

PDP11/34

MEM MANG EXERCISER
MD-11-DFKTF-A

EP-DFKTF-A-DL-A

OCT 1976

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FICHE 1 OF 1

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This microfiche card contains a grid of frames. The frames are arranged in approximately 10 rows and 3 columns. The content of the frames includes:

- Textual data, possibly code or configuration parameters.
- Small diagrams or flowcharts.
- Tables of data.
- Diagrams showing connections or system components.

The frames are too small to read clearly, but they appear to contain technical information related to the PDP11/34 system.

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DFKTF-A-D
PRODUCT NAME: 11/34 MEMORY MANAGEMENT ABORT TESTS
DATE CREATED: DECEMBER 21, 1975
MAINTAINER: DIAGNOSTIC ENGINEERING
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1.0 ABSTRACT

PROGRAM DFKTF TESTS THE MEMORY MANAGEMENT ABORT LOGIC. THE PROGRAM IS WRITTEN TO CAUSE A MEMORY MANAGEMENT ABORT AT EVERY PDP11/34 MICRO STATE WHERE A MEMORY REFERENCE IS INITIATED. ABORTS ARE IN ALL CASES TRAPPED TO THE KERNEL, HOWEVER, THE INSTRUCTIONS CAUSING THE ABORT ARE EXECUTED IN BOTH MODES (KERNEL AND USER).

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11/34

2.2 STORAGE

PROGRAM STORAGE - THE ROUTINE USES MEMORY 0-17777

2.3 PRELIMINARY PROGRAMS

TESTS DFKTA-DFKTD

3.0 LOADING AND STARTING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER

LOAD ADDRESS 200

START.

THE PROGRAM WILL LOOP AND RING BELL ON COMPLETION.

4.0 SWITCH SETTINGS

5.0 SUBROUTINE ABSTRACTS

5.1 HLT

THE HLT (HALT) INSTRUCTION IS EXECUTED WHEN AN ERROR IS DETECTED. NOTE THAT THE HLT (HALT) INSTRUCTION TRAPS TO LOC 4 IN USER MODE. IF A HLT (HALT) INSTRUCTION IS EXECUTED IN THESE MODES THE TRAP IS TAKEN AND THE PROGRAM HALTS AT LOCATION 176 IN KERNEL MODE. PRESSING CONTINUE RESTARTS THE TEST. NOTE: THE USER STACK POINTER IS NOT AFFECTED. TO 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 KERNEL MODE.

6.0 ERRORS

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

6.1 ERROR RECOVERY

PRESS CONTINUE OR RESTART AT 200 OR PREVIOUS SCOPE.

6.2 ERROR LOOPING

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

7.0 RESTRICTIONS**7.1 STARTING RESTRICTION**

NONE

7.2 OPERATIONAL RESTRICTION

NONE

8.0 MISCELLANEOUS

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

8.2 STACK POINTER

THE STACK POINTERS ARE INITIALLY SET TO THE FOLLOWING VALUES

KERNEL = 1060

USER = 600

AND ARE RESET TO THESE VALUES AT THE START OF EACH SUBTEST (BY SCOPE).

8.3 PASS COUNT

1000(8) PASSES ARE REQUIRED FOR COMPLETION OF THIS PROGRAM; AT WHICH TIME THE BELL WILL RING AT THE TTY.

8.4 MEMORY MANAGEMENT MEMORY MAP

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

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*
;COPYRIGHT 1975, DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS.
;MEMORY MANAGEMENT ABORT TEST. THIS PROGRAM TESTS MEMORY MGMT ABORT ERRORS
;THIS PROGRAM IS A MODIFICATION OF THE 11/40 TEST, DBKTF. THIS
;VERSION HAS BEEN MODIFIED TO ACCOUNT FOR ANY 11/40-11/34 DIFFERENCE.
;THIS PROGRAM IS INTENDED TO BE RUN ONLY ON 11/34 PROCESSORS.
    
```

;GENERAL REGISTER ASSIGNMENTS

```

000000      RD=X0
000001      R1=X1
000002      R2=X2
000003      R3=X3
000004      R4=X4
000005      R5=X5
000006      SP=X6
000007      PC=X7
    
```

;STACK POINTER REGISTERS

```

000006      KSP=X6      ;KERNEL STACK POINTER
000006      USP=X6      ;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
000200      PRTY4=200
000000      KM=000000
140000      UM=140000
000000      PKM=000000
030000      PUM=030000

; 'T' BIT
;PRIORITY LEVEL 7
;PRIORITY LEVEL 4
;KERNEL MODE
;USER MODE
;PREVIOUS KERNEL MODE
;PREVIOUS USER MODE
    
```

;VECTOR ADDRESSES

```

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

;REGISTER ADDRESSES

```

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

;INITIAL STACK POINTER SETTINGS

```

001100      KPTR=1100     ;BOTTOM OF KERNEL STACK
000600      UPTR=600      ;USER STACK SETTING
    
```

100000
040000
020000
000400
000100

;MISCELLANEOUS BIT ASSIGNMENTS

BIT15=100000
BIT14=40000
BIT13=20000
BIT8=400
BIT6=100

000001
000000
000002
000004
000006
000010
000012
000014
000016
000000
000140
000000
000400
020000
040000
100000

;MEMORY MANAGEMENT REGISTER SRO BIT ASSIGNMENTS

ENMM=1
VSO=0
VS1=2
VS2=4
VS3=6
VS4=10
VS5=12
VS6=14
VS7=16
IS=00
UPG=140
KPG=000
DN=400
AVR=20000
PLA=40000
NRA=100000

;ENABLE MEMORY MANAGEMENT

;DESTINATION MODE
;ACCESS VIOLATION ABORT
;PAGE LENGTH ABORT
;NON-RESIDENT ABORT

000010
000000
000010
000100

;PAGE DESCRIPTOR REGISTER (PDR) BIT ASSSIGNMENTS

ED=10
UP=0
DMN=10
W=100

;EXPANSION DIRECTION BIT IN PDR
;EXPAND UP
;EXPAND DOWN
;'W' BIT IN PDR

177572
177574
177576

;MEMORY MANAGEMENT REGISTER ADDRESS ASSIGNMENTS

SRO=177572
SR1=177574
SR2=177576

;ADDRESS OF MEMORY MGMT REGISTER SRO
SR1
SR2

177600
177602
177604
177606
177610
177612
177614
177616

UIPDR0=177600
UIPDR1=177602
UIPDR2=177604
UIPDR3=177606
UIPDR4=177610
UIPDR5=177612
UIPDR6=177614
UIPDR7=177616

;ADDRESS OF USER 'I' 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

172300

KIPDR0=172300

172302
172304
172306
172310
172312
172314
172316

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

172340
172342
172344
172346
172350
172352
172354
172356

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

000000
000002
000004
000006

;ACCESS CONTROL FIELD DEFINITIONS (IN PDR)
NR0=0 ;NON-RESIDENT ABORT ALL REFS.
R00=2 ;READ, ABORT ON WRITE
R04=4 ;TRAP ON READ & WRITE
R06=6 ;READ & WRITE

000000
104000

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

016700
140000
120000
100000
040000
020000
060000

;VIRTUAL ADDRESSES
K10=16700
K16=140000
U15=120000
U14=100000
U12=40000
U11=20000
U13=60000

016600
016700
017200
017300
017400
017000
017100

;CORRESPONDING PHYSICAL ADDRESSES
PK10=16600
PK16=16700
PUI5=17200
PUI4=17300
PUI3=17400
PUI2=17000
PUI1=17100

.LIST ME
.NLIST MC,MD
;FILL TRAP AND INTERRUPT VECTOR AREA WITH
;+2
;HALT
;UNEXPECTED TRAPS/INTERRUPTS WILL HALT AT VECTOR ADDRESS +2
;AND DISPLAY VECTOR ADDRESS+4 NOTE: LISTING DOES NOT SHOW LOADING THE
;VECTOR AREA.

000010 000010
000400 000400

.NLIST MC
.=ERRVEC
.WORD SHLT

000030 000030
000442 000442
000046 000046
000046 007010
000052 000052
000052 000000

. =EMTVEC
.WORD SCOPEA
. =46
LOGIC
. =52
0

000176 000176
000000 000000

. =176
HALT
:EXAMINE R1, THE CONTENTS OF WHICH IS THE PC OF THE PRESENT TEST
:THE TOP WORD ON THE KERNEL STACK CONTAINS THE VIRTUAL
:ADDRESS OF THE HLT INSTRUCTION IN THE TEST THAT FAILED.
:ERROR! TO IDENTIFY WHICH TEST FAILED

000200 000200
000167 001006

. =200
JMP START ;GO START TEST

000400 000400

. =400
:USER HLT (HALT) TRAP SERVICE ROUTINE

000400 042737 000001 177572
000406 042737 140000 177776
000414 162716 000002
000420 005776 000000
000424 001404
000426 062716 000002
000432 000137 000012
000436 000137 000176

SHLT: BIC @1,@SR0 ;TURN MEM MGMT OFF
BIC @140000,@PSW ;RETURN TO KERNEL
SUB @2,(KSP) ;POINT PC TO TRAPPING INST.
TST @1(KSP) ;WAS IT A HLT (HALT)
BEQ SHLTA
ADD @2,(KSP) ;RESTORE PC TO TRAPPING INST.
JMP @@ERRVEC+2 ;GO HALT AT 6
SHLTA: JMP @@176 ;GO HALT AT ADDRESS 176

000442 005037 177572
000446 011601
000450 012706 001100
000454 005046
000456 010146
000460 012746 000600
000464 012737 030000 177776
000472 106606
000474 001400
000476 000006

:SCOPE (EMT) SERVICE ROUTINE
SCOPEA: CLR @SR0 ;DISABLE MEMORY MGMT
MOV (KSP),R1 ;SAVE PC IN R1
MOV @KPTR,KSP ;SET KERNEL STACK PTR
CLR -(KSP) ;SET UP FOR KERNEL MODE ON RETURN
MOV R1,-(KSP) ;RETURN IN LINE
MOV @UPTR,-(KSP) ;USER STACK PTR ON KERNEL STACK
MOV @PLM,@PSW ;PREVIOUS USER MODE
MTPD USP ;SET USER STACK PTR
BEQ SCOPEX
SCOPEX: RTT ;RETURN TO NEXT TEST IN KERNEL MODE
;WITH ALL STACK PTRS SET UP

001200 001200
000000 000000
001202 000000
001204
001212

. =1200
:TAGS
ICNT: 0 ;CONTAINS PASS COUNT
SROT: 0 ;CONTAINS SR0 CONTENTS ON ERROR
TEMP=.
. =.+6

```

001212 000240
001214 005067 177760
001220 012706 001100
001224 104000
001226 005037 000252

```

:START MEMORY MANAGEMENT TEST.

