERROR! FAILED TO ABORT

003062      T12C:
003062 022766 050017 000002      CMP      #SM+PSM+17,2(KSP)    ;CHECK THAT CORRECT STATUS
003070 001401      BEQ      .+4                  ;WAS SAVED ON THE STACK
003072 000000      HLT
                                           ;ERROR! INCORRECT STATUS
003074 022767 100065 174470      CMP      #NRA+SPG+DS+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
003102 001401      BEQ      .+4                  ;& FAILING PAGE #)
003104 000000      HLT
                                           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003106 022767 000000 174460      CMP      #0,SR1             ;CHECK SR1 (REGISTER CHANGES)
003114 001401      BEQ      .+4
003116 000000      HLT
                                           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
003120 022767 003052 174450      CMP      #T12A,SR2           ;CHECK CONTENTS OF SR2
003126 001401      BEQ      .+4                  ;(PC OF ABORTED INSTRUCTION)
003130 000000      HLT
                                           ;ERROR! INCORRECT PC IN SR2
003132 005037 177572      CLR      @#SR0              ;DISABLE MEMORY MGMT
003136 022737 040000 017100      CMP      #SI2,@#PSD1
003144 001401      BEQ      .+4
003146 000000      HLT
                                           ;ERROR!
003150 104000      SCOPE
                                           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                           ;CHECK ABORT AT RTI.10
                                           ;ABORTS WHEN TOP WORD OFF STACK (PC) IS FETCHED
003152 012737 003214 000250      MOV      #T13C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
003160 012767 050000 174610      MOV      #SM+PSM,PSW        ;SUPER MODE!!!,PREV SUPER MODE..
003166 012706 040000      MOV      #SI2,SSP          ;SUPER STACK PTR IS NON-RES

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003172 012737 003212 017000      MOV      #T13D,@#PSI2      ;LOAD 'NEW' PC
003200 005237 177572      INC      @#SRO            ;ENABLE MEMORY MGMT
003204 000277      SCC
003206 000002      T13A:   RTI              ;NON-RES ABORT AT RTI.10
003210 000000      T13B:   HLT              ;ERROR! FAILED TO ABORT
003212 000000      T13D:   HLT              ;ERROR! RTI FAILED & DID NOT ABORT

003214      T13C:
003214 022706 001054      CMP      #KPTR-4,KSP      ;CHECK STACK PTR
003220 001401      BEQ      .+4              ;AFTER ABORT
003222 000000      HLT
003224 022766 050017 000002      CMP      #SM+PSM+17,2(KSP) ;CHECK THAT CORRECT STATUS
003232 001401      BEQ      .+4              ;WAS SAVED ON THE STACK
003234 000000      HLT                      ;ERROR! INCORRECT STATUS
003236 022767 100065 174326      CMP      #NRA+SPG+DS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
003244 001401      BEQ      .+4              ;& FAILING PAGE #)
003246 000000      HLT                      ;ERROR! INCORRECT ABORT CONDITIGWS OR PAGE IDENT
003250 022767 000026 174316      CMP      #S2+SP,SR1      ;CHECK SR1 (REGISTER CHANGES)
003256 001401      BEQ      .+4
003260 000000      HLT                      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
003262 022767 003206 174306      CMP      #T13A,SR2       ;CHECK CONTENTS OF SR2
003270 001401      BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
003272 000000      HLT                      ;ERROR! INCORRECT PC IN SR2
003274 106506      MFPD     SSP              ;PUSH SUPER STACK PTR ONTO KERNEL STACK
003276 022716 040002      CMP      #SI2+2,(KSP)    ;CHECK THAT SUPER STACK PTR WAS POPPED
003302 001401      BEQ      .+4
003304 000000      HLT
003306 104000      SCOPE                    ;ERROR!
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
```

```
                                ;CHECK ABORT AT RTI.30
                                ;ABORTS WHEN SECOND WORD ON STACK (STATUS) IS FETCHED
003310 012737 003354 000250      MOV      #T14C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
003316 012767 170000 174452      MOV      #UM+PUM,PSW     ;USER MODE!!!,PREV USER MODE..!
003324 012706 100076      MOV      #UD4+76,USP
003330 012737 003352 017376      MOV      #T14D,@#PUD4+76 ;LOAD USER STACK (PHYS ADRS.)
003336 005037 017400      CLR      @#PUD4+100      ;AND 'NEW' STATUS
003342 005237 177572      INC      @#SRO            ;ENABLE MEMORY MGMT
003346 000006      T14A:   RTI              ;SEG LEN ABORT AFTER FIRST POP RTI.30
003350 000000      T14B:   HLT              ;ERROR! FAILED TO ABORT
003352 000000      T14D:   HLT              ;ERROR!
```

```
003354      T14C:
003354 022767 040171 174210      CMP      #PLA+UPG+DS+VS4+1,SRO ;CHECK SRO (ABORT CONDITIONS
003362 001401      BEQ      .+4              ;& FAILING PAGE #)
003364 000000      HLT                      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003366 022767 013026 174200      CMP      #D2+DR6+S2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
003374 001401      BEQ      .+4
003376 000000      HLT                      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
003400 022767 003346 174170      CMP      #T14A,SR2       ;CHECK CONTENTS OF SR2
003406 001401      BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
003410 000000      HLT                      ;ERROR! INCORRECT PC IN SR2
003412 106506      MFPD     USP              ;PUSH USER STACK PTR ONTO KERNEL STACK
003414 022716 100102      CMP      #UD4+102,(KSP)  ;CHECK THAT USER STACK PTR POPPED TWICE
003420 001401      BEQ      .+4
003422 000000      HLT
003424 104000      SCOPE                    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
```

```

;CHECK ABORT AT RTS.10
;ABORTS WHEN TOP WORD ON SUPER STACK (RETURN PC) IS FETCHED
003426 012767 050000 174342      MOV    #SM+PSM,PSW    ;SUPER MODE!!!,PREV SUPER MODE!!
003434 012706 040000              MOV    #SI2,SSP
003440 012737 003464 000250      MOV    #T16C,@MMVEC  ;LOAD MEM MGMT ERROR VECTOR
003446 012705 003462              MOV    #T16D,R5
003452 005237 177572              INC    @MSRO          ;ENABLE MEMORY MGMT
003456 000205      T16A:  RTS    5        ;ABORTS AT RTS.10 (STACK IS NON-RES)
003460 000000      T16B:  HLT
003462 000000      T16D:  HLT          ;ERROR! RTS& ABORT FAILED
                                ;ERROR! ABORT FAILED

003464      T16C:
003464 022706 001054      CMP    #KPTR-4,KSP   ;CHECK STACK PTR
003470 001401              BEQ    .+4           ;AFTER ABORT
003472 000000              HLT
003474 022767 100065 174070      CMP    #NRA+SPG+DS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
003502 001401              BEQ    .+4           ;& FAILING PAGE #)
003504 000000              HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003506 022767 000026 174060      CMP    #S2+SP,SR1   ;CHECK SR1 (REGISTER CHANGES)
003514 001401              BEQ    .+4
003516 000000              HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
003520 022767 003456 174050      CMP    #T16A,SR2    ;CHECK CONTENTS OF SR2
003526 001401              BEQ    .+4           ;(PC OF ABORTED INSTRUCTION)
003530 000000              HLT          ;ERROR! INCORRECT PC IN SR2
003532 022705 003462              CMP    #T16D,R5     ;CHECK THAT R5 DID NOT CHANGE
003536 001401              BEQ    .+4
003540 000000              HLT          ;ERROR!
003542 106506      MFPD  SSP          ;PUSH SUPER STACK PTR ONTO KERNEL STACK
003544 022716 040002      CMP    #SI2+2,(KSP) ;CHECK THAT SUPER STACK WAS POPPED
003550 001401              BEQ    .+4
003552 000000              HLT          ;ERROR! INCORRECT SUPER STACK PTR
003554 104000              SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT MRK.10
;ABORTS WHEN TOP WORD ON STACK IS FETCHED
003556 012737 003614 000250      MOV    #T17C,@MMVEC  ;LOAD MEM MGMT ERROR VECTOR
003564 012737 006400 016676      MOV    #6400,@MKIO-2 ;6400 IS A MARK 0 INST.
003572 012705 003612              MOV    #T17D,R5     ;PRESET R5
003576 005037 016700              CLR    @MKIO
003602 005237 177572              INC    @MSRO        ;ENABLE MEMORY MGMT
003606 000137 016676              JMP    @MKIO-2      ;GO TO MARK INSTRUCTION
                                RETURN=.

;***** NOTE PC CHANGE *****
                                .=KIO-2
016676 006400      T17A:  MARK    0      ;SEG LEN ABORT AT MRK.10
016700 000000      T17B:  HLT
                                ;***** RETURN PC*****
                                .=RETURN
003612 000000      T17D:  HLT          ;ERROR! FAILED TO ABOR
003614      T17C:
003614 022706 001054      CMP    #KPTR-4,KSP   ;CHECK STACK PTR
003620 001401              BEQ    .+4           ;AFTER ABORT
003622 000000              HLT          ;ERROR! INCORRECT STACK PTR
003624 022767 040021 173740      CMP    #PLA+DS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
003632 001401              BEQ    .+4           ;& FAILING PAGE #)
```

```

003634 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003636 022767 000000 173730  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
003644 001401          BEQ      .+4
003646 000000          HLT
003650 022767 016676 173720  CMP      #T17A,SR2 ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
003656 001401          BEQ      .+4 ;CHECK CONTENTS OF SR2
003660 000000          HLT ;(PC OF ABORTED INSTRUCTION)
003662 022705 003612  CMP      #T17D,R5 ;ERROR! INCORRECT PC IN SR2
003666 001401          BEQ      .+4 ;CHECK THAT R5 IS UNCHANGED
003670 000000          HLT
003672 104000          SCOPE ;ERROR!
;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT IRD.00
;ABORTS WHEN SOURCE INDEX IS FETCHED
;SOURCE MODE = 6, PC

```

```

003674 012737 003736 000250  MOV      #T20C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
003702 012702 177777          MOV      #-1,R2 ;PRESET DEST REG
003706 012737 016702 016676  MOV      #16702,@#KIO-2 ;16702,000000 IS A MOV .+4,R2
003714 005037 016700          CLR      @#KIO ;INSTRUCTION
003720 005037 016702          CLR      @#KIO+2
003724 005237 177572          INC      @#SR0 ;ENABLE MEMORY MGMT
003730 000277          SCC ;PRESET CC'S
003732 000137 016676  JMP      @#KIO-2 ;GO TO MOV INST.
003736          RETURN=

```

```

;***** NOTE PC CHANGE *****

```

```

016676 016676 000000  T20A: MOV      .+4,R2 ;SEG LEN ABORT WHEN INDEX VALUE IS FETCHED
016702 000000  T20B: HLT ;ERROR! FAILED TO ABORT

```

```

;***** RETURN PC *****

```

```

003736          .=RETURN
003736 022706 001054  T20C: CMP      #KPTR-4,KSP ;CHECK STACK PTR
003742 001401          BEQ      .+4 ;AFTER ABORT
003744 000000          HLT ;ERROR! INCORRECT STACK PTR
003746 022766 000017 000002  CMP      #17,2(KSP) ;CHECK THAT CORRECT STATUS
003754 001401          BEQ      .+4 ;WAS SAVED ON THE STACK
003756 000000          HLT ;ERROR! INCORRECT STATUS
003760 022767 040001 173604  CMP      #PLA+IS+VSO+1,SR0 ;CHECK SR0 (ABORT CONDITIONS)
003766 001401          BEQ      .+4 ;& FAILING PAGE #)
003770 000000          HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003772 022767 000000 173574  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
004000 001401          BEQ      .+4
004002 000000          HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004004 022767 016676 173564  CMP      #T20A,SR2 ;CHECK CONTENTS OF SR2
004012 001401          BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
004014 000000          HLT ;ERROR! INCORRECT PC IN SR2
004016 005202          INC      R2
004020 001401          BEQ      .+4
004022 000000          HLT
004024 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;ABORTS WHEN SOURCE INDEX IS FETCHED
;SOURCE MODE = 7

```

```

004026 012737 004070 000250  MOV      #T21C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
004034 012737 177777 016700  MOV      #-1,@#PKD6
004042 012702 140000          MOV      #KD6,R2 ;LOAD INDEX REGISTER

```



```
004046 012737 017202 016676      MOV      #017202,@#K10-2 ;017202,000000 IS A MOV @0(R2),R2
004054 005037 016700      CLR      @#K10           ;INSTRUCTION
004060 005237 177572      INC      @#SRO           ;ENABLE MEMORY MGMT
004064 000137 016676      JMP      @#K10-2
                                RETURN=.
;***** NOTE PC CHANCE *****
                                .=K10-2
016676 017202 000000      T21A:    MOV      @0(R2),R2 ;SEG LEN ABORT AT S67.20
016702 000000      T21B:    HLT                       ;ERROR! FAILED TO ABORT
                                .=RETURN
;***** RETURN PC *****
T21C:
004070 022767 040001 173474      CMP      #PLA+IS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
004076 001401      BEQ      .+4                ;& FAILING PAGE #)
004100 000000      HLT                       ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004102 022767 000000 173464      CMP      #0,SRI           ;CHECK SRI (REGISTER CHANGES)
004110 001401      BEQ      .+4
004112 000000      HLT                       ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SRI
004114 022767 016676 173454      CMP      #T21A,SR2        ;CHECK CONTENTS OF SR2
004122 001401      BEQ      .+4                ;(PC OF ABORTED INSTRUCTION)
004124 000000      HLT                       ;ERROR! INCORRECT PC IN SR2
004126 022702 140000      CMP      #KD6,R2          ;CHECK THAT R2 IS UNCHANGED
004132 001401      BEQ      .+4
004134 000000      HLT                       ;ERROR!
004136 104000      SCOPE                      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT SOB.20
;ABORTS WHEN INST FOLLOWING SOB IS FETCHED
004140 012703 000001      MOV      #1,%3
004144 012737 077302 016676      MOV      #077302,@#K10-2 ;077302=SOB R3,.-2
004152 005037 016674      CLR      @#K10-4         ;CLEAR INST. PRECEDING SOB (.-2)
004156 005037 016700      CLR      @#K10           ;PUT HLT FOLLOWING SOB
004162 012737 004202 000250      MOV      #T22C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
004170 005237 177572      INC      @#SRO           ;ENABLE MEMORY MGMT
004174 000277      SCC                       ;PRESET CC'S
004176 000137 016676      JMP      @#K10-2         ;GO TO SOB INST.

                                RETURN=.
                                .=K10-4
016674 000000      T22:    HLT                       ;ERROR! SOB BRANCHED & FAILED TO ABORT
016676 077302      T22A:    SOB      R3,.-2      ;ABORTS WHEN NEXT INST. IS FETCHED
016700 000000      T22AA:  HLT                       ;ERROR! FAILED TO ABORT
016702 000000      T22B:    0
                                .=RETURN
T22C:
004202 022706 001054      CMP      #KPTR-4,KSP      ;CHECK STACK PTR
004206 001401      BEQ      .+4                ;AFTER ABORT
004210 000000      HLT                       ;ERROR! INCORRECT STACK PTR
004212 022766 000017 000002      CMP      #17,2(KSP)      ;CHECK THAT CORRECT STATUS
004220 001401      BEQ      .+4                ;WAS SAVED ON THE STACK
004222 000000      HLT                       ;ERROR! INCORRECT STATUS
004224 022767 040001 173340      CMP      #PLA+IS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
004232 001401      BEQ      .+4                ;& FAILING PAGE #)
004234 000000      HLT                       ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
```

```
004236 022767 000000 173330      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
004244 001401                      BEQ      .+4
004246 000000                      HLT
004250 022767 016700 173320      CMP      #T22AA,SR2 ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004256 001401                      BEQ      .+4 ;CHECK CONTENTS OF SR2
004260 000000                      HLT ;(PC OF ABORTED INSTRUCTION)
004262 005703                      TST      R3 ;ERROR! INCORRECT PC IN SR2
004264 001401                      BEQ      .+4 ;CHECK THAT R3 DECREMENTD
004266 000000                      HLT ;ERROR! R3 WAS NOT DECREMENTED BY SOB
004270 104000                      SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
```

```
                                ;CHECK ABORT AT SPL.10
                                ;ABORTS WHEN INST FOLLOWING SPL IS FETCHED
004272 012767 000340 173476      MOV      #PRTY7,PSW ;KERNEL MODE!!!,PREV KERNEL MODE!!
004300 012737 004334 000250      MOV      #T23C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
004306 012737 000230 016676      MOV      #230,@#KIO-2 ;230=SPL 0
004314 005037 016700                      CLR      @#KIO
004320 005237 177572                      INC      @#SRO ;ENABLE MEMORY MGMT
004324 000237                      SPL      7
004326 000277                      SCC
004330 000137 016676                      JMP      @#KIO-2
                                RETURN=.
                                .=KIO-2
016676 000230      T23A: SPL      0 ;SEG LEN ABORT WHEN NEXT INST IS FETCHED
016700 000000      T23AA: HLT ;ERROR! FAILED TO ABORT AT SPL.10
016702 000000      T23B: 0
                                .=RETURN
004334
```

```
                                T23C:
004334 022706 001054                      CMP      #KPTR-4,KSP ;CHECK STACK PTR
004340 001401                      BEQ      .+4 ;AFTER ABORT
004342 000000                      HLT ;ERROR! INCORRECT STACK PTR
004344 022766 000017 000002      CMP      #17,2(KSP) ;CHECK THAT CORRECT STATUS
004352 001401                      BEQ      .+4 ;WAS SAVED ON THE STACK
004354 000000                      HLT ;ERROR! INCORRECT STATUS
004356 022767 040001 173206      CMP      #PLA+1,SRO ;CHECK SRO (ABORT CONDITIONS)
004364 001401                      BEQ      .+4 ;& FAILING PAGE #)
004366 000000                      HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004370 022767 000000 173176      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
004376 001401                      BEQ      .+4
004400 000000                      HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004402 022767 016700 173166      CMP      #T23AA,SR2 ;CHECK CONTENTS OF SR2
004410 001401                      BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
004412 000000                      HLT ;ERROR! INCORRECT PC IN SR2
004414 104000                      SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
```

