

KT11-C

KEYS
MD-11-DCKTC-A

EP-DCKTC-A-DL-A
COPYRIGHT © 1976
FICHE 1 OF 1

NOV 1976
digital
MADE IN USA

This microfiche card contains a grid of frames. The left side of the card features a vertical column of frames, each containing a diagram of a circuit board with various components and connections. The remaining frames in the grid contain text-based data, likely technical specifications or test results, organized in a structured format with columns and rows. The text is small and difficult to read due to the high resolution of the microfiche.

B01

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 2
DCKTOR

.REM *

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DCKTC-A
PRODUCT NAME:	KT11-C ACCESS KEYS TEST
DATE CREATED:	15 APRIL 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	RICK FADDEN

1.0 ABSTRACT

THIS PROGRAM CHECKS THE OPERATION OF EACH ACCESS KEY FOR EACH OF THE FOUR UNIBUS CYCLES (OR COMBINATION OF CYCLES) WHICH MAY REFERENCE AN ADDRESS THRU SEGMENTATION. THESE CYCLES ARE DATI, DATO (NO DATIP), DATIP-DATO, AND DATIP-DATOB. EACH OF THESE CASES IS TESTED WITH AND WITHOUT MEMORY MANAGEMENT ENABLE SET. THUS EIGHT CASES ARE TESTED FOR EACH KEY. SR0, SR1, SR2, THE CORRESPONDING PDR'S, AND THE PROPER EXECUTION OR PREVENTION OF EXECUTION OF THE INSTRUCTION ARE CHECKED IN EACH CASE.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP 11/45 WITH KT11-C OPTION

2.2 STORAGE

THE PROGRAM REQUIRES 5K OF MEMORY, STARTING AT LOCATION 0.

3.0 LOADING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER.

4.0 STARTING PROCEDURE

4.1 NORMAL DIAGNOSTIC OPERATION

LOAD ADDRESS 200.
SET DESIRED SWITCH REGISTER SETTINGS (ALL DOWN FOR WORST CASE).
PRESS START.
THE PROGRAM WILL DISPLAY THE NUMBER OF THE CURRENT SUBTEST IN THE DISPLAY REGISTER, AND WILL RING THE BELL ON COMPLETION OF A PASS.

4.2 SINGLE SUBTEST LOOP (TESTX)

LOAD ADDRESS 210.
PRESS START.
AT THE FIRST HALT, LOAD THE ADDRESS OF THE DESIRED SUBTEST (THE ADDRESS OF THE TESTXX TAG) INTO THE SWITCH REGISTER.
THEN PRESS "CONTINUE".
AT THE SECOND HALT, SET THE OPERATIONAL SWITCH SETTINGS DESIRED (SW11 MUST BE SET TO ZERO). THEN PRESS CONTINUE.

5.0 OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SW15=1 OR UP-- HALT ON ERROR
 SW14=1 OR UP-- SCOPE LOOP
 SW13=1 OR UP-- INHIBIT PRINTOUT
 SW11=1 OR UP-- INHIBIT ITERATIONS
 SW08=1 OR UP-- LOAD MICROBREAK REGISTER WITH VALUE IN
 SW00-SW07(AT START OF TEST ONLY).

5.2 SUBROUTINE ABSTRACTS

5.2.1 SCOPE

THIS SUBROUTINE CALL IS PLACED BETWEEN EACH SUBTEST. IT RECORDS THE STARTING ADDRESS OF EACH SUB-TEST AS IT IS BEING ENTERED. IF A SCOPE LOOP IS REQUESTED, IT WILL JUMP TO THE START OF THE SUBTEST THAT THE SCOPE LOOP IS REQUESTED FOR. IF SCOPE LOOP IS NOT REQUESTED, THERE WILL BE 1024 ITERATIONS ON THAT SUBTEST BEFORE THE NEXT SUBTEST IS ENTERED. SWITCH 11 ON A 1 INHIBITS ITERATION OF SUBTESTS.

5.2.2 HLT

THIS EMT CALLS THE SUBROUTINE PRINT, WHICH PRINTS OUT THE LOCATION COUNTER AT THE TIME OF FAILURE AND THE CONTENTS OF THE PROCESSOR STATUS REGISTER. NOTE THAT THE LOCATION COUNTER WILL BE THE ADDRESS OF THE HLT PLUS TWO.

5.2.3 TRAPCATCHER

THIS IS A SERIES OF INSTRUCTIONS STARTING AT LOCATION 0 DESIGNED TO DETECT AND ISOLATE UNEXPECTED TRAPS AND INTERRUPTS TO THE TRAP AND INTERRUPT VECTOR AREA OF MEMORY.

EACH VECTOR ENTRANCE ADDRESS IS LOADED WITH THE ADDRESS OF THE NEXT LOCATION. THE NEXT LOCATION IS LOADED WITH A HALT (000000). THUS AN ILLEGAL TRAP OR INTERRUPT WILL CAUSE A HALT AT THE TRAP LOCATION PLUS TWO.

IF A HALT OCCURS IN THE TRAP OR INTERRUPT AREA, EXAMINE REGISTER SIX. IT WILL CONTAIN THE CURRENT STACK ADDRESS. THE CONTENTS OF THE CURRENT STACK ADDRESS IS THE VALUE OF THE LOCATION COUNTER WHEN THE TRAP OR INTERRUPT OCCURRED.

5.2.4 TESTX (SINGLE SUBTEST LOOP)

THIS ROUTINE ALLOWS A SINGLE SUBTEST TO BE RUN CONTINUOUSLY FOR SCOPE LOOP PURPOSES. WHILE A SCOPE LOOP SWITCH OPTION EXISTS, IT REQUIRES THAT YOU ARE WITHIN THE TEST IN WHICH YOU WISH TO LOOP. IN SOME CASES (SUCH AS WITH INTERMITTENT FAILURES) THAT'S

E01

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 5
DCKTCA

NOT EASY TO DO. THIS SUBROUTINE ALLOWS YOU TO LOAD THE ADDRESS
OF ANY SUBTEST AT THE HALT AND THEN GO DIRECTLY TO THAT TEST.

5.2.5 EMTSRV (EMT DECODER)

THIS ROUTINE DECODES ALL EMT CALLS, INCLUDING PATCHES AND THE HLT CALL WHICH PASSES CONTROL TO THE PRINT ROUTINE.

5.2.6 CLRALL

THIS ROUTINE CLEARS ALL THE PAR'S AND PDR'S OF THE KT11-C, AS WELL AS SRD.

5.2.7 RWALL

THIS ROUTINE MAPS ALL PAGES TO BANK 0 BY CLEARING ALL THE PAR'S. ALL PAGES ARE MADE 4K READ-WRITE BY LOADING ALL THE PDR'S WITH THE VALUE 77406.

5.2.8 SETUP

THIS ROUTINE FIRST CALLS RWALL TO MAP ALL THE PAGES 4K, RW, BANK 0. IT THEN SETS THE KEY FOR KERNEL PAGE 1 TO WHATEVER VALUE WAS STORED ON THE STACK BEFORE THE ROUTINE WAS CALLED. THIS ALLOWS A REFERENCE TO PAGE 1 TO TEST THE DESIRED ACCESS KEY. FINALLY, KERNEL PAGE 7 IS MAPPED TO THE EXTERNAL BANK.

5.3 PROGRAM AND/OR OPERATOR ACTION

5.3.1 SA 200 (NORMAL DIAGNOSTIC OPERATION)

THE PROGRAM EXECUTES 8 TESTS OF EACH KEY, DISPLAYING THE SUBTEST NUMBER IN THE LIGHTS. TESTS 21 THRU 30 ARE CYCLED THRU 3 TIMES, ONCE FOR EACH OF THE KEYS WHICH GIVES A NON-RESIDENT ABORT. AT THE END OF EACH PASS THRU THE DIAGNOSTIC THE BELL IS RUNG.

5.3.2 SA 210 (SINGLE SUBTEST LOOP)

THIS STARTING ADDRESS ALLOWS THE USER TO RUN A SINGLE SUBTEST REPEATEDLY BY GIVING THE ADDRESS OF THE DESIRED SUBTEST AT THE FIRST HALT. IF SW11 IS SET TO A ONE, NORMAL TEST EXECUTION WILL BE RESUMED.

6.0 ERRORS

6.1 ERROR PRINTOUT

PRINTOUTS ARE IN A STANDARD TWO-WORD FORMAT. THE FIRST WORD IS THE OCTAL VALUE OF THE PC+2 OF THE DETECTED ERROR. THE SECOND IS THE CONTENTS OF THE PROCESSOR STATUS REGISTER WHEN THE ERROR WAS DETECTED.

6.2 ERROR RECOVERY

IN GENERAL, TEST FAILURES WILL PRINTOUT AN ERROR MESSAGE AND CONTINUE. IF THE "HALT ON ERROR" SWITCH IS SET, HITTING CONTINUE WILL RECOVER. IF THE PROGRAM HANGS UP IN A LOOP, THE ERROR IS LIKELY TO BE A SIGNAL WHICH WAS NEVER RECEIVED. IF A HALT OCCURS IN THE TRAP AND VECTOR AREA THE PROGRAM MUST BE RESTARTED. IF THE PROGRAM HALTS IN THE MAIN FLOW, CONSULT THE LISTING IF NO MESSAGE IS TYPED OUT.

7.0 RESTRICTIONS

PROGRAM MUST BE LOADED INTO LOWER 5K OF MEMORY.

8.0 MISCELLANEOUS

8.1 EXECUTION TIME

EACH PASS TAKES APPROXIMATELY 1 MINUTE WITH CORE MEMORY.

8.2 DISPLAY REGISTER

THE NUMBER OF THE CURRENT SUBTEST IS DISPLAYED.

9.0 PROGRAM DESCRIPTION

THE PROGRAM RUNS EIGHT SEPARATE TESTS OF EACH ACCESS KEY. DATI, DATO (NO DATIP), DATIP-DATO, AND DATIP-DATOB ARE CHECKED FOR EACH KEY, WITH AND WITHOUT MEMORY MANAGEMENT ENABLE SET. THE SUBTEST NUMBER IS DISPLAYED IN THE DISPLAY REGISTER, AND THE BELL IS RUNG AT THE END OF EACH PASS.