```

START:  NOP
        CLR      ICNT
BEGIN:  MOV      #KPTR,KSP      ;CLEAR PASS COUNT
        SCOPE
        CLR      @MMVEC+2      ;SET KERNEL STACK PTR
        ;SCOPE SETS ALL STACK PTRS
        ;KERNEL MODE ON ABORT

```

```

001232 000240
001234 005067 176332
001240 012702 177600
001244 012703 000010
001250 005022
001252 077302
001254 012702 177640
001260 012703 000010
001264 005022
001266 077302
001270 012702 172300
001274 012703 000010
001300 005022
001302 077302
001304 012702 172340
001310 012703 000010
001314 005022
001316 077302

```

:ROUTINE TO CLEAR MEMORY MANAGEMENT REGISTERS.

```

MMO:   NOP
        CLR      SRO
        MOV      @UIPDR0,R2
        MOV      @R3
        CLR      (R2)+
        SOB      R3,-2
        MOV      @UIPAR0,R2
        MOV      @R3
        CLR      (R2)+
        SOB      R3,-2
        MOV      @KIPDR0,R2
        MOV      @R3
        CLR      (R2)+
        SOB      R3,-2
        MOV      @KIPAR0,R2
        MOV      @R3
        CLR      (R2)+
        SOB      R3,-2

```

```

001320 012737 073006 172300
001326 012737 000006 172314
001334 012737 077406 172316
001342 012737 073006 177600
001350 012737 000006 177604
001356 012737 000006 177602
001364 012737 000006 177610
001372 012737 000006 177612

```

```

MMK:   MOV      @73006,@KIPDR0 :RW, UP 167 BLOCKS
        MOV      @86,@KIPDR6   :RW, UP 1 BLOCK
        MOV      @77406,@KIPDR7 :RW, UP 200 BLOCKS
        MOV      @73006,@UIPDR0 :RW, UP 167 BLOCKS
        MOV      @86,@UIPDR2   :RW, UP 1 BLOCK
        MOV      @86,@UIPDR1   :RW, UP 1 BLOCK
        MOV      @86,@UIPDR4   :RW, UP 1 BLOCK
        MOV      @86,@UIPDR5   :RW, UP 1 BLOCK

```

```

001400 005067 170734
001404 012767 000167 170742
001412 012767 007600 170736
001420 005067 176214
001424 012767 000170 176212
001432 012767 000171 176202
001440 012767 000172 176204
001446 012767 000173 176174

```

```

CLR      KIPAR0      ;VA=PA=0000-16677
MOV      @167,KIPAR6 ;VA=140000-140077;PA=16700-16777
MOV      @7600,KIPAR7 ;VA=160000-177776,PA=760000-777776
CLR      UIPAR0      ;VA=PA=0-16677
MOV      @170,UIPAR2 ;VA=40000-40077/PA=17000-17077
MOV      @171,UIPAR1 ;VA=20000-20077/PA=17100-17177
MOV      @172,UIPAR5 ;VA=120000-120077/PA=17200-17277
MOV      @173,UIPAR4 ;VA=100000-100077/PA=17300-17377

```

```

;CHECK
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE=1
TO:
001454 012737 001510 000250      MOV      #TDC,2#MMVEC      ;LOAD MEM MGMT ERROR VECTOR
001454 005067 176564              CLR      MMVEC+2
001466 012703 016700              MOV      #K10,R3
001472 010302              MOV      R3,R2
001474 005013              CLR      (R3)
001476 005237 177572              INC      2#SR0            ;ENABLE MEMORY MGMT
001502 000277              SCC
TOA: 001504 011302              MOV      (R3),R2          ;MEM MGMT LENGTH ABORT AT SRC00
TOB: 001506 000000              HLT
TOC: 001510 022706 001074      CMP      #KPTR-4,KSP      ;ERROR! DID NOT ABORT
                                BEQ      .+4                    ;CHECK STACK PTR
001514 001401              HLT
001516 000000              HLT
001520 022766 000017 000002      CMP      #17,2(KSP)      ;CHECK THAT CORRECT STATUS
                                BEQ      .+4                    ;WAS SAVED ON THE STACK
001526 001401              HLT                        ;ERROR! INCORRECT STATUS
001530 000000              HLT
001532 022767 040001 176032      CMP      #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
                                BEQ      .+4                    ;& FAILING PAGE #)
001540 001401              HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001542 000000              HLT
001544 022767 001504 176024      CMP      #TOA,SR2        ;CHECK CONTENTS OF SR2
                                BEQ      .+4                    ;(PC OF ABORTED INSTRUCTION)
001552 001401              HLT                        ;ERROR! INCORRECT PC IN SR2
001554 000000              HLT
001556 020203              CMP      R2,R3            ;CHECK THAT INSTRUCTIONS AS ABORTED
001560 001401              BEQ      .+4
001562 000000              HLT
001564 104000              HLT                        ;ERROR!
                                SCOPE                          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE=2,BYTE INSTRUCTION
001566 012737 001614 000250      MOV      #T1C,2#MMVEC    ;LOAD MEM MGMT ERROR VECTOR
001574 012702 016700              MOV      #K10,R2
001600 010204              MOV      R2,R4
001602 005012              CLR      (R2)
001604 005237 177572              INC      2#SR0            ;ENABLE MEMORY MGMT
T1A: 001610 122202              CMPB     (R2)+,R2        ;SEG LENGTH ABORT AT SRC01
T1B: 001612 000000              HLT
T1C: 001614 022706 001074      CMP      #KPTR-4,KSP      ;ERROR! DID NOT ABORT
                                BEQ      .+4                    ;CHECK STACK PTR
001620 001401              HLT
001622 000000              HLT
001624 022767 040001 175740      CMP      #PLA+1,SR0      ;CHECK SR0 (ABORT CONDITIONS
                                BEQ      .+4                    ;& FAILING PAGE #)
001632 001401              HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001634 000000              HLT
001636 022767 001610 175732      CMP      #T1A,SR2        ;CHECK CONTENTS OF SR2
                                BEQ      .+4                    ;(PC OF ABORTED INSTRUCTION)
001644 001401              HLT                        ;ERROR! INCORRECT PC IN SR2
001646 000000              HLT
;CHECK THAT REGISTER INCREMENTED PROPERLY
001650 022702 016700              CMP      #K10,R2
001654 001401              BEQ      .+4
001656 000000              HLT
001660 104000              HLT                        ;ERROR!
                                SCOPE                          ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

:CHECK
:ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
:SOURCE MODE=3
001662 012737 001710 000250 MOV #T2C,2#MMVEC ;LOAD MEM MGMT ERROR VECTOR
001670 012705 016700 MOV #K10,R5
001674 010504 MOV R5,R4
001676 005237 177572 INC 2#SR0 ;ENABLE MEMORY MGMT
001702 000277 SCC ;PRESET CC'S
001704 153504 T2A: B1SB 2(R5)+,R4 ;NON-RES ABORT AT S13.10
001706 000000 T2B: HLT ;ERROR! FAILED TO ABORT
001710 T2C:
001710 022766 000017 000002 CMP #17,2(KSP) ;CHECK THAT CORRECT STATUS
001716 001401 BEQ .+4 ;WAS SAVED ON THE STACK
001720 000000 HLT ;ERROR! INCORRECT STATUS
001722 022767 040001 175642 CMP #PLA+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
001730 001401 BEQ .+4 ;& FAILING PAGE #)
001732 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
001734 022767 001704 175634 CMP #T2A,SR2 ;CHECK CONTENTS OF SR2
001742 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
001744 000000 HLT ;ERROR! INCORRECT PC IN SR2
001746 022705 016700 CMP #K10,R5
001752 001401 BEQ .+4
001754 000000 HLT ;ERROR! R5 DID NOT AUTO-INCREMENT
001756 104000 HLT ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
SCOPE

```

```

:CHECK
:ABORTS WHEN SOURCE OPERAND IS FETCHED
:SOURCE MODE=4,USER MODE
001760 012737 002014 000250 MOV #T3C,2#MMVEC ;LOAD MEM MGMT ERROR VECTOR
001766 012767 170000 176002 MOV #UM+PUM,PSW ;USER MODE!!!, PREV USER MODE
001774 012702 100000 MOV #UI4,R2
002000 010203 MOV R2,R3
002002 005237 177572 INC 2#SR0 ;ENABLE MEMORY MGMT
002006 000277 SCC ;PRESET CC'S
002010 064203 T3A: ADD -(R2),R3 ;NON-RESIDENT ABORT
002012 000000 T3B: HLT ;ERROR! FAILED TO ABORT
002014 022706 001074 T3C: CMP #KPTR-4,KSP ;CHECK STACK PTR
002020 001401 BEQ .+4
002022 000000 HLT
002024 022766 170017 000002 CMP #UM+PUM+17,2(KSP) ;CHECK THAT CORRECT STATUS
002032 001401 BEQ .+4 ;WAS SAVED ON THE STACK
002034 000000 HLT ;ERROR! INCORRECT STATUS
002036 022767 140147 175526 CMP #NRA+PLA+UPG+VS3+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
002044 001401 BEQ .+4 ;& FAILING PAGE #)
002046 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002050 022767 002010 175520 CMP #T3A,SR2 ;CHECK CONTENTS OF SR2
002056 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
002060 000000 HLT ;ERROR! INCORRECT PC IN SR2
;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (UIPDR2)
002062 032767 000100 175514 BIT #W,UIPDR2 ;CHECK CONTENTS OF REFERENCED PDR
002070 001401 BEQ .+4
002072 000000 HLT ;ERROR!
002074 042767 000100 175502 BIC #W,UIPDR2
002102 022702 077776 CMP #UI4-2,R2 ;CHECK THAT AUTO- DECREMENT TOOK PLACE
002106 001401 BEQ .+4

```

MO1

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002110	000000				HLT				;ERROR! R2 FAILED TO AUTO-DECREMENT
002112	022703	100000			CMP	#UI4,R3			;CHECK THAT R3 WAS NOT CHANGED
002116	001401				BEQ	.+4			
002120	000000				HLT				;ERROR!
002122	104000				SCOPE				;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
;CHECK									
;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED									
;SOURCE MODE=5, USER MODE									
002124	012737	002164	000250		MOV	#T4C, @MMVEC			;LOAD MEM MGMT ERROR VECTOR
002132	012767	170000	175636		MOV	#UM+PUM, PSW			;USER MODE!!!, PREV USER MODE!!
002140	012704	120002			MOV	#UI5+2, R4			
002144	010405				MOV	R4, R5			
002146	012737	177777	017200		MOV	#-1, @PUI5			
002154	005237	177572			INC	@SR0			;ENABLE MEMORY MGMT
002160	145405			T4A:	BICB	@-(R4), R5			;NON-RESIDENT ABORT
002162	000000			T4B:	HLT				;ERROR! FAILED TO ABORT
002164	022706	001074		T4C:	CMP	#KPTR-4, KSP			;CHECK STACK PTR
002170	001401				BEQ	.+4			
002172	000000				HLT				
002174	022767	140157	175370		CMP	#NRA+PLA+UPG+VS7>1, SR0			;CHECK SR0 (ABORT CONDITIONS
002202	001401				BEQ	.+4			; & FAILING PAGE #)
002204	000000				HLT				;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002206	022767	002160	175362		CMP	#T4A, SR2			;CHECK CONTENTS OF SR2
002214	001401				BEQ	.+4			; (PC OF ABORTED INSTRUCTION)
002216	000000				HLT				;ERROR! INCORRECT PC IN SR2
;CHECK CONTENTS OF REFERENCED PAGE DESCRIPTOR REGISTER (UIPDR5)									
002220	032767	000100	175364		BIT	#W, UIPDR5			;CHECK CONTENTS OF REFERENCED PDR
002226	001401				BEQ	.+4			
002230	000000				HLT				;ERROR!
002232	042767	000100	175352		BIC	#W, UIPDR5			
002240	022704	120000			CMP	#UI5, R4			;CHECK AUTO-DECREMENT
002244	001401				BEQ	.+4			
002246	000000				HLT				;ERROR! FAILED TO AUTO-DECREMENT R4
002250	022705	120002			CMP	#UI5+2, R5			;CHECK THAT R5 WAS UNCHANGED
002254	001401				BEQ	.+4			
002256	000000				HLT				;ERROR!
002260	104000				SCOPE				;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS
;CHECK									
;ABORTS WHEN SOURCE OPERAND IS FETCHED									
;SOURCE MODE = 6									
002262	012737	002306	000250		MOV	#T6C, @MMVEC			;LOAD MEM MGMT ERROR VECTOR
002270	012702	177777			MOV	#-1, R2			
002274	005237	177572			INC	@SR0			;ENABLE MEMORY MGMT
002300	016702	014374		T6A:	MOV	KIO, R2			;SEG LENGTH ABORT
002304	000000			T6B:	HLT				;ERROR! FAILED TO ABORT
002306				T6C:					
002306	022767	040001	175256		CMP	#PLA+1, SR0			;CHECK SR0 (ABORT CONDITIONS
002314	001401				BEQ	.+4			; & FAILING PAGE #)
002316	000000				HLT				;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002320	022767	002300	175250		CMP	#T6A, SR2			;CHECK CONTENTS OF SR2
002326	001401				BEQ	.+4			; (PC OF ABORTED INSTRUCTION)
002330	000000				HLT				;ERROR! INCORRECT PC IN SR2
002332	005202				INC	R2			;CHECK THAT R2 WAS NOT CHANGED
002334	001401				BEQ	.+4			