```
                                ;CHECK ABORT AT D12.01
                                ;ABORTS WHEN DEST OPERAND IS FETCHED
004416 012737 010000 177776      MOV      #KM+PSM,@#PSW ;KERNEL MODE!!!,PREV SUPER MODE.!
004424 012737 004446 000250      MOV      #T24C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
004432 012702 040000                      MOV      #S12,R2
004436 005237 177572                      INC      @#SRO ;ENABLE MEMORY MGMT
004442 106522      T24A: MFPD (R2)+ ;NON-RESIDENT ABORT AT D12.01
004444 000000      T24B: HLT
```

```
                                T24C:
```

004446	022706	001054		CMP	#KPTR-4,KSP	;CHECK STACK PTR
004452	001401			BEQ	.+4	;AFTER ABORT
004454	000000			HLT		;ERROR! INCORRECT STACK PTR
004456	022767	100065	173106	CMP	#NRA+SPG+DS+VS2+1,SRO	;CHECK SRO (ABORT CONDITIONS
004464	001401			BEQ	.+4	; & FAILING PAGE #)
004466	000000			HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004470	022767	000022	173076	CMP	#S2+R2,SR1	;CHECK SR1 (REGISTER CHANGES)
004476	001401			BEQ	.+4	
004500	000000			HLT		;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004502	022767	004442	173066	CMP	#T24A,SR2	;CHECK CONTENTS OF SR2
004510	001401			BEQ	.+4	;(PC OF ABORTED INSTRUCTION)
004512	000000			HLT		;ERROR! INCORRECT PC IN SR2
004514	022702	040002		CMP	#SI2+2,R2	;CHECK THAT R2 AUTO-INCREMENTED
004520	001401			BEQ	.+4	
004522	000000			HLT		;ERROR! R2 DID NOT AUTO-INCREMENT
004524	104000			SLOPE		;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D12.00
;ABORTS WHEN DEST OPERAND IS FETCHED

004526	012737	004556	000250	MOV	#T25C,@MMVEC	;LOAD MEM MGMT ERROR VECTOR
004534	012702	177572		MOV	#SRO,R2	
004540	012767	050000	173230	MOV	#SM+PSM,PSW	;SUPER MODE!!!,PREV SUPER MODE!!
004546	005237	177572		INC	@SRO	;ENABLE MEMORY MGMT
004552	005012			T25A: CLR	(R2)	;ABORT AT D12.00
004554	000000			T25B: HLT		;ERROR! FAILED TO ABORT

T25C:

004556	022706	001054		CMP	#KPTR-4,KSP	;CHECK STACK PTR
004562	001401			BEQ	.+4	;AFTER ABORT
004564	000000			HLT		;ERROR! INCORRECT STACK PTR
004566	022767	140077	172776	CMP	#NRA+PLA+SPG+DS+VS7+1,SRO	;CHECK SRO (ABORT CONDITIONS
004574	001401			BEQ	.+4	; & FAILING PAGE #)
004576	000000			HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004600	022767	000000	172766	CMP	#0,SR1	;CHECK SR1 (REGISTER CHANGES)
004606	001401			BEQ	.+4	
004610	000000			HLT		;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004612	022767	004552	172756	CMP	#T25A,SR2	;CHECK CONTENTS OF SR2
004620	001401			BEQ	.+4	;(PC OF ABORTED INSTRUCTION)
004622	000000			HLT		;ERROR! INCORRECT PC IN SR2
004624	104000			SCOPE		;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D12.20
;ABORTS WHEN INST FOLLOWING INST AT T26A IS FETCHED

004626	012737	004676	000250	MOV	#T26C,@MMVEC	;LOAD MEM MGMT ERROR VECTOR
004634	005002			CLR	R2	
004636	012703	140000		MOV	#KD6,R3	
004642	012737	177777	016700	MOV	#-1,@PKD6	
004650	012737	010223	016676	MOV	#010223,@K10-2	;010223=MOV R2,(R3)+
004656	005037	016700		CLR	@K10	
004662	005237	177572		INC	@SRO	;ENABLE MEMORY MGMT
004666	000237			SPL	7	;PRESET PRIORITY
004670	00257			CCC		
004672	000137	016676		JMP	@K10-2	
	004676			RETURN=.		
	016676			.=K10-2		
016676	010223			T26A: MOV	R2,(R3)+	;ABORTS WHEN NEXT INST. IS FETCHED

```

016700 000000 T26AA: HLT ;ERROR! FAILED TO ABORT AT D12.20
016702 000000 T26B: 0
004676 004676 . =RETURN

004676 004676 000344 000002 T26C:
004704 001401 CMP #PRTY7+Z,2(KSP) ;CHECK THAT CORRECT STATUS
004706 000000 BEQ .+4 ;WAS SAVED ON THE STACK
004710 022757 040001 172654 HLT ;ERROR! INCORRECT STATUS
004716 001401 CMP #PLA+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
004720 000000 BEQ .+4 ;& FAILING PAGE #)
004722 022767 000000 172644 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004730 001401 CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
004732 000000 BEQ .+4
004734 022767 016700 172634 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
004742 001401 CMP #T26AA,SR2 ;CHECK CONTENTS OF SR2
004744 000000 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
004746 005037 177572 CLR @#SR0 ;ERROR! INCORRECT PC IN SR2
004752 005737 016700 TST @#PKD6 ;DISABLE MEMORY MGMT
004756 001401 BEQ .+4 ;CHECK THAT MOV INST COMPLETED
004760 000000 HLT ;ERROR!
004762 022703 140002 CMP #KD6+2,R3 ;CHECK AUTO-INCREMENT
004766 001401 BEQ .+4
004770 000000 HLT ;ERROR!
004772 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D12.80
;ABORTS WHEN DEST OPERAND IS FETCHED
;DM=2
004774 012737 005032 000250 MOV #T27C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
005002 012704 100000 MOV #UD4,R4
005006 012767 070000 172762 MOV #SM+PUM,PSW ;SUPER MODE!!!,PREV USER MODE!!
005014 012706 000700 MOV #SPTR,SSP ;SET SUPER STACK PTR
005020 005016 CLR (SSP)
005022 005237 177572 INC @#SR0 ;ENABLE MEMORY MGMT
005026 006624 T27A: MTP#I (R4)+ ;NON-RESIDENT ABORT AT D12.80
005030 000000 T27B: HLT ;ERROR! FAILED TO ABORT

005032 005032 000000 T27C:
005040 001401 CMP #NRA+UPG+IS+VS4+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
005042 000000 BEQ .+4 ;& FAILING PAGE #)
005044 022767 012026 172522 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005052 001401 CMP #D2+DR4+S2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
005054 000000 BEQ .+4
005056 022767 005026 172512 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005064 001401 CMP #T27A,SR2 ;CHECK CONTENTS OF SR2
005066 000000 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
005070 106506 HLT ;ERROR! INCORRECT PC IN SR2
005072 022716 000702 MFPD SSP ;PUSH SUPER STACK PTR ONTO KERNEL STACK
005076 001401 CMP #SPTR+2,(KSP) ;CHECK THAT SUPER STACK PTR POPPED
005100 000000 HLT ;ERROR! SUPER STACK PTR FAILED TO POP
005102 022704 100002 CMP #UD4+2,R4 ;CHECK AUTO-INC OF R4
005106 001401 BEQ .+4
005110 000000 HLT ;ERROR! AUTO-INC FAILED
005112 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK ABORT AT D12.90
;ABORTS WHEN DEST OPERAND IS FETCHED
005114 012737 005144 000250      MOV    #T30C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
005122 012703 001077              MOV    #KDO-1,R3
005126 012737 177777 001100      MOV    #-1,@#KDO
005134 005237 177572              INC    @#SRO ;ENABLE MEMORY MGMT
005140 142323      T30A: BICB   (R3)+,(R3)+ ;SEG LENGTH ABORT AT D12.90
005142 000000              HLT    ;ERROR! FAILED TO ABORT

005144      T30C:
005144 022767 040021 172420      CMP    #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
005152 001401              BEQ    .+4 ;& FAILING PAGE #)
005154 000000              HLT    ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005156 022767 005413 172410      CMP    #D1+DR3+S1+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
005164 001401              BEQ    .+4
005166 000000              HLT    ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005170 022767 005140 172400      CMP    #T30A,SR2 ;CHECK CONTENTS OF SR2
005176 001401              BEQ    .+4 ;(PC OF ABORTED INSTRUCTION)
005200 000000              HLT    ;ERROR! INCORRECT PC IN SR2
005202 005037 177572      CLR    @#SRO ;DISABLE MEMORY MGMT
005206 022703 001101      CMP    #KDO+1,R3 ;CHECK AUTO-INC TWICE
005212 001401              BEQ    .+4
005214 000000              HLT    ;ERROR!
005216 005237 001100      INC    @#KDO
005222 001401              BEQ    .+4
005224 000000              HLT    ;ERROR!
005226 104000              SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D30.90
;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
005230 012737 005300 000250      MOV    #T31C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
005236 012702 040000      MOV    #SI2,R2
005242 012703 017100      MOV    #PSD1,R3
005246 012713 177777      MOV    #-1,(R3)
005252 011337 017000      MOV    (R3),@#PSI2
005256 012703 020002      MOV    #SD1+2,R3 ;R3= SUPER VIRTUAL ADDRESS
005262 012767 050000 172506      MOV    #SM+PSM,PSW ;SUPER MODE!!!,PREV SUPER MODE!!
005270 005237 177572      INC    @#SRO ;ENABLE MEMORY MGMT
005274 114332      T31A: MOVB   -(R3),@(R2)+ ;NON-RESIDENT ABORT AT D30.90
005276 000000      T31B: HLT    ;ERROR! FAILED TO ABORT

005300      T31C:
005300 022767 100065 172264      CMP    #NRA+SPG+DS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
005306 001401              BEQ    .+4 ;& FAILING PAGE #)
005310 000000              HLT    ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005312 022767 011373 172254      CMP    #D2+DR2+SM1+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
005320 001401              BEQ    .+4
005322 000000              HLT    ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005324 022767 005274 172244      CMP    #T31A,SR2 ;CHECK CONTENTS OF SR2
005332 001401              BEQ    .+4 ;(PC OF ABORTED INSTRUCTION)
005334 000000              HLT    ;ERROR! INCORRECT PC IN SR2
005336 022702 040002      CMP    #SI2+2,R2 ;CHECK AUTO-INC
005342 001401              BEQ    .+4
005344 000000              HLT    ;ERROR!
005346 022703 020001      CMP    #SD1+1,R3 ;CHECK AUTO DECREMENT OF R3

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005352 001401      BEQ      .+4
005354 000000      HLT
005356 104000      SCOPE      ;ERROR! R3 NOT AUTO-DECREMENTED
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT D10.50
005360 012737 005422 000250      MOV      #T32C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
005366 012767 050000 172402      MOV      #SM+PSM,PSW      ;SUPER MODE!!!,PREV SUPER MODE..
005374 012706 000700      MOV      #SPTR,SSP      ;SET SUPER STACK PTR
005400 005016      CLR      (SSP)
005402 012702 020000      MOV      #SD1,R2
005406 010237 017100      MOV      R2,@#PSD1
005412 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
005416 006632      T32A: MTP1 @#SRO      ;NON-RESIDENT ABORT AT D10.50
005420 000000      T32B: HLT @#SRO+      ;ERROR! FAILED TO ABORT

                                T32C:
005422 022767 100043 172142      CMP      #NRA+SPG+IS+VS1+1,SRO ;CHECK SRO (ABORT CONDITIONS
005430 001401      BEQ      .+4      ;& FAILING PAGE #)
005432 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005434 022767 011026 172132      CMP      #D2+DR2+S2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
005442 001401      BEQ      .+4
005444 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005446 022767 005416 172122      CMP      #T32A,SR2      ;CHECK CONTENTS OF SR2
005454 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
005456 000000      HLT      ;ERROR! INCORRECT PC IN SR2
005460 106506      MFPD    SSP      ;PUSH SUPER STACK PTR ONTO KERNEL STACK
005462 022716 000702      CMP      #SPTR+2,(KSP) ;CHECK THAT SUPER STACK PTR POPPED
005466 001401      BEQ      .+4
005470 000000      HLT      ;ERROR!
005472 022702 020002      CMP      #SD1+2,R2      ;CHECK AUTO-INC
005476 001401      BEQ      .+4
005500 000000      HLT      ;ERROR!
005502 104000      SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT D30.80
                                ;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
005504 012737 005544 000250      MOV      #T33C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
005512 012767 070000 172256      MOV      #SM+PUM,PSW      ;SUPER MODE!!!,PREV USER MODE!!
005520 012716 120000      MOV      #UI5,(SSP)      ;PUSH DEST ADKS ON SUPER STACK
005524 005046      CLR      -(SSP)      ;PUSH DATA ON SUPER STACK
005526 012737 177777 017200      MOV      #-1,@#PUI5
005534 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
005540 106636      T33A: MTPD @#SRO+      ;NON-RESIDENT ABORT AT D10.50 WHEN MTPD
                                ;ADDRESSES FINAL ADDRESS
005542 000000      T33B: HLT      ;ERROR! FAILED TO ABORT

                                T33C:
005544 022767 100173 172020      CMP      #NRA+UPG+DS+VS5+1,SRO ;CHECK SRO (ABORT CONDITIONS
005552 001401      BEQ      .+4      ;& FAILING PAGE #)
005554 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005556 022767 013026 172010      CMP      #D2+DR6+S2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
005564 001401      BEQ      .+4
005566 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005570 022767 005540 172000      CMP      #T33A,SR2      ;CHECK CONTENTS OF SR2
005576 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
005600 000000      HLT      ;ERROR! INCORRECT PC IN SR2

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```

005602 106506          MFPD  SSP          ;GET SUPER STACK PTR
005604 022716 000702  CMP    #SPTR+2,(KSP) ;CHECK THAT SUPER STACK PTR POPPED TWICE
005610 001401          BEQ    .+4
005612 000000          HLT
005614 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D30.00
;ABORTS WHEN ADDRESS OF SHIFT COUNT IS FETCHED
005616 012737 005646 000250 MOV    #T34C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
005624 012703 016700  MOV    #K10,R3
005630 010304          MOV    R3,R4
005632 012713 177777  MOV    #-1,(R3) ;FINAL ADDRESS IS ODD
005636 005237 177572  INC    @#SRO ;ENABLE MEMORY MGMT
005642 072433 T34A:  ASH    @(R3)+,R4 ;SEG LENGTH ERROR AT D30.00
005644 000000 T34B:  HLT ;ERROR! FAILED TO ABORT

005646          T34C:
005646 022767 040021 171716  CMP    #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
005654 001401          BEQ    .+4 ;& FAILING PAGE #)
005656 000000          HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005660 022767 000023 171706  CMP    #S2+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
005666 001401          BEQ    .+4
005670 000000          HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
005672 022767 005642 171676  CMP    #T34A,SR2 ;CHECK CONTENTS OF SR2
005700 001401          BEQ    .+4 ;(PC OF ABORTED INSTRUCTION)
005702 000000          HLT ;ERROR! INCORRECT PC IN SR2
005704 022704 016700  CMP    #K10,R4
005710 001401          BEQ    .+4
005712 000000          HLT ;ERROR!
005714 022703 016702  CMP    #K10+2,R3 ;CHECK AUTO-INC
005720 001401          BEQ    .+4
005722 000000          HLT ;ERROR!
005724 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D50.20
;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
;DM=5
005726 012737 005760 000250 MOV    #T35C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
005734 012704 016700  MOV    #K10,R4
005740 012714 177777  MOV    #-1,(R4)
005744 005237 177572  INC    @#SRO ;ENABLE MEMORY MGMT
005750 000277          SCC
005752 112754 177777  T35A:  MOVB   #-1,@-(R4) ;SEG LENGTH ABORT AT D50.20
005756 000000 T35B:  HLT ;ERROR. FAILED TO ABORT

005760          T35C:
005760 022766 000017 000002  CMP    #17,2(KSP) ;CHECK THAT CORRECT STATUS
005766 001401          BEQ    .+4 ;WAS SAVED ON THE STACK
005770 000000          HLT ;ERROR! INCORRECT STATUS
005772 022767 040021 171572  CMP    #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
006000 001401          BEQ    .+4 ;& FAILING PAGE #)
006002 000000          HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006004 022767 172027 171562  CMP    #DM2+DR4+S2+PC,SR1 ;CHECK SR1 (REGISTER CHANGES)
006012 001401          BEQ    .+4
006014 000000          HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006016 022767 005752 171552  CMP    #T35A,SR2 ;CHECK CONTENTS OF SR2

```

```

006024 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
006026 000000      HLT
006030 022704 016676  CMP      #K10-2,R4 ;ERROR! INCORRECT PC IN SR2
006034 001401      BEQ      .+4
006036 000000      HLT      ;ERROR!
006040 104000      SCOPE     ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT D40.30
;ABORTS WHEN DEST OPERAND IS FETCHED
;DM=4

```

```

006042 012737 006074 000250  MOV      #T36C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006050 012704 140002      MOV      #KD6+2,R4
006054 012703 016702      MOV      #K10+2,R3
006060 012713 177777      MOV      #-1,(R3)
006064 005237 177572      INC      @#SRO ;ENABLE MEMORY MGMT
006070 154443 T36A: B1SB    -(R4),-(R3) ;SEG LENGTH ABORT AT 40.30
006072 000000 T36B: HLT      ;ERROR! FAILED TO ABORT

```

```

006074 T36C:
006074 022767 040021 171470  CMP      #PLA+DS+1,SRO ;CHECK SRO (ABORT CONDITIONS
006102 001401      BEQ      .+4      ;& FAILING PAGE #)
006104 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006106 022767 175774 171460  CMP      #DM1+DR3+SM1+R4,SR1 ;CHECK SR1 (REGISTER CHANGES)
006114 001401      BEQ      .+4
006116 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006120 022767 006070 171450  CMP      #T36A,SR2 ;CHECK CONTENTS OF SR2
006126 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
006130 000000      HLT      ;ERROR! INCORRECT PC IN SR2
006132 022703 016701      CMP      #K10+1,R3 ;CHECK AUTO-DEC
006136 001401      BEQ      .+4
006140 000000      HLT      ;ERROR!
006142 022704 140001      CMP      #KD6+1,R4 ;CHECK AUTO-DEC
006146 001401      BEQ      .+4
006150 000000      HLT      ;ERROR! AUTO-DEC FAILED
006152 104000      SCOPE     ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT D67.80
;ABORTS WHEN INST FETCHES DEST INDEX
;DM=6

```