*

H01

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 8
DCKTCA

;COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
;TEST OF THE KT11-C ACCESS KEYS

;OPERATING INSTRUCTIONS

1. LOAD TEST USING THE ABSOLUTE LOADER
2. LOAD SA 200
3. SET SR TO INITIAL SETTINGS
4. PRESS START

;DYNAMIC SWITCH REGISTER SETTINGS ARE:

;SW15=1 CAUSES HALT ON ERROR
;SW14=1 CAUSES SCOPE LOOPING
;SW13=1 INHIBITS ERROR PRINTOUT
;SW11=1 INHIBITS ITERATIONS
;SW08=1 LOAD MICROBREAK REGISTER WITH LOW BYTE OF SR

;DEFINITIONS

104400	SCOPE=TRAP
000240	NOP=240
000000	R0=%0
000001	R1=%1
000002	R2=%2
000003	R3=%3
000004	R4=%4
000005	R5=%5
000006	R6=%6
000007	R7=%7
000006	SP=%6
000007	PC=%7
177570	SR=177570
177776	PS=177776
177776	STATUS=PS
104006	HLT=104006

;LOAD TRAP CATCHER IN LOCATIONS 0 THRU 377
;EACH VECTOR ADDRESS IS LOADED WITH THE ADDRESS
;OF THE NEXT LOCATION, AND THE NEXT LOCATION IS LOADED
;WITH A HALT INSTRUCTION (000000)

;LOAD VECTOR AREA

000030	000030	.=30
000030	023224	EMTSRV
000032	000340	340
	000034	.=34
000034	022472	SCOPEC
000036	000000	0

;LOAD STARTING AREA

000200	000200	.=200
000200	000167	JMP START
	000210	.=210
000210	000167	JMP TESTX

;LOAD DATA AREA

001000	001000	.=1000
001000	000000	KSTACK: 0

002000	002000		SSTACK: 0	.=. +776	
003000	000000		USTACK: 0	.=. +776	
003002	000000	000000 000000		.WORD 0,0,0,0	
003010	000000		TCSR:	177564	; TELETYPE PRINTER CSR
003012	177564		TDBR:	177566	
003014	177566		TEMPX:	0	; TEMPORARY STORAGE
003016	000000		TEMP1:	0	
003020	000000		TEMP2:	0	
003022	000000		SR0:	177572	; KT11-C STATUS REGISTER ADDRESSES
003024	177572		SR1:	177574	
003026	177574		SR2:	177576	
003030	177576		SR3:	172516	
003032	172516		KTVEC:	250	; KT11-C INTERRUPT VECTOR
003034	000250		KTSTA:	252	
003036	000252		ADRTAB:		
003040			UIPDR0:	177600	; USER I-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES
003040	177600		UIPDR1:	177602	
003042	177602		UIPDR2:	177604	
003044	177604		UIPDR3:	177606	
003046	177606		UIPDR4:	177610	
003050	177610		UIPDR5:	177612	
003052	177612		UIPDR6:	177614	
003054	177614		UIPDR7:	177616	
003056	177616		UDPDR0:	177620	; USER D-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES
003060	177620		UDPDR1:	177622	
003062	177622		UDPDR2:	177624	
003064	177624		UDPDR3:	177626	
003066	177626		UDPDR4:	177630	
003070	177630		UDPDR5:	177632	
003072	177632		UDPDR6:	177634	
003074	177634		UDPDR7:	177636	
003076	177636		UIPAR0:	177640	; USER I-SPACE PAGE ADDRESS REGISTER ADDRESSES
003100	177640		UIPAR1:	177642	
003102	177642		UIPAR2:	177644	
003104	177644		UIPAR3:	177646	
003106	177646		UIPAR4:	177650	
003110	177650		UIPAR5:	177652	
003112	177652		UIPAR6:	177654	
003114	177654		UIPAR7:	177656	
003116	177656		UDPAR0:	177660	; USER D-SPACE PAGE ADDRESS REGISTER ADDRESSES
003120	177660		UDPAR1:	177662	
003122	177662		UDPAR2:	177664	
003124	177664		UDPAR3:	177666	
003126	177666		UDPAR4:	177670	
003130	177670		UDPAR5:	177672	
003132	177672		UDPAR6:	177674	
003134	177674		UDPAR7:	177676	
003136	177676		SIPDR0:	172200	; SUPERVISOR I-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES
003140	172200		SIPDR1:	172202	
003142	172202		SIPDR2:	172204	
003144	172204		SIPDR3:	172206	
003146	172206		SIPDR4:	172210	
003150	172210		SIPDR5:	172212	
003152	172212				

003154 172214
 003156 172216
 003160 172220
 003162 172222
 003164 172224
 003166 172226
 003170 172230
 003172 172232
 003174 172234
 003176 172236
 003200 172240
 003202 172242
 003204 172244
 003206 172246
 003210 172250
 003212 172252
 003214 172254
 003216 172256
 003220 172260
 003222 172262
 003224 172264
 003226 172266
 003230 172270
 003232 172272
 003234 172274
 003236 172276
 003240 172300
 003242 172302
 003244 172304
 003246 172306
 003250 172310
 003252 172312
 003254 172314
 003256 172316
 003260 172320
 003262 172322
 003264 172324
 003266 172326
 003270 172330
 003272 172332
 003274 172334
 003276 172336
 003300 172340
 003302 172342
 003304 172344
 003306 172346
 003310 172350
 003312 172352
 003314 172354
 003316 172356
 003320 172360
 003322 172362
 003324 172364
 003326 172366
 003330 172370
 003332 172372

SIPDR6: 172214
 SIPDR7: 172216
 SDPDR0: 172220
 SDPDR1: 172222
 SDPDR2: 172224
 SDPDR3: 172226
 SDPDR4: 172230
 SDPDR5: 172232
 SDPDR6: 172234
 SDPDR7: 172236
 SIPAR0: 172240
 SIPAR1: 172242
 SIPAR2: 172244
 SIPAR3: 172246
 SIPAR4: 172250
 SIPAR5: 172252
 SIPAR6: 172254
 SIPAR7: 172256
 SDPAR0: 172260
 SDPAR1: 172262
 SDPAR2: 172264
 SDPAR3: 172266
 SDPAR4: 172270
 SDPAR5: 172272
 SDPAR6: 172274
 SDPAR7: 172276
 KIPDR0: 172300
 KIPDR1: 172302
 KIPDR2: 172304
 KIPDR3: 172306
 KIPDR4: 172310
 KIPDR5: 172312
 KIPDR6: 172314
 KIPDR7: 172316
 KDPDR0: 172320
 KDPDR1: 172322
 KDPDR2: 172324
 KDPDR3: 172326
 KDPDR4: 172330
 KDPDR5: 172332
 KDPDR6: 172334
 KDPDR7: 172336
 KIPAR0: 172340
 KIPAR1: 172342
 KIPAR2: 172344
 KIPAR3: 172346
 KIPAR4: 172350
 KIPAR5: 172352
 KIPAR6: 172354
 KIPAR7: 172356
 KDPAR0: 172360
 KDPAR1: 172362
 KDPAR2: 172364
 KDPAR3: 172366
 KDPAR4: 172370
 KDPAR5: 172372

;SUPERVISOR D-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES

;SUPERVISOR I-SPACE PAGE ADDRESS REGISTER ADDRESSES

;SUPERVISOR D-SPACE PAGE ADDRESS REGISTER ADDRESSES

;KERNEL I-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES

;KERNEL D-SPACE PAGE DESCRIPTOR REGISTER ADDRESSES

;KERNEL I-SPACE PAGE ADDRESS REGISTER ADDRESSES

;KERNEL D-SPACE PAGE ADDRESS REGISTER ADDRESSES


```

003334 172374      KDPAR6: 172374
003336 172376      KDPAR7: 172376
                003336      ADREND=  -2
003340 177600      PDRTAB: 177600      ;TABLE OF ADDRESSES OF 1ST PDR OF EACH SET
003342 172200      172200
003344 172300      172300
003346 177640      PARTAB: 177640      ;TABLE OF ADDRESSES OF 1ST PAR OF EACH SET
003350 172240      172240
003352 172340      172340

003354 003240      STATAB: KIPDR0      ;KERNEL TABLE OF PDR'S AND PAR'S
003356 000000      0
003360 003140      SIPDR0      ;SUPERVISOR TABLE OF PDR'S AND PAR'S
003362 040000      40000
003364 003040      UIPDR0      ;USER TABLE OF PDR'S AND PAR'S
003366 140000      STAEND: 140000
003370 000000      STAPNT: 0
003372 177573      SROH: 177573      ;KT11-C STATUS REGISTER HIGH BYTE ADDRESSES
003374 177575      SRIH: 177575
003376 177577      SR2H: 177577
003400 177770      UBRK: 177770      ;MICROBREAK REGISTER ADDRESS
003402 000000      NRCNT: 0      ;COUNTER FOR TEST OF THE 3 NR KEYS
003404 000000 000003 000007 NRKEYS: 0,3,7      ;VALUES OF THE 3 NON RESIDENT KEYS
003412 125252      DESTAD: 125252      ;LOCATION USED FOR READS AND WRITES TO CHECK
                                ;EXECUTION OR ABORTING AT CORRECT POINT

```

```

;SET UP FOR START OF TESTS
003414 005037 177776 START: CLR 0#PS
003420 012706 001000 MOV #KSTACK,SP      ;SETUP KERNEL STACK
003424 012737 040000 177776 MOV #40000,0#PS      ;SETUP SUPERVISOR STACK POINTER
003432 012706 002000 MOV #SSTACK,SP
003436 012737 140000 177776 MOV #140000,0#PS      ;SETUP USER STACK POINTER
003444 012706 003000 MOV #USTACK,SP
003450 005037 177776 CLR 0#PS
003454 012767 002000 017132 MOV #2000,ICOUNT      ;INITIALIZE ITERATION COUNT
003462 012767 003504 017130 MOV #TEST1+2,RETURN      ;SETUP SCOPE AND ITERATION LOOP RETURN
003470 005067 177706 CLR NRCNT      ;INITIALIZE FOR NR TEST
003474 012777 000007 177330 MOV #7,0SR3      ;ENABLE ALL D-SPACES

```

```

;SHOW THAT DATI TO A RROT PAGE (ACF=1) WITHOUT MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
003502 104400 TEST1: SCOPE
003504 012737 000001 177570 MOV #1,0#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
003512 005037 177776 CLR 0#PS      ;INITIALIZE PROCESSOR STATUS
003516 012706 001000 MOV #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
003522 005077 177276 CLR 0SR0      ;INITIALIZE SRO
003526 012746 000001 MOV #1,-(SP)      ;PUSH RROT KEY ON STACK
003532 004767 016552 JSR %7,SETUP      ;MAKE KERNEL PAGE 1 RROT, BANK 0
                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ;MAKE ALL OTHER PAGES RW, BANK 0
                                ;RESTORE STACK
003536 005726 TST (SP)+      ;SETUP ABORT RETURN IN CASE
003540 012777 003700 177266 MOV #RET1,0KTVEC
003546 005077 177264 CLR 0KTSTA