```

002336 000000 HLT ;ERROR!
002340 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN ADDRESS OF SOURCE OPERAND IS FETCHED
;SOURCE MODE = 7, PC
002342 012737 002364 000250 MOV #T7C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
002350 005004 CLR R4
002352 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
002356 067404 016700 T7A: ADD @KIO(R4),R4 ;SEG LEN ABORT
002362 000000 T7B: HLT ;ERROR! FAILED TO ABORT
002364 T7C:
002364 022767 040001 175200 CMP #PLA+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
002372 001401 BEQ .+4 ;& FAILING PAGE #)
002374 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002376 022767 002356 175172 CMP #T7A,SR2 ;CHECK CONTENTS OF SR2
002404 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
002406 000000 HLT ;ERROR! INCORRECT PC IN SR2
002410 005704 TST R4
002412 001401 BEQ .+4
002414 000000 HLT
002416 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK
;ABORTS WHEN SOURCE OPERAND IS FETCHED
;SOURCE MODE = 3, PC
002420 012737 002442 000250 MOV #T10C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
002426 005003 CLR R3
002430 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
002434 013703 016700 T10A: MOV @KIO,R3 ;SEG LEN ABORT
002440 000000 T10B: HLT ;ERROR! FAILED TO ABORT
002442 T10C:
002442 022767 040001 175122 CMP #PLA+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
002450 001401 BEQ .+4 ;& FAILING PAGE #)
002452 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002454 022767 002434 175114 CMP #T10A,SR2 ;CHECK CONTENTS OF SR2
002462 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
002464 000000 HLT ;ERROR! INCORRECT PC IN SR2
002466 005703 TST R3
002470 001401 BEQ .+4
002472 000000 HLT ;ERROR!
002474 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK
;ABORTS WHEN TOP WORD OFF STACK (PC) IS FETCHED
002476 012737 002544 000250 MOV #T13C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
002504 012767 170000 175264 MOV #UM+PUM,PSW ;USER MODE!!! PREV USER MODE!!
002512 012706 040100 MOV #UI2+100,USP ;USER STACK PTR IS NON-RES
002516 012737 002542 017100 MOV #T13D,@PUI2+100 ;LOAD 'NEW' PC
002524 005037 017102 CLR @PUI2+102
002530 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
002534 000277 SCC
002536 000002 T13A: RTI ;NON-RES ABORT
002540 000000 T13B: HLT ;ERROR! FAILED TO ABORT
002542 000000 T13D: HLT ;ERROR! RTI FAILED & DID NOT ABORT

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002544 022706 001074      T13C:  CMP      #KPTR-4,KSP      ;CHECK STACK PTR
002550 001401              BEQ      .+4
002552 000000              HLT
002554 022766 170017 000002  CMP      #UM+PUM+17,2(KSP) ;CHECK THAT CORRECT STATUS
002562 001401              BEQ      .+4 ;WAS SAVED ON THE STACK
002564 000000              HLT ;ERROR! INCORRECT STATUS
002566 022767 040145 174776  CMP      #PLA+UPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
002574 001401              BEQ      .+4 ; & FAILING PAGE #)
002576 000000              HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002600 022767 002536 174770  CMP      #T13A,SR2 ;CHECK CONTENTS OF SR2
002606 001401              BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
002610 000000              HLT ;ERROR! INCORRECT PC IN SR2
002612 106506              MFPD    USP ;PUSH USER STACK PTR ONTO KERNEL STACK
002614 022716 040100      CMP      #UI2+100,(KSP) ;CHECK THAT USER STACK PTR WAS POPPED
002620 001401              BEQ      .+4
002622 000000              HLT ;ERROR!
002624 104000              SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK
;ABORTS WHEN SECOND WORD ON STACK (STATUS) IS FETCHED
002626 012737 002672 000250  MOV      #T14C,2#MVEC ;LOAD MEM MGMT ERROR VECTOR
002634 012767 170000 175134  MOV      #UM+PUM,PSW ;USER MODE!!!,PREV USER MODE!!
002642 012706 100076              MOV      #UI4+76,USP
002646 012737 002670 017376  MOV      #T14D,2#PUI4+76 ;LOAD USER STACK (PHYS ADRS.)
002654 005037 017400              CLR      2#PUI4+100 ;AND 'NEW' STATUS
002660 005237 177572              INC      2#SRO ;ENABLE MEMORY MGMT
002664 000006              RTT ;SEG LEN ABORT AFTER FIRST POP
002666 000000              HLT ;ERROR! FAILED TO ABORT
002670 000000              HLT ;ERROR!
002672
002672 022767 040151 174672  CMP      #PLA+UPG+VS4+1,SRO ;CHECK SRO (ABORT CONDITIONS
002700 001401              BEQ      .+4 ; & FAILING PAGE #)
002702 000000              HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
002704 022767 002664 174664  CMP      #T14A,SR2 ;CHECK CONTENTS OF SR2
002712 001401              BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
002714 000000              HLT ;ERROR! INCORRECT PC IN SR2
002716 106506              MFPD    USP ;PUSH USER STACK PTR ONTO KERNEL STACK
002720 022716 100100      CMP      #UI4+100,(KSP) ;CHECK THAT USER STACK PTR POPPED TWICE
002724 001401              BEQ      .+4
002726 000000              HLT
002730 104000              SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK
;ABORTS WHEN TOP WORD ON USER STACK (RETURN PC) IS FETCHED
002732 012767 170000 175036  MOV      #UM+PUM,PSW ;USER MODE!!! PREV USER MODE!!
002740 012706 020100              MOV      #UI1+100,USP
002744 012737 002770 000250  MOV      #T16C,2#MVEC ;LOAD MEM MGMT ERROR VECTOR
002752 012706 002766              MOV      #T16D,RS
002756 005237 177572              INC      2#SRO ;ENABLE MEMORY MGMT
002762 000205              RTS      5 ;ABORTS (STACK IS NON-RES)
002764 000000              HLT ;ERROR! RTS& ABORT FAILED
002766 000000              HLT ;ERROR! ABORT FAILED
002770 022706 001074      T16C:  CMP      #KPTR-4,KSP ;CHECK STACK PTR
002774 001401              BEQ      .+4
002776 000000              HLT
003000 022767 040143 174564  CMP      #PLA+UPG+VS1+1,SRO ;CHECK SRO (ABORT CONDITIONS

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003006 001401 BEQ .+4 ;& FAILING PAGE 8)
003010 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003012 022767 002762 174556 CMP #T16A,SR2 ;CHECK CONTENTS OF SR2
003020 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
003022 000000 HLT ;ERROR! INCORRECT PC IN SR2
003024 022705 002766 CMP #T16D,R5 ;CHECK THAT R5 DID NOT CHANGE
003030 001401 BEQ .+4
003032 000000 HLT ;ERROR!
003034 106506 MFPO USP ;PUSH USER STACK PTR ONTO KERNEL STACK
003036 022716 02010C CMP #UI1+100,(KSP) ;CHECK THAT USER STACK WAS POPPED
003042 001401 BEQ .+4
003044 000000 HLT ;ERROR! INCORRECT USER STACK PTR
003046 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK
;ABORTS WHEN SOURCE INDEX IS FETCHED
;SOURCE MODE = 6, PC

```

```

003050 012737 003112 000250 MOV #T20C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
003056 012702 177777 MOV #1,R2 ;PRESET DEST REG
003062 012737 016702 016676 MOV #16702,#KIO-2 ;16702,000000 IS A MOV .+4,R2
003070 005037 016700 CLR #KIO ;INSTRUCTION
003074 005037 016702 CLR #KIO+2
003100 005237 177572 INC #SR0 ;ENABLE MEMORY MGMT
003104 000277 SCC ;PRESET CC'S
003106 000137 016676 JMP #KIO-2 ;GO TO MOV INST.
003112 003112 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 *****

```

```

003112 003112 T20C: CMP #KPTR-4,KSP ;CHECK STACK PTR
003116 001401 BEQ .+4
003120 000000 HLT
003122 022766 000017 000002 CMP #17,2(KSP) ;CHECK THAT CORRECT STATUS
003130 001401 BEQ .+4 ;WAS SAVED ON THE STACK
003132 000000 HLT ;ERROR! INCORRECT STATUS
003134 022767 040001 174430 CMP #PLA+IS+VSO+1,SR0 ;CHECK SR0 (ABORT CONDITIONS)
003142 001401 BEQ .+4 ;& FAILING PAGE 8)
003144 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003146 022767 016676 174422 CMP #T20A,SR2 ;CHECK CONTENTS OF SR2
003154 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
003156 000000 HLT ;ERROR! INCORRECT PC IN SR2
003160 005202 INC R2
003162 001401 BEQ .+4
003164 000000 HLT
003166 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

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

```

```

003170 012737 003232 000250 MOV #T21C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
003176 012737 177777 MOV #1,#PKI6
003204 012702 140000 MOV #K16,R2 ;LOAD INDEX REGISTER
003210 012737 017202 016676 MOV #017202,#KIO-2 ;017202,000000 IS A MOV #0(R2),R2
003216 005037 016700 CLR #KIO ;INSTRUCTION

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003222 005237 177572
003226 000137 016676
003232

INC 3#SR0 ;ENABLE MEMORY MGMT
JMP 3#KIO-2
RETURN=.