```

006154 012737 006220 000250  MOV      #T37C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006162 012767 070000 171606  MOV      #SM+PUM,PSW ;SUPER MODE!..PREV USER MODE.!
006170 012706 000700      MOV      #SPTR,SSP ;SET SUPER STACK PTR
006174 005016      CLR      (SSP)
006176 012737 106667 017076  MOV      #106667,@#PSI2+76 ;106667,000000 = MTPD .+4
006204 005037 017100      CLR      @#PSI2+100 ;INSTRUCTION
006210 005237 177572      INC      @#SRO ;ENABLE MEMORY MGMT
006214 000137 040076      JMP      @#SI2+76
006220      RETURN=
017076 106667 000000 T37A: MTPD    .+4 ;SEG LENGTH ABORT WHEN INDEX WORD
017102 000000 T37B: HLT      ;IS FETCHED AT D67.80
006220 ;ERROR FAILED TO ABORT
      .-RETURN

```

```

006220 T37C:

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```

006220 022767 040045 171344    CMP    #PLA+SPG+VS2+1,SRO    ;CHECK SPO (ABORT CONDITIONS
006226 001401                    BEQ    .+4                    ;& FAILING PAGE #)
006230 000000                    HLT                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006232 022767 000026 171334    CMP    #S2+SP,SR1           ;CHECK SR1 (REGISTER CHANGES)
006240 001401                    BEQ    .+4
006242 000000                    HLT                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006244 022767 040076 171324    CMP    #SI2+76,SR2          ;CHECK CONTENTS OF SR2
006252 001401                    BEQ    .+4                    ;(PC OF ABORTED INSTRUCTION)
006254 000000                    HLT                                ;ERROR! INCORRECT PC IN SR2
006256 106506                    MFPD   SSP                   ;GET SUPER STACK PTR
006260 022716 000702            CMP    #SPTR+2,(KSP)
006264 001401                    BEQ    .+4
006266 000000                    HLT                                ;ERROR!
006270 104000                    SCOPE                          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
    
```

;CHECK ABORT AT D67.90
 ;WHEN INSTRUCTION FETCHES DESTINATION INDEX VALUE

```

006272 012737 006340 000250    MOV    #T40C,@MMVEC        ;LOAD MEM MGMT ERROR VECTOR
006300 012767 050000 171470    MOV    #SM+PSM,PSW         ;SUPER MODE!! ,PREV SUPER MODE!!
006306 012737 113767 017074    MOV    #113767,@#PSI2+74   ;113767,020001,177776
006314 012737 020001 017076    MOV    #20001,@#PSI2+76    ;IS A MOVB @#20001,..+4
006322 012737 177776 017100    MOV    #177776,@#PSI2+100  ;INSTRUCTION
006330 005237 177572            INC    @#SRO                ;ENABLE MEMORY MGMT
006334 000137 040074            JMP    @#SI2+74
    
```

```

006340 017074 113767 020001 177776 T40A: MOV    @#20001,..+4        ;SEG LENGTH ABORT WHEN INST. FETCHES
006340 017074                    ;DEST INDEX WORD AT D67.90
017102 000000 006340 T40B: HLT                                ;ERROR! FAILED TO ABORT
    
```

```

006340 006340 022767 040045 171224 T40C: CMP    #PLA+SPG+VS2+1,SRO    ;CHECK SRO (ABORT CONDITIONS
006346 001401                    BEQ    .+4                    ;& FAILING PAGE #)
006350 000000                    HLT                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006352 022767 000027 171214    CMP    #S2+PC,SR1           ;CHECK SR1 (REGISTER CHANGES)
006360 001401                    BEQ    .+4
006362 000000                    HLT                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006364 022767 040074 171204    CMP    #SI2+74,SR2          ;CHECK CONTENTS OF SR2
006372 001401                    BEQ    .+4                    ;(PC OF ABORTED INSTRUCTION)
006374 000000                    HLT                                ;ERROR! INCORRECT PC IN SR2
006376 104000                    SCOPE                          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
    
```

;CHECK ABORT AT D40.20
 ;WHEN INSTRUCTION FETCHES DESTINATION OPERAND

```

006400 012737 006446 000250    MOV    #T41C,@MMVEC        ;LOAD MEM MGMT ERROR VECTOR
006406 012767 170000 171362    MOV    #UM+PUM,PSW         ;USER MODE!!! ,PREV USER MODE!!
006414 012703 100000            MOV    #UD4,R3
006420 012704 100102            MOV    #UD4+102,R4
006424 012737 012344 017200    MOV    #012344,@#PUI5      ;012344 = MOV (R3)+,-(R4)
006432 005037 017202            CLR    @#PUI5+2
006436 005237 177572            INC    @#SRO                ;ENABLE MEMORY MGMT
006442 000137 120000            JMP    @#UI5
    
```

```

006446 017200                    RETURN=.
017200 012344 T41A: MOV    (R3)+,-(R4)        ;ABORT AT D40.20
    
```

```
017202 000000          T41B:  HLT          ;ERROR. FAILED TO ABORT
      006446          .=RETURN

006446
006446 022767 040171 171116 T41C:  CMP      #PLA+UPG+DS+VS4+1,SRO ;CHECK SRO (ABORT CONDITIONS
006454 001401          BEQ      .+4          ;& FAILING PAGE #)
006456 000000          HLT          ;ERROR. INCORRECT ABORT CONDITIONS OR PAGE IDENT
006460 022767 172023 171106 CMP      #DM2+DR4+S2+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
006466 001401          BEQ      .+4
006470 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006472 022767 120000 171076 CMP      #UI5,SR2          ;CHECK CONTENTS OF SR2
006500 001401          BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
006502 000000          HLT          ;ERROR! INCORRECT PC IN SR2
006504 022704 100100          CMP      #UD4+100,R4
006510 001401          BEQ      .+4
006512 000000          HLT
006514 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D50.30
;(WHEN INSTRUCTION FETCHES ADDRESS OF DESTINATION OPERAND)
006516 012737 006554 000250 MOV      #T42C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006524 012737 010000 177776 MOV      #KM+PSM,@#PSW ;KERNEL MODE!!!,PREV SUPER MODE!!
006532 012703 140102          MOV      #KD6+102,R3
006536 012737 177777 017000 MOV      #-1,@#PKD6+100
006544 005237 177572          INC      @#SRO
006550 106653          T42A:  MTPD      @-(R3) ;ENABLE MEMORY MGMT
006552 000000          T42B:  HLT          ;SEG LENGTH ABORT AT D50.30
                                ;ERROR! FAILED TO ABORT

006554 022706 001056          T42C:  CMP      #KPTR-2,KSP ;CHECK STACK PTR ( 1 POP, 2 PUSHES)
006560 001401          BEQ      .+4
006562 000000          HLT          ;ERROR! INCORRECT STACK PTR
006564 022767 040035 171000 CMP      #PLA+DS+VS6+1,SRO ;CHECK SRO (ABORT CONDITIONS
006572 001401          BEQ      .+4          ;& FAILING PAGE #)
006574 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006576 022767 171426 170770 CMP      #DM2+DR3+S2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
006604 001401          BEQ      .+4
006606 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006610 022767 006550 170760 CMP      #T42A,SR2          ;CHECK CONTENTS OF SR2
006616 001401          BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
006620 000000          HLT          ;ERROR! INCORRECT PC IN SR2
006622 022703 140100          CMP      #KD6+100,R3 ;CHECK AUTO-DECREMENT
006626 001401          BEQ      .+4
006630 000000          HLT          ;ERROR! DID NOT AUTO-DEC
006632 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT D30.00
;ABORTS WHEN ADDRESS TO JUMP TO IS FETCHED
006634 012737 006702 000250 MOV      #T43C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006642 012737 000137 017076 MOV      #137,@#PSI2+76 ;000137,T43D =JMP @#T43D
006650 012737 006700 017100 MOV      #T43D,@#PSI2+100
006656 005037 017102          CLR      @#PSI2+102
006662 012767 070000 171106 MOV      #SM+PUM,PSW ;SUPER MODE!!!,PREV USER MODE..
006670 005237 177572          INC      @#SRO ;ENABLE MEMORY MGMT
006674 000137 040076          JMP      @#SI2+76 ;GO DO INSTRUCTION
                                RETURN-
                                .-PSI2+76
```



```

017076 000137 006700 T43A: JMP @T43D
017102 000000 T43B: HLT ;ERROR! JMP FAILED
          006700      . =RETURN
006700 000000 T43D: HLT ;ERROR! FAILED TO ABORT
006702
006702 022767 040045 170662 T43C: CMP #PLA+SPG+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
006710 001401      BEQ .+4 ;& FAILING PAGE #)
006712 000000      HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006714 022767 000027 170652 CMP #S2+PC,SR1 ;CHECK SR1 (REGISTER CHANGES)
006722 001401      BEQ .+4
006724 000000      HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
006726 022767 040076 170642 CMP #SI2+76,SR2 ;CHECK CONTENTS OF SR2
006734 001401      BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
006736 000000      HLT ;ERROR! INCORRECT PC IN SR2
006740 104000      SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT D10.00
;WHEN INSTRUCTION FETCHES ADDRESS OF DEST. OPERAND. (UI5+4)
006742 012737 007012 000250 MCV #T44C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
006750 012767 170000 171020 MOV #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE.!
006756 012706 000600 MOV #UPTR,USP ;SET USER STACK PTR
006762 012703 120006 MOV #UI5+6,R3
006766 012737 177777 017204 MOV #-1,@#PUI5+4
006774 012737 004753 017200 MOV #4753,@#PUI5 ;004753 = JSR 7,@-(R3)
007002 005237 177572 INC @#SR0 ;ENABLE MEMORY MGMT
007006 000137 120000 JMP @#UI5 ;GO DO INST.
          007012 RETURN=.
          017200 . =PUI5

```

```

017200 004753 T44A: JSR 7,@-(R3)
017202 000000 T44B: HLT ;ERROR!
          007012 . RETURN

```

```

007012 T44C:
007012 022706 001054 CMP #KPTR-4,KSP ;CHECK STACK PTR
007016 001401 BEQ .+4 ;AFTER ABORT
007020 000000 HLT ;ERROR! INCORRECT STACK PTR
007022 022767 100173 170542 CMP #NRA+UPG+DS+VS5+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
007030 001401 BEQ .+4 ;& FAILING PAGE #)
007032 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
007034 022767 000363 170532 CMP #SM2+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
007042 001401 BEQ .+4
007044 000000 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
007046 022767 120000 170522 CMP #UI5,SR2 ;CHECK CONTENTS OF SR2
007054 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
007056 000000 HLT ;ERROR! INCORRECT PC IN SR2
007060 106506 MFDP USP ;GET USER STACK PTR (ON KERNEL STACK)
007062 022716 000600 CMP #UPTR,(KSP) ;CHECK THAT USER STACK DID NOT
007066 001401 BEQ .+4 ;GET PUSHED
007070 000000 HLT ;ERROR!
007072 022703 120004 CMP #UI5+4,R3 ;CHECK AUTO-DEC
007076 001401 BEQ .+4
007100 000000 HLT ;ERROR!
007102 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT D10.30
;WHEN INSTRUCTION FETCHES DESTINATION OPERAND (UIPDR5)

```

```

007104 012737 007156 000250      MOV      #T45C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
007112 012767 170000 170656      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE.!
007120 012706 000600      MOV      #UPTR,USP      ;SET USER STACK PTR
007124 005016      CLR      (USP)
007126 012737 012667 017200      MOV      #012667,@#PUI5      ;012667,057606 = MOV (USP)+,UIPDR5
007134 012737 057606 017202      MOV      #57606,@#PUI5+2      ;INSTRUCTION
007142 005037 017204      CLR      @#PUI5+4
007146 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
007152 000137 120000      JMP      @#UI5
          007156      RETURN=
          017200      .=PUI5
017204 012667 057606      T45A:    MOV      (USP)+,UIPDR5-UI5+PUI5
          000000      T45B:    HLT      ;ERROR. FAILED TO ABORT
          007156      .=RETURN

007156      T45C:
007156 022767 140177 170406      CMP      #NRA+PLA+UPG+DS+VS7+1,SRO      ;CHECK SRO (ABORT CONDITIONS
007164 001401      BEQ      .+4      ;& FAILING PAGE #)
007166 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
007170 022767 000026 170376      CMP      #S2+SP,SR1      ;CHECK SR1 (REGISTER CHANGES)
007176 001401      BEQ      .+4
007200 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
007202 022767 120000 170366      CMP      #UI5,SR2      ;CHECK CONTENTS OF SR2
007210 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
007212 000000      HLT      ;ERROR! INCORRECT PC IN SR2
007214 005037 177572      CLR      @#SRO      ;DISABLE MEMORY MGMT
007220 005737 177612      TST      @#UIPDR5
007224 001001      BNE      .+4
007226 000000      HLT
007230 104000      SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

          ;CHECK ABORT AT ASC.60
          ;ABORTS WHEN INSTRUCTION FOLLOWING ASH IS FETCHED
007232 012737 007302 000250      MOV      #T46C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
007240 012737 073204 017276      MOV      #073204,@#PUI5+76      ;073204 IS AN ASHC R4,R2 INST.
007246 005037 017300      CLR      @#PUI5+100
007252 012767 170000 170516      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
007260 012704 000001      MOV      #1,R4      ;SHIFT COUNT = +1 (1 PLACE LEFT)
007264 012702 100000      MOV      #100000,R2
007270 005003      CLR      R3
007272 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
007276 000137 120076      JMP      @#UI5+76
          007302      RETURN=
          017276      .=PUI5+76
017300 000257      CCC      ;PRESET CC'S
017302 073204      T46A:    ASHC      R4,R2      ;SEG LEN ABORT WHEN NEXT INST. IS FETCHED
          000000      T46B:    HLT

          .=RETURN

007302      T46C:
007302 022706 001054      CMP      #KPTR-4,KSP      ;CHECK STACK PTR
007306 001401      BEQ      .+4      ;AFTER ABORT
007310 000000      HLT      ;ERROR! INCORRECT STACK PTR
007312 122767 000007 171536      CMPB     #Z+V+C,KPTR-2      ;CHECK THAT 'C','V',&'Z' BITS SET ON SHIFT
007320 001401      BEQ      .+4
007322 000000      HLT      ;ERROR! INCORRECT STATUS SAVED ON ABORT

```

```

007324 022767 040153 170240    CMP    #PLA+UPG+IS+VS5+1,SRO ;CHECK SRO (ABORT CONDITIONS
007332 001401                    BEQ    .+4                    ;& FAILING PAGE #)
007334 000000                    HLT                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
007336 022767 000000 170230    CMP    #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
007344 001401                    BEQ    .+4
007346 000000                    HLT                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
007350 022767 120100 170220    CMP    #UI5+100,SR2 ;CHECK CONTENTS OF SR2
007356 001401                    BEQ    .+4                    ;(PC OF ABORTED INSTRUCTION)
007360 000000                    HLT                                ;ERROR! INCORRECT PC IN SR2
007362 005702                    TST    R2                    ;CHECK THAT SHIFT COMPLETED
007364 001401                    BEQ    .+4
007366 000000                    HLT
007370 005703                    TST    R3
007372 001401                    BEQ    .+4
007374 000000                    HLT
007376 104000                    SCOPE ;SCOPE STORES PC IN F1 & SETS ALL STACK PTRS
    
```

;CHECK ABORT AT ASC.80

;ABORTS WHEN INST FOLLOWING ASHC IS FETCHED

```

007400 012737 007454 000250    MOV    #T47C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
007400 012767 050000 170362    MOV    #SM+PSM,PSW ;SUPER MODE!!!,PREV SUPER MODE!!
007414 012737 073422 017076    MOV    #073422,@PSI2+76 ;073422 IS AN ASHC (R2)+,R4 INST
007422 012702 001004                    MOV    #TEMP,R2 ;LOAD R2 = ADRS OF SHIFT COUNT
007426 005012                    CLR    (R2) ;SHIFT COUNT = 0
007430 012705 000001                    MOV    #1,R5 ;LOAD CONSTANTS
007434 010504                    MOV    R5,R4
007436 005037 017100                    CLR    @PSI2+100 ;HALT AFTER INST.
007442 005237 177572                    INC    @SR0 ;ENABLE MEMORY MGMT
007446 000277                    SCC
007450 000137 040076                    JMP    @PSI2+76 ;GO TO ASHC INST.
    
```

RETURN=

.=PSI2+76

ASHC (R2)+,R4

T47A: HLT ;SEG LENGTH ABORT WHEN THIS INST IS FETCHED

.=RETURN

T47C: TSTB @KPTR-2 ;CHECK STATUS ON STACK

BEQ .+4

HLT ;ERROR! INCORRECT STATUS ON STACK

CMP #PLA+SPG+IS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS

BEQ .+4 ;& FAILING PAGE #)

HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT

CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)

BEQ .+4

HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1

CMP #SI2+100,SR2 ;CHECK CONTENTS OF SR2

BEQ .+4 ;(PC OF ABORTED INSTRUCTION)

HLT ;ERROR! INCORRECT PC IN SR2

CMP #TEMP+2,R2

BEQ .+4

HLT

SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT JSR.30

;ABORTS WHEN REGISTER (R5) IS PUSHED ON USER STACK

```

007534 012737 007604 000250    MOV    #T50C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
007542 012767 170000 170226    MOV    #UM+PUM,PSW ;USER MODE!..,PREV USER MODE..
    