```



```

003552 012767 125252 177632      MOV      #125252,DESTAD ;SETUP LOCATION TO BE REFERENCED
003560 012701 023412      MOV      #DESTAD+20000,R1 ;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION TO
                                ;BE REFERENCED THRU KERNEL PAGE 1
003564 005277 177234      INC      @SRO          ;TURN ON KT11-C
003570 022721 125252      CMP      #125252,(R1)+ ;DATI TO RROT PAGE
003574 001404      BEQ     CMPOK1        ;BRANCH IF CORRECT VALUE WAS READ
003576 005377 177222      DEC     @SRO          ;ON ERROR, TURN OFF KT11-C
003602 104006      HLT     @SRO          ;RELOCATION FAILED THRU KERNEL PAGE 1
003604 000441      BR      DONE1
003606 017702 177212      CMPOK1: MOV    @SRO,R2   ;SAVE CONTENTS OF SRO
003612 105377 177206      DEC     @SRO          ;TURN OFF KT11-C
003616 022702 010021      CMP     #10021,R2    ;CHECK SAVED CONTENTS OF SRO
003622 001401      BEQ     .+4
003624 104006      HLT     .+4
                                ;SRO INCORRECT-SHOULD HAVE
                                ;TRACKED REFERENCE TO DATA SPACE,
                                ;PAGE 0, WHICH GOT THE ADDRESS
                                ;OF SRO, AND MMGT TRAP SHOULD BE SET
                                ;CHECK SR1
003626 022777 000027 177172      CMP     #27,@SR1
003634 001401      BEQ     .+4
003636 104006      HLT     .+4
                                ;SR1 INCORRECT-SHOULD KEEP
                                ;TRACKING EVEN WITH KT11-C OFF
                                ;CHECK SR2
003640 022777 003640 177162      CMP     #,@SR2
003646 001401      BEQ     .+4
003650 104006      HLT     .+4
                                ;SR2 INCORRECT-SHOULD TRACK EVEN
                                ;WHEN KT11-C IS OFF
                                ;CHECK INSTRUCTION SPACE PDR FOR
                                ;THE RROT PAGE REFERENCED
                                ;KIPDR1 INCORRECT-SHOULD NOT
                                ;HAVE BEEN CHANGED SINCE THE
                                ;RROT REFERENCE WAS TO DATA SPACE
003652 022777 077401 177362      CMP     #77401,@KIPDR1 ;CHECK DATA SPACE PDR CORRESPONDING
003660 001401      BEQ     .+4          ;TO THE RROT REFERENCE
003662 104006      HLT     .+4          ;KDPDR1 INCORRECT-"A" BIT SHOULD
                                ;BE SET SINCE DATA SPACE WAS READ
                                ;AND WAS RROT
003664 022777 077601 177370      CMP     #77601,@KDPDR1
003672 001401      BEQ     .+4
003674 104006      HLT     .+4
003676 000404      BR      DONE1
003700 042777 000001 177116  RET1:  BIC     #1,@SRO    ;TURN OFF KT11-C
003706 104006      HLT     .+4          ;DATI TO RROT PAGE CAUSED
                                ;A TRAP OR ABORT ALTHOUGH MEMORY
                                ;MANAGEMENT TRAP ENABLE WAS NOT SET
                                ;RESTORE TRAP RETURN TO CAUSE HALT
003710 016777 177122 177116  DONE1: MOV    KTSTA,@KTVEC ;ON AN UNEXPECTED TRAP
003716 005077 177114      CLR    @KTSTA        ;INITIALIZE SRO
003722 005077 177076      CLR    @SRO          ;INITIALIZE PROCESSOR STATUS
003726 005037 177776      CLR    @#PS
                                ;SHOW THAT A DATI TO A RROT PAGE (ACF=1) WITH MEMORY MANAGEMENT
                                ;TRAP ENABLE SET CAUSES A TRAP AT THE END OF THE INSTRUCTION
                                ;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE
                                ;PDR'S FOR THE PAGE REFERENCED ARE CORRECT
003732 104400      TEST2: SCOPE
003734 012737 000002 177570      MOV    #2,@#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
003742 005037 177776      CLR    @#PS         ;INITIALIZE PROCESSOR STATUS
003746 012706 001000      MOV    #KSTACK,SP  ;INITIALIZE KERNEL STACK POINTER
003752 005077 177046      CLR    @SRO        ;INITIALIZE SRO
003756 012746 000001      MOV    #1,-(SP)    ;PUSH RROT KEY ON STACK
003762 004767 016322      JSR    %7,SETUP    ;MAKE KERNEL PAGE 1 RROT, BANK 0

```


MO1

003766	005726			TST	(SP)+		;	MAKE KERNEL PAGE 7 RW, EXTERNAL
003770	012777	004036	177036	MOV	#RET2,@KTVEC		;	MAKE ALL OTHER PAGES RW, BANK 0
003776	005077	177034		CLR	@KTSTA		;	RESTORE STACK POINTER
004002	012767	125252	177402	MOV	#125252,DESTAD		;	SETUP TRAP RETURN
004010	005003			CLR	R3		;	INITIALIZE LOCATION TO BE READ
							;	CLEAR REGISTER TO SAVE WHAT WAS READ
							;	ALLOWS CHECKING TO SEE THAT THE
							;	INSTRUCTION COMPLETED BEFORE
							;	TRAPPING
004012	012701	023412		MOV	#DESTAD+20000,R1		;	R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
004016	012777	001001	177000	MOV	#1001,@SRO		;	TO BE REFERENCED THRU KERNEL PAGE 1
004024	012103			MOV	(R1)+,R3		;	TURN ON KT11-C, SET MMGT TRAP ENABLE
004026	105077	176772		CLRB	@SRO		;	DATI TO RROT PAGE
004032	104006			HLT			;	IF NO TRAP, TURN OFF KT11-C
004034	000440			BR	DONE2		;	DATI TO RROT PAGE WITH MEMORY
							;	MANAGEMENT TRAP ENABLE SET DIDN'T
							;	CAUSE A TRAP
004036	017702	176762		RET2:	MOV	@SRO,R2	;	SAVE CONTENTS OF SRO
004042	005377	176756		DEC	@SRO		;	TURN OFF KT11-C
004046	022702	011021		CMP	#11021,R2		;	CHECK SAVED CONTENTS OF SRO
004052	001401			BEQ	+.4		;	SRO INCORRECT-SHOULD HAVE TRACKED
004054	104006			HLT			;	THE REFERENCE TO DATA SPACE, PAGE
							;	0, WHICH GOT THE ADDRESS OF SRO,
							;	AND MMGT TRAP SHOULD BE SET
							;	CHECK SR1
004056	022777	000027	176742	CMP	#27,@SR1		;	SRI INCORRECT-SHOULD CONTINUE
004064	001401			BEQ	+.4		;	TRACKING WITH KT11-C OFF
004066	104006			HLT			;	CHECK SR2
004070	022777	004070	176732	CMP	#.,@SR2		;	SR2 INCORRECT-SHOULD STILL BE
004076	001401			BEQ	+.4		;	TRACKING EVEN WITH KT11-C OFF
004100	104006			HLT			;	CHECK INSTRUCTION SPACE PDR
004102	022777	077401	177132	CMP	#77401,@KIPDR1		;	KIPDR1 INCORRECT-SHOULD NOT
004110	001401			BEQ	+.4		;	HAVE BEEN CHANGED SINCE THE RROT
004112	104006			HLT			;	REFERENCE WAS TO DATA SPACE
							;	CHECK DATA SPACE PDR
004114	022777	077601	177140	CMP	#77601,@KDPDR1		;	KDPDR1 INCORRECT-"A" BIT SHOULD
004122	001401			BEQ	+.4		;	BE SET SINCE DATA SPACE WAS RROT
004124	104006			HLT			;	AND WAS READ
							;	CHECK LOCATION WRITTEN INTO
004126	022703	125252		CMP	#125252,R3		;	THE INSTRUCTION REFERENCING THE RROT
004132	001401			BEQ	+.4		;	PAGE TRAPPED BEFORE COMPLETING
004134	104006			HLT			;	OR RELOCATION FAILED SINCE THE
							;	MOVE DID NOT CORRECTLY LOAD R3
004136	016777	176674	176670	DONE2:	MOV	KTSTA,@KTVEC	;	CHANGE KT11-C FAULT RETURN TO
004144	005077	176666		CLR	@KTSTA		;	CAUSE A HALT ON AN UNEXPECTED TRAP
004150	005077	176650		CLR	@SRO			
004154	005037	177776		CLR	@#PS			

;SHOW THAT A DATO (NO DATIP) TO A RROT PAGE (ACF=1) WITHOUT

NO1

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 14
DCKTCA

;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS WITHOUT COMPLETING THE DATO
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT

004160	104400								
004162	012737	000003	177570	TEST3:	SCOPE				
004170	005037	177776			MOV	#3, @#SR			;LOAD TEST NUMBER INTO THE DISPLAY
004174	012706	001000			CLR	@#PS			;INITIALIZE PROCESSOR STATUS
004200	005077	176620			MOV	#KSTACK, SP			;INITIALIZE KERNEL STACK POINTER
004204	012746	000001			CLR	@SRO			;INITIALIZE SRO
004210	004767	016074			MOV	#1, -(SP)			;PUSH RROT KEY ON STACK
					JSR	%7, SETUP			;MAKE KERNEL PAGE 1 RROT, BANK 0
									;MAKE KERNEL PAGE 7 RW, EXTERNAL
									;MAKE ALL OTHER PAGES RW, BANK 0
									;RESTORE STACK POINTER
004214	005726				TST	(SP)+			;SETUP ABORT RETURN
004216	012777	004264	176610		MOV	#RET3, @KTVEC			
004224	005077	176606			CLR	@KTSTA			
004230	005067	177156			CLR	DESTAD			;INITIALIZE LOCATION TO BE ADDRESSED
									;BY DATO TO RROT PAGE
004234	012701	023412			MOV	#DESTAD+20000, R1			;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
									;TO BE REFERENCED THRU KERNEL PAGE 1
004240	112777	000001	176556		MOV	#1, @SRO			;TURN ON KT11-C
004246	012721	125252		AD3:	MOV	#125252, (R1)+			;DATO TO RROT PAGE-SHOULD ABORT
004252	042777	000001	176544		BIC	#1, @SRO			;TURN OFF KT11-C
004260	104006				HLT				;DATO TO RROT PAGE FAILED TO ABORT
004262	000440				BR	DONE3			
004264	017702	176534		RET3:	MOV	@SRO, R2			;SAVE CONTENTS OF SRO
004270	005377	176530			DEC	@SRO			;TURN OFF KT11-C
004274	022702	020023			CMP	#20023, R2			;CHECK SAVED CONTENTS OF SRO
004300	001401				BEQ	.+4			
004302	104006				HLT				;SRO INCORRECT-SHOULD HAVE LOCKED
									;ON DATO TO KERNEL DATA SPACE PAGE 1(RROT)
									;AND MMGT TRAP SHOULD BE SET
									;CHECK SR1
004304	022777	010427	176514		CMP	#10427, @SR1			
004312	001401				BEQ	.+4			
004314	104006				HLT				;SR1 INCORRECT-SHOULD HAVE LOCKED
									;ON THE ABORTED REFERENCE, WHICH
									;AUTOINCREMENTED R7, AND THEN R1
									;CHECK SR2
004316	022777	004246	176504		CMP	#AD3, @SR2			
004324	001401				BEQ	.+4			
004326	104006				HLT				;SR2 INCORRECT-SHOULD HAVE LOCKED
									;ON THE ABORTED REFERENCE, WITH THE
									;VIRTUAL ADDRESS OF THE INSTRUCTION
									;CHECK INSTRUCTION SPACE PDR
004330	022777	077401	176704		CMP	#77401, @KIPDR1			
004336	001401				BEQ	.+4			
004340	104006				HLT				;KIPDR1 INCORRECT-SHOULD NOT HAVE
									;BEEN CHANGED SINCE THE RROT REFERENCE
									;WAS TO DATA SPACE
									;CHECK DATA SPACE PDR
004342	022777	077401	176712		CMP	#77401, @KDPDR1			
004350	001401				BEQ	.+4			
004352	104006				HLT				;KDPDR1 INCORRECT-SHOULD NOT
									;HAVE BEEN CHANGED SINCE DATO
									;DIDN'T WRITE AND WAS NOT A READ
									;MAKE CERTAIN THAT DESTINATION
									;LOCATION WAS NOT WRITTEN
									;DATO TO RROT PAGE WROTE
									;INTO THE DESTINATION LOCATION
									;CHANGE KT11-C FAULT RETURN
004354	005767	177032			TST	DESTAD			
004360	001401				BEQ	.+4			
004362	104006				HLT				
004364	016777	176446	176442	DONE3:	MOV	KTSTA, @KTVEC			