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

016676 016676
017202 000000
016702 000000
003232

T21A: MOV 30(R2),R2 ;SEG LEN ABORT
T21B: HLT ;ERROR! FAILED TO ABORT
.=RETURN

***** RETURN PC *****

003232
003232 022767 040001 174332
003240 001401
003242 000000
003244 022767 016676 174324
003252 001401
003254 000000
003256 022702 140000
003262 001401
003264 000000
003266 104000

T21C: CMP #PLA+IS+VSO+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
BEQ .+4 ;& FAILING PAGE #)
HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
CMP #T21A,SR2 ;CHECK CONTENTS OF SR2
BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
HLT ;ERROR! INCORRECT PC IN SR2
CMP #K16,R2 ;CHECK THAT R2 IS UNCHANGED
BEQ .+4
HLT ;ERROR!
SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

:CHECK
:ABORTS WHEN INST FOLLOWING SOB IS FETCHED

003270 012703 000001
003274 012737 077302 016676
003302 005037 016674
003306 005037 016700
003312 012737 003332 000250
003320 005237 177572
003324 000277
003326 000137 016676

MOV #1,X3
MOV #077302,3#KIO-2 ;077302=SOB R3,.-2
CLR 3#KIO-4 ;CLEAR INST. PRECEDING SOB (.-2)
CLR 3#KIO ;PUT HLT FOLLOWING SOB
MOV #T22C,3#MVEC ;LOAD MEM MGMT ERROR VECTOR
INC 3#SR0 ;ENABLE MEMORY MGMT
SCC ;PRESET CC'S
JMP 3#KIO-2 ;GO TO SOB INST.

003332
016674 000000
016676 077302
016700 000000
016702 000000
003332

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

003332 022706 001074
003336 001401
003340 000000
003342 022766 000017 000002
003350 001401
003352 000000
003354 022767 040001 174210
003362 001401
003364 000000
003366 022767 016676 174202
003374 001401
003376 000000
003400 005703
003402 001401
003404 000000