```

```
007550 012706 100000      MOV    #UD4,USP      ;SET USER STACK PTR
007554 005037 017276      CLR    @#PUD4-2
007560 005005      CLR    R5
007562 012767 007602 171214      MOV    #T50D,TEMP
007570 005237 177572      INC    @#SR0        ;ENABLE MEMORY MGMT
007574 004577 171204      T50A: JSR    5,@TEMP  ;NON-RES ABORT AT JSR.30
007600 000000      T50B: HLT           ;JSR FAILED & DID NOT ABORT
007602 000000      T50D: HLT           ;ERROR! FAILED TO ABORT

007604      T50C:
007604 022767 140167 167760      CMP    #NRA+PLA+UPG+DS+VS3+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
007612 001401      BEQ    .+4          ;& FAILING PAGE #)
007614 000000      HLT           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
007616 022767 000366 167750      CMP    #SM2+SP,SR1  ;CHECK SR1 (REGISTER CHANGES)
007624 001401      BEQ    .+4
007626 000000      HLT           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
007630 022767 007574 167740      CMP    #T50A,SR2   ;CHECK CONTENTS OF SR2
007636 001401      BEQ    .+4          ;(PC OF ABORTED INSTRUCTION)
007640 000000      HLT           ;ERROR! INCORRECT PC IN SR2
007642 106506      MFPD   USP        ;PUSH USER STACK PTR ONTO KERNEL STACK
007644 022716 077776      CMP    #UD4-2,(KSP) ;CHECK THAT USER STACK PTR DEC-
007650 001401      BEQ    .+4          ;REMENTED
007652 000000      HLT           ;ERROR!
007654 005705      TST    R5
007656 001401      BEQ    .+4
007660 000000      HLT
007662 104000      SCOPE           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT SVC.80 (MFPI)
;ABORTS WHEN DATA IS PUSHED ONTO SUPER STACK
007664 012737 007724 000250      MOV    #T51C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
007672 012767 070000 170076      MOV    #SM+PUM,PSW  ;SUPER MODE!!!,PREV USER MODE!!
007700 005006      CLR    SSP        ;SET SUPERVISOR STACK PTR
007702 012737 120000 000000      MOV    #UIS,@#0    ;LOAD STACK
007710 005237 177572      INC    @#SR0      ;ENABLE MEMORY MGMT
007714 000240      NOP
007716 006576 000000      T51A: MFPI @ (SSP) ;SEG LENGTH ABORT AT SVC.80
007722 000000      T51B: HLT        ;ERROR! FAILED TO ABORT

007724      T51C:
007724 022706 001054      CMP    #KPTR-4,KSP  ;CHECK STACK PTR
007730 001401      BEQ    .+4          ;AFTER ABORT
007732 000000      HLT           ;ERROR! INCORRECT STACK PTR
007734 022767 140077 167630      CMP    #NRA+PLA+SPG+DS+VS7+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
007742 001401      BEQ    .+4          ;& FAILING PAGE #)
007744 000000      HLT           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
007746 022767 000366 167620      CMP    #SM2+SP,SR1  ;CHECK SR1 (REGISTER CHANGES)
007754 001401      BEQ    .+4
007756 000000      HLT           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
007760 022767 007716 167610      CMP    #T51A,SR2   ;CHECK CONTENTS OF SR2
007766 001401      BEQ    .+4          ;(PC OF ABORTED INSTRUCTION)
007770 000000      HLT           ;ERROR! INCORRECT PC IN SR2
007772 106506      MFPD   SSP
007774 022716 177776      CMP    #0-2,(KSP)
010000 001401      BEQ    .+4
010002 000000      HLT
```

010004 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT SVC.60 (SUPERVISORY MODE)
;ABORTS WHEN STATUS IS PUSHED ONTO SUPER STACK

```

010006 012737 010060 000250      MOV      #T52C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
010014 012767 040000 170000      MOV      #SM,IOTVEC+2
010022 012767 010056 167770      MOV      #T52D,IOTVEC
010030 012767 050000 167740      MOV      #SM+PSM,PSW      ;SUPER MODE!!!,PREV SUPER MODE!!
010036 005006      CLR      SSP      ;SET SUPER STACK PTR
010040 012767 170000 167730      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
010046 005237 177572      INC      @#SR0      ;ENABLE MEMORY MGMT
010052 000004      T52A:   IOT      ;NON-RESIDENT ABORT AT SVC.60
010054 000000      T52B:   HLT      ;ERROR! IOT & ABORT FAILED
010056 000000      T52D:   HLT      ;ERROR! ABORT FAILED
    
```

T52C:

```

010060 010060 022706 001054      CMP      #KPTR-4,KSP      ;CHECK STACK PTR
010060 010064 001401      BEQ      .+4      ;AFTER ABORT
010066 010066 000000      HLT      ;ERROR! INCORRECT STACK PTR
010070 010070 022766 170000 000002      CMP      #UM+PUM,2(KSP)  ;CHECK THAT CORRECT STATUS
010076 010076 001401      BEQ      .+4      ;WAS SAVED ON THE STACK
010100 010100 000000      HLT      ;ERROR! INCORRECT STATUS
010102 010102 022767 140077 167462      CMP      #NRA+PLA+SPG+DS+VS7+1,SRO ;CHECK SRO (ABORT CONDITIONS
010110 010110 001401      BEQ      .+4      ;& FAILING PAGE #)
010112 010112 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
010114 010114 022767 173366 167452      CMP      #DM2+DR6+SM2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
010122 010122 001401      BEQ      .+4
010124 010124 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
010126 010126 022767 010052 167442      CMP      #T52A,SR2      ;CHECK CONTENTS OF SR2
010134 010134 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
010136 010136 000000      HLT      ;ERROR! INCORRECT PC IN SR2
010140 010140 122737 000060 177777      CMPB     #60,@#PSW+1      ;CHECK FOR CORRECT PSW ON ABORT
010146 010146 001401      BEQ      .+4      ;(KM+PUM IN HIGH BYTE)
010150 010150 000000      HLT      ;ERROR! INCORRECT PSW AFTER ABORT
010152 010152 012737 010000 177776      MOV      #KM+PSM,@#PSW    ;KERNEL MODE!!! PREV SUPER MODE!!
010160 010160 106506      MFPD     SSP      ;PUSH SUPER STACK PTR ONTO KERNEL STACK
010162 010162 022716 177774      CMP      #0-4,(KSP)      ;CHECK PUSHES
010166 010166 001401      BEQ      .+4
010170 010170 000000      HLT      ;ERROR!
010172 010172 104000      SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
    
```

;CHECK ABORT AT SVC.80
;ABORTS WHEN RETURN PC IS PUSHED ONTO SUPERVISOR STACK

```

010174 012737 010250 000250      MOV      #T53C,@#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
010202 012767 050000 167566      MOV      #SM+PSM,PSW      ;SUPER MODE!!!,PREV SUPER MODE!!
010210 012706 020002      MOV      #SD1+2,SSP      ;SET SUPER STACK PTR
010214 012767 010246 167576      MOV      #T53D,IOTVEC
010222 012767 040340 167572      MOV      #SM+PRTY7,IOTVEC+2
010230 012767 170000 167540      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
010236 005237 177572      INC      @#SR0      ;ENABLE MEMORY MGMT
010242 000004      T53A:   IOT      ;NON-RESIDENT ABORT AT SVC.80
010244 000000      T53B:   HLT      ;ERROR! IOT & ABORT FAILED
010246 000000      T53D:   HLT      ;ERROR! ABORT FAILED
    
```

T53C:

```

010250 010250 022706 001054      CMP      #KPTR-4,KSP      ;CHECK STACK PTR
    
```



```

010646 013700 177776 T55C: MOV @#PSW,R0 ;GET NEW STATUS
010652 022700 030000 CMP #KM+PUM,R0 ;CHECK NEW STATUS
010656 001401 BEQ .+4
010660 000000 HLT ;ERROR! INCORRECT STATUS AFTER ABORT
010662 022706 001054 CMP #KPTR-4,KSP ;CHECK STACK PTR
010666 001401 BEQ .+4 ;AFTER ABORT
010670 000000 HLT ;ERROR! INCORRECT STACK PTR
010672 022766 170017 000002 CMP #UM+PUM+17,2(KSP) ;CHECK THAT CORRECT STATUS
010700 001401 BEQ .+4 ;WAS SAVED ON THE STACK
010702 000000 HLT ;ERROR! INCORRECT STATUS
010704 022767 040221 166660 CMP #PLA+IC+DS+KPG+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
010712 001401 BEQ .+4 ;& FAILING PAGE #)
010714 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
010716 022767 000000 166650 CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
010724 001401 BEQ .+4
010726 000000 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
010730 022767 000004 166640 CMP #ERRVEC,SR2 ;CHECK CONTENTS OF SR2
010736 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
010740 000000 HLT ;ERROR! INCORRECT PC IN SR2
010742 005037 177572 CLR @#SRO ;DISABLE MEMORY MGMT
010746 106506 MFPD USP ;GET USER STACK PTR
010750 022716 000602 CMP #UPTR+2,(KSP) ;CHECK THAT MTPD POPPED USER STACK
010754 001401 BEQ .+4
010756 000000 HLT ;ERROR! INCORRECT USER STACK PTR
010760 022702 000003 CMP #3,R2 ;CHECK AUTO-INC OF R2
010764 001401 BEQ .+4
010766 000000 HLT ;ERROR! R2 DID NOT AUTO-INC
010770 016737 170010 172320 MOV TEMP,@#KDPDRO ;RESTORE KDPDRO
010776 012737 000012 000010 MOV #RESVEC+2,@#RESVEC
011004 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT AT FET.00
011006 012737 011050 000250 MOV #T56C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
011014 012767 050000 166754 MOV #SM+PSM,PSW ;SUPER MODE!!!,PREV SUPER MODE!!
011022 012706 000700 MOV #SPTR,SSP ;SET SUPER STACK PTR
011026 012746 040000 MOV #SM,-(SSP)
011032 012746 040100 MOV #SI2+100,-(SSP)
011036 005037 017100 CLR @#PSI2+100
011042 005237 177572 INC @#SRO ;ENABLE MEMORY MGMT
011046 000002 RTI

```

```

011050 RETURN=
017100 000000 T56A: HLT ;ERROR! FAILED TO ABORT AT FET.00
011050 017100 .=PSI2+100
011050 .=RETURN

```

```

011050 T56C:
011050 022706 001054 CMP #KPTR-4,KSP ;CHECK STACK PTR
011054 001401 BEQ .+4 ;AFTER ABORT
011056 000000 HLT ;ERROR! INCORRECT STACK PTR
011060 022767 040045 166504 CMP #PLA+SPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
011066 001401 BEQ .+4 ;& FAILING PAGE #)
011070 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011072 022767 000000 166474 CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
011100 001401 BEQ .+4
011102 000000 HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
011104 022767 040100 166464 CMP #SI2+100,SR2 ;CHECK CONTENTS OF SR2

```

```
011112 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
011114 000000      HLT      ;ERROR! INCORRECT PC IN SR2
011116 104000      SCOPE     ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT FET.01 (V1A D10.40)
011120 012737 011156 000250  MOV      #T57C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
011126 012767 170000 166642  MOV      #UM+PUM,PSW ;USER MODE!! ,PREV USER MODE!!
011134 012737 012646 017276  MOV      #012646,@#PUI5+76 ;012646=MOV (6)+,-(6)
011142 005037 017300      CLR      @#PUI5+100 ;INSTRUCTION
011146 005237 177572      INC      @#SRO ;ENABLE MEMORY MGMT
011152 000137 120076      JMP      @#UI5+76

011156      RETURN=
017276 012646      MOV      (6)+,-(6)
017300 000000 011156 T57A: HLT      ;ABORTS AT FET.01
      .-RETURN

011156      T57C:
011156 022767 040153 166406  CMP      #PLA+UPG+VS5+1,SRO ;CHECK SRO (ABORT CONDITIONS
011164 001401      BEQ      .+4 ;& FAILING PAGE #)
011166 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011170 022767 000000 166376  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
011176 001401      BEQ      .+4
011200 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
011202 022767 120100 166366  CMP      #UI5+100,SR2 ;CHECK CONTENTS OF SR2
011210 001401      BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
011212 000000      HLT      ;ERROR! INCORRECT PC IN SR2
011214 106506      MFPD     USP ;GET USER STACK PTR
011216 022716 000600      CMP      #UPTR,(KSP) ;CHECK USER STACK PTR
011222 001401      BEQ      .+4
011224 000000      HLT      ;ERROR! INCORRECT USER STACK PTR
011226 104000      SCOPE     ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT FET.03
011230 012767 050000 166540  MOV      #SM+PSM,PSW ;SUPER MODE!! ,PREV SUPER MODE!!
011236 012737 011270 000250  MOV      #T60C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
011244 012737 000005 017076  MOV      #5,@#PSI2+76 ;5 IS A RESET INSTRUCTION
011252 005037 017100      CLR      @#PSI2+100
011256 005005      CLR      R5
011260 005237 177572      INC      @#SRO ;ENABLE MEMORY MGMT
011264 000137 040076      JMP      @#SI2+76 ;GO EXECUTE RESET

011270      RETURN=
017076 000005 011270 T60A: RESET ;ABORTS WHEN NEXT INST. FETCHED
017100 000000      HLT      ;ERROR! FAILED TO ABORT
      .-RETURN

011270      T60C:
011270 022767 040045 166274  CMP      #PLA+SPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
011276 001401      BEQ      .+4 ;& FAILING PAGE #)
011300 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011302 022767 000000 166264  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
011310 001401      BEQ      .+4
011312 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
011314 022767 040100 166254  CMP      #SI2+100,SR2 ;CHECK CONTENTS OF SR2
011322 001401      BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
011324 000000      HLT      ;ERROR! INCORRECT PC IN SR2
```

```

011326 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT FET.06
011330 012767 170000 166440      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE..
011336 012737 011400 000250      MOV      #T61C,@MMVEC    ;LOAD MEM MGMT ERROR VECTOR
011344 012704 000001              MOV      #1,R4
011350 012702 100000              MOV      #100000,R2
011354 005003                    CLR      R3
011356 012737 071204 017276      MOV      #071204,@#PUI5+76 ;071204 = DIV R4,R2 INST.
011364 005037 017300              CLR      @#PUI5+100      ;HALT FOLLOWS DIV INST.
011370 005237 177572              INC      @#SR0           ;ENABLE MEMORY MGMT
011374 000137 120076              JMP      @#PUI5+76       ;GO DO DIVIDE
                                RETURN=
                                .=PUI5+76
017276 071204              DIV      R4,R2
017300 000000              T61A:  HLT              ;SEG LEN ABORT WHEN THIS INST FETCHED
                                011400      .=RETURN
011400 022767 040153 166164      T61C:  CMP      #PLA+UPG+VS5+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
011406 001401              BEQ      .+4             ;& FAILING PAGE #)
011410 000000              HLT              ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011412 022767 000000 166154      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
011420 001401              BEQ      .+4
011422 000000              HLT              ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
011424 022767 120100 166144      CMP      #UI5+100,SR2   ;CHECK CONTENTS OF SR2
011432 001401              BEQ      .+4             ;(PC OF ABORTED INSTRUCTION)
011434 000000              HLT              ;ERROR! INCORRECT PC IN SR2
011436 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT MUL.50
;ABORTS WHEN INST FOLLOWING MUL IS FETCHED
011440 012767 050000 166330      MOV      #SM+PSM,PSW    ;SUPER MODE!!!,PREV SUPER MODE!!
011446 012737 011510 000250      MOV      #T62C,@MMVEC    ;LOAD MEM MGMT ERROR VECTOR
011454 012703 000002              MOV      #2,R3
011460 012704 000001              MOV      #1,R4
011464 005005                    CLR      R5
011466 012737 070403 017076      MOV      #070403,@#PSI2+76 ;070403 = MUL R3,R4 INST.
011474 005037 017100              CLR      @#PSI2+100     ;HALT FOLLOWS INST.
011500 005237 177572              INC      @#SR0           ;ENABLE MEMORY MGMT
011504 000137 040076              JMP      @#SI2+76       ;GO DO MUL INST
                                RETURN=
                                .=PSI2+76
017076 070403              MUL      R3,R4
017100 000000              T62A:  HLT              ;ABORT WHEN THIS INST FETCHED AT MUL.50
                                011510      .=RETURN
011510 022767 040045 166054      T62C:  CMP      #PLA+SPG+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
011516 001401              BEQ      .+4             ;& FAILING PAGE #)
011520 000000              HLT              ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011522 022767 000000 166044      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
011530 001401              BEQ      .+4
011532 000000              HLT              ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
011534 022767 040100 166034      CMP      #SI2+100,SR2   ;CHECK CONTENTS OF SR2
011542 001401              BEQ      .+4             ;(PC OF ABORTED INSTRUCTION)
011544 000000              HLT              ;ERROR! INCORRECT PC IN SR2
011546 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK ABORT AT MRK.30
;ABORTS WHEN INST FOLLOWING MARK IS FETCHED
011550 012767 050000 166220      MOV      #SM+PSM,PSW      ;SUPER MODE!!!,PREV SUPER MODE!!
011556 012737 011606 000250      MOV      #T63C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
011564 012746                MOV      (PC)+,-(SSP)    ;PUSH MARK INST ON SUPER STACK
011566 006401                MARK      1              ;PUSH THIS INST ON SUPER STACK
011570 012705 040100                MOV      #SI2+100,R5     ;AFTER MARK EXECUTE INST AT T63A
011574 005037 017100                CLR      @#T63A          ;WHICH IS A HALT
011600 005237 177572                INC      @#SRO           ;ENABLE MEMORY MGMT
011604 000116                JMP      (SSP)           ;GO EXECUTE MARK AT SPTR-2
                                RETURN=
                                .=PSI2+100
017100 000000      T63A:  HLT                    ;SEG ABORT WHEN THIS INST. FETCHED AT MRK.30
                                .=RETURN