004372 005077 176440
004376 005077 176422
004402 005037 177776

CLR @KTSTA
CLR @SRO
CLR @PS

; TO CAUSE A HALT ON AN UNEXPECTED TRAP

; SHOW THAT A DATO (NO DATIP) TO A RROT PAGE (ACF=1) WITH
; MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
; SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
; CORRESPONDING TO THE REFERENCE IS CORRECT

004406 104400
004410 012737 000004 177570
004416 005037 177776
004422 012706 001000
004426 005077 176372
004432 012746 000001
004436 004767 015646

TEST4: SCOPE
MOV #4, @SR
CLR @PS
MOV @KSTACK, SP
CLR @SRO
MOV #1, -(SP)
JSR %7, SETUP

; LOAD TEST NUMBER INTO THE DISPLAY
; INITIALIZE PROCESSOR STATUS
; INITIALIZE KERNEL STACK POINTER
; INITIALIZE SRO
; PUSH RROT KEY ON STACK
; MAKE KERNEL PAGE 1 RROT, BANK 0
; MAKE KERNEL PAGE 7 RW, EXTERNAL
; MAKE ALL OTHER PAGES RW, BANK 0
; RESTORE STACK POINTER
; SETUP ABORT RETURN

004442 005726
004444 012777 004510 176362
004452 005077 176360
004456 005067 176730

TST (SP)+
MOV @RET4, @KTVEC
CLR @KTSTA
CLR DESTAD

; INITIALIZE LOCATION TO BE ADDRESSED
; BY DATO TO RROT PAGE

004462 012702 023412

MOV @DESTAD+20000, R2

; R2 CONTAINS ADDRESS OF LOCATION
; TO BE REFERENCED THRU KERNEL PAGE 1

004466 012777 001001 176330
004474 012722 125252
004500 005377 176320
004504 104006
004506 000440
004510 017701 176310
004514 005377 176304
004520 022701 021023
004524 001401
004526 104006

AD4: MOV #1001, @SRO
MOV #125252, (R2)+
DEC @SRO
HLT
RET4: BR DONE4
MOV @SRO, R1
DEC @SRO
CMP #21023, R1
BEQ .+4
HLT

; TURN ON KT11-C, SET MMGT TRAP ENABLE
; DATO TO RROT PAGE-SHOULD ABORT
; TURN OFF KT11-C
; DATO TO RROT PAGE FAILED TO ABORT

; SAVE CONTENTS OF SRO
; TURN OFF KT11-C
; CHECK SAVED CONTENTS OF SRO

; SRO INCORRECT-SHOULD HAVE LOCKED
; ON DATO TO KERNEL DATA SPACE PAGE 1(RROT)
; AND ACCESS FAULT SHOULD BE SET
; CHECK SR1

004530 022777 011027 176270
004536 001401
004540 104006

CMP #11027, @SR1
BEQ .+4
HLT

; SR1 INCORRECT-SHOULD HAVE LOCKED
; ON THE ABORTED REFERENCE, WHICH AUTO-
; INCREMENTED R7, AND THEN R2
; CHECK SR2

004542 022777 004474 176260
004550 001401
004552 104006

CMP #AD4, @SR2
BEQ .+4
HLT

; SR2 INCORRECT-SHOULD HAVE LOCKED
; ON THE ABORTED REFERENCE, WITH THE
; VIRTUAL ADDRESS OF THE INSTRUCTION
; CHECK INSTRUCTION SPACE PDR

004554 022777 077401 176460
004562 001401
004564 104006

CMP #77401, @KIPDR1
BEQ .+4
HLT

; KIPDR1 INCORRECT-SHOULD NOT
; HAVE BEEN CHANGED SINCE THE RROT
; REFERENCE WAS TO DATA SPACE
; CHECK DATA SPACE PDR

004566 022777 077401 176466
004574 001401
004576 104006

CMP #77401, @KDPDR1
BEQ .+4
HLT

; KDPDR1 INCORRECT-SHOULD NOT
; HAVE BEEN CHANGED SINCE DATO
; DIDN'T WRITE AND REFERENCE WAS


```

005014 022777 077401 176240      CMP      #77401, @KDPDR1
005022 001401                      BEQ      .+4
005024 104006                      HLT

;BEEN CHANGED SINCE THE RROT
;REFERENCE WAS TO DATA SPACE
;CHECK DATA SPACE PDR

005026 005767 176360      TST      DESTAD
005032 001401                      BEQ      .+4
005034 104006                      HLT

;KDPDR1 INCORRECT - SHOULD NOT HAVE
;BEEN CHANGED, SINCE DATIP IS ABORTED
;SINCE IT WILL BE FOLLOWED BY A DATO OR DATOB
;MAKE CERTAIN THAT DESTINATION
;LOCATION WAS NOT WRITTEN
;DATO TO RROT PAGE WROTE INTO
;THE DESTINATION LOCATION
;CHANGE PAGE FAULT RETURN
;TO CAUSE A HALT ON AN UNEXPECTED
;TRAP

005036 016777 175774 175770  DONE5:  MOV      KTSTA, @KTVEC
005044 005077 175766          CLR      @KTSTA
005050 005077 175750          CLR      @SRO
005054 005037 177776          CLR      @#PS

;SHOW THAT A DATIP, DATO SEQUENCE TO A RROT PAGE (ACF=1) WITH
;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT
TEST6:  SCOPE
005060 104400                      MOV      #6, @#SR
005062 012737 000006 177570    CLR      @#PS
005070 005037 177776          MOV      @KSTACK, SP
005074 012706 001000          CLR      @SRO
005100 005077 175720          MOV      #1, -(SP)
005104 012746 000001          JSR      %7, SETUP
005110 004767 015174

;LOAD TEST NUMBER INTO THE DISPLAY
;INITIALIZE PROCESSOR STATUS
;INITIALIZE KERNEL STACK POINTER
;INITIALIZE SRO
;PUSH RROT KEY ON STACK
;MAKE KERNEL PAGE 1 RROT, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;RESTORE STACK POINTER
;SETUP ABORT RETURN

005114 005726                      TST      (SP)+
005116 012777 005162 175710    MOV      #RET6, @KTVEC
005124 005077 175706          CLR      @KTSTA
005130 005067 176256          CLR      DESTAD

;INITIALIZE LOCATION TO BE ADDRESSED
;BY DATIP, DATO TO RROT PAGE
;R3 CONTAINS VIRTUAL ADDRESS+2 OF LOCATION
;TO BE REFERENCED THRU KERNEL PAGE 1
;TURN ON KT11-C
;DATIP, DATO TO RROT PAGE
;TURN OFF KT11-C
;DATIP, DATO TO RROT PAGE FAILED TO
;ABORT
;SAVE CONTENTS OF SRO
;TURN OFF KT11-C
;CHECK SAVED CONTENTS OF SRO

005134 012703 023414          MOV      #DESTAD+20002, R3

AD6:    BIS      #1001, @SRO
005140 052777 001001 175656    INC      -(R3)
005146 005243                      BIC      #1, @SRO
005150 042777 000001 175646    HLT
005156 104006
005160 000441                      BR
005162 017701 175636          MOV      @SRO, R1
005166 042777 000001 175630    BIC      #1, @SRO
005174 022701 021023          CMP      #21023, R1
005200 001401                      BEQ      .+4
005202 104006                      HLT

;SRO INCORRECT-SHOULD HAVE LOCKED
;ON DATO TO KERNEL DATA PAGE 1(RROT) AND
;ACCESS FAULT SHOULD BE SET
;CHECK SR1

005204 022777 000363 175614    CMP      #363, @SR1
005212 001401                      BEQ      .+4
005214 104006                      HLT

;SR1 INCORRECT-SHOULD HAVE LOCKED
;ON THE ABORTED REFERENCE, WHICH
;AUTODECREMENTED R3
;CHECK SR2

005216 022777 005146 175604    CMP      #AD6, @SR2
005224 001401                      BEQ      .+4
005226 104006                      HLT

;SR2 INCORRECT-SHOULD HAVE LOCKED