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

```

003406 104000                                SCOPE                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN DEST OPERAND IS FETCHED
003410 012767 030000 174360                MOV      @K1+PUM,PSW
003416 012737 003440 000250                MOV      @T24C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
003424 012702 040000                          MOV      @UI2,R2
003430 005237 177572                          INC      @SR0 ;ENABLE MEMORY MGMT
003434 106542                                T24A:  HFPD ;NON-RESIDENT ABORT
003436 000000                                T24B:  HLT
003440 022706 001074                                T24C:  CMP      @KPTR-4,KSP ;CHECK STACK PTR
003444 001401                                BEQ     .+4
003446 000000                                HLT
003450 022767 040143 174114                CMP      @UPG+PLA+VS1+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
003456 001401                                BEQ     .+4 ;& FAILING PAGE #)
003460 000000                                HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003462 022767 003434 174106                CMP      @T24A,SR2 ;CHECK CONTENTS OF SR2
003470 001401                                BEQ     .+4 ;(PC OF ABORTED INSTRUCTION)
003472 000000                                HLT ;ERROR! INCORRECT PC IN SR2
003474 022702 037776                          CMP      @UI2-2,R2 ;CHECK THAT R2 AUTO-DECREMENTED
003500 001401                                BEQ     .+4
003502 000000                                HLT ;ERROR! R2 DID NOT AUTO-DECREMENT
003504 104000                                SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN DEST OPERAND IS FETCHED
003506 012737 003536 000250                MOV      @T25C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
003514 012702 177572                          MOV      @SR0,R2
003520 012767 170000 174250                MOV      @UM+PUM,PSW
003526 005237 177572                          INC      @SR0 ;ENABLE MEMORY MGMT
003532 005012                                T25A:  CLR      (R2) ;ABORT
003534 000000                                T25B:  HLT ;ERROR! FAILED TO ABORT
003536 022706 001074                                T25C:  CMP      @KPTR-4,KSP ;CHECK STACK PTR
003542 001401                                BEQ     .+4
003544 000000                                HLT
003546 022767 140157 174016                CMP      @NRA+PLA+UPG+VS7+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
003554 001401                                BEQ     .+4 ;& FAILING PAGE #)
003556 000000                                HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003560 022767 003532 174010                CMP      @T25A,SR2 ;CHECK CONTENTS OF SR2
003566 001401                                BEQ     .+4 ;(PC OF ABORTED INSTRUCTION)
003570 000000                                HLT ;ERROR! INCORRECT PC IN SR2
003572 104000                                SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN DEST OPERAND IS FETCHED
003574 012737 003624 000250                MOV      @T30C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
003602 012703 016677                          MOV      @KIO-1,R3
003606 012737 177777 016700                MOV      @-1,@KIO
003614 005237 177572                          INC      @SR0 ;ENABLE MEMORY MGMT
003620 142323                                T30A:  BICB   (R3)+,(R3)+ ;SEG LENGTH ABORT
003622 000000                                HLT ;ERROR! FAILED TO ABORT

003624 022767 040001 173740                T30C:  CMP      @PLA+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
003632 001401                                BEQ     .+4 ;& FAILING PAGE #)
003634 000000                                HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT

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003636 022767 003620 173732      CMP      @T30A,SR2      ;CHECK CONTENTS OF SR2
003644 001401                    BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
003646 000000                    HLT                        ;ERROR! INCORRECT PC IN SR2
003650 005037 177572      CLR      @SR0          ;DISABLE MEMORY MGMT
003654 022703 016700      CMP      @K10,R3 ;CHECK AUTO-INC TWICE
003660 001401                    BEQ      .+4
003662 000000                    HLT                        ;ERROR!
003664 005237 016700      INC      @K10
003670 001401                    BEQ      .+4
003672 000000                    HLT                        ;ERROR!
003674 104000                    SCOPE                    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN ADDRESS OF DEST OPERAND IS FETCHED
003676 012737 003746 000250      MOV      @T31C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
003704 012702 040000      MOV      @UI2,R2
003710 012703 017100      MOV      @PUI1,R3
003714 012713 177777      MOV      @-1,(R3)
003720 011337 017000      MOV      (R3),@PUI2
003724 012703 020002      MOV      @UI1+2,R3 ;R3= USER VIRTUAL ADDRESS
003730 012767 170000 174040      MOV      @UM+PUM,PSW
003736 005237 177572      INC      @SR0 ;ENABLE MEMORY MGMT
003742 114332      T31A: MOVB   -(R3),@R2+ ;NON-RESIDENT ABORT
003744 000000      T31B: HLT ;ERROR! FAILED TO ABORT

003746 000000      T31C:
003746 022767 140157 173616      CMP      @NRA+PLA+UPG+VS7+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
003754 001401                    BEQ      .+4          ;& FAILING PAGE #)
003756 000000                    HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
003760 022767 003742 173610      CMP      @T31A,SR2 ;CHECK CONTENTS OF SR2
003766 001401                    BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)
003770 000000                    HLT                        ;ERROR! INCORRECT PC IN SR2
003772 022702 040002      CMP      @UI2+2,R2 ;CHECK AUTO-INC
003776 001401                    BEQ      .+4
004000 000000                    HLT                        ;ERROR!
004002 022703 020001      CMP      @UI1+1,R3 ;CHECK AUTO DECREMENT OF R3
004006 001401                    BEQ      .+4
004010 000000                    HLT                        ;ERROR! R3 NOT AUTO-DECREMENTED
004012 104000                    SCOPE                    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT
004014 012737 004060 000250      MOV      @T32C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
004022 012767 170000 173746      MOV      @UM+PUM,PSW
004030 012706 000600      MOV      @UPTR,USP
004034 005016                    CLR      (USP)
004036 012702 060000      MOV      @UI3,R2
004042 012737 177777 017400      MOV      @-1,@PUI3
004050 005237 177572      INC      @SR0 ;ENABLE MEMORY MGMT
004054 006632      T32A: MTP   @R2+ ;NON-RESIDENT ABORT
004056 000000      T32B: HLT ;ERROR! FAILED TO ABORT
004060 000000      T32C:
004060 022767 100147 173504      CMP      @NRA+UPG+VS3+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
004066 001401                    BEQ      .+4          ;& FAILING PAGE #)
004070 000000                    HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004072 022767 004054 173476      CMP      @T32A,SR2 ;CHECK CONTENTS OF SR2
004100 001401                    BEQ      .+4          ;(PC OF ABORTED INSTRUCTION)

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004326 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN DEST OPERAND IS FETCHED
;DM=4

004330	012737	004362	000250	MOV	%T36C,%MMVEC	;LOAD MEM MGMT ERROR VECTOR
004336	012704	140002		MOV	%K16+2,R4	
004342	012703	016702		MOV	%K10+2,R3	
004346	012713	177777		MOV	%-1,(R3)	
004352	005237	177572		INC	%SR0	;ENABLE MEMORY MGMT
004356	154443			T36A: BISR	-(R4),-(R3)	;SEG LENGTH ABORT
004360	000000			T36B: HLT		;ERROR! FAILED TO ABORT
				T36C:		
004362	022767	040001	173202	CMP	%PLA+1,SR0	;CHECK SR0 (ABORT CONDITIONS
004370	001401			BEQ	+.4	& FAILING PAGE #)
004372	000000			HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004374	022767	004356	173174	CMP	%T36A,SR2	;CHECK CONTENTS OF SR2
004402	001401			BEQ	+.4	(PC OF ABORTED INSTRUCTION)
004404	000000			HLT		;ERROR! INCORRECT PC IN SR2
004406	022703	016701		CMP	%K10+1,R3	;CHECK AUTO-DEC
004412	001401			BEQ	+.4	
004414	000000			HLT		;ERROR!
004416	022704	140001		CMP	%K16+1,R4	;CHECK AUTO-DEC
004422	001401			BEQ	+.4	
004424	000000			HLT		;ERROR! AUTO-DEC FAILED
004426	104000			SCOPE		;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;WHEN INSTRUCTION FETCHES DESTINATION INDEX VALUE

004430	012737	004476	000250	MOV	%T40C,%MMVEC	;LOAD MEM MGMT ERROR VECTOR
004436	012767	170000	173332	MOV	%UM+PUM,PSW	
004444	012737	113767	017074	MOV	%113767,%PUI2+74	;113767,020001,177776
004452	012737	020001	017076	MOV	%20001,%PUI2+76	;IS A MOVB %20001,..+4
004460	012737	177776	017100	MOV	%177776,%PUI2+100	;INSTRUCTION
004466	005237	177572		INC	%SR0	;ENABLE MEMORY MGMT
004472	000137	040074		JMP	%PUI2+74	
	004476			RETURN=		
	017074			.=PUI2+74		
017074	113767	020001	177776	T40A: MOVB	%20001,..+4	;SEG LENGTH ABORT WHEN INST. FETCHES
						;DEST INDEX WORD
017102	000000			T40B: HLT		;ERROR! FAILED TO ABORT
	004476			.=RETURN		
				T40C:		
004476	022767	040145	173066	CMP	%PLA+UPG+VS2+1,SR0	;CHECK SR0 (ABORT CONDITIONS
004504	001401			BEQ	+.4	& FAILING PAGE #)
004506	000000			HLT		;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004510	022767	040074	173060	CMP	%UI2+74,SR2	;CHECK CONTENTS OF SR2
004516	001401			BEQ	+.4	(PC OF ABORTED INSTRUCTION)
004520	000000			HLT		;ERROR! INCORRECT PC IN SR2
004522	104000			SCOPE		;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;WHEN INSTRUCTION FETCHES DESTINATION OPERAND

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004524 012737 004572 000250      MOV      @T41C,@MMVEC      ;LOAD MEM MGMT ERROR VECTOR
004532 012767 170000 173236      MOV      @UM+PUM,PSW      ;USER MODE!!!,PREV USER MODE!!
004540 012703 100000                MOV      @UI4,R3
004544 012704 100102                MOV      @UI4+102,R4
004550 012737 010344 017200      MOV      @010344,@PUI5    ;012344 = MOV R3,-(R4)
004556 005037 017202                CLR      @PUI5+2
004562 005237 177572                INC      @SR0              ;ENABLE MEMORY MGMT
004566 000137 120000                JMP      @UI5
                                RETURN=.
                                .=PUI5
017200 010344                T41A:   MOV      R3,-(R4)      ;ABORT
017202 000000                T41B:   HLT                    ;ERROR! FAILED TO ABORT
                                .=RETURN

004572                                T41C:
004572 022767 040151 172772      CMP      @PLA+UPG+VS4+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
004600 001401                BEQ      .+4              ;& FAILING PAGE #)
004602 000000                HLT                    ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004604 022767 120000 172764      CMP      @UI5,SR2        ;CHECK CONTENTS OF SR2
004612 001401                BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
004614 000000                HLT                    ;ERROR! INCORRECT PC IN SR2
004616 022704 100100                CMP      @UI4+100,R4
004622 001401                BEQ      .+4
004624 000000                HLT
004626 104000                SCOPE                    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK
                                ; (WHEN INSTRUCTION FETCHES ADDRESS OF DESTINATION OPERAND)
004630 012737 004666 000250      MOV      @T42C,@MMVEC      ;LOAD MEM MGMT ERROR VECTOR
004636 012767 030000 173132      MOV      @KM+PUM,PSW
004644 012703 140102                MOV      @KI6+102,R3
004650 012737 177777 017000      MOV      @-1,@PKI6+100
004656 005237 177572                INC      @SR0              ;ENABLE MEMORY MGMT
004662 106653                T42A:   MTPD      @-(R3)    ;SEG LENGTH ABORT
004664 000000                T42B:   HLT                    ;ERROR! FAILED TO ABORT

004666 022706 001076                T42C:   CMP      @KPTR-2,KSP ;CHECK STACK PTR ( 1 POP, 2 PUSHES)
004672 001401                BEQ      .+4
004674 000000                HLT                    ;ERROR! INCORRECT STACK PTR
004676 022767 040015 172666      CMP      @PLA+VS6+1,SR0   ;CHECK SR0 (ABORT CONDITIONS
004704 001401                BEQ      .+4              ;& FAILING PAGE #)
004706 000000                HLT                    ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
004710 022767 004662 172660      CMP      @T42A,SR2        ;CHECK CONTENTS OF SR2
004716 001401                BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
004720 000000                HLT                    ;ERROR! INCORRECT PC IN SR2
004722 022703 140100                CMP      @KI6+100,R3      ;CHECK AUTO-DECREMENT
004726 001401                BEQ      .+4
004730 000000                HLT
004732 104000                SCOPE                    ;ERROR! DID NOT AUTO-DEC
                                ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK
                                ;ABORTS WHEN ADDRESS TO JUMP TO IS FETCHED
004734 012737 005002 000250      MOV      @T43C,@MMVEC      ;LOAD MEM MGMT ERROR VECTOR
004742 012737 000137 017076      MOV      @137,@PUI2+76    ;000137,T43D =JMP @T43D
004750 012737 005000 017100      MOV      @T43D,@PUI2+100
004756 005037 017102                CLR      @PUI2+102

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004762 012767 170000 173006      MOV      #UM+PUM,PSW
004770 005237 177572                INC      @#SR0                ;ENABLE MEMORY MGMT
004774 000137 040076                JMP      @#UI2+76            ;GO DO INSTRUCTION
                                RETURN=.
                                .=#PUI2+76
017076 000137 005000      T43A:   JMP      @#T43D
017102 000000      T43B:   HLT                        ;ERROR! JMP FAILED
                                .=#RETURN
005000 000000      T43D:   HLT                        ;ERROR! FAILED TO ABORT
005002 000000      T43C:
005002 022767 040145 172562      CMP      #PLA+UPG+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
005010 001401                BEQ      .+4                ;& FAILING PAGE #)
005012 000000                HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005014 022767 040076 172554      CMP      #UI2+76,SR2        ;CHECK CONTENTS OF SR2
005022 001401                BEQ      .+4                ;(PC OF ABORTED INSTRUCTION)
005024 000000                HLT                        ;ERROR! INCORRECT PC IN SR2
005026 104000                SCOPE                       ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK
                                ;WHEN INSTRUCTION FETCHES ADDRESS OF DEST. OPERAND. (UI5+4)
005030 012737 005100 000250      MOV      @T44C,@MMVEC        ;LOAD MEM MGMT ERROR VECTOR
005036 012767 170000 172732      MOV      #UM+PUM,PSW        ;USER MODE!!!,PREV USER MODE!!
005044 012706 000600                MOV      #UPTR,USP          ;SET USER STACK PTR
005050 012703 120006                MOV      #UI5+6,R3
005054 012737 177776 017204      MOV      @-2,@#PUI5+4
005062 012737 004753 017200      MOV      @4753,@#PUI5        ;004753 = JSR 7,@-(R3)
005070 005237 177572                INC      @#SR0                ;ENABLE MEMORY MGMT
005074 000137 120000                JMP      @#UI5                ;GO DO INST.
                                RETURN=.
                                .=#PUI5
017200 004753      T44A:   JSR      7,@-(R3)
017202 000000      T44B:   HLT                        ;ERROR!
                                .=#RETURN
005100 022706 001074      T44C:   CMP      #KPTR-4,KSP        ;CHECK STACK PTR
005104 001401                BEQ      .+4