011606      T63C:
011606 022706 001054                CMP      #KPTR-4,KSP     ;CHECK STACK PTR
011612 001401                BEQ      .+4             ;AFTER ABORT
011614 000000                HLT                    ;ERROR! INCORRECT STACK PTR
011616 022767 040045 165746      CMP      #PLA+SPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
011624 001401                BEQ      .+4             ;& FAILING PAGE #)
011626 000000                HLT                    ;ERROR. INCORRECT ABORT CONDITIONS OR PAGE IDENT
011630 022767 000000 165736      CMP      #0,SRI         ;CHECK SRI (REGISTER CHANGES)
011636 001401                BEQ      .+4
011640 000000                HLT                    ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SRI
011642 022767 040100 165726      CMP      #SI2+100,SR2   ;CHECK CONTENTS OF SR2
011650 001401                BEQ      .+4             ;(PC OF ABORTED INSTRUCTION)
011652 000000                HLT                    ;ERROR! INCORRECT PC IN SR2
011654 106506                MFPD     SSP            ;PUSH SUPER STACK PTR ONTO KERNEL STACK
011656 022716 000704                CMP      #SPTR+4,(KSP)  ;CHECK SUPER STACK PTR
011662 001401                BEQ      .+4
011664 000000                HLT                    ;ERROR! INCORRECT SUPER STACK PTR
011666 023705 000702                CMP      @#SPTR+2,R5    ;CHECK CONTENTS OF R5
011672 001401                BEQ      .+4
011674 000000                HLT                    ;ERROR!
011676 104000                SCOPE                   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT TST.10
;ABORTS WHEN INST FOLLOWING TST IS FETCHED
011700 012737 011734 000250      MOV      #T64C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
011706 012702 177777                MOV      #-1,R2         ;R2=STATUS WORD ADDRESS (ODD BYTE)
011712 012737 105722 016676      MOV      #105722,@#KIO-2 ;105722=TSTB (R2)+
011720 005037 016700                CLR      @#KIO
011724 005237 177572                INC      @#SRO           ;ENABLE MEMORY MGMT
011730 000137 016676                JMP      @#KIO-2        ;GO EXECUTE INSTRUCTION
                                RETURN=
                                .=KIO-2
016676 105722      T64A:  TSTB      (R2)+          ;ABORTS WHEN NEXT INST. IS FETCHED
016700 000000      T64B:  HLT                    ;ERROR! FAILED TO ABORT
                                .=RETURN

011734      T64C:
011734 022767 040001 165630      CMP      #PLA+KPG+IS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
011742 001401                BEQ      .+4             ;& FAILING PAGE #)
011744 000000                HLT                    ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
011746 022767 000000 165620      CMP      #0,SRI         ;CHECK SRI (REGISTER CHANGES)

```



```

011754 001401      BEQ      .+4
011756 000000      HLT
011760 022767 016700 165610  CMP      #T64B,SR2
011766 001401      BEQ      .+4
011770 000000      HLT
011772 005702      TST      R2
011774 001401      BEQ      .+4
011776 000000      HLT
012000 104000      SCOPE

```

;CHECK ABORT AT ASC.61

;ABORTS WHEN INSTRUCTION FOLLOWING ASC IS FETCHED

```

012002 012737 012054 000250  MOV      #T65C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
012010 012700 017102  MOV      #PSI2+102,R0
012014 005040      CLR      -(R0) ;SET UP CODE (HALT)
012016 012740      MOV      (7)+,-(R0)
012020 073205      ASHC     R5,R2 ;ASC R5,R2
012022 012705 177777  MOV      #-1,R5 ;SHIFT COUNT = -1 (1 PLACE RIGHT)
012026 005002      CLR      R2
012030 012703 100001  MOV      #100001,R3
012034 012767 050000 165734  MOV      #SM+PSM,PSW ;SUPER MODE!!!,PREV SUPER MODE.!
012042 005237 177572  INC      @#SRO ;ENABLE MEMORY MGMT
012046 000261      SEC
012050 000137 040076  JMP      @#SI2+76 ;GO EXECUTE ASC INSTRUCTION
012054  RETURN=
017076 073205      T65A: ASHC     R5,R2 ;SEG LENGTH ABORT WHEN NEXT INST
017100 000000      HLT ;ERROR. FAILED TO ABORT HERE
012054 012054      .=PSI2+76
012054 017076      .=RETURN

```

T65C:

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012054 022706 001054  CMP      #KPTR-4,KSP ;CHECK STACK PTR
012060 001401      BEQ      .+4 ;AFTER ABORT
012062 000000      HLT ;ERROR! INCORRECT STACK PTR
012064 122767 000001 166764  CMPB     #C,KPTR-2 ;CHECK STATUS ON STACK
012072 001401      BEQ      .+4
012074 000000      HLT ;ERROR! INCORRECT STATUS ON STACK
012076 022767 040045 165466  CMP      #PLA+SPG+IS+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
012104 001401      BEQ      .+4 ;& FAILING PAGE #)
012106 000000      HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012110 022767 000000 165456  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
012116 001401      BEQ      .+4
012120 000000      HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012122 022767 040100 165446  CMP      #SI2+100,SR2 ;CHECK CONTENTS OF SR2
012130 001401      BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
012132 000000      HLT ;ERROR! INCORRECT PC IN SR2
012134 005702      TST      R2 ;CHECK RESULT
012136 001401      BEQ      .+4
012140 000000      HLT ;ERROR! INCORRECT RESULT IN R2
012142 022703 040000  CMP      #040000,R3 ;CHECK RESULT
012146 001401      BEQ      .+4
012150 000000      HLT ;ERROR! INCORRECT RESULT IN R3
012152 104000      SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

;CHECK ABORT AT D00.90

;ABORTS WHEN INSTRUCTION FOLLOWING MOV B IS FETCHED

```

012154 012737 012212 000250  MOV      #T66C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR

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012162 012703 016700      MOV      #K10,R3
012166 005013      CLR      (3)          ;SET UP CODE (HALT)
012170 012743      MOV      (7)+,-(R3)
012172 114203      MOV      -(R2),R3    ;THIS INSTRUCTION IS NOT EXECUTED
012174 012702 001004      MOV      #TEMP,R2
012200 012722 100000      MOV      #100000,(R2)+
012204 005237 177572      INC      @#SR0       ;ENABLE MEMORY MGMT
012210 000113      JMP      (R3)        ;GO EXECUTE MOV B INSTRUCTION
                                RETURN=.
                                .=K10-2
016676 114203      T66A:  MOV      -(R2),R3    ;ABORTS WHEN THE NEXT INST IS FETCHED
016700 000000      T66B:  HLT
                                .=RETURN
012212 012212      T66C:
012212 022767 040001 165352      CMP      #PLA+KPG+IS+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
012220 001401      BEQ      .+4          ;& FAILING PAGE #)
012222 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012224 022767 000000 165342      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
012232 001401      BEQ      .+4
012234 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012236 022767 016700 165332      CMP      #T66B,SR2    ;CHECK CONTENTS OF SR2
012244 001401      BEQ      .+4          ; (PC OF ABORTED INSTRUCTION)
012246 000000      HLT      ;ERROR! INCORRECT PC IN SR2
012250 022703 177600      CMP      #177600,R3   ;MOV B TO A REGISTER EXTENDS
012254 001401      BEQ      .+4          ;THE SIGN
012256 000000      HLT      ;ERROR! INCORRECT RESULT IN R3
012260 104000      SCOPE   ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT FET07 (VIA ASH.30)
                                ;ABORTS WHEN INSTRUCTION FOLLOWING ASH IS FETCHED
012262 012737 012320 000250      MOV      #T67C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
012270 012702 016700      MOV      #K10,R2
012274 005012      CLR      (R2)
012276 012742      MOV      (7)+,-(R2)
012300 072403      ASH      R3,R4
012302 012703 177777      MOV      #-1,R3      ;SHIFT COUNT=-1=1 PLACE RIGHT
012306 012704 100001      MOV      #100001,R4  ;R4=DATA TO BE SHIFTED
012312 005237 177572      INC      @#SR0       ;ENABLE MEMORY MGMT
012316 000112      JMP      (R2)
                                RETURN=.
                                .=K10-2
016676 072403      T67A:  ASH      R3,R4    ;ABORTS WHEN NEXT INSTRUCTION IS FETCHED
016700 000000      T67B:  HLT
                                .=RETURN
012320 122766 000011 000002      T67C:  CMP      #N+C,2(6)    ;CHECK STATUS ON THE STACK
012326 001401      BEQ      .+4
012330 000000      HLT
012332 022767 040001 165232      CMP      #PLA+KPG+IS+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
012340 001401      BEQ      .+4          ;& FAILING PAGE #)
012342 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012344 022767 000000 165222      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
012352 001401      BEQ      .+4
012354 000000      HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012356 022767 016700 165212      CMP      #T67B,SR2    ;CHECK CONTENTS OF SR2
012364 001401      BEQ      .+4          ; (PC OF ABORTED INSTRUCTION)
012366 000000      HLT      ;ERROR! INCORRECT PC IN SR2

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012370 022704 140000      CMP      #140000,R4
012374 001401      BEQ      .+4
012376 000000      HLT
012400 104000      SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT FET.05 (VIA ASH.40)
;ABORTS WHEN INSTRUCTION FOLLOWING ASH IS FETCHED
012402 012737 012446 000250      MOV      #T70C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
012410 012705 016700      MOV      #K10,R5
012414 005015      CLR      (R5)
012416 012745      MOV      (7)+,-(R5)
012420 072223      ASH      (3)+,R2
012422 012703 001004      MOV      #TEMP,R3
012426 012713 000001      MOV      #1,(R3) ;SHIFT COUNT =1=1 PLACE LEFT
012432 012702 100000      MOV      #100000,R2
012436 005237 177572      INC      @SRO ;ENABLE MEMORY MGMT
012442 000261      SEC
012444 000115      JMP      (R5)
          012446      RETURN=.
          016676      .=K10-2
016676 072223      T70A:   ASH      (R3)+,R2
016700 000000      T70B:   HLT
          012446      .=RETURN
012446 022767 040001 165116      T70C:   CMP      #PLA+KPG+IS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
012454 001401      BEQ      .+4 ;& FAILING PAGE #)
012456 000000      HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012460 022767 000000 165106      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
012466 001401      BEQ      .+4
012470 000000      HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012472 022767 016700 165076      CMP      #T70B,SR2 ;CHECK CONTENTS OF SR2
012500 001401      BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
012502 000000      HLT ;ERROR! INCORRECT PC IN SR2
012504 005702      TST      R2
012506 001401      BEQ      .+4
012510 000000      HLT
012512 022703 001006      CMP      #TEMP+2,R3
012516 001401      BEQ      .+4
012520 000000      HLT
012522 104000      SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT AT FET.04
;ABORT OCCURS WHEN INST FOLLOWING DIV IS FETCHED
012524 012737 012560 000250      MOV      #T71C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
012532 012705 016676      MOV      #K10-2,R5
012536 012725      MOV      (PC)+,(R5)+
012540 071220      DIV      (R0)+,R2 ;LOAD INSTRUCTION
012542 005015      CLR      (R5) ;LOAD HALT FOLLOWING DIVIDE
012544 012700 001004      MOV      #TEMP,R0
012550 005010      CLR      (R0) ;DIVISOR IS 0
012552 005237 177572      INC      @SRO ;ENABLE MEMORY MGMT
012556 000145      JMP      -(R5) ;GO EXECUTE DIVIDE INSTRUCTION
          012560      RETURN=.
          016676      .=K10-2
016676 071220      T71A:   DIV      (R0)+,R2 ;ABORTS WHEN NEXT INSTRUCTION FETCHED
016700 000000      T71B:   HLT ;ERROR! FAILED TO ABORT

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012560 012560
012560 022767 040001 165004 T71C:  CMP #PLA+KPG+IS+VSU+1,SRO ;CHECK SRO (ABORT CONDITIGNS
012566 001401  BEQ .+4 ;& FAILING PAGE #)
012570 000000  HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012572 022767 000000 164774  CMP #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
012600 001401  BEQ .+4
012602 000000  HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012604 022767 016700 164764  CMP #T71B,SR2 ;CHECK CONTENTS OF SR2
012612 001401  BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
012614 000000  HLT ;ERROR! INCORRECT PC IN SR2
012616 022700 001006  CMP #TEMP+2,R0 ;CHECK AUTO-INCREMENT
012622 001401  BEQ .+4
012624 000000  HLT ;ERROR! AUTO-INC FAILED
012626 104000  SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK ACCESS VIOLATION ABORT
;ABORTS WHEN SOURCE DATA IS FETCHED USING DATIP WITH DEST ADDRESS READ ONLY
012630 012737 012662 000250  MOV #T72C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
012636 112737 000002 172334  MOVB #RDO,@KDPDR6 ;SET KERNEL 'D' ADDRESS 140000-140077
;READ ABORT ON WRITE
012644 005037 016700  CLR @PKD6 ;CLEAR CORRESPONDING PHYSICAL ADDRESS
012650 005237 177572  INC @SRO ;ENABLE MEMORY MGMT
012654 000261  SEC ;SET 'C'
012656 005537 140000  T72A: ADC @KDD6 ;ABORTS WHEN DATA IS FETCHED USING DATIP

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```

012662 012662
012662 022767 020035 164702 T72C:  CMP #AVA+KPG+DS+VS6+1,SRO ;CHECK SRO (ABORT CONDITIONS
012670 001401  BEQ .+4 ;& FAILING PAGE #)
012672 000000  HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
012674 022767 000027 164672  CMP #S2+PC,SR1 ;CHECK SR1 (REGISTER CHANGES)
012702 001401  BEQ .+4
012704 000000  HLT ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
012706 022767 012656 164662  CMP #T72A,SR2 ;CHECK CONTENTS OF SR2
012714 001401  BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
012716 000000  HLT ;ERROR! INCORRECT PC IN SR2
012720 022766 000001 000002  CMP #C,2(KSP) ;CHECK THAT CORRECT STATUS
012726 001401  BEQ .+4 ;WAS SAVED ON THE STACK
012730 000000  HLT ;ERROR! INCORRECT STATUS
012732 005037 177572  CLR @SRO ;DISABLE MEMORY MGMT
012736 005737 016700  TST @PKD6 ;CHECK THAT ADDRESS WAS NOT WRITTEN
012742 001401  BEQ .+4
012744 000000  HLT ;ERROR! DATA WRITTEN INTO READ ONLY ADDRESS
012746 104000  SCOPE

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```

;CHECK ACCESS VIOLATION ABORT
;ABORTS WHEN SOURCE DATA IS FETCHED FROM READ ONLY SPACE USING A DATIP.
012750 012737 012774 000250  MOV #T73C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
012756 005037 016700  CLR @PKD6 ;PRESET ADDRESS
012762 005237 177572  INC @SRO ;ENABLE MEMORY MGMT
012766 000261  SEC ;SET 'C'
012770 106037 140001  T73A: RORB @KDD6+1 ;ABORTS WHEN RESULT IS WRITTEN

```

```

012774 012774
012774 022767 020035 164570 T73C:  CMP #AVA+KPG+DS+VS6+1,SRO ;CHECK SRO (ABORT CONDITIONS
013002 001401  BEQ .+4 ;& FAILING PAGE #)

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```

013004 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013006 022767 000027 164560  CMP      #S2+PC,SR1 ;CHECK SR1 (REGISTER CHANGES)
013014 001401          BEQ      .+4
013016 000000          HLT
013020 022767 012770 164550  CMP      #73A,SR2 ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
013026 001401          BEQ      .+4 ;CHECK CONTENTS OF SR2
01303C 0C0000          HLT      ;(PC OF ABORTED INSTRUCTION)
013032 022766 000001 000002  CMP      #C,2(KSP) ;ERROR! INCORRECT PC IN SR2
013040 001401          BEQ      .+4 ;CHECK THAT CORRECT STATUS
013042 000000          HLT      ;WAS SAVED ON THE STACK
013044 005037 177572          CLR      @#SR0 ;ERROR! INCORRECT STATUS
013050 005737 016700          TST      @#PKD6 ;DISABLE MEMORY MGMT
013054 001401          BEQ      .+4
013056 000000          HLT
013060 012737 000006 172334  MOV      #6,@#KDPDR6 ;ERROR! ADDRESS WAS WRITTFN
013066 104000          SCOPE ;SET KDPDR R/W
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK ABORT AT FET.02
013070 012737 013152 000250  MOV      #T75C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
013076 000237          SPL      7 ;SET PRIORITY LEVEL 7
013100 012737 010000 177772  MOV      #PIR4,@#PIRQ ;BOOK INT REQUEST AT LEVEL 4
013106 012737 140000 000240  MOV      #KD6,@#PIRVEC ;SET PIRQ INT VECTOR
013114 012737 000340 000242  MOV      #340,@#PIRVEC+2 ;PRIORITY LEVEL 7 ON INTERRUPT
013122 012737 000340 000252  MOV      #340,@#MMVEC+2 ;PRIORITY LEVEL 7 ON ABORT TRAP
013130 005037 016700          CLR      @#PKD6
013134 005237 177572          INC      @#SR0 ;ENABLE MEMORY MGMT
013140 000264          SEZ
013142 000233          SPL      3 ;SET 'Z'
013144 001001          BNE      .+4 ;ALLOW BOOKED INTERRUPT
013146 000000          HLT      ;SHOULD NOT BRANCH
013150 000000          HLT      ;ERROR! DID NOT INTERRUPT & BRANCH FAILED
                                ;ERROR! DID NOT INTERRUPT

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016700 000000          HLT      ;ERROR! DID NOT ABORT WHEN THIS INST
                                ;WAS FETCHED
                                ;CHECK ABORT AT SVC.80 USING 'T' BIT TRAP
                                ;ABORTS WHEN RETURN PC IS PUSHED ONTO SUPERVISOR STACK
                                ;CHECK SR0 (ABORT CONDITIONS
                                ;& FAILING PAGE #)
                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
                                ;CHECK SR1 (REGISTER CHANGES)
                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
                                ;CHECK CONTENTS OF SR2
                                ;(PC OF ABORTED INSTRUCTION)
                                ;ERROR! INCORRECT PC IN SR2
                                ;CLEAR REQUEST
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

013152 013152          .=RETURN
013152 022767 100015 164412  CMP      #NRA+KPG+IS+VS6+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
01316C 0C1401          BEQ      .+4 ;& FAILING PAGE #)
013162 000000          HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013164 022767 000000 164402  CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
013172 001401          BEQ      .+4
013174 000000          HLT
013176 022767 140000 164372  CMP      #KD6,SR2 ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
013204 001401          BEQ      .+4 ;CHECK CONTENTS OF SR2
013206 000000          HLT      ;(PC OF ABORTED INSTRUCTION)
013210 005037 177772          CLR      @#PIRQ ;ERROR! INCORRECT PC IN SR2
013214 012737 000242 000240  MOV      #PIRVEC+2,@#PIRVEC ;CLEAR REQUEST
013222 005037 000242          CLR      @#PIRVEC+2
013226 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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013230 012737 013322 000250  MOV      #T76C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
013236 012737 013404 000014  MOV      #T76D,@#TBITVEC ;SET 'T' BIT TRAP VECTOR
013244 012737 04C000 000016  MOV      #SM,@#TBITVEC+2 ;SUPER MODE ON TRAP