```



```

005230 022777 077401 176004      CMP      #77401, @KIPDR1
005236 001401                      BEQ      .+4
005240 104006                      HLT

; ON THE ABORTED REFERENCE, WITH THE
; VIRTUAL ADDRESS OF THE INSTRUCTION
; CHECK INSTRUCTION SPACE PDR

; KIPDR1 INCORRECT-SHOULD NOT HAVE
; BEEN CHANGED SINCE THE RRCT
; REFERENCE WAS TO DATA SPACE
; CHECK DATA SPACE PDR

005242 022777 077401 176012      CMP      #77401, @KDPDR1
005250 001401                      BEQ      .+4
005252 104006                      HLT

; KDPDR1 INCORRECT - SHOULD NOT HAVE
; BEEN CHANGED, SINCE DATIP IS ABORTED
; SINCE IT WILL BE FOLLOWED BY A DATO OR DATOB
; MAKE CERTAIN THAT DESTINATION
; LOCATION WAS NOT WRITTEN
; DATO TO RROT PAGE WROTE INTO
; THE DESTINATION LOCATION
; CHANGE PAGE FAULT RETURN
; TO CAUSE A HALT ON AN UNEXPECTED
; TRAP

005254 005767 176132      TST      DESTAD
005260 001401                      BEQ      .+4
005262 104006                      HLT

005264 016777 175546 175542  DONE6:  MOV      KTSTA, @KTVEC
005272 005077 175540                      CLR      @KTSTA
005276 005077 175522                      CLR      @SRO
005302 005037 177776                      CLR      @#PS

; SHOW THAT A DATIP, DATOB SEQUENCE TO A RROT PAGE (ACF=1) WITHOUT
; MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
; SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
; CORRESPONDING TO THE REFERENCE IS CORRECT

005306 104400      TEST7:  SCOPE
005310 012737 000007 177570      MOV      #7, @#SR
005316 005037 177776                      CLR      @#PS
005322 012706 001000                      MOV      #KSTACK, SP
005326 005077 175472                      CLR      @SRO
005332 012746 000001                      MOV      #1, -(SP)
005336 004767 014746                      JSR      %7, SETUP

; LOAD TEST NUMBER INTO THE DISPLAY
; INITIALIZE PROCESSOR STATUS
; INITIALIZE KERNEL STACK POINTER
; INITIALIZE SRO
; PUSH RROT KEY ON STACK
; MAKE KERNEL PAGE 1 RROT, BANK 0
; MAKE KERNEL PAGE 7 RW, EXTERNAL
; MAKE ALL OTHER PAGES RW, BANK 0
; RESTORE STACK POINTER
; SETUP ABORT RETURN

005342 005726      TST      (SP)+
005344 012777 005406 175462      MOV      #RET7, @KTVEC
005352 005077 175460                      CLR      @KTSTA
005356 005067 176030                      CLR      DESTAD

; INITIALIZE LOCATION TO BE ADDRESSED
; BY DATIP, DATOB TO RROT PAGE
; R4 CONTAINS VIRTUAL ADDRESS OF LOCATION
; TO BE REFERENCED THRU KERNEL PAGE 1

005362 012704 023412      MOV      #DESTAD+20000, R4

; TURN ON KT11-C
; DATIP, DATOB TO RROT PAGE
; TURN OFF KT11-C
; DATIP, DATO TO RROT PAGE FAILED TO ABORT

005366 052777 000001 175430      BIS      #0001, @SRO
005374 105224      AD7:    INCB   (R4)+
005376 005377 175422                      DEC      @SRO
005402 104006                      HLT
005404 000440                      BR
005406 017701 175412      RET7:  MOV      @SRO, R1
005412 005377 175406                      DEC      @SRO
005416 022701 020023      CMP      #20023, R1
005422 001401                      BEQ      .+4
005424 104006                      HLT

; SRO INCORRECT-SHOULD HAVE LOCKED ON
; DATOB TO KERNEL DATA PAGE 1 (RROT)
; ACCESS FAULT SHOULD BE SET
; CHECK SR1

005426 022777 000014 175372      CMP      #14, @SR1
005434 001401                      BEQ      .+4

```



```

005436 104006          HLT          ;SR1 INCORRECT-SHOULD HAVE LOCKED
                                        ;ON THE ABORTED REFERENCE, WHICH AUTO-
                                        ;INCREMENTED R4
                                        ;CHECK SR2
005440 022777 005374 175362    CMP      #AD7, @SR2
005446 001401          BEQ      .+4
005450 104006          HLT          ;SR2 INCORRECT-SHOULD HAVE LOCKED
                                        ;ON THE ABORTED REFERENCE, WITH THE
                                        ;VIRTUAL ADDRESS OF THE INSTRUCTION
                                        ;CHECK INSTRUCTION SPACE PDR
005452 022777 077401 175562    CMP      #77401, @KIPDR1
005460 001401          BEQ      .+4
005462 104006          HLT          ;KIPDR1 INCORRECT-SHOULD NOT HAVE
                                        ;BEEN CHANGED
                                        ;CHECK DATA SPACE PDR
005464 022777 077401 175570    CMP      #77401, @KDPDR1
005472 001401          BEQ      .+4
005474 104006          HLT          ;KDPDR1 INCORRECT - SHOULD NOT HAVE
                                        ;BEEN CHANGED-DATA IS ABORTED
                                        ;SINCE IT MUST BE FOLLOWED BY A DATO
                                        ;MAKE CERTAIN THAT DESTINATION
                                        ;LOCATION WAS NOT WRITTEN
                                        ;DATOB TO RROT PAGE WROTE INTO
                                        ;THE DESTINATION LOCATION
                                        ;CHANGE KT11-C FAULT
                                        ;RETURN TO CAUSE A HALT ON AN
                                        ;UNEXPECTED TRAP
005476 005767 175710          TST      DESTAD
005502 001401          BEQ      .+4
005504 104006          HLT
005506 016777 175324 175320    DONE7:  MOV      KTSTA, @KTVEC
005514 005077 175316          CLR      @KTSTA
005520 005077 175300          CLR      @SR0
005524 005037 177776          CLR      @#PS
                                        ;SHOW THAT A DATIP, DATOB SEQUENCE TO A RROT PAGE (ACF=1) WITH
                                        ;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
                                        ;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                        ;CORRESPONDING TO THE REFERENCE IS CORRECT
005530 104400          TEST10: SCOPE
005532 012737 000010 177570    MOV      #10, @#SR
005540 005037 177776          CLR      @#PS
005544 012706 001000          MOV      #KSTACK, SP
005550 005077 175250          CLR      @SR0
005554 012746 000001          MOV      #1, -(SP)
005560 004767 014524          JSR      %7, SETUP
                                        ;LOAD TEST NUMBER INTO THE DISPLAY
                                        ;INITIALIZE PROCESSOR STATUS
                                        ;INITIALIZE KERNEL STACK POINTER
                                        ;INITIALIZE SR0
                                        ;PUSH RROT KEY ON STACK
                                        ;MAKE KERNEL PAGE 1 RROT, BANK 0
                                        ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                        ;MAKE ALL OTHER PAGES RW, BANK 0
                                        ;RESTORE STACK POINTER
                                        ;SETUP ABORT RETURN
005564 005726          TST      (SP)+
005566 012777 005630 175240    MOV      #RET10, @KTVEC
005574 005077 175236          CLR      @KTSTA
005600 005067 175606          CLR      DESTAD
                                        ;INITIALIZE LOCATION TO BE ADDRESSED
                                        ;BY DATIP, DATOB TO RROT PAGE
                                        ;R4 CONTAINS VIRTUAL ADDRESS OF LOCATION
                                        ;TO BE REFERENCED THRU KERNEL PAGE -1
005604 012704 023412          MOV      #DESTAD+20000, R4
005610 052777 001001 175206    AD10:   BIS      #1001, @SR0
005616 105224          INCB    (R4)+
005620 005377 175200          DEC      @SR0
005624 104006          HLT
005626 000440          BR
005630 017701 175170          RET10:  MOV      @SR0, R1
005634 005377 175164          DEC      @SR0
005640 022701 021023          CMP      #21023, R1
005644 001401          BEQ      .+4
005646 104006          HLT          ;SR0 INCORRECT-SHOULD HAVE LOCKED ON

```



```

;DATOB TO KERNEL DATA PAGE 1 (RROT)
;ACCESS FAULT SHOULD BE SET
;CHECK SR1
005650 022777 000014 175150    CMP    #14, @SR1
005656 001401    BEQ    .+4
005660 104006    HLT

;SR1 INCORRECT-SHOULD HAVE LOCKED
;ON THE ABORTED REFERENCE, WHICH AUTO-
;INCREMENTED R4
;CHECK SR2
005662 022777 005616 175140    CMP    #AD10, @SR2
005670 001401    BEQ    .+4
005672 104006    HLT

;SR2 INCORRECT-SHOULD HAVE LOCKED
;ON THE ABORTED REFERENCE, WITH THE
;VIRTUAL ADDRESS OF THE INSTRUCTION
;CHECK INSTRUCTION SPACE PDR
005674 022777 077401 175340    CMP    #77401, @KIPDR1
005702 001401    BEQ    .+4
005704 104006    HLT

;KIPDR1 INCORRECT-SHOULD NOT HAVE
;BEEN CHANGED
;CHECK DATA SPACE PDR
005706 022777 077401 175346    CMP    #77401, @KDPDR1
005714 001401    BEQ    .+4
005716 104006    HLT

;KDPDR1 INCORRECT - SHOULD NOT HAVE
;BEEN CHANGED-DATIP IS ABORTED
;SINCE IT MUST BE FOLLOWED BY A DATO
;MAKE CERTAIN THAT DESTINATION
;LOCATION WAS NOT WRITTEN
;DATOB TO RROT PAGE WROTE INTO
;THE DESTINATION LOCATION
;CHANGE KT11-C FAULT
;RETURN TO CAUSE A HALT ON AN
;UNEXPECTED TRAP
005720 005767 175466    TST    DESTAD
005724 001401    BEQ    .+4
005726 104006    HLT

005730 016777 175102 175076  DONE10: MOV    KTSTA, @KTVEC
005736 005077 175074    CLR    @KTSTA
005742 005077 175056    CLR    @SR0
005746 005037 177776    CLR    @#PS

;SHOW THAT DATI TO A RRO PAGE (ACF=2) WITHOUT MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
TEST11: SCOPE
005752 104400    MOV    #11, @#SR
005754 012737 000011 177570    CLR    @#PS
005762 005037 177776    MOV    #KSTACK, SP
005766 012706 001000    CLR    @SR0
005772 005077 175026    MOV    #2, -(SP)
005776 012746 000002    JSR    %7, SETUP
006002 004767 014302

;LOAD TEST NUMBER INTO THE DISPLAY
;INITIALIZE PROCESSOR STATUS
;INITIALIZE KERNEL STACK POINTER
;INITIALIZE SR0
;PUSH RRO KEY ON STACK
;MAKE KERNEL PAGE 1 RRO, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;RESTORE STACK POINTER
;SETUP ABORT RETURN IN CASE
006006 005726    TST    (SP)+
006010 012777 006150 175016    MOV    #RET11, @KTVEC
006016 005077 175014    CLR    @KTSTA
006022 012767 125252 175362    MOV    #125252, DESTAD
006030 012701 023412    MOV    #DESTAD+20000, R1

;INITIALIZE LOCATION TO BE REFERENCED
;R1 CONTAINS VIRTUAL ADDRESS OF
;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
;TURN ON KT11-C
;DATI TO RRO PAGE
006034 005277 174764    INC    @SR0
006040 022721 125252    CMP    #125252, (R1)+
006044 001404    BEQ    OK11
006046 005377 174752    DEC    @SR0
006052 104006    HLT
006054 000441    BR
006056 017702 174742    OK11: MOV    @SR0, R2

;ON ERROR, TURN OFF KT11-C
;RELOCATION FAILED THRU KERNEL PAGE 1
;SAVE CONTENTS OF SR0