005106 000000                HLT                        ;INCORRECT STACK PTR
005110 022767 140157 172454      CMP      #NRA+PLA+UPG+VS7+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
005116 001401                BEQ      .+4                ;& FAILING PAGE #)
005120 000000                HLT                        ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005122 022767 120000 172446      CMP      #UI5,SR2            ;CHECK CONTENTS OF SR2
005130 001401                BEQ      .+4                ;(PC OF ABORTED INSTRUCTION)
005132 000000                HLT                        ;ERROR! INCORRECT PC IN SR2
005134 106506                MFPD      USP                ;GET USER STACK PTR (ON KERNEL STACK)
005136 022716 000576      CMP      #UPTR-2,(KSP)        ;CHECK THAT USER STACK DID NOT
005142 001401                BEQ      .+4                ;GET PUSHED
005144 000000                HLT                        ;ERROR!
005146 022703 120004      CMP      #UI5+4,R3            ;CHECK AUTO-DEC
005152 001401                BEQ      .+4
005154 000000                HLT                        ;ERROR!
005156 104000                SCOPE                       ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

                                ;CHECK
                                ;WHEN INSTRUCTION FETCHES DESTINATION OPERAND (UIPDR5)
005160 012737 005232 000250      MOV      @T45C,@MMVEC        ;LOAD MEM MGMT ERROR VECTOR
005166 012767 170000 172602      MOV      #UM+PUM,PSW        ;USER MODE!!!,PREV USER MODE!!
005174 012706 000600                MOV      #UPTR,USP          ;SET USER STACK PTR

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K02

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DFKTFA.P11

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005200 005016          CLR      (USP)
005202 012737 012667 017200  MOV      @012667,@#PUIS ;012667,057606 = MOV (USP)+,UIPDRS
005210 012737 057606 017202  MOV      @57606,@#PUIS+2 ;INSTRUCTION
005216 005037 017204          CLR      @#PUIS+4
005222 005237 177572          INC      @#SR0 ;ENABLE MEMORY MGMT
005226 000137 120000          JMP      @#UIS
005232          RETURN=.
017200 012667 057606          T45A: MOV      (USP)+,UIPDRS-UIS+PUIS
017204 000000          T45B: HLT ;ERROR! FAILED TO ABORT
005232          .:=RETURN

005232          T45C:
005232 022767 140157 172332  CMP      @NRA+UPG+PLA+VS7+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
005240 001401          BEQ      .+4 ;& FAILING PAGE #)
005242 000000          HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005244 022767 120000 172324  CMP      @UIS,SR2 ;CHECK CONTENTS OF SR2
005252 001401          BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
005254 000000          HLT ;ERROR! INCORRECT PC IN SR2
005256 005037 177572          CLR      @#SR0 ;DISABLE MEMORY MGMT
005262 005737 177612          TST      @#UIPDRS
005266 001001          BNE      .+4
005270 000000          HLT
005272 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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```

;CHECK
;ABORTS WHEN REGISTER (RS) IS PUSHED ON USER STACK
005274 012737 005344 000250  MOV      @T50C,@#MVEC ;LOAD MEM MGMT ERROR VECTOR
005302 012767 170000 172466  MOV      @UM+PUN,PSW ;USER MODE!!! PREV USER MODE!!
005310 012706 100000          MOV      @UI4,USP ;SET USER STACK PTR
005314 005037 017276          CLR      @#PUIS-2
005320 005005          CLR      RS
005322 012767 005342 173654  MOV      @T50D,TEMP
005330 005237 177572          INC      @#SR0 ;ENABLE MEMORY MGMT
005334 004577 173644          JSR      S,@TEMP ;NON-RES ABORT
005340 000000          T50A: HLT ;JSR FAILED & DID NOT ABORT
005342 000000          T50B: HLT ;ERROR! FAILED TO ABORT
005344          T50C:
005344 022767 140147 172220  CMP      @NRA+PLA+UPG+VS3+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
005352 001401          BEQ      .+4 ;& FAILING PAGE #)
005354 000000          HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005356 022767 005334 172212  CMP      @T50A,SR2 ;CHECK CONTENTS OF SR2
005364 001401          BEQ      .+4 ;(PC OF ABORTED INSTRUCTION)
005366 000000          HLT ;ERROR! INCORRECT PC IN SR2
005370 106506          MFPD    USP ;PUSH USER STACK PTR ONTO KERNEL STACK
005372 022716 077776          CMP      @UI4-2,(KSP) ;CHECK THAT USER STACK PTR DEC-
005376 001401          BEQ      .+4 ;REMENTED
005400 000000          HLT ;ERROR!
005402 005705          TST      RS
005404 001401          BEQ      .+4
005406 000000          HLT
005410 104000          SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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;CHECK


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005412 012737 005456 000250 ;ABORTS WHEN STATUS IS PUSHED ONTO USER STACK
005420 012767 140000 172374 MOV #T52C, @MMVEC ;LOAD MEM MGMT ERROR VECTOR
005426 012767 005454 172364 MOV #UM, IOTVEC+2
005434 012767 170000 172334 MOV #T52D, IOTVEC
005442 005006 MOV #UM+PUM, PSM ;USER MODE!!! PREV USER MODE!!
005444 005237 177572 CLR USP ;SET USER STACK PTR
005450 000004 INC @SR0 ;ENABLE MEMORY MGMT
005452 000000 T52A: IOT ;NON-RESIDENT ABORT
005454 000000 T52B: HLT ;ERROR! IOT & ABORT FAILED
005456 022706 001074 T52D: HLT ;ERROR! ABORT FAILED
005462 001401 T52C: CMP #KPTR-4, KSP ;CHECK STACK PTR
005464 000000 BEQ .+4
005466 022766 170000 000002 HLT ;INCORRECT STACK PTR
005474 001401 CMP #UM+PUM, 2(KSP) ;CHECK THAT CORRECT STATUS
005476 000000 BEQ .+4 ;WAS SAVED ON THE STACK
005500 022767 140157 172064 HLT ;ERROR! INCORRECT STATUS
005506 001401 CMP #NRA+UPG+PLA+VS7-1, SR0 ;CHECK SR0 (ABORT CONDITIONS
005510 000000 BEQ .+4 ;& FAILING PAGE #)
005512 022767 005450 172056 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005520 001401 CMP #T52A, SR2 ;CHECK CONTENTS OF SR2
005522 000000 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
005524 122737 000060 177777 HLT ;ERROR! INCORRECT PC IN SR2
005532 001401 CMPB #60, @PSW+1 ;CHECK FOR CORRECT PSW ON ABORT
005534 000000 BEQ .+4 ;(KM+PUM IN HIGH BYTE)
005536 012737 030000 177776 HLT ;ERROR! INCORRECT PSW AFTER ABORT
005544 106506 MOV #KM+PUM, @PSW ;KERNEL MODE!!! PREV SUPER MODE!!
005546 022716 177776 MFPD USP ;PUSH USER STACK PTR ONTO KERNEL STACK
005552 001401 CMP #0-2, (KSP) ;CHECK PUSHES
005554 000000 HLT ;ERROR!
005556 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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;CHECK
;ABORTS WHEN RETURN PC IS PUSHED ONTO USER STACK
005560 012737 005626 000250 MOV #T53C, @MMVEC ;LOAD MEM MGMT ERROR VECTOR
005566 012767 170000 172202 MOV #UM+PUM, PSM ;USER MODE, PREV. USER MODE
005574 012706 040002 MOV #UI2+2, USP ;SET USER STACK PTR
005600 012767 005624 172212 MOV #T53D, IOTVEC
005606 012767 140340 172206 MOV #UM+PRTY7, IOTVEC+2
005614 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
005620 000004 T53A: IOT ;NON-RESIDENT ABORT AT TRP14
005622 000000 T53B: HLT ;ERROR! IOT & ABORT FAILED
005624 000000 T53D: HLT ;ERROR! ABORT FAILED
005626 022706 001074 T53C: CMP #KPTR-4, KSP ;CHECK STACK PTR
005632 001401 BEQ .+4
005634 000000 HLT ;INCORRECT STACK PTR
005636 022716 005622 CMP #T53B, (KSP) ;CHECK RETURN PC
005642 001401 BEQ .+4
005644 000000 HLT
005646 022766 170340 000002 CMP #UM+PUM+PRTY7, 2(KSP) ;CHECK THAT CORRECT STATUS
005654 001401 BEQ .+4 ;WAS SAVED ON THE STACK
005656 000000 HLT ;ERROR! INCORRECT STATUS
005660 022767 040143 171704 CMP #PLA+UPG+VS1+1, SR0 ;CHECK SR0 (ABORT CONDITIONS
005666 001401 BEQ .+4 ;& FAILING PAGE #)
005670 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
005672 022767 005620 171676 CMP #T53A, SR2 ;CHECK CONTENTS OF SR2

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005700 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
005702 000000      HLT      ;ERROR! INCORRECT PC IN SR2
005704 012767 030000 172064      MOV      #KM+PUM,PSW
005712 106506      MFPD     USP      ;PUSH USER STACK PTR ONTO KERNEL STACK
005714 022716 037776      CMP      #UI2-2,(KSP) ;CHECK THAT USER STACK PTR WAS
005720 001401      BEQ      .+4      ;DECREMENTED BY 4
005722 000000      HLT      ;ERROR!
005724 005067 172072      CLR      IOTVEC+2
005730 012767 000022 172062      MOV      #IOTVEC+2,IOTVEC
005736 104000      SCOPE    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT
005740 012737 006002 000250      MOV      #T56C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
005746 012767 170000 172022      MOV      #UM+PUM,PSW
005754 012706 000600      MOV      #UPTR,USP
005760 012746 140000      MOV      #UM,-(USP)
005764 012746 040100      MOV      #UI2+100,-(USP)
005770 005037 017100      CLR      #PUI2+100
005774 005237 177572      INC      #SRO      ;ENABLE MEMORY MGMT
006000 000002      T56B:   RTI
006002 006002      RETURN=.
017100 017100      T56A:   .=#PUI2+100
006002 022706 001074      T56C:   CMP      #KPTR-4,KSP ;CHECK STACK PTR
006006 001401      BEQ      .+4
006010 000000      HLT
006012 022767 040145 171552      CMP      #PLA+UPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
006020 001401      BEQ      .+4      ;& FAILING PAGE #)
006022 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006024 022767 006000 171544      CMP      #T56B,SR2 ;CHECK CONTENTS OF SR2
006032 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
006034 000000      HLT      ;ERROR! INCORRECT PC IN SR2
006036 104000      SCOPE    ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ABORT
006040 012767 170000 171730      MOV      #UM+PUM,PSW
006046 012737 006100 000250      MOV      #T60C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006054 012737 000005 017076      MOV      #5,#PUI2+76 ;5 IS A RESET INSTRUCTION
006062 005037 017100      CLR      #PUI2+100
006066 005005      CLR      R5
006070 005237 177572      INC      #SRO      ;ENABLE MEMORY MGMT
006074 000137 040076      JMP      #UI2+76 ;GO EXECUTE RESET
006100 006100      RETURN=.
017076 017076      T60A:   .=#PUI2+76
017100 000005      RESET
017100 000000      HLT
006100 006100      .=#RETURN

T60C:
006100 022767 040145 171464      CMP      #PLA+UPG+VS2+1,SRO ;CHECK SRO (ABORT CONDITIONS
006106 001401      BEQ      .+4      ;& FAILING PAGE #)
006110 000000      HLT      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006112 022767 040076 171456      CMP      #UI2+76,SR2 ;CHECK CONTENTS OF SR2
006120 001401      BEQ      .+4      ;(PC OF ABORTED INSTRUCTION)
006122 000000      HLT      ;ERROR! INCORRECT PC IN SR2

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006124 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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;CHECK
;ABORTS WHEN INST FOLLOWING MARK IS FETCHED
006126 012767 170000 171642 MOV #UM+PUM,PSW
006134 012737 006164 000250 MOV #T63C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006142 012746 MOV (PC)+,-(USP) ;PUSH MARK INST ON USER STACK
006144 006401 MARK 1 ;PUSH THIS INST ON USER STACK
006146 012705 040100 MOV #UI2+100,R5 ;AFTER MARK EXECUTE INST AT T63A
006152 005037 017100 CLR #T63A ;WHICH IS A HALT
006156 005237 177572 INC #SR0 ;ENABLE MEMORY MGMT
006162 000116 JMP (USP) ;GO EXECUTE MARK AT SPTR-2
006164 006164 RETURN=.
017100 017100 .=PUI2+100
000000 T63A: HLT ;SEG ABORT WHEN THIS INST. FETCHED AT
006164 006164 .=RETURN
006170 022706 001074 T63C: CMP #KPTR-4,KSP ;CHECK STACK PTR
006172 001401 BEQ .+4
006174 022767 040145 171370 CMP #PLA+UPG+VS2+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
006202 001401 BEQ .+4 ;& FAILING PAGE #)
006204 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006206 022767 000576 171362 CMP #UPTR-2,SR2 ;CHECK CONTENTS OF SR2
006214 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
006216 000000 HLT ;ERROR! INCORRECT PC IN SR2
006220 106506 MFPD USP ;PUSH USER STACK PTR ONTO KERNEL STACK
006222 022716 000604 CMP #UPTR+4,(KSP) ;CHECK USER STACK PTR
006226 001401 BEQ .+4
006230 000000 HLT ;ERROR! INCORRECT USER STACK PTR
006232 023705 000602 CMP #UPTR+2,R5 ;CHECK CONTENTS OF R5
006236 001401 BEQ .+4
006240 000000 HLT ;ERROR!
006242 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

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;CHECK
;ABORTS WHEN INST FOLLOWING TST IS FETCHED
006244 012737 006300 000250 MOV #T64C,#MMVEC ;LOAD MEM MGMT ERROR VECTOR
006252 012702 177777 MOV #-1,R2 ;R2=STATUS WORD ADDRESS (ODD BYTE)
006256 012737 105722 016676 MOV #105722,#KIO-2 ;105722=TSTB (R2)+
006264 005037 016700 CLR #KIO
006270 005237 177572 INC #SR0 ;ENABLE MEMORY MGMT
006274 000137 016676 JMP #KIO-2 ;GO EXECUTE INSTRUCTION
006300 006300 RETURN=.
016676 105722 T64A: TSTB (R2)+ ;ABORTS WHEN NEXT INST. IS FETCHED
016700 000000 T64B: HLT ;ERROR! FAILED TO ABORT
006300 006300 .=RETURN
006300 022767 040001 171264 T64C: CMP #PLA+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
006306 001401 BEQ .+4 ;& FAILING PAGE #)
006310 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006312 022767 016676 171256 CMP #T64A,SR2 ;CHECK CONTENTS OF SR2
006320 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
006322 000000 HLT ;ERROR! INCORRECT PC IN SR2
006324 005702 TST R2 ;CHECK AUTO-INC

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006326 001401 BEQ .+4
006330 000000 HLT
006332 104000 SCOPE ;ERROR! AUTO-INC FAILED
;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK
;ABORTS WHEN INSTRUCTION FOLLOWING MOVB IS FETCHED
006334 012737 006372 000250 MOV @T66C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
006342 012703 016700 MOV @K10,R3
006346 005013 CLR (3) ;SET UP CODE (HALT)
006350 012743 MOV (7)+,-(R3)
006352 114203 MOVB -(R2),R3 ;THIS INSTRUCTION IS NOT EXECUTED
006354 012702 001204 MOV @TEMP,R2
006360 012722 100000 MOV @100000,(R2)+
006364 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
006370 000113 JMP (R3) ;GO EXECUTE MOVB INSTRUCTION
006372 006372 RETURN=.
016676 114203 T66A: MOVB -(R2),R3 ;ABORTS WHEN THE NEXT INST IS FETCHED
016700 000000 T66B: HLT ;ERROR! FAILED TO ABORT HERE
006372 006372 .=RETURN
006372 022767 040001 171172 T66C: CMP @PLA+VS0+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
006400 001401 BEQ .+4 ;& FAILING PAGE #)
006402 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006404 022767 016676 171164 CMP @T66A,SR2 ;CHECK CONTENTS OF SR2
006412 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
006414 000000 HLT ;ERROR! INCORRECT PC IN SR2
006416 022703 177600 CMP @177600,R3 ;MOVB TO A REGISTER EXTENDS
006422 001401 BEQ .+4 ;THE SIGN
006424 000000 HLT ;ERROR! INCORRECT RESULT IN R3
006426 104000 SCOPE ;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

;CHECK ACCESS VIOLATION ABORT
;ABORTS WHEN SOURCE DATA IS FETCHED USING DATIP WITH DEST ADDRESS READ ONLY
006430 012737 006462 000250 MOV @T72C,@MMVEC ;LOAD MEM MGMT ERROR VECTOR
006436 112737 000002 172314 MOVB @RD0,@KIPDR6 ;SET KERNEL ADDRESS 140000-140077
;READ ABORT ON WRITE
006444 005037 016700 CLR @PKI6 ;CLEAR CORRESPONDING PHYSICAL ADDRESS
006450 005237 177572 INC @SR0 ;ENABLE MEMORY MGMT
006454 000261 SEC ;SET 'C'
006456 005537 140000 T72A: ADC @K16 ;ABORTS WHEN DATA IS FETCHED USING DATIP

006462 006462 T72C: CMP @AVA+VS6+1,SR0 ;CHECK SR0 (ABORT CONDITIONS
006470 001401 BEQ .+4 ;& FAILING PAGE #)
006472 000000 HLT ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006474 022767 006456 171074 CMP @T72A,SR2 ;CHECK CONTENTS OF SR2
006502 001401 BEQ .+4 ;(PC OF ABORTED INSTRUCTION)
006504 000000 HLT ;ERROR! INCORRECT PC IN SR2
006506 022766 000001 000002 CMP @C,2(KSP) ;CHECK THAT CORRECT STATUS
006514 001401 BEQ .+4 ;WAS SAVED ON THE STACK
006516 000000 HLT ;ERROR! INCORRECT STATUS
006520 005037 177572 CLR @SR0 ;DISABLE MEMORY MGMT
006524 005737 016700 TST @PKI6 ;CHECK THAT ADDRESS WAS NOT WRITTEN
006530 001401 BEQ .+4
006532 000000 HLT ;ERROR! DATA WRITTEN INTO READ ONLY ADDRESS