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013252 012767 050000 164516      MOV      #SM+PSM,PSW      ;SUPER MODE...!,PREV SUPER MODE!!
013260 012706 020002                MOV      #SD1+2,SSP      ;SET SUPER STACK PTR
013264 012767 170000 164504      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE..
013272 005000                CLR      RO              ;PRESET RO
013274 013746 177776                MOV      @#PSW,-(USP)     ;SET UP TO
013300 005237 177572                INC      @#SRO           ;ENABLE MEMORY MGMT
013304 052716 000020                BIS      #T,(USP)        ;SET 'T' BIT
013310 012746 013316                MOV      #.+6,-(USP)
013314 000006                RTT
013316 005200                RTT                      ;RTT SETS THE 'T' BIT
013320 000000                INC      RO              ;TRAP AFTER THIS INST
                                T76A: HLT                      ;ERROR! FAILED TO TRAP

013322                T76C:
013322 022767 040261 164242      CMP      #PLA+IC+DS+SPG+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
013330 001401                BEQ      .+4              ;& FAILING PAGE #)
013332 000000                HLT                      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013334 022767 173366 164232      CMP      #DM2+DR6+SM2+SP,SR1 ;CHECK SR1 (REGISTER CHANGES)
013342 001401                BEQ      .+4
013344 000000                HLT                      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
013346 022767 000014 164222      CMP      #TBITVEC,SR2    ;CHECK CONTENTS OF SR2
013354 001401                BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
013356 000000                HLT                      ;ERROR! INCORRECT PC IN SR2
013360 022766 170020 000002      CMP      #UM+PUM+T,2(KSP) ;CHECK THAT CORRECT STATUS
013366 001401                BEQ      .+4              ;WAS SAVED ON THE STACK
013370 000000                HLT                      ;ERROR! INCORRECT STATUS
013372 022716 013320                CMP      #T76A,(KSP)     ;CHECK RETURN PC ON
013376 001401                BEQ      .+4              ;STACK
013400 000000                HLT                      ;ERROR! INCORRECT RETURN PC ON STACK
013402 000401                BR       T76EX           ;EXIT TEST
013404 000000                T76D: HLT                ;ERROR! FAILED TO ABORT AT SVC.80
013406 012737 000016 000014      T76EX: MOV      #TBITVEC+2,@#TBITVEC
013414 005037 000016                CLR      @#TBITVEC+2
013420 104000                SCOPE

                                ;CHECK RELATIONSHIP BETWEEN SEG ABORT TRAP & FATAL STACK ERROR TRAP
013422 012737 010000 177776      MOV      #KM+PSM,@#PSW ;KERNEL MODE!!!,PREV SUPER MODE!!
013430 012737 013466 000250      MOV      #T100B,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
013436 012737 013470 000004      MOV      #T100C,@#ERRVEC ;LOAD FATAL STACK ERROR TRAP VECTOR
013444 012706 000740                MOV      #REDPTR,KSP    ;SET KERNEL STACK PTR IN RED ZONE
013450 005037 000000                CLR      @#0            ;PRESET RED STACK
013454 005237 177572                INC      @#SRO           ;ENABLE MEMORY MGMT
013460 006537 040100                T100A: MFPI @#S12+100 ;SEG ABORT WHEN DATA AT S12+100 IS FETCHED
013464 000000                HLT                      ;ERROR! NO FATAL STACK ERR NOR SEG ABORT
013466 000000                T100B: HLT                ;ERROR! NO FATAL STACK ERROR TRAP
013470 005706                T100C: TST      KSP      ;CHECK THAT KERNEL STACK PTR WAS FORCED
013472 001401                BEQ      .+4              ;TO 0
013474 000000                HLT                      ;ERROR! FATAL STACK ERROR TRAP FAILED
013476 022737 013466 000000      CMP      #T100B,@#0     ;CHECK THAT RETURN ADDRESS WAS SAVED
013504 001401                BEQ      .+4
013506 000000                HLT                      ;ERROR! RETURN ADDRESS NOT SAVED
013510 012706 001060                MOV      #KPTR,KSP      ;RESTORE KERNEL STACK PTR
013514 022767 040045 164050      CMP      #PLA+IS+SPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
013522 001401                BEQ      .+4              ;& FAILING PAGE #)
013524 000000                HLT                      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013526 022767 000027 164040      CMP      #S2+PC,SR1    ;CHECK SR1 (REGISTER CHANGES)
013534 001401                BEQ      .+4

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013536 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
013540 022767 013460 164030  CMP      #T100A,SR2    ;CHECK CONTENTS OF SR2
013546 001401          BEQ      .+4         ;(PC OF ABORTED INSTRUCTION)
013550 000000          HLT          ;ERROR! INCORRECT PC IN SR2
013552 012737 000400 000004  MOV      #SHLT,@#ERRVEC ;RESTORE ERROR TRAP
013560 104000          SCOPE        ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT WHEN PSW IS NON-RESIDENT
013562 012737 013616 000250  MOV      #T102C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
013570 005002          CLR      R2         ;PRESET DESTINATION
013572 005237 177572          INC      @#SRO       ;ENABLE MEMORY MGMT
013576 012746 040017          MOV      #SM+17,-(KSP) ;'NEW' STATUS ON STACK
013602 012746 013610          MOV      #.+6,-(KSP)  ;RETURN PC
013606 000002          RTI         ;SET STATUS AND EXECUTE NEXT INST.
013610 013702 177776  T102A: MOV      @#PSW,R2    ;PSW IS NON-RESIDENT IN SUPER MODE
013614 000000          HLT          ;ERROR! FAILED TO ABORT

013616 013616 022767 140077 163746  T102C: CMP      #NRA+PLA+SPG+DS+VS7+1,SRO ;CHECK SRO (ABORT CONDITIONS
013624 001401          BEQ      .+4         ;& FAILING PAGE #)
013526 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013630 022767 000027 163736  CMP      #S2+PC,SR1   ;CHECK SR1 (REGISTER CHANGES)
013636 001401          BEQ      .+4
013640 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
013642 022767 013610 163726  CMP      #T102A,SR2   ;CHECK CONTENTS OF SR2
013650 001401          BEQ      .+4         ;(PC OF ABORTED INSTRUCTION)
013652 000000          HLT          ;ERROR! INCORRECT PC IN SR2
013654 022766 040017 000002  CMP      #SM+17,2(KSP) ;CHECK THAT CORRECT STATUS
013662 001401          BEQ      .+4         ;WAS SAVED ON THE STACK
013664 000000          HLT          ;ERROR! INCORRECT STATUS
013666 005702          TST      R2         ;CHECK THAT R2 WAS NOT LOADED
013670 001401          BEQ      .+4
013672 000000          HLT          ;ERROR! DEST (R2) WAS CHEANGED
013674 104000          SCOPE

;CHECK ABORT WHEN DEST ADDRESS IS PSW AND PSW IS NON-RESIDENT
013676 012737 010000 177776  MOV      #KM+PSM,@#PSW ;KERNEL MODE!!!,PREV SUPER MODE!!
013704 012737 013740 000250  MOV      #T103C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
013712 005046          CLR      -(KSP)      ;DATA TO STACK
013714 012746 177776          MOV      #PSW,-(KSP)  ;ADDRESS OF PSW TO STACK
013720 005046          CLR      -(KSP)      ;DATA TO STACK
013722 005237 177572          INC      @#SRO       ;ENABLE MEMORY MGMT
013726 052737 000357 177776  BIS      #PRTY7+17,@#PSW ;PRESET STATUS
013734 106636  T103A: MTPD    @(KSP)+  ;DEST ADRS(PSW) IS NON-RES
013736 000000          HLT          ;ERROR! FAILED TO ABORT

013740 013700 177776  T103C: MOV      @#PSW,R0     ;SAVE CURRENT STATUS
013744 022700 000340          CMP      #KM+PKM+PRTY7,R0 ;CHECK CURRENT STATUS
013750 001401          BEQ      .+4
013752 000000          HLT          ;ERROR! INCORRECT STATUS AFTER ABORT
013754 022767 140077 163610  CMP      #NRA+PLA+SPG+DS+VS7+1,SRO ;CHECK SRO (ABORT CONDITIONS
013762 001401          BEQ      .+4         ;& FAILING PAGE #)
013764 000000          HLT          ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
013766 022767 013026 163600  CMP      #D2+DR6+S2+KSP,SR1 ;CHECK SR1 (REGISTER CHANGES)
013774 001401          BEQ      .+4
013776 000000          HLT          ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1

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014242 172100          ADDF   ACO,AC1          ;THESE INSTRUCTIONS
014244 012725          MOV    (7)+,(5)+
014246 172100          ADDF   ACO,AC1          ;WILL BE
014250 012715          MOV    (7)+,(5)
014252 000000          HLT
014254 005237 177572    INC    @#SR0           ;EXECUTED IN THIS TEST
014260 000137 040076    JMP    @#SI2+76       ;ENABLE MEMORY MGMT
                                ;GO DO FLOATING POINT INST.
                                RETURN=
                                .=PSI2+76

017076 172100          ADDF   ACO,AC1          ;DO THIS INST. ABORT ON NEXT
017100 172100          F0A:  ADDF   ACO,AC1          ;SEG LEN ABORT AT FET.00
017102 000000          HLT
                                ;ERROR! FAILED TO ABORT
                                .=RETURN

014264          F0C:
014264 022706 001054    CMP    #KPTR-4,KSP    ;CHECK STACK PTR
014270 001401          BEQ    .+4            ;AFTER ABORT
014272 000000          HLT
                                ;ERROR! INCORRECT STACK PTR
014274 022767 040045 163270  CMP    #PLA+SPG+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
014302 001401          BEQ    .+4            ;& FAILING PAGE #)
014304 000000          HLT
                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
014306 022767 000000 163260  CMP    #0,SR1        ;CHECK SR1 (REGISTER CHANGES)
014314 001401          BEQ    .+4
014316 000000          HLT
                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
014320 022767 040100 163250  CMP    #SI2+100,SR2   ;CHECK CONTENTS OF SR2
014326 001401          BEQ    .+4            ;(PC OF ABORTED INSTRUCTION)
014330 000000          HLT
                                ;ERROR! INCORRECT PC IN SR2
014332 005037 177572    CLR    @#SR0           ;DISABLE MEMORY MGMT
014336 173527 040400    CMPF   #2,AC1
014342 170000          CFCC
014344 001401          BEQ    .+4
014346 000000          HLT
                                ;ERROR! FOP DID NOT COMPLETE.
014350 104000          SCOPE
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT D12.80
014352 012737 014420 000250  MOV    #F1C,@#MMVEC   ;LOAD MEM MGMT ERROR VECTOR
014360 012767 170000 163410  MOV    #UM+PUM,PSW    ;USER MODE!!!,PREV USER MODE!!
014366 172427 040200          LDF    #1,ACO
014372 174037 017200          STF   ACO,@#PUI5
014376 012703 120000          MOV    #UI5,R3
014402 005237 177572    INC    @#SR0           ;ENABLE MEMORY MGMT
014406 172023          F1A:  ADDF   (3)+,ACO    ;NON-RES ABORT AT D12.80
014410 000240          NOP
014412 000240          NOP
014414 000240          NOP
014416 000000          HLT
                                ;ERROR! FAILED TO ABORT

014420          F1C:
014420 022767 100173 163144  CMP    #NRA+UPG+DS+VS5+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
014426 001401          BEQ    .+4            ;& FAILING PAGE #)
014430 000000          HLT
                                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
014432 022767 000043 163134  CMP    #S4+R3,SR1    ;CHECK SR1 (REGISTER CHANGES)
014440 001401          BEQ    .+4
014442 000000          HLT
                                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
014444 022767 014406 163124  CMP    #F1A,SR2      ;CHECK CONTENTS OF SR2

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014452 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
014454 000000      HLT                ;ERROR! INCORRECT PC IN SR2
014456 173427 040200  CMPF      #1,ACO   ;CHECK THAT INST. ABORTED
014462 170000      CFCC
014464 001401      BEQ      .+4
014466 000000      HLT                ;ERROR!
014470 104000      SCOPE           ;SCOPE STORES PC IN R1 & SFTS ALL STACK PTRS

```

;BEGIN TESTING FLOATING POINT DOUBLE INSTRUCTION ABORT TRAPS
;AUTO INCREMENT FIRST DATA WORD

```

014472 012767 050000 163276      MOV      #SM+PSM,PSW ;SUPER MODE!!!,PREV SUPER MODE.!
014500 012737 014540 000250      MOV      #F2C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
014506 170127 000200      LDFPS   #200
014512 172427 040200      LDD      #1,ACO     ;PRESET ACO
014516 012703 020100      MOV      #SD1+100,R3
014522 005037 017200      CLR      @#PSD1+100 ;PRESET PHYSICAL ADDRESS
014526 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
014532 172423      F2A: LDD      (R3)+,ACO ;ABORTS WHEN FIRST DATA IS FETCHED
014534 000000      HLT
014536 000240      NOP
014540      F2C:
014540 022767 040063 163024      CMP      #PLA+SPG+DS+VS1+1,SRO ;CHECK SRO (ABORT CONDITIONS
014546 001401      BEQ      .+4      ;& FAILING PAGE #)
014550 000000      HLT                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
014552 022767 000103 163014      CMP      #S8+R3,SR1 ;CHECK SR1 (REGISTER CHANGES)
014560 001401      BEQ      .+4
014562 000000      HLT                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
014564 022767 014532 163004      CMP      #F2A,SR2   ;CHECK CONTENTS OF SR2
014572 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
014574 000000      HLT                ;ERROR! INCORRECT PC IN SR2
014576 174067 164202      STF      ACO,TEMP  ;PUT ACO IN TEMP
014602 173427 040200      CMPD    #1,ACO     ;CHECK THAT ACO WAS NOT CHANGED
014606 170000      CFCC           ;COPY FLOATING CC'S INTO PSW
014610 001401      BEQ      .+4
014612 000000      HLT                ;ERROR! ACO WAS ALTERED
014614 104000      SCOPE           ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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;AUTO INCREMENT SECOND DATA WORD

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014616 012767 170000 163152      MOV      #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE!!
014624 012737 014654 000250      MOV      #F3C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
014632 170127 000200      LDFPS   #200
014636 012704 100076      MOV      #UD4+76,R4
014642 005237 177572      INC      @#SRO      ;ENABLE MEMORY MGMT
014646 172024      F3A: ADDD    (R4)+,ACO ;ABORTS WHEN SECOND DATA IS FETCHED
014650 000000      HLT
014652 000240      NOP
014654      F3C:
014654 022767 040171 162710      CMP      #PLA+UPG+DS+VS4+1,SRO ;CHECK SRO (ABORT CONDITIONS
014662 001401      BEQ      .+4      ;& FAILING PAGE #)
014664 000000      HLT                ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
014666 022767 000104 162700      CMP      #S8+R4,SR1 ;CHECK SR1 (REGISTER CHANGES)
014674 001401      BEQ      .+4
014676 000000      HLT                ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
014700 022767 014646 162670      CMP      #F3A,SR2   ;CHECK CONTENTS OF SR2
014706 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)

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015144      F5C:
015144 022767 040171 162420  CMP      #PLA+UPG+DS+VS4+1,SRO ;CHECK SRO (ABORT CONDITIONS
015152 001401      BEQ      .+4                ;& FAILING PAGE #)
015154 000000      HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
015156 022767 000100 162410  CMP      #S8+R0,SR1        ;CHECK SR1 (REGISTER CHANGES)
015164 001401      BEQ      .+4
015166 000000      HLT                        ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
015170 022767 015136 162400  CMP      #F5A,SR2         ;CHECK CONTENTS OF SR2
015176 001401      BEQ      .+4                ;(PC OF ABORTED INSTRUCTION)
015200 000000      HLT                        ;ERROR! INCORRECT PC IN SR2
015202 022700 100104      CMP      #UD4+104,R0       ;CHECK AUTO INC 4 TIMES
015206 001401      BEQ      .+4
015210 000000      HLT                        ;ERROR! R0 NOT AUTO-INC 4 TIMES
015212 170200      STFPS   R0                ;STORE FPS IN R0
015214 022700 000200      CMP      #200,R0         ;CHECK FP STATUS AFTER ABORT
015220 001401      BEQ      .+4
015222 000000      HLT                        ;ERROR! INCORRECT FPS AFTER ABORT
015224 174067 163554      STF      ACO,TEMP        ;PUT ACO IN TEMP
015230 173427 040200      CMPD    #1,ACO          ;CHECK THAT ACO WAS NOT CHANGED
015234 170000      CFCC                      ;COPY FLOATING CC'S INTO PSW
015236 001401      BEQ      .+4
015240 000000      HLT                        ;ERROR! ACO WAS ALTERED
015242 104000      SCOPE                    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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015244 012767 050000 162524 ;AUTO DECREMENT FIRST DATA WORD
015252 012737 015302 000250  MOV      #SM+PSM,PSW     ;SUPER MODE!!!,PREV SUPER MODE!!
015260 170127 000200      MOV      #F6C,@MMVEC    ;LOAD MEM MGMT ERROR VECTOR
015264 012703 020000      LDFPS   #200
015270 005237 177572      MOV      #SD1,R3
015274 173043      INC     @#SR0           ;ENABLE MEMORY MGMT
015276 000000      SUBD   -(R3),ACO       ;ABORTS WHEN FIRST DATA IS FETCHED
015300 000240      HLT
015302      NOP           ;ERROR! FAILED TO ABURT