```


006062	105377	174736		DECB	ASRO		;TURN OFF KT11-C
006066	022702	000021		CMP	#21,R2		;CHECK SAVED CONTENTS OF SRO
006072	001401			BEQ	+.4		
006074	104006			HLT			;SRO INCORRECT-SHOULD HAVE
							;TRACKED REFERENCE TO DATA SPACE,
							;PAGE 0, WHICH GOT THE ADDRESS OF SRO
							;CHECK SR1
006076	022777	000027	174722	CMP	#27,ASR1		
006104	001401			BEQ	+.4		
006106	104006			HLT			;SR1 INCORRECT-SHOULD KEEP
							;TRACKING EVEN WITH KT11-C OFF
							;CHECK SR2
006110	022777	006110	174712	CMP	#.,ASR2		
006116	001401			BEQ	+.4		
006120	104006			HLT			;SR2 INCORRECT-SHOULD TRACK EVEN
							;WHEN KT11-C IS OFF
							;CHECK INSTRUCTION SPACE PDR FOR
							;THE RRO PAGE REFERENCED
							;KIPDR1 INCORRECT-SHOULD NOT
							;HAVE BEEN CHANGED
							;CHECK DATA SPACE PDR CORRESPONDING
							;TO THE RRO REFERENCE
							;KDPDR1 INCORRECT-SHOULD NOT HAVE
							;CHANGED SINCE PAGE WAS NOT WRITTEN
							;TURN OFF KT11-C
							;DATI TO RRO PAGE CAUSED
							;A TRAP OR ABORT
							;RESTORE TRAP RETURN TO CAUSE HALT
							;ON AN UNEXPECTED TRAP
							;INITIALIZE SRO
							;INITIALIZE PROCESSOR STATUS
006122	022777	077402	175112	CMP	#77402,AKIPDR1		
006130	001401			BEQ	+.4		
006132	104006			HLT			
006134	022777	077402	175120	CMP	#77402,AKDPDR1		
006142	001401			BEQ	+.4		
006144	104006			HLT			
006146	000404			BR	DONE11		
006150	042777	000001	174646	RET11:	#1,ASRO		
006156	104006			HLT			
006160	016777	174652	174646	DONE11:	MOV	KTSTA,AKTVEC	
006166	005077	174644		CLR	AKTSTA		
006172	005077	174626		CLR	ASRO		
006176	005037	177776		CLR	A#PS		
							;SHOW THAT A DATI TO A RRO PAGE (ACF=2) WITH MEMORY MANAGEMENT
							;TRAP ENABLE SET DOESN'T TRAP OR ABORT
							;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE
							;PDR'S FOR THE PAGE REFERENCED ARE CORRECT
006202	104400			TEST12:	SCOPE		
006204	012737	000012	177570	MOV	#12,ASR		;LOAD TEST NUMBER INTO THE DISPLAY
006212	005037	177776		CLR	A#PS		;INITIALIZE PROCESSOR STATUS
006216	012706	001000		MOV	#KSTACK,SP		;INITIALIZE KERNEL STACK POINTER
006222	005077	174576		CLR	ASRO		;INITIALIZE SRO
006226	012746	000002		MOV	#2,-(SP)		;PUSH RRO KEY ON STACK
006232	004767	014052		JSR	%7,SETUP		;MAKE KERNEL PAGE 1 RRO, BANK 0
							;MAKE KERNEL PAGE 7 RW, EXTERNAL
							;MAKE ALL OTHER PAGES RW, BANK 0
							;RESTORE STACK POINTER
							;SETUP TRAP RETURN
006236	005726			TST	(SP)+		
006240	012777	006402	174566	MOV	#RET12,AKTVEC		
006246	005077	174564		CLR	AKTSTA		
006252	012767	125252	175132	MOV	#125252,DESTAD		;INITIALIZE LOCATION TO BE READ
006260	012701	023412		MOV	#DESTAD+20000,R1		;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION TO BE
							;REFERENCED THRU KERNEL PAGE 1
							;TURN ON KT11-C, SET MMGT TRAP ENABLE
							;DATI TO RRO PAGE
006264	012777	001001	174532	MOV	#1001,ASRO		
006272	022721	125252		CMP	#125252,(R1)+		
006276	001404			BEQ	OK12		
006300	005377	174520		DEC	ASRO		;ON ERROR, TURN OFF KT11-C
006304	104006			HLT			;RELOCATION FAILED THRU KERNEL PAGE 1
006306	000441			BR	DONE12		
006310	017702	174510		OK12:	MOV	ASRO,R2	;SAVE CONTENTS OF SRO

006554	001401			BEQ	.+4				
006556	104006			HLT					:SRO INCORRECT-SHOULD HAVE LOCKED :ON DATO TO KERNEL DATA PAGE 1(RR0) :AND ACCESS VIOLATION SHOULD BE SET :CHECK SR1
006560	022777	010427	174240	CMP	#10427,SR1				
006566	001401			BEQ	.+4				:SR1 INCORRECT-SHOULD HAVE LOCKED :ON THE ABORTED REFERENCE, WHICH :AUTOINCREMENTED R7, AND THEN R1 :CHECK SR2
006570	104006			HLT					
006572	022777	006522	174230	CMP	#AD13,SR2				
006600	001401			BEQ	.+4				:SR2 INCORRECT-SHOULD HAVE LOCKED :ON THE ABORTED REFERENCE, WITH THE :VIRTUAL ADDRESS OF THE INSTRUCTION :CHECK INSTRUCTION SPACE PDR
006602	104006			HLT					
006604	022777	077402	174430	CMP	#77402,KIPDR1				
006612	001401			BEQ	.+4				:KIPDR1 INCORRECT-SHOULD NOT HAVE :BEEN CHANGED
006614	104006			HLT					:CHECK DATA SPACE PDR
006616	022777	077402	174436	CMP	#77402,KDPDR1				
006624	001401			BEQ	.+4				:KDPDR1 INCORRECT-SHOULD NOT :HAVE BEEN CHANGED
006626	104006			HLT					:MAKE CERTAIN THAT DESTINATION :LOCATION WAS NOT WRITTEN :DATO TO RRO PAGE WROTE :INTO THE DESTINATION LOCATION :CHANGE KT11-C FAULT RETURN :TO CAUSE A HALT ON AN UNEXPECTED TRAP
006630	005767	174556		TST	DESTAD				
006634	001401			BEQ	.+4				
006636	104006			HLT					
006640	016777	174172	174166	MOV	KTSTA,KTVEC	DONE13:			
006646	005077	174164		CLR	KTSTA				
006652	005077	174146		CLR	SR0				
006656	005037	177776		CLR	PS				
:SHOW THAT A DATO (NO DATIP) TO A RRO PAGE (ACF=2) WITH :MEMORY MANAGEMENT TRAP ENABLE SET ABORTS :SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR :CORRESPONDING TO THE REFERENCE IS CORRECT									
006662	104400			TEST14:	SCOPE				
006664	012737	000014	177570	MOV	#14,SR				:LOAD TEST NUMBER INTO THE DISPLAY
006672	005037	177776		CLR	PS				:INITIALIZE PROCESSOR STATUS
006676	012706	001000		MOV	KSTACK,SP				:INITIALIZE KERNEL STACK POINTER
006702	005077	174116		CLR	SR0				:INITIALIZE SRO
006706	012746	000002		MOV	#2,-(SP)				:PUSH RRO KEY ON STACK
006712	004767	013372		JSR	%7,SETUP				:MAKE KERNEL PAGE 1 RRO, BANK 0 :MAKE KERNEL PAGE 7 RW, EXTERNAL :MAKE ALL OTHER PAGES RW, BANK 0 :RESTORE STACK :SETUP ABORT RETURN
006716	005726			TST	(SP)+				
006720	012777	006764	174106	MOV	#RET14,KTVEC				
006726	005077	174104		CLR	KTSTA				
006732	005067	174454		CLR	DESTAD				:INITIALIZE LOCATION TO BE ADDRESSED :BY DATO TO RRO PAGE :R2 CONTAINS VIRTUAL ADDRESS OF LOCATION :TO BE REFERENCED THRU KERNEL PAGE 1
006736	012702	023412		MOV	#DESTAD+20000,R2				
006742	012777	001001	174054	MOV	#1001,SR0	AD14:			:TURN ON KT11-C, SET MMGT TRAP ENABLE
006750	012722	125252		MOV	#125252,(R2)+				:DATO TO RRO PAGE-SHOULD ABORT
006754	105377	174044		DECB	SR0				:TURN OFF KT11-C
006760	104006			HLT					:DATO TO RRO PAGE FAILED TO ABORT
006762	000440			BR	DONE14				

006764	017701	174034		RET14:	MOV	ASRO,R1	:SAVE CONTENTS OF SRO
006770	005377	174030			DEC	ASRO	:TURN OFF KT11-C
006774	022701	021023			CMP	#21023,R1	:CHECK SAVED CONTENTS OF SRO
007000	001401				BEQ	.+4	
007002	104006				HLT		:SRO INCORRECT-SHOULD HAVE LOCKED :ON DATO TO KERNEL DATA PAGE 1(RR0) :AND ACCESS FAULT SHOULD BE SET
007004	022777	011027	174014		CMP	#11027,ASR1	:CHECK SR1
007012	001401				BEQ	.+4	
007014	104006				HLT		:SR1 INCORRECT-SHOULD HAVE LOCKED :ON THE ABORTED REFERENCE, WHICH AUTO- :INCREMENTED R7, AND THEN R2
007016	022777	006750	174004		CMP	#AD14,ASR2	:CHECK SR2
007024	001401				BEQ	.+4	
007026	104006				HLT		:SR2 INCORRECT-SHOULD HAVE LOCKED :ON THE ABORTED REFERENCE, WITH THE :VIRTUAL ADDRESS OF THE INSTRUCTION
007030	022777	077402	174204		CMP	#77402,AKIPDR1	:CHECK INSTRUCTION SPACE PDR
007036	001401				BEQ	.+4	
007040	104006				HLT		:KIPDR1 INCORRECT-SHOULD NOT :HAVE BEEN CHANGED
007042	022777	077402	174212		CMP	#77402,AKDPDR1	:CHECK DATA SPACE PDR
007050	001401				BEQ	.+4	
007052	104006				HLT		:KDPDR1 INCORRECT-SHOULD NOT :HAVE BEEN CHANGED
007054	005767	174332			TST	DESTAD	:MAKE CERTAIN THAT DESTINATION :LOCATION WAS NOT WRITTEN
007060	001401				BEQ	.+4	:DATO TO RRO PAGE WROTE :INTO THE DESTINATION LOCATION
007062	104006				HLT		:CHANGE KT11-C FAULT RETURN :TO CAUSE A HALT ON AN UNEXPECTED TRAP
007064	016777	173746	173742	DONE14:	MOV	KTSTA,AKTVEC	
007072	005077	173740			CLR	AKTSTA	
007076	005077	173722			CLR	ASRO	
007102	005037	177776			CLR	ASPS	

:SHOW THAT A DATIP, DATO SEQUENCE TO A RRO PAGE (ACF=2) WITHOUT
:MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
:SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
:CORRESPONDING TO THE REFERENCE IS CORRECT