```

006534 104000

SCOPE

```

;CHECK ACCESS VIOLATION ABORT
;ABORTS WHEN SOURCE DATA IS FETCHED FROM READ ONLY SPACE USING A DATIP.
006536 012737 006562 000250      MOV      #T73C, @#MVEC      ;LOAD MEM MGMT ERROR VECTOR
006544 005037 016700              CLR      @#PKI6            ;PRESET ADDRESS
006550 005237 177572              INC      @#SR0            ;ENABLE MEMORY MGMT
006554 000261                      SEC                      ;SET 'C'
006556 106037 140001      T73A:  RORB   @#KI6+1      ;ABORTS WHEN RESULT IS WRITTEN
006562 022767 020015 171002      T73C:  CMP      @AVA+VS6+1, SR0 ;CHECK SR0 (ABORT CONDITIONS
006570 001401                      BEQ      .+4              ;& FAILING PAGE #)
006572 000000                      HLT                      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006574 022767 006556 170774      CMP      @T73A, SR2      ;CHECK CONTENTS OF SR2
006602 001401                      BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
006604 000000                      HLT                      ;ERROR! INCORRECT PC IN SR2
006606 022766 000001 000002      CMP      @C, 2(KSP)      ;CHECK THAT CORRECT STATUS
006614 001401                      BEQ      .+4              ;WAS SAVED ON THE STACK
006616 000000                      HLT                      ;ERROR! INCORRECT STATUS
006620 005037 177572              CLR      @#SR0            ;DISABLE MEMORY MGMT
006624 005737 016700              TST      @#PKI6
006630 001401                      BEQ      .+4
006632 000000                      HLT
006634 012737 000006 172314      MOV      @6, @#KIPDR6    ;ERROR! ADDRESS WAS WRITTEN
006642 104000                      SCOPE                    ;SET KIPDR R/W
;SCOPE STORES PC IN R1 & SETS ALL STACK PTRS

```

```

;CHECK ABORT USING 'T' BIT TRAP
;CHECK ABORT WHEN PSW IS NON-RESIDENT
006644 012737 006700 000250      MOV      @T102C, @#MVEC   ;LOAD MEM MGMT ERROR VECTOR
006652 005002                      CLR      R2              ;PRESET DESTINATION
006654 005237 177572              INC      @#SR0            ;ENABLE MEMORY MGMT
006660 012746 140017              MOV      @UM+17, -(KSP)  ;'NEW' STATUS ON STACK
006664 012746 006672              MOV      @.+6, -(KSP)   ;RETURN PC
006670 000002                      RTI                      ;SET STATUS AND EXECUTE NEXT INST.
006672 013702 177776      T102A: MOV      @#PSW, R2    ;PSW IS NON-RESIDENT IN USER MODE
006676 000000                      HLT                      ;ERROR! FAILED TO ABORT
006700 022767 140157 170664      T102C: CMP      @NRA+PLA+UPG+VS7+1, SR0 ;CHECK SR0 (ABORT CONDITIONS
006706 001401                      BEQ      .+4              ;& FAILING PAGE #)
006710 000000                      HLT                      ;ERROR! INCORRECT ABORT CONDITIONS OR PAGE IDENT
006712 022767 006672 170656      CMP      @T102A, SR2     ;CHECK CONTENTS OF SR2
006720 001401                      BEQ      .+4              ;(PC OF ABORTED INSTRUCTION)
006722 000000                      HLT                      ;ERROR! INCORRECT PC IN SR2
006724 022766 140017 000002      CMP      @UM+17, 2(KSP)  ;CHECK THAT CORRECT STATUS
006732 001401                      BEQ      .+4              ;WAS SAVED ON THE STACK
006734 000000                      HLT                      ;ERROR! INCORRECT STATUS
006736 005702                      TST      R2              ;CHECK THAT R2 WAS NOT LOADED
006740 001401                      BEQ      .+4
006742 000000                      HLT
006744 104000                      SCOPE
;ERROR! DEST (R2) WAS CHANGED

```

```

006746 005267 172226      END:    INC      ICNT
006752 022767 005000 172220      CMP      @5000, ICNT
006760 001402                      BEQ      DONE
006762 000167 172232      JMP      BEGIN

```

```

006766 012767 000007 170572 DONE:  MOV  #7,TPB
006774 105767 170564          TSTB  TPS
007000 100375          BPL   -4
007002 013702 000042          MOV  @#42,%2
007006 001404          BEQ  DONE1
007010 004712          LOGIC: JSR  7,(2)
007012 000240          NOP
007014 000240          NOP
007016 000240          NOP
007020 000167 172166          DONE1: JMP  START
          000001          .END

```

```

:GET DECTAPE MONITOR RETURN ADDRESS
:DO NOT RETURN TO MON IF (42)=0
:RETURN TO DECTAPE MONITOR
:ACT11
:OVERLAY
:AREA

```


F03

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 DFKTFA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

KI6 = 140000	317#	770	790	956	1003	1020	1083	1098	1429#	1453#				
KM = 000000	204#	833	954	1082	1246	1279								
KPG = 000000	251#													
KPTR = 001100	229#	372	393	452	479	530	566	661	713	748	814	839	861	
	969	1089	1142	1231	1264	1301	1350							
KSP =x000006	193#	362#	363	365#	371	372#	373#	374#	375#	393#	452	455	479	
	505	530	533	566	661	664	674	698	713	726	748	751	814	
	817	839	861	943	955#	956#	958#	968	969	985	1089	1142	1152	
	1212	1231	1234	1248	1264	1267	1270	1281	1301	1350	1360	1438	1461	
	1477#	1478#	1489											
LOGIC = 007010	346	1506#												
MMK = 001320	417#													
MMVEC = 000250	218#	395#	443#	444#	472#	497#	522#	558#	591#	611#	631#	651#	681#	
	707#	733#	768#	801#	834#	855#	874#	899#	926#	953#	977#	1002#	1028#	
	1053#	1081#	1105#	1129#	1162#	1194#	1222#	1255#	1289#	1314#	1339#	1370#	1395#	
	1423#	1449#	1474#											
MMO = 001232	398#													
N = 000010	200#													
NRA = 100000	255#	536	569	864	911	936	1145	1178	1205	1237	1483			
NRO = 000000	305#													
PC =x000007	190#	1340												
PFVEC = 000024	213#													
PKIO = 016600	324#													
PKI6 = 016700	325#	769#	1084#	1426#	1442	1450#	1465							
PKM = 000000	206#													
PLA = 040000	254#	458	482	508	536	569	597	617	637	667	691	716	754	
	784	820	842	864	882	911	962	988	1011	1043	1068	1092	1119	
	1145	1178	1205	1237	1273	1304	1327	1353	1382	1410	1483			
PRTY4 = 000200	203#													
PRTY7 = 000340	202#	1259	1270											
PSM = 177776	221#	361#	376#	523#	559#	652#	682#	705#	833#	857#	905#	927#	954#	
	1029#	1054#	1082#	1109#	1130#	1163#	1195#	1225#	1243	1246#	1256#	1279#	1290#	
	1313#	1338#	1480											
PUI1 = 017100	330#	901												
PUI2 = 017000	329#	654#	655#	903#	1030#	1031#	1032#	1036	1106#	1107#	1108#	1113	1294#	
	1298	1315#	1316#	1321	1347									
PUI3 = 017400	328#	931#												
PUI4 = 017300	327#	684#	685#	1197#										
PUI5 = 017200	326#	562#	1057#	1058#	1062	1133#	1134#	1138	1166#	1167#	1168#	1172	1173#	
PUM = 030000	207#	376	523	533	559	652	664	682	705	833	857	905	927	
	954	1029	1054	1082	1109	1130	1163	1195	1225	1234	1246	1256	1270	
	1279	1290	1313	1338										
RDO = 000002	306#	1424												
RETURN= 006372	741#	747	775#	780	806#	812	1035#	1040	1061#	1065	1112#	1116	1137#	
	1141	1171#	1175	1297#	1300	1320#	1324	1346#	1349	1376#	1380	1404#	1408	
	308#													
RM = 000006	307#													
RMT = 000004	183#													
RO =x000000	184#	371#	374	404#	406#	408#	410#	412#	414#	446#	450#	464	473#	
R1 =x000001	185#	400#	402#	404#	406#	408#	410#	412#	414#	446#	450#	464	473#	
R2 =x000002	474	475#	477	489	524#	525	528	547	592#	594#	603#	734#	744#	
	760#	770#	778#	790	835#	837	848	856#	859#	900#	907#	917	930#	
	933#	946	1371#	1378	1388	1399	1400#	1401#	1406	1475#	1480#	1492		
R3 =x000003	186#	401#	403#	405#	407#	409#	411#	413#	415#	445#	446	447#	450	
	464	525#	528#	550	632#	634#	643	809#	826	875#	878#	889	901#	
	902#	903	904#	907	920	1004#	1005#	1007#	1017	1055#	1063	1083#	1086#	