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015302      F6C:
015302 022767 040061 162262  CMP      #PLA+SPG+DS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
015310 001401      BEQ      .+4                ;& FAILING PAGE #)
015312 000000      HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
015314 022767 000303 162252  CMP      #SM8+R3,SR1     ;CHECK SR1 (REGISTER CHANGES)
015322 001401      BEQ      .+4
015324 000000      HLT                        ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
015326 022767 015274 162242  CMP      #F6A,SR2        ;CHECK CONTENTS OF SR2
015334 001401      BEQ      .+4                ;(PC OF ABORTED INSTRUCTION)
015336 000000      HLT                        ;ERROR! INCORRECT PC IN SR2
015340 005037 177572      CLR     @#SR0           ;DISABLE MEMORY MGMT
015344 022703 017770      CMP      #SD1-8.,R3     ;CHECK AUTO-DEC
015350 001401      BEQ      .+4
015352 000000      HLT                        ;ERROR! R3 NOT AUTO-DEC
015354 170200      STFPS   R0                ;STORE FPS IN R0
015356 022700 000200      CMP      #200,R0         ;CHECK FP STATUS AFTER ABORT
015362 001401      BEQ      .+4
015364 000000      HLT                        ;ERROR! INCORRECT FPS AFTER ABORT
015366 174067 163412      STF      ACO,TEMP        ;PUT ACO IN TEMP
015372 173427 040200      CMPD    #1,ACO          ;CHECK THAT ACO WAS NOT CHANGED
015376 170000      CFCC                      ;COPY FLOATING CC'S INTO PSW
015400 001401      BEQ      .+4
015402 000000      HLT                        ;ERROR! ACO WAS ALTERED

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015404 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;AUTO DECREMENT SECOND DATA WORD
015406 012767 170000 162362      MOV      #UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
015414 012737 015444 000250      MOV      #F7C,@#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
015422 170127 000200          LDFPS   #200
015426 012704 100002          MOV      #UD4+2,R4
015432 005237 177572          INC      @#SRO           ;ENABLE MEMORY MGMT
015436 177444          F7A:    LDCFD   -(R4),ACO    ;ABORTS WHEN SECOND DATA WORD IS FETCHED
015440 000000          HLT
015442 000240          NOP           ;ERROR! FAILED TO ABORT
015444
015444 022767 140167 162120      F7C:    CMP      #NRA+PLA+UPG+DS+VS3+1,SRO ;CHECK SRO (ABORT CONDITIONS
015452 001401          BEQ     .+4           ;& FAILING PAGE #)
015454 000000          HLT           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
015456 022767 000344 162110      CMP      #SM4+R4,SR1    ;CHECK SR1 (REGISTER CHANGES)
015464 001401          BEQ     .+4
015466 000000          HLT           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
015470 022767 015436 162100      CMP      #F7A,SR2      ;CHECK CONTENTS OF SR2
015476 001401          BEQ     .+4           ;(PC OF ABORTED INSTRUCTION)
015500 000000          HLT           ;ERROR! INCORRECT PC IN SR2
015502 022704 077776          CMP      #UD4-2,R4     ;CHECK AUTO-DEC TWICE
015506 001401          BEQ     .+4
015510 000000          HLT           ;ERROR! R4 NOT AUTO-DEC TWICE
015512 174067 163266          STF     ACO,TEMP      ;PUT ACO IN TEMP
015516 173427 040200          CMPD   #1,ACO        ;CHECK THAT ACO WAS NOT CHANGED
015522 170000          CFCC
015524 001401          BEQ     .+4           ;COPY FLOATING CC'S INTO PSW
015526 000000          HLT           ;ERROR! ACO WAS ALTERED
015530 104000          SCOPE          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;AUTO DECREMENT THIRD DATA WORD
015532 012737 015562 000250      MOV      #F10C,@#MMVEC  ;LOAD MEM MGMT ERROR VECTOR
015540 170127 000200          LDFPS   #200
015544 012702 140004          MOV      #KD6+4,R2
015550 005237 177572          INC      @#SRO           ;ENABLE MEMORY MGMT
015554 173442          F10A:   CMPD   -(R2),ACO
015556 000000          HLT
015560 000240          NOP
015562
015562 022767 140033 162002      F10C:   CMP      #NRA+PLA+KPG+DS+VS5+1,SRO ;CHECK SRO (ABORT CONDITIONS
015570 001401          BEQ     .+4           ;& FAILING PAGE #)
015572 000000          HLT           ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
015574 022767 000302 161772      CMP      #SM8+R2,SR1    ;CHECK SR1 (REGISTER CHANGES)
015602 001401          BEQ     .+4
015604 000000          HLT           ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
015606 022767 015554 161762      CMP      #F10A,SR2      ;CHECK CONTENTS OF SR2
015614 001401          BEQ     .+4           ;(PC OF ABORTED INSTRUCTION)
015616 000000          HLT           ;ERROR! INCORRECT PC IN SR2
015620 022702 137774          CMP      #KD6-4,R2     ;CHECK AUTO DEC 3 TIMES
015624 001401          BEQ     .+4
015626 000000          HLT           ;ERROR! R2 NOT AUTO-DEC 3 TIMES
015630 170200          STFPS  R0             ;STORE FPS IN R0
015632 022700 000200          CMP      #200,R0      ;CHECK FP STATUS AFTER ABORT
015636 001401          BEQ     .+4
015640 000000          HLT           ;ERROR. INCORRECT FPS AFTER ABORT

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015642 174067 163136      STF      ACO,TEMP      ;PUT ACO IN TEMP
015646 173427 040200      CMPD     #1,ACO      ;CHECK THAT ACO WAS NOT CHANGED
015652 170000              CFCC              ;COPY FLOATING CC'S INTO PSW
015654 001401              BEQ      .+4
015656 000000              HLT
015660 104000              SCOPE      ;ERROR! ACO WAS ALTERED
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;AUTO DECREMENT FOURTH WORD
015662 012767 070000 162106  MOV      #SM+PUM,PSW ;SUPER MODE!..,PREV USER MODE..
015670 012737 015720 000250  MOV      #F11C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
015676 170127 000200              LDFPS     #200
015702 012700 020006              MOV      #SD1+6,R0
015706 005237 177572              INC      @#SRO      ;ENABLE MEMORY MGMT
015712 171440              F11A:  MODD     -(R0),ACO
015714 000000              HLT
015716 000240              NOP
015720
015720 022767 040061 161644  F11C:  CMP      #PLA+SPG+DS+VS0+1,SRO ;CHECK SRO (ABORT CONDITIONS
015726 001401              BEQ      .+4      ;& FAILING PAGE #)
015730 000000              HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
015732 022767 000300 161634  CMP      #SM8+R0,SR1 ;CHECK SR1 (REGISTER CHANGES)
015740 001401              BEQ      .+4
015742 000000              HLT      ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
015744 022767 015712 161624  CMP      #F11A,SR2 ;CHECK CONTENTS OF SR2
015752 001401              BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
015754 000000              HLT      ;ERROR! INCORRECT PC IN SR2
015756 005037 177572              CLR      @#SRO      ;DISABLE MEMORY MGMT
015762 022700 017776              CMP      #SD1-2,R0 ;CHECK AUTO-DEC 4 TIMES
015766 001401              BEQ      .+4
015770 000000              HLT      ;ERROR! R0 NOT AUTO-DEC 4 TIMES
015772 170200              STFPS    R0      ;STORE FPS IN R0
015774 022700 000200              CMP      #200,R0 ;CHECK FP STATUS AFTER ABORT
016000 001401              BEQ      .+4
016002 000000              HLT      ;ERROR! INCORRECT FPS AFTER ABORT
016004 174067 162774              STF      ACO,TEMP ;PUT ACO IN TEMP
016010 173427 040200      CMPD     #1,ACO ;CHECK THAT ACO WAS NOT CHANGED
016014 170000              CFCC              ;COPY FLOATING CC'S INTO PSW
016016 001401              BEQ      .+4
016020 000000              HLT      ;ERROR. ACO WAS ALTERED
016022 104000              SCOPE      ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK ABORT AT FET.09
                                ;ABORTS WHEN INST FOLLOWING MODD IS FETCHED
016024 012767 070000 161744  MOV      #SM+PUM,PSW ;SUPER MODE!!!,PREV USER MODE..
016032 012737 016074 000250  MOV      #F12C,@#MMVEC ;LOAD MEM MGMT ERROR VECTOR
016040 170127 000200              LDFPS     #200
016044 012702 017100              MOV      #PSI2+100,R2
016050 005012              CLR      (R2)
016052 012742              MOV      (7)+,-(R2)
016054 171443              MODD     -(R3),ACO
016056 005237 177572              INC      @#SRO      ;ENABLE MEMORY MGMT
016062 012703 020000              MOV      #SD1,R3
016066 174023              STD      ACO,(R3)+
016070 000137 040076              JMP      @#SI2+76 ;GO EXECUTE MODD INST
                                RETURN=
                                .=PSI2+76

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017076	171443			F12A:	MODD	-(R3),ACO	
017100	000000				HLT		;ABORTS AT FET.09 WHEN FETCHED
	016074				.=RETURN		
016074				F12C:			
016074	022767	040045	161470		CMP	#PLA+SPG+IS+VS2+1,SR0	;CHECK SR0 (ABORT CONDITIONS
016102	001401				BEQ	+.4	; & FAILING PAGE #)
016104	000000				HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
016106	022767	000000	161460		CMP	#0,SR1	;CHECK SR1 (REGISTER CHANGES)
016114	001401				BEQ	+.4	
016116	000000				HLT		;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
016120	022767	040100	161450		CMP	#SI2+100,SR2	;CHECK CONTENTS OF SR2
016126	001401				BEQ	+.4	; (PC OF ABORTED INSTRUCTION)
016130	000000				HLT		;ERROR. INCORRECT PC IN SR2
016132	022703	020000			CMP	#SD1,R3	;CHECK THAT R3 WAS DECREMENTED BY 8.
016136	001401				BEQ	+.4	
016140	000000				HLT		;ERROR! R0 NOT DECREMENTED PROPERLY
016142	170200				STFPS	R0	;STORE FPS IN R0
016144	022700	000204			CMP	#204,R0	;CHECK FP STATUS AFTER ABORT
016150	001401				BEQ	+.4	
016152	000000				HLT		;ERROR! INCORRECT FPS AFTER ABORT
016154	174067	162624			STF	ACO,TEMP	;PUT ACO IN TEMP
016160	173427	000000			CMPD	#0,ACO	;CHECK THAT ACO WAS NOT CHANGED
016164	170000				CFCC		;COPY FLOATING CC'S INTO PSW
016166	001401				BEQ	+.4	
016170	000000				HLT		;ERROR! ACO WAS ALTERED
016172	174167	162606			STF	AC1,TEMP	;PUT AC1 IN TEMP
016176	173527	040200			CMPD	#1,AC1	;CHECK THAT AC1 WAS NOT CHANGED
016202	170000				CFCC		;COPY FLOATING CC'S INTO PSW
016204	001401				BEQ	+.4	
016206	000000				HLT		;ERROR! AC1 WAS ALTERED
016210	104000				SCOPE		

;CHECK RELATIONSHIP BETWEEN MEM MGMT ABORT AND FLOATING POINT EXCEPT-
;ION INTERRUPT.

016212	012737	016266	000250		MOV	#F13C,@#MMVEC	;LOAD MEM MGMT ERROR VECTOR
016220	012737	016346	000244		MOV	#F13D,@#FPVEC	;LOAD FP INTERRUPT VECTOR
016226	012700	001004			MOV	#TEMP,R0	
016232	005020				CLR	(R0)+	;LOAD TEMP
016234	005020				CLR	(R0)+	;AND TEMP+2
016236	170127	007400			LDFPS	#7400	;ENABLE INTERRUPTS (FP)
016242	172440				LDF	-(R0),ACO	
016244	012702	016676			MOV	#K10-2,R2	
016250	012722				MOV	(PC)+,(R2)+	;LOAD INSTRUCTION
016252	174410				DIVF	(R0),ACO	
016254	005012				CLR	(R2)	;HALT FOLLOWS MULF
016256	005237	177572			INC	@#SR0	;ENABLE MEMORY MGMT
016262	000137	016676			JMP	@#K10-2	;GO EXECUTE MULF

	016266				RETJRN=.		
	016676				.=K10-2		
016676	174410				DIVF	(R0),ACO	;WILL INTERRUPT
016700	000000			F13A:	HALT		;ABORTS WHEN THIS INST IS FETCHED
	016266				.=RETJRN		

016266				F13C:			
016266	022767	040001	161276		CMP	#PLA+KPG+IS+VS0+1,SR0	;CHECK SR0 (ABORT CONDITIONS
016274	001401				BEQ	+.4	; & FAILING PAGE #)
016276	000000				HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT

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016300 022767 000000 161266      CMP      #0,SR1 ;CHECK SR1 (REGISTER CHANGES)
016306 001401                      BEQ      .+4
016310 000000                      HLT
016312 022767 016700 161256      CMP      #F13A,SR2 ;ERROR! INCORRECT REGISTER CHANGES RECORDED IN SR1
016320 001401                      BEQ      .+4 ;CHECK CONTENTS OF SR2
016322 000000                      HLT ;(PC OF ABORTED INSTRUCTION)
016324 005702                      TST      R2 ;ERROR! INCORRECT PC IN SR2
016326 001401                      BEQ      .+4 ;FP INTERRUPT SERV ROUTINE CLEARS R2
016330 000000                      HLT ;ERROR! FP DID NOT INTERRUPT
016332 170200                      STFPS   R0 ;STORE FPS IN R0
016334 022700 ~07404              CMP      #107404,R0 ;CHECK FP STATUS AFTER ABORT
016340 001401                      BEQ      .+4
016342 000000                      HLT ;ERROR! INCORRECT FPS AFTER ABORT
016344 000402                      BR       F13EX ;EXIT TEST
016346 005002                      F13D:   CLR      R2 ;CLEAR R2
016350 000002                      RTI
016352 170127 000000              F13EX: LDFPS   #0 ;CLEAR FLOATING POINT STATUS
016356 012737 000252 000250      MOV      @MMVEC+2,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
016364 005037 000252              CLR      @MMVEC+2
016370 012737 000246 000244      MOV      #FPVEC+2,@FPVEC
016376 104000                      SCOPE

016400 005267 162374              END:    INC      ICNT
016404 022767 004400 162366      CMP      #4400,ICNT
016412 001402                      BEQ      DONE
016414 000167 162476              JMP      BEGIN
016420 012767 000007 161140      DONE:   MOV      #7,TPB
016426 105767 161132              TSTB    TPS
016432 100375                      BPL     .-4
016434 013702 000042              MOV      @#42,R2 ;GET DECTAPE MONITOR RETURN ADDRESS
016440 001406                      BEQ     DONE1 ;DO NOT RETURN TO MON IF (42)-0
016442 005037 177774              CLR     @SLR ;CLEAR STACK LIMIT REGISTER
016446 004712                      LOGICAL:JSR    7,(2) ;RETURN TO DECTAPE MONITOR
016450 000240                      NOP
016452 000240                      NOP ;ACT11
016454 000240                      NOP ;OVERLAY
016456 000167 162426              DONE1: JMP      START ;AREA