007106	104400			TEST15:	SCOPE		
007110	012737	000015	177570		MOV	#15,ASR	:LOAD TEST NUMBER INTO THE DISPLAY
007116	005037	177776			CLR	ASPS	:INITIALIZE PROCESSOR STATUS
007122	012706	001000			MOV	#KSTACK,SP	:INITIALIZE KERNEL STACK POINTER
007126	005077	173672			CLR	ASRO	:INITIALIZE SRO
007132	012746	000002			MOV	#2,-(SP)	:PUSH RRO KEY ON STACK
007136	004767	013146			JSR	%7, SETUP	:MAKE KERNEL PAGE 1 RRO, BANK 0 :MAKE KERNEL PAGE 7 RW, EXTERNAL :MAKE ALL OTHER PAGES RW, BANK 0
007142	005726				TST	(SP)+	:RESTORE STACK POINTER
007144	012777	007210	173662		MOV	#RET15,AKTVEC	:SETUP ABORT RETURN
007152	005077	173660			CLR	AKTSTA	
007156	005067	174230			CLR	DESTAD	:INITIALIZE LOCATION TO BE ADDRESSED :BY DATIP, DATO TO RRO PAGE
007162	012703	023414			MOV	#DESTAD+20002,R3	:R3 CONTAINS ADDRESS+2 OF LOCATION :TO BE REFERENCED THRU KERNEL PAGE 1
007166	052777	000001	173630		BIS	#1,ASRO	:TURN ON KT11-C

007174	005243			AD15:	INC	-(R3)	:DATIP, DATO TO RRO PAGE - SHOULD ABORT
007176	042777	000001	173620		BIC	#1, @SRO	:TURN OFF KT11-C
007204	104006				HLT		:DATIP, DATO TO RRO PAGE FAILED TO
007206	000441				BR	DONE15	:ABORT
007210	017701	173610		RET15:	MOV	@SRO, R1	:SAVE CONTENTS OF SRO
007214	042777	000001	173602		BIC	#1, @SRO	:TURN OFF KT11-C
007222	022701	020023			CMP	#20023, R1	:CHECK SAVED CONTENTS OF SRO
007226	001401				BEQ	.+4	
007230	104006				HLT		:SRO INCORRECT-SHOULD HAVE LOCKED
							:ON DATIP, DATO TO KERNEL DATA PAGE 1(RRO)
							:ACCESS FAULT SHOULD BE SET
007232	022777	000363	173566		CMP	#363, @SR1	:CHECK SR1
007240	001401				BEQ	.+4	
007242	104006				HLT		:SR1 INCORRECT-SHOULD HAVE LOCKED
							:ON THE ABORTED REFERENCE, WHICH
							:AUTODECREMENTED R3
007244	022777	007174	173556		CMP	#AD15, @SR2	:CHECK SR2
007252	001401				BEQ	.+4	
007254	104006				HLT		:SR2 INCORRECT-SHOULD HAVE LOCKED
							:ON THE ABORTED REFERENCE, CONTAINING THE
							:VIRTUAL ADDRESS OF THE INSTRUCTION
007256	022777	077402	173756		CMP	#77402, @KIPDR1	:CHECK INSTRUCTION SPACE PDR
007264	001401				BEQ	.+4	
007266	104006				HLT		:KIPDR1 INCORRECT-SHOULD NOT HAVE
							:BEEN CHANGED
007270	022777	077402	173764		CMP	#77402, @KDPDR1	:CHECK DATA SPACE PDR
007276	001401				BEQ	.+4	
007300	104006				HLT		:KDPDR1 INCORRECT - SHOULD NOT HAVE
							:BEEN CHANGED, SINCE THE INSTRUCTION WAS
							:ABORTED BEFORE THE WRITE OCCURRED
007302	005767	174104			TST	DESTAD	:MAKE CERTAIN THAT DESTINATION
007306	001401				BEQ	.+4	:LOCATION WAS NOT WRITTEN
007310	104006				HLT		:DATO TO RRO PAGE WROTE INTO
							:THE DESTINATION LOCATION
007312	016777	173520	173514	DONE15:	MOV	KTSTA, @KTVEC	:CHANGE PAGE FAULT RETURN
007320	005077	173512			CLR	@KTSTA	:TO CAUSE A HALT ON AN UNEXPECTED
007324	005077	173474			CLR	@SRO	:TRAP
007330	005037	177776			CLR	@#PS	
							:SHOW THAT A DATIP, DATO SEQUENCE TO A RRO PAGE (ACF=2) WITH
							:MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
							:SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
							:CORRESPONDING TO THE REFERENCE IS CORRECT
007334	104400			TEST16:	SCOPE		
007336	012737	000016	177570		MOV	#16, @#SR	:LOAD TEST NUMBER INTO THE DISPLAY
007344	005037	177776			CLR	@#PS	:INITIALIZE PROCESSOR STATUS
007350	012706	001000			MOV	#KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
007354	005077	173444			CLR	@SRO	:INITIALIZE SRO
007360	012746	000002			MOV	#2, -(SP)	:PUSH RRO KEY ON STACK
007364	004767	012720			JSR	%7, SETUP	:MAKE KERNEL PAGE 1 RRO, BANK 0
							:MAKE KERNEL PAGE 7 RW, EXTERNAL
							:MAKE ALL OTHER PAGES RW, BANK 0
007370	005726				TST	(SP)+	:RESTORE STACK POINTER
007372	012777	007436	173434		MOV	#RET16, @KTVEC	:SETUP ABORT RETURN
007400	005077	173432			CLR	@KTSTA	
007404	005067	174002			CLR	DESTAD	:INITIALIZE LOCATION TO BE ADDRESSED

007410	012703	023414		MOV	#DESTAD+20002,R3	;BY DATIP, DATO TO RRO PAGE ;R3 CONTAINS ADDRESS+2 OF LOCATION
007414	052777	001001	173402	BIS	#1001,@SR0	;TO BE REFERENCED THRU KERNEL PAGE 1
007422	005243			AD16: INC	-(R3)	;TURN ON KT11-C
007424	042777	000001	173372	BIC	#1,@SR0	;DATIP, DATO TO RRO PAGE - SHOULD ABORT
007432	104006			HLT		;TURN OFF KT11-C
007434	000441			BR	DONE16	;DATIP, DATO TO RRO PAGE FAILED TO
007436	017701	173362		RET16: MOV	@SR0,R1	;ABORT
007442	042777	000001	173354	BIC	#1,@SR0	;SAVE CONTENTS OF SR0
007450	022701	021023		CMP	#21023,R1	;TURN OFF KT11-C
007454	001401			BEQ	+.4	;CHECK SAVED CONTENTS OF SR0
007456	104006			HLT		;SR0 INCORRECT-SHOULD HAVE LOCKED
						;ON DATIP, DATO TO KERNEL DATA PAGE 1(RRO)
						;ACCESS FAULT SHOULD BE SET
007460	022777	000363	173340	CMP	#363,@SR1	;CHECK SR1
007466	001401			BEQ	+.4	
007470	104006			HLT		;SR1 INCORRECT-SHOULD HAVE LOCKED
						;ON THE ABORTED REFERENCE, WHICH
						;AUTODECREMENTED R3
007472	022777	007422	173330	CMP	#AD16,@SR2	;CHECK SR2
007500	001401			BEQ	+.4	
007502	104006			HLT		;SR2 INCORRECT-SHOULD HAVE LOCKED
						;ON THE ABORTED REFERENCE, CONTAINING THE
						;VIRTUAL ADDRESS OF THE INSTRUCTION
007504	022777	077402	173530	CMP	#77402,@KIPDR1	;CHECK INSTRUCTION SPACE PDR
007512	001401			BEQ	+.4	
007514	104006			HLT		;KIPDR1 INCORRECT-SHOULD NOT HAVE
						;BEEN CHANGED
007516	022777	077402	173536	CMP	#77402,@KDPDR1	;CHECK DATA SPACE PDR
007524	001401			BEQ	+.4	
007526	104006			HLT		;KDPDR1 INCORRECT - SHOULD NOT HAVE
						;BEEN CHANGED, SINCE THE INSTRUCTION WAS
						;ABORTED BEFORE THE WRITE OCCURRED
007530	005767	173656		TST	DESTAD	;MAKE CERTAIN THAT DESTINATION
007534	001401			BEQ	+.4	;LOCATION WAS NOT WRITTEN
007536	104006			HLT		;DATO TO RRO PAGE WROTE INTO
						;THE DESTINATION LOCATION
007540	016777	173272	173266	DONE16: MOV	KTSTA,@KTVEC	;CHANGE PAGE FAULT RETURN
007546	005077	173264		CLR	@KTSTA	;TO CAUSE A HALT ON AN UNEXPECTED
007552	005077	173246		CLR	@SR0	;TRAP
007556	005037	177776		CLR	@#PS	

;SHOW THAT A DATIP, DATOB SEQUENCE TO A RRO PAGE (ACF=2) WITHOUT
;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT

007562	104400			TEST17: SCOPE		
007564	012737	000017	177570	MOV	#17,@#SR	;LOAD TEST NUMBER INTO THE DISPLAY
007572	005037	177776		CLR	@#PS	;INITIALIZE PROCESSOR STATUS
007576	012706	001000		MOV	#KSTACK,SP	;INITIALIZE KERNEL STACK POINTER
007602	005077	173216		CLR	@SR0	;INITIALIZE SR0
007606	012746	000002		MOV	#2,-(SP)	;PUSH RRO KEY ON STACK
007612	004767	012472		JSR	%7,SETUP	;MAKE KERNEL PAGE 1 RRO, BANK 0
						;MAKE KERNEL PAGE 7 RW, EXTERNAL