T14C	002672	681	690	
T14D	002670	684	689	
T16A	002762	710	719	
T16B	002764	711		
T16C	002770	707	713	
T16D	002766	708	712	722
T2A	001704	502	511	
T2B	001706	503		
T2C	001710	497	504	
T20A	016676	744	757	
T20B	016702	745		
T20C	003112	733	748	
T21A	016676	778	787	
T21B	016702	779		
T21C	003232	768	783	
T22	016674	808		
T22A	016676	809	823	
T22AA	016700	810		
T22B	016702	811		
T22C	003332	801	814	
T24A	003434	837	845	
T24B	003436	838		
T24C	003440	834	839	
T25A	003532	859	867	
T25B	003534	860		
T25C	003536	855	861	
T3A	002010	528	539	
T3B	002012	529		
T3C	002014	522	530	
T30A	003620	878	885	
T30C	003624	874	881	
T31A	003742	907	914	
T31B	003744	908		
T31C	003746	899	910	
T32A	004054	933	939	
T32B	004056	934		
T32C	004060	926	935	
T33A	004160	958	965	
T33B	004162	960		
T33C	004164	953	961	
T35A	004252	982	991	
T35B	004256	983		
T35C	004260	977	984	
T36A	004356	1007	1014	
T36B	004360	1008		
T36C	004362	1002	1010	
T4A	002160	564	572	
T4B	002162	565		
T4C	002164	558	566	
T40A	017074	1037		
T40B	017102	1039		
T40C	004476	1028	1042	
T41A	017200	1063		
T41B	017202	1064		
T41C	004572	1053	1067	
T42A	004662	1086	1095	

T42B	004664	1087#		
T42C	004666	1081	1089#	
T43A	017076	1114#		
T43B	017102	1115#		
T43C	005002	1105	1118#	
T43D	005000	1107	1114	1117#
T44A	017200	1139#		
T44B	017202	1140#		
T44C	005100	1129	1142#	
T45A	017200	1173#		
T45B	017204	1174#		
T45C	005232	1162	1177#	
T50A	005334	1201#	1208	
T50B	005340	1202#		
T50C	005344	1194	1204#	
T50D	005342	1199	1203#	
T52A	005450	1228#	1240	
T52B	005452	1229#		
T52C	005456	1222	1231#	
T52D	005454	1224	1230#	
T52E	005620	1261#	1276	
T52F	005622	1262#	1267	
T52G	005626	1255	1264#	
T53D	005624	1258	1263#	
T55A	017100	1299#		
T55B	006000	1296#	1307	
T55C	006002	1289	1301#	
T6A	002300	594#	600	
T6B	002304	595#		
T6C	002306	591	596#	
T60A	017076	1322#		
T60C	006100	1314	1326#	
T63A	017100	1343#	1348#	
T63C	006164	1339	1350#	
T64A	016676	1378#	1385	
T64B	016700	1379#		
T64C	006300	1370	1381#	
T66A	016676	1406#	1413	
T66B	016700	1407#		
T66C	006372	1395	1409#	
T7A	002356	614#	620	
T7B	002362	615#		
T7C	002364	611	616#	
T72A	006456	1429#	1435	
T72C	006462	1423	1431#	
T73A	006556	1453#	1459	
T73C	006562	1449	1454#	
UIPAR0=	177640	277#	404	429#
UIPAR1=	177642	278#	431#	
UIPAR2=	177644	279#	430#	
UIPAR3=	177646	280#		
UIPAR4=	177650	281#	433#	
UIPAR5=	177652	282#	432#	
UIPAR6=	177654	283#		
UIPAR7=	177656	284#		
UIPDR0=	177600	268#	400	420#

CAC	3318														
CFPS	3318														
CPC	3158														
CPDR	3158	542	575												
CSRO	3158	458	482	508	536	559	596	616	636	667	690	716	754	783	820
	842	864	881	910	935	961	988	1010	1042	1067	1092	1118	1145	1177	1204
CSR2	1237	1273	1304	1326	1353	1381	1409	1431	1454	1482					
	3158	461	485	511	539	572	600	620	640	670	694	719	757	787	823
	845	867	885	914	939	965	991	1014	1046	1071	1095	1122	1148	1181	1208
CSTAT	1240	1276	1307	1330	1356	1385	1413	1435	1458	1486					
SVEC	3158	455	505	533	664	751	817	984	1234	1270	1438	1461	1489		
	3158	442	472	497	522	558	591	611	631	651	681	707	733	768	801
	834	855	874	899	926	953	977	1002	1028	1053	1081	1105	1129	1162	1194
	1222	1255	1289	1314	1339	1370	1395	1423	1449	1474					

ADC	1429																
ADD	365	528	614														
BEQ	364	378	453	456	459	462	465	480	483	486	490	506	509	512	515		
	531	534	537	540	544	548	551	567	570	573	577	581	584	588	601		
	604	618	621	624	638	641	644	662	665	668	671	675	692	695	699		
	714	717	720	723	727	749	752	755	758	761	785	788	791	815	818		
	821	824	827	840	843	846	849	862	865	868	883	886	890	893	912		
	915	918	921	937	940	944	947	963	966	970	986	989	992	995	1012		
	1015	1018	1021	1044	1047	1069	1072	1075	1090	1093	1096	1099	1120	1123	1143		
	1146	1149	1153	1156	1179	1182	1206	1209	1213	1216	1232	1235	1238	1241	1244		
	1249	1265	1268	1271	1274	1277	1282	1302	1305	1308	1328	1331	1351	1354	1357		
	1361	1364	1383	1386	1389	1411	1414	1417	1433	1436	1439	1443	1456	1459	1462		
	1466	1484	1487	1490	1493	1499	1505										
BIC	360	361	546	579													
BICB	564	878															
BISB	502	1007															
BIT	543	576															
BNE	1186																
BPL	1503																
CLR	370	373	392	395	399	402	406	410	414	426	429	444	447	475	612		
	632	655	685	736	737	772	799	800	859	888	929	1058	1108	1165	1168		
	1184	1197	1198	1226	1284	1294	1316	1317	1343	1373	1397	1426	1441	1450	1464		
	1475																
CMP	452	455	458	461	464	479	482	485	489	505	508	511	514	530	533		
	536	539	547	550	566	569	572	580	583	597	600	617	620	637	640		
	661	664	667	670	674	691	694	698	713	716	719	722	726	748	751		
	754	757	784	787	790	814	817	820	823	839	842	845	848	861	864		
	867	882	885	889	911	914	917	920	936	939	943	946	962	965	969		
	985	988	991	994	1011	1014	1017	1020	1043	1046	1068	1071	1074	1089	1092		
	1095	1098	1119	1122	1142	1145	1148	1152	1155	1178	1181	1205	1208	1212	1221		
	1234	1237	1240	1248	1264	1267	1270	1273	1276	1281	1301	1304	1307	1327	1330		
	1350	1353	1356	1360	1363	1382	1385	1410	1413	1416	1432	1435	1438	1455	1458		
	1461	1483	1486	1489	1498												
	477	1243															
CMPB	312																
EMT	311	340	351														
HALT	448	476	500	526	563	593	603	613	633	656	686	709	738	760	773		
INC	802	836	858	877	892	906	932	957	980	1006	1033	1059	1085	1110	1135		
	1169	1200	1227	1260	1295	1318	1344	1374	1402	1427	1451	1476	1497				
IOT	1228	1261															
JMP	356	366	367	740	774	804	1034	1060	1111	1114	1136	1170	1319	1345	1375		
	1403	1500	1510														
JSR	1139	1201	1506														
MARK	1341																
MFPD	673	697	725	837	942	968	1151	1211	1247	1280	1359						
MOV	371	372	374	375	376	393	400	401	404	405	408	409	412	413	417		
	418	419	420	421	422	423	424	427	428	430	431	432	433	443	445		
	446	450	472	473	474	497	498	499	522	523	524	525	558	559	560		
	561	562	591	592	594	611	631	634	651	652	653	654	681	682	683		
	684	705	706	707	708	733	734	735	744	768	769	770	771	778	787		
	798	801	833	834	835	855	856	857	874	875	876	899	900	901	902		
	903	904	905	926	927	928	930	931	953	954	955	956	977	978	979		
	1002	1003	1004	1005	1028	1029	1030	1031	1032	1053	1054	1055	1056	1057	1063		
	1081	1082	1083	1084	1105	1106	1107	1109	1129	1130	1131	1132	1133	1134	1162		
	1163	1164	1166	1167	1173	1194	1195	1196	1199	1222	1223	1224	1225	1246	1255		
	1256	1257	1258	1259	1279	1285	1289	1290	1291	1292	1293	1313	1314	1315	1338		

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 DFKTFA.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

	1339	1340	1342	1370	1371	1372	1395	1396	1398	1400	1401	1423	1449	1468	1474
MOV8	1477	1478	1480	1501	1504										
MTPD	907	982	1037	1399	1406	1424									
MTP1	377	958	1086												
NOP	933														
RESET	391	398	1507	1508	1509										
RORB	1322														
RTI	1453														
RTS	658	1296	1479												
RTT	710														
SCC	379	687													
SEC	449	501	527	657	739	803	981								
SOB	1428	1452													
SUB	403	407	411	415	809										
TST	362														
TSTB	363	623	643	826	1185	1215	1388	1442	1465	1492					
.ENABL	1378	1502													
.END	1														
.LIST	1512														
.MACR	1	315	331	340											
.NLIST	315	331													
.REM	1	315	331	332	340										
.REPT	1														
.TITLE	340														
.WORD	1														
	342	344													

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DFKTFA,DFKTFA.SEQ/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DFKTFA.P11
 RUN-TIME: 5 10 2 SECONDS
 RUN-TIME RATIO: 25/19=1.3
 CORE USED: 8K (15 PAGES)