000001                      .END
```


NR3 = 000003	484#													
NR7 = 000007	488#													
OST = 004000	323#													
PFVEC = 000024	271#													
PIRQ = 177772	282#	2522*	2548*											
PIRVEC = 000240	275#	2523*	2524*	2549*	2550*									
PIR4 = 010000	303#	2522												
PKD6 = 016700	505#	912*	1132*	1292*	1320	1661*	2467*	2486	2494*	2513	2526*	2534		
PKIO = 016600	504#													
PKM = 000000	261#	2661												
PLA = 040000	326#	653	681	711	847	870	894	918	1008	1076	1115	1147	1187	
	1225	1276	1310	1369	1487	1519	1545	1582	1614	1642	1669	1699	1766	
	1806	1844	1872	1905	1940	1982	2021	2064	2103	2128	2157	2184	2212	
	2242	2274	2314	2348	2381	2414	2448	2571	2609	2632	2664	2745	2804	
	283C	2861	2895	2928	2962	2990	3023	3066	3115					
PRTY4 = 000200	256#													
PRTY7 = 000340	255#	1203	1307	1965	2004	2656	2661	2673						
PSD1 = 017100	507#	936*	939*	956	1391	1424*	2798*							
PSI2 = 017000	506#	809*	966*	1393*	1569*	1570*	1574	1601*	1602*	1603*	1607	1686*	1687*	
	1688*	1693	1827*	1832*	1837	2091*	2095	2145*	2146*	2151	2202*	2203*	2207	
	2234	2291	2303	2722	2734	3052	3061							
PSM = 010000	262#	730	742	806	935	943	964	977	1025	1238	1267	1395	1420	
	1600	1659	1826	1925	1952	1962	1991	2087	2143	2197	2225	2298	2558	
	2593	2650	2673	2721	2793	2919								
PSW = 177776	280#	557*	559*	698*	720*	730*	770*	806*	935*	964*	998*	1025*	1203*	
	1238*	1267*	1333*	1395*	1420*	1451*	1566*	1600*	1628*	1659*	1689*	1713*	1751*	
	1786*	1826*	1861*	1893*	1925*	1927*	1949	1952*	1962*	1966*	1991*	2008*	2032	
	2047*	2054	2087*	2116*	2143*	2169*	2197*	2225*	2298*	2558*	2560*	2562	2593*	
	2628	2650*	2653	2656*	2660	2683*	2721*	2763*	2793*	2821*	2886*	2919*	2953*	
	3014*	3049*												
PUD4 = 017300	509#	1000*	1001*	1863*										
PUI5 = 017200	508#	773*	1454*	1631*	1632*	1636	1716*	1717*	1721	1754*	1755*	1756*	1760	
	1761*	1784*	1785*	1793	2117*	2118*	2122	2174*	2175*	2179	2765*			
PUM = 030000	263#	557	770	998	1333	1451	1566	1628	1689	1713	1751	1786	1861	
	1893	1927	1937	1966	1979	2008	2018	2032	2047	2055	2061	2116	2169	
	2560	2580	2763	2821	2886	2953	3014	3049						
RDO = 000002	483#	2465	2679											
RDOT = 000001	482#													
REDPTR = 000740	295#	2596												
REG = 004000	257#	264#	698	708	720									
RESVEC = 000010	268#	2042*	2082*	2710*	2714*									
RETURN = 016266	1064#	1070	1101#	1107	1138#	1143	1172#	1178	1211#	1216	1299#	1304	1573#	
	1579	1606#	1611	1635#	1639	1692#	1696	1720#	1724	1759#	1763	1792#	1798	
	1836#	1840	2094#	2097	2121#	2125	2150#	2154	2178#	2182	2206#	2210	2233#	
	2236	2268#	2272	2302#	2306	2342#	2346	2373#	2377	2408#	2412	2442#	2446	
	2533#	2537	2733#	2739	3060#	3064	3109#	3113						
RW = 000006	487#	599	600	601	602	603	604	605	606	607	608	609	610	
	2006	2045												
RWT = 000004	485#													
RWTW = 000005	486#													
SCOPE = 104000	492#	581	665	694	724	765	802	835	859	882	906	930	959	
	993	1021	1054	1088	1127	1159	1199	1234	1261	1285	1326	1357	1385	
	1416	1446	1474	1502	1531	1560	1595	1623	1654	1681	1708	1746	1779	
	1821	1856	1888	1918	1957	1998	2037	2083	2112	2141	2166	2193	2221	
	2258	2286	2329	2360	2393	2429	2460	2489	2517	2551	2590	2619	2647	
	2676	2707	2759	2788	2818	2851	2883	2916	2950	2979	3011	3045	3092	

	3138													
SCOPEA 0C0434	524	549#												
SCOPEX 000516	562	564#												
SDE = 000002	363#	584												
SDPAR0= 172260	435#	619*												
SDPAR1= 172262	436#	621*												
SDPAR2= 172264	437#													
SDPAR3= 172266	438#													
SDPAR4= 172270	439#													
SDPAR5= 172272	440#													
SDPAR6= 172274	441#													
SDPAR7= 172276	442#													
SDPDR0= 172220	417#	604*												
SDPDR1= 172222	418#	605*												
SDPDR2= 172224	419#	755	758*											
SDPDR3= 172226	420#													
SDPDR4= 172230	421#													
SDPDR5= 172232	422#													
SDPDR6= 172234	423#													
SDPDR7= 172236	424#													
SD1 = 020000	500#	939	1394	1413	1423	1443	1963	1993	2559	2797	2922	2938	3017	
	3033	3057	3075											
SHLT 000400	522	540#	2618											
SHLTA 000430	543	546#												
SIPARO 172240	426#	618*												
SIPAR1= 172242	427#													
SIPAR2= 172244	428#	620*												
SIPAR3= 172246	429#													
SIPAR4= 172250	430#													
SIPAR5= 172252	431#													
SIPAR6= 172254	432#													
SIPAR7= 172256	433#													
SIPDR0= 172200	408#	593	603*											
SIPDR1= 172202	409#													
SIPDR2= 172204	410#	606*												
SIPDR3= 172206	411#													
SIPDR4= 172210	412#													
SIPDR5= 172212	413#													
SIPDR6= 172214	414#													
SIPDR7= 172216	415#													
SI2 - 040000	499#	731	759	762	808	832	936	956	965	990	1026	1051	1240	
	1258	1390	1410	1572	1588	1605	1620	1691	1705	1835	1850	2090	2109	
	2149	2163	2205	2218	2229	2248	2301	2320	2599	2732	2751	3059	3072	
SLR = 177774	281#	582*	3149*											
SM - 040000	259#	730	742	806	935	943	964	977	1025	1267	1333	1395	1420	
	1451	1566	1600	1689	1826	1893	1923	1925	1962	1965	2004	2087	2089	
	2143	2197	2225	2298	2557	2558	2625	2641	2721	2793	2919	3014	3049	
SM1 = 000370	342#	1404	1548											
SM2 = 000360	343#	748	785	921	1733	1875	1908	1943	1985	2574				
SM4 = 000340	344#	2965												
SM6 = 000320	345#													
SM8 = 000300	346#	2931	2993	3026										
SPG = 000040	318#	745	819	946	980	1038	1249	1276	1401	1430	1582	1614	1699	
	1844	1905	1940	1982	2103	2157	2212	2242	2314	2571	2609	2632	2664	
	2745	2804	2928	3023	3066									
SPTR - 000700	293#	555	1334	1351	1421	1440	1471	1567	1592	2088	2252	2255		

T10B	002652	891#		
T10C	002654	887	893#	
T100A	013460	2599#	2615	
T100B	013466	2594	2601#	2605
T100C	013470	2595	2602#	
T102A	013610	2628#	2638	
T102C	013616	2622	2631#	
T103A	013734	2657#	2670	
T103C	013740	2651	2660#	
T104A	014062	2684#		
T104B	014066	2685#	2697	
T104C	014076	2681	2690#	
T11A	002746	914#	924	
T11B	002750	915#		
T11C	002752	910	917#	
T12A	003052	939#	952	
T12B	003060	940#		
T12C	003062	934	942#	
T13A	003206	969#	986	
T13B	003210	970#		
T13C	003214	963	973#	
T13D	003212	966	971#	
T14A	003346	1003#	1014	
T14B	003350	1004#		
T14C	003354	997	1007#	
T14D	003352	1000	1005#	
T16A	003456	1030#	1044	
T16B	003460	1031#		
T16C	003464	1027	1034#	
T16D	003462	1028	1032#	1047
T17A	016676	1067#	1082	
T17B	016700	1068#		
T17C	003614	1058	1072#	
T17D	003612	1060	1071#	1085
T2A	001676	704#	717	
T2B	001700	705#		
T2C	001702	699	707#	
T20A	016676	1104#	1121	
T20B	016702	1105#		
T20C	003736	1093	1108#	
T21A	016676	1141#	1153	
T21B	016702	1142#		
T21C	004070	1131	1146#	
T22	016674	1174#		
T22A	016676	1175#		
T22AA	016700	1176#	1193	
T22B	016702	1177#		
T22C	004202	1167	1180#	
T23A	016676	1213#		
T23AA	016700	1214#	1231	
T23B	016702	1215#		
T23C	004334	1204	1218#	
T24A	004442	1242#	1255	
T24B	004444	1243#		
T24C	004446	1239	1245#	
T25A	004552	1269#	1282	

T25B	004554	1270#	
T25C	004556	1265	1272#
T26A	016676	1301#	
T26AA	016700	1302#	1316
T26B	016702	1303#	
T26C	004676	1289	1306#
T27A	005026	1337#	1347
T27B	005030	1338#	
T27C	005032	1331	1340#
T3A	002022	735#	751
T3B	002024	736#	
T3C	002026	729	738#
T30A	005140	1365#	1375
T30C	005144	1361	1368#
T31A	005274	1397#	1407
T31B	005276	1398#	
T31C	005300	1389	1400#
T32A	005416	1426#	1436
T32B	005420	1427#	
T32C	005422	1419	1429#
T33A	005540	1456#	1467
T33B	005542	1458#	
T33C	005544	1450	1460#
T34A	005642	1483#	1493
T34B	005644	1484#	
T34C	005646	1478	1486#
T35A	005752	1512#	1525
T35B	005756	1513#	
T35C	005760	1507	1515#
T36A	006070	1541#	1551
T36B	006072	1542#	
T36C	006074	1536	1544#
T37A	017076	1575#	
T37B	017102	1577#	
T37C	006220	1565	1581#
T4A	002204	775#	788
T4B	002206	776#	
T4C	002210	769	778#
T40A	017074	1608#	
T40B	017102	1610#	
T40C	006340	1599	1613#
T41A	017200	1637#	
T41B	017202	1638#	
T41C	006446	1627	1641#
T42A	006550	1663#	1675
T42B	006552	1664#	
T42C	006554	1658	1666#
T43A	017076	1694#	
T43B	017102	1695#	
T43C	006702	1685	1698#
T43D	006700	1687	1694 1697#
T44A	017200	1722#	
T44B	017202	1723#	
T44C	007012	1712	1726#
T45A	017200	1761#	
T45B	017204	1762#	

T45C	007156	1750	1765#
T46A	017300	1795#	
T46B	017302	1796#	
T46C	007302	1783	1799#
T47A	017100	1839#	
T47C	007454	1825	1841#
T5A	002354	812#	825
T5B	002356	813#	
T5C	002360	807	815#
T50A	007574	1867#	1878
T50B	007600	1868#	
T50C	007604	1860	1871#
T50D	007602	1865	1869#
T51A	007716	1898#	1911
T51B	007722	1899#	
T51C	007724	1892	1901#
T52A	010052	1929#	1946
T52B	010054	1930#	
T52C	010060	1922	1933#
T52D	010056	1924	1931#
T53A	010242	1968#	1988
T53B	010244	1969#	1976
T53C	010250	1961	1972#
T53D	010246	1964	1970#
T54A	010444	2010#	2027
T54B	010450	2003	2013#
T54C	010452	2002	2014#
T55A	010640	2050#	
T55B	010644	2042	2053#
T55C	010646	2041	2054#
T56A	017100	2096#	
T56C	011050	2086	2099#
T57A	017300	2124#	
T57C	011156	2115	2127#
T6A	002466	843#	853
T6B	002472	844#	
T6C	002474	840	846#
T60A	017076	2152#	
T60C	011270	2144	2156#
T61A	017300	2181#	
T61C	011400	2170	2183#
T62A	017100	2209#	
T62C	011510	2198	2211#
T63A	017100	2230*	2235#
T63C	011606	2226	2238#
T64A	016676	2270#	
T64B	016700	2271#	2280
T64C	011734	2262	2273#
T65A	017076	2304#	
T65C	012054	2290	2307#
T66A	016676	2344#	
T66B	016700	2345#	2354
T66C	012212	2333	2347#
T67A	016676	2375#	
T67B	016700	2376#	2387
T67C	012320	2364	2378#

UI5 - 120000	501#	771	796	799	1452	1634	1648	1715	1719	1736	1743	1758	1761*
	1772	1791	1812	1895	2120	2134	2177	2190	2766				
UM - 140000	260#	770	998	1628	1713	1751	1786	1861	1927	1937	1966	1979	2008
	2018	2047	2061	2116	2169	2560	2580	2683	2700	2763	2821	2886	2953
UP - 000000	331#	599	600	601	602	603	604	605	606	607	608	609	610
	2679												
UPG = 000140	317#	782	1008	1341	1461	1642	1730	1766	1806	1872	2128	2184	2691
	2775	2830	2895	2962									
UPTR = 000600	294#	556	1714	1740	1752	2075	2138						
V = 000002	251#	1803											
VS0 = 000000	307#	653	681	711	847	918	1076	1115	1147	1187	1982	2021	2064
	2274	2348	2381	2414	2448	2571	2861	2928	3023	3115			
VS1 = 000002	308#	1430	2804										
VS2 = 000004	309#	745	819	946	980	1038	1249	1401	1582	1614	1699	1844	2103
	2157	2212	2242	2314	2609	2745	3066						
VS3 = 000006	310#	1872	2962										
VS4 = 000010	311#	1008	1341	1642	2830	2895							
VS5 = 000012	312#	782	1461	1730	1806	2128	2184	2775	2990				
VS6 = 000014	313#	1669	2473	2500	2539								
VS7 = 000016	314#	1276	1766	1905	1940	2632	2664	2691					
W = 000100	334#	755	758	792	795								
Z = 000004	252#	1307	1803	2673									
.	520#	521#	523#	525#	527#	530#	535#	538#	567#	571	572#	575#	592
	596	648	651	654	657	660	663	679	682	685	688	692	709
	712	715	718	722	740	743	746	749	752	756	760	763	780
	783	786	789	793	797	800	817	820	823	826	829	833	848
	851	854	857	871	874	877	880	895	898	901	904	919	922
	925	928	944	947	950	953	957	975	978	981	984	987	991
	1009	1012	1015	1019	1036	1039	1042	1045	1048	1052	1064	1066#	1070#
	1074	1077	1080	1083	1086	1101	1103#	1104	1107#	1110	1113	1116	1119
	1122	1125	1138	1140#	1143#	1148	1151	1154	1157	1172	1173#	1175	1178#
	1182	1185	1188	1191	1194	1197	1211	1212#	1216#	1220	1223	1226	1229
	1232	1247	1250	1253	1256	1259	1274	1277	1280	1283	1299	1300#	1304#
	1308	1311	1314	1317	1321	1324	1342	1345	1348	1352	1355	1370	1373
	1376	1380	1383	1402	1405	1408	1411	1414	1431	1434	1437	1441	1444
	1462	1465	1468	1472	1488	1491	1494	1497	1500	1517	1520	1523	1526
	1529	1546	1549	1552	1555	1558	1573	1574#	1575*	1579#	1583	1586	1589
	1593	1606	1607#	1608*	1611#	1615	1618	1621	1635	1636#	1639#	1643	1646
	1649	1652	1667	1670	1673	1676	1679	1692	1693#	1696#	1700	1703	1706
	1720	1721#	1724#	1728	1731	1734	1737	1741	1744	1759	1760#	1763#	1767
	1770	1773	1777	1792	1793#	1798#	1801	1804	1807	1810	1813	1816	1819
	1836	1837#	1840#	1842	1845	1848	1851	1854	1873	1876	1879	1883	1886
	1903	1906	1909	1912	1916	1935	1938	1941	1944	1947	1950	1955	1974
	1977	1980	1983	1986	1989	1994	2016	2019	2022	2025	2028	2033	2056
	2059	2062	2065	2068	2071	2076	2079	2094	2095#	2097#	2101	2104	2107
	2110	2121	2122#	2125#	2129	2132	2135	2139	2150	2151#	2154#	2158	2161
	2164	2178	2179#	2182#	2185	2188	2191	2206	2207#	2210#	2213	2216	2219
	2233	2234#	2236#	2240	2243	2246	2249	2253	2256	2268	2269#	2272#	2275
	2278	2281	2284	2302	2303#	2306#	2309	2312	2315	2318	2321	2324	2327
	2342	2343#	2346#	2349	2352	2355	2358	2373	2374#	2377#	2379	2382	2385
	2388	2391	2408	2409#	2412#	2415	2418	2421	2424	2427	2442	2443#	2446#
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	2584	2603	2606	2610	2613	2616	2626	2633	2636	2639	2642	2645	2662
	2665	2668	2671	2674	2692	2695	2698	2701	2704	2733	2734#	2739#	2743
	2746	2749	2752	2757	2776	2779	2782	2786	2805	2808	2811	2816	2831

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0070

2834	2837	2840	2844	2849	2862	2865	2868	2871	2876	2881	2896	2899
2902	2905	2909	2914	2929	2932	2935	2939	2943	2948	2963	2966	2969
2972	2977	2991	2994	2997	3000	3004	3009	3024	3027	3030	3034	3038
3043	3060	3061#	3064#	3067	3070	3073	3076	3080	3085	3090	3109	3110#
3113#	3116	3119	3122	3125	3129	3146						

CAC	510#	2813	2846	2878	2911	2945	2974	3006	3040	3082	3087				
CFPS	510#	2842	2874	2907	2941	3002	3036	3078	3127						
COMMEN	1#														
CPC	495#	1976													
CPDR	495#	754	791												
CPTR	495#	646	677	738	778	815	973	1034	1072	1108	1180	1218	1245	1272	1726
	1799	1901	1933	1972	2014	2058	2099	2238	2307	2741					
CSRO	495#	653	681	711	745	782	819	846	869	893	917	946	980	1007	1038
	1076	1115	1146	1187	1225	1249	1276	1310	1340	1368	1400	1429	1460	1486	1519
	1544	1581	1613	1641	1669	1698	1730	1765	1806	1844	1871	1905	1940	1982	2021
	2064	2103	2127	2156	2183	2211	2242	2273	2314	2347	2381	2413	2447	2472	2499
	2538	2570	2609	2631	2664	2690	2745	2774	2803	2829	2860	2894	2927	2961	2989
	3022	3065	3114												
CSR1	495#	656	684	714	748	785	822	850	873	897	921	949	983	1011	1041
	1079	1118	1150	1190	1228	1252	1279	1313	1344	1372	1404	1433	1464	1490	1522
	1548	1585	1617	1645	1672	1702	1733	1769	1809	1847	1875	1908	1943	1985	2024
	2067	2106	2131	2160	2187	2215	2245	2277	2317	2351	2384	2417	2451	2476	2503
	2542	2574	2612	2635	2667	2694	2748	2778	2807	2833	2864	2898	2931	2965	2993
	3026	3069	3118												
CSR2	495#	659	687	717	751	788	825	853	876	900	924	952	986	1014	1044
	1082	1121	1153	1193	1231	1255	1282	1316	1347	1375	1407	1436	1467	1493	1525
	1551	1588	1620	1648	1675	1705	1736	1772	1812	1850	1872	1911	1946	1988	2027
	2070	2109	2134	2163	2190	2218	2248	2280	2320	2354	2387	2420	2454	2479	2506
	2545	2577	2615	2638	2670	2697	2751	2781	2810	2836	2867	2901	2934	2968	2996
	3029	3072	3121												
CSTAT	495#	650	708	742	942	977	1112	1184	1222	1306	1515	1937	1979	2018	2061
	2482	2509	2580	2641	2673	2700									
ENDCOM	1#														
ESCAPE	1#														
KKM	510#														
KKP	495#	1203													
KKR	510#	698													
KSM	510#	1238	1659	1991	2593	2650									
KSMF	510#														
KSR	495#														
KUM	510#														
KUP	495#														
KUR	495#														
LDKM1	495#														
LDKO	495#														
LDPDR	510#	598	600	601	602	603	604	605	606	607	608	609	610	2006	2045
	2679														
LDSO	510#	1335	1422	1568											
LDUO	510#	1753													
MULT	1#														
NEWIST	1#														
POP	1#														
PUSH	1#														
SETK	510#														
SETS	510#	1334	1421	1567	2088										
SETU	510#	1714	1752												
SETUP	1#														
SGF	495#	549	955	1319	1378	1775	2030	2073	2485	2512	2754	2873	2937	3032	
SGN	495#	641	673	702	733	774	811	842	865	889	913	937	967	1002	1029
	1062	1098	1136	1168	1207	1241	1268	1295	1336	1364	1396	1425	1455	1482	1510
	1540	1571	1604	1633	1662	1690	1718	1757	1790	1833	1866	1896	1928	1967	2009

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(CROSS REFERENCE TABLE -- MACRO NAMES)

I 6

SEG 0073

.STRAP 1#
.STYPB 1#
.STYPD 1#
.STYPE 1#
.STYPD 1#
.1170 1#

. ABS. 017304 000

ERRORS DETECTED: 0

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RUN-TIME: 9 12 1 SECONDS
RUN-TIME RATIO: 80/23=3.4
CORE USED: 26K (51 PAGES)