007616	005726			TST	(SP)+				: MAKE ALL OTHER PAGES RW, BANK 0
007620	012777	007662	173206	MOV	#RET17, @KTVEC				: RESTORE STACK POINTER
007626	005077	173204		CLR	@KTSTA				: SETUP ABORT RETURN
007632	005067	173554		CLR	DESTAD				: INITIALIZE LOCATION TO BE ADDRESSED
007636	012704	023412		MOV	#DESTAD+20000, R4				: BY DATIP, DATOB TO RRO PAGE
007642	052777	000001	173154	BIS	#1, @SR0 ; TURN ON				: R4 CONTAINS ADDRESS OF LOCATION
007650	105224			INCB	(R4)+				: TO BE REFERENCED THRU KERNEL PAGE 1
007652	005377	173146		DEC	@SR0				: DATIP, DATOB TO RRO PAGE - SHOULD ABORT
007656	104006			HLT					: TURN OFF KT11-C
007660	000440			BR	DONE17				: DATIP, DATO TO RRO PAGE FAILED
007662	017701	173136		MOV	@SR0, R1				: TO ABORT
007666	005377	173132		DEC	@SR0				: SAVE CONTENTS OF SR0
007672	022701	020023		CMP	#20023, R1				: TURN OFF KT11-C
007676	001401			BEQ	.+4				: CHECK SAVED CONTENTS OF SR0
007700	104006			HLT					: SR0 INCORRECT-SHOULD HAVE LOCKED ON
									: THE DATIP, DATOB TO KERNEL DATA PAGE 1 (RRO)
									: ACCESS FAULT SHOULD BE SET
007702	022777	000014	173116	CMP	#14, @SR1				: CHECK SR1
007710	001401			BEQ	.+4				: SR1 INCORRECT-SHOULD HAVE LOCKED
007712	104006			HLT					: ON THE ABORTED REFERENCE, WHICH AUTO-
									: INCREMENTED R4 BY ONE
007714	022777	007650	173106	CMP	#AD17, @SR2				: CHECK SR2
007722	001401			BEQ	.+4				: SR2 INCORRECT-SHOULD HAVE LOCKED
007724	104006			HLT					: ON THE ABORTED REFERENCE, CONTAINING THE
									: VIRTUAL ADDRESS OF THE INSTRUCTION
007726	022777	077402	173306	CMP	#77402, @KIPDR1				: CHECK INSTRUCTION SPACE PDR
007734	001401			BEQ	.+4				: KIPDR1 INCORRECT-SHOULD NOT HAVE
007736	104006			HLT					: BEEN CHANGED
007740	022777	077402	173314	CMP	#77402, @KDPDR1				: CHECK DATA SPACE PDR
007746	001401			BEQ	.+4				: KDPDR1 INCORRECT-SHOULD NOT HAVE
007750	104006			HLT					: BEEN CHANGED, SINCE THE INSTRUCTION WAS
									: ABORTED BEFORE THE WRITE OCCURRED
007752	005767	173434		TST	DESTAD				: MAKE CERTAIN THAT DESTINATION
007756	001401			BEQ	.+4				: LOCATION WAS NOT WRITTEN
007760	104006			HLT					: DATOB TO RRO PAGE WROTE INTO
									: THE DESTINATION LOCATION
007762	016777	173050	173044	MOV	KTSTA, @KTVEC				: CHANGE KT11-C FAULT
007770	005077	173042		CLR	@KTSTA				: RETURN TO CAUSE A HALT ON AN
007774	005077	173024		CLR	@SR0				: UNEXPECTED TRAP
010000	005037	177776		CLR	@#PS				
									: SHOW THAT A DATIP, DATOB SEQUENCE TO A RRO PAGE (ACF=2) WITH
									: MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
									: SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
									: CORRESPONDING TO THE REFERENCE IS CORRECT
010004	104400			TEST20: SCOPE					
010006	012737	000020	177570	MOV	#20, @#SR				: LOAD TEST NUMBER INTO THE DISPLAY
010014	005037	177776		CLR	@#PS				: INITIALIZE PROCESSOR STATUS
010020	012706	001000		MOV	#KSTACK, SP				: INITIALIZE KERNEL STACK POINTER

010024	005077	172774		CLR	SR0	: INITIALIZE SR0
010030	012746	000002		MOV	#2, -(SP)	: PUSH RRO KEY ON STACK
010034	004767	012250		JSR	%7, SETUP	: MAKE KERNEL PAGE 1 RRO, BANK 0
						: MAKE KERNEL PAGE 7 RW, EXTERNAL
						: MAKE ALL OTHER PAGES RW, BANK 0
010040	005726			TST	(SP)+	: RESTORE STACK POINTER
010042	012777	010104	172764	MOV	#RET20, %KTVEC	: SETUP ABORT RETURN
010050	005077	172762		CLR	%KTSTA	
010054	005067	173332		CLR	DESTAD	: INITIALIZE LOCATION TO BE ADDRESSED
						: BY DATIP, DATOB TO RRO PAGE
010060	012704	023412		MOV	#DESTAD+20000, R4	: R4 CONTAINS ADDRESS OF LOCATION
						: TO BE REFERENCED THRU KERNEL PAGE 1
010064	052777	001001	172732	BIS	#1001, SR0	: TURN ON KT11-C
010072	105224		AD20:	INCB	(R4)+	: DATIP, DATOB TO RRO PAGE - SHOULD ABORT
010074	005377	172724		DEC	SR0	: TURN OFF KT11-C
010100	104006			HLT		: DATIP, DATO TO RRO PAGE FAILED
010102	000440			BR	DONE20	: TO ABORT
010104	017701	172714	RET20:	MOV	SR0, R1	: SAVE CONTENTS OF SR0
010110	005377	172710		DEC	SR0	: TURN OFF KT11-C
010114	022701	021023		CMP	#21023, R1	: CHECK SAVED CONTENTS OF SR0
010120	001401			BEQ	.+4	
010122	104006			HLT		: SR0 INCORRECT-SHOULD HAVE LOCKED ON
						: THE DATIP, DATOB TO KERNEL DATA PAGE 1 (RRO)
						: ACCESS FAULT SHOULD BE SET
010124	022777	000014	172674	CMP	#14, SR1	: CHECK SR1
010132	001401			BEQ	.+4	
010134	104006			HLT		: SR1 INCORRECT-SHOULD HAVE LOCKED
						: ON THE ABORTED REFERENCE, WHICH AUTO-
						: INCREMENTED R4 BY ONE
010136	022777	010072	172664	CMP	#AD20, SR2	: CHECK SR2
010144	001401			BEQ	.+4	
010146	104006			HLT		: SR2 INCORRECT-SHOULD HAVE LOCKED
						: ON THE ABORTED REFERENCE, CONTAINING THE
						: VIRTUAL ADDRESS OF THE INSTRUCTION
010150	022777	077402	173064	CMP	#77402, %KIPDR1	: CHECK INSTRUCTION SPACE PDR
010156	001401			BEQ	.+4	
010160	104006			HLT		: KIPDR1 INCORRECT-SHOULD NOT HAVE
						: BEEN CHANGED
010162	022777	077402	173072	CMP	#77402, %KDPDR1	: CHECK DATA SPACE PDR
010170	001401			BEQ	.+4	
010172	104006			HLT		: KDPDR1 INCORRECT-SHOULD NOT HAVE
						: BEEN CHANGED, SINCE THE INSTRUCTION WAS
						: ABORTED BEFORE THE WRITE OCCURRED
010174	005767	173212		TST	DESTAD	: MAKE CERTAIN THAT DESTINATION
010200	001401			BEQ	.+4	: LOCATION WAS NOT WRITTEN
010202	104006			HLT		: DATOB TO RRO PAGE WROTE INTO
						: THE DESTINATION LOCATION
010204	016777	172626	172622	DONE20: MOV	KTSTA, %KTVEC	: CHANGE KT11-C FAULT
010212	005077	172620		CLR	%KTSTA	: RETURN TO CAUSE A HALT ON AN
010216	005077	172602		CLR	SR0	: UNEXPECTED TRAP
010222	005037	177776		CLR	%PS	

```

: THE FOLLOWING TESTS (21-30) ARE RUN FOR EACH OF THE NON-RESIDENT
: KEYS - A PASS IS MADE FOR KEY 0, THEN A PASS IS MADE FOR KEY 3,
: AND FINALLY A PASS IS MADE FOR KEY 7
: THE CURRENT KEY IS STORED ON THE STACK

```



```

:SHOW THAT DATI TO A NR PAGE WITHOUT MEMORY
:MANAGEMENT TRAP ENABLE SET ABORTS WITHOUT COMPLETING
:SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT
:THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
TEST21: SCOPE
010226 104400
010230 005037 001000 CLR @#KSTACK ;PUT 0 ON STACK AS FIRST NR KEY TO BE TESTED
;THIS INSTRUCTION IS SKIPPED WHEN TESTING THE
;OTHER 2 KEYS, WHICH ARE SETUP AFTER TEST30
010234 012737 000021 177570 MOV @21,@#SR ;LOAD TEST NUMBER INTO THE DISPLAY
010242 005037 177776 CLR @#PS ;INITIALIZE PROCESSOR STATUS
010246 012706 001000 MOV @KSTACK,SP ;INITIALIZE KERNEL STACK POINTER
010252 005077 172546 CLR @SRO ;INITIALIZE SRO
010256 004767 012026 JSR %7,SETUP ;MAKE KERNEL PAGE 1 NR, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;SETUP ABORT RETURN
010262 012777 010326 172544 MOV @RET21,@KTVEC
010270 005077 172542 CLR @KTSTA
010274 005003 CLR R3 ;INITIALIZE DESTINATION LOCATION
010276 012767 125252 173106 MOV @125252,DESTAD ;INITIALIZE SOURCE LOCATION
010304 012701 023412 MOV @DESTAD+20000,R1 ;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
;TO BE REFERENCED THRU KERNEL PAGE 1
010310 005277 172510 INC @SRO ;TURN ON KT11-C
010314 012103 AD21: MOV (R1)+,R3 ;DATI TO NR PAGE - SHOULD ABORT
010316 005377 172502 DEC @SRO ;ON ERROR, TURN OFF KT11-C
010322 104006 HLT ;NO ABORT ON DATI TO A NON-RESIDENT PAGE
010324 000445 BR DONE21
010326 017702 172472 RET21: MOV @SRO,R2 ;SAVE CONTENTS OF SRO
010332 105377 172466 DEC @SRO ;TURN OFF KT11-C
010336 022702 100023 CMP @100023,R2 ;CHECK SAVED CONTENTS OF SRO
010342 001401 BEQ .+4
010344 104006 HLT ;SRO INCORRECT-SHOULD HAVE
;LOCKED ON REFERENCE TO DATA SPACE,
;KERNEL PAGE 1 WHICH WAS NON-RESIDENT
;CHECK SR1
010346 022777 000021 172452 CMP @21,@SR1
010354 001401 BEQ .+4
010356 104006 HLT ;SR1 INCORRECT-SHOULD HAVE
;LOCKED UP AFTER NR
;ACCESS AUTO INCREMENTED
;REGISTER 1 BY TWO
;CHECK SR2
010360 022777 010314 172442 CMP @AD21,@SR2
010366 001401 BEQ .+4
010370 104006 HLT ;SR2 INCORRECT-SHOULD HAVE LOCKED ON
;NR REFERENCE
010372 017705 172644 MOV @KIPDR1,R5 ;MOVE CONTENTS OF KIPDR1 TO R5
010376 042705 000007 BIC @7,R5 ;TO MASK OFF ACCESS KEY
010402 022705 077400 CMP @77400,R5 ;CHECK INSTRUCTION SPACE PDR FOR
010406 001401 BEQ .+4 ;THE NR PAGE REFERENCED (BITS 0-2 MASKED OUT)
010410 104006 HLT ;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
010412 017704 172644 MOV @KDPDR1,R4 ;MOVE CONTENTS OF KDPDR1 TO R5
010416 042704 000007 BIC @7,R4 ;TO MASK OFF ACCESS KEY
010422 022704 077400 CMP @77400,R4 ;CHECK DATA SPACE PDR CORRESPONDING
010426 001401 BEQ .+4 ;TO THE RROT REFERENCE
010430 104006 HLT ;KDPDR1 INCORRECT- SHOULD NOT
;HAVE BEEN CHANGED

```



```

010432 005703          TST      R3          ;CHECK DESTINATION LOCATION TO SEE
010434 001401          BEQ      .+4         ;IF INSTRUCTION ALTERED IT BEFORE ABORTING
010436 104006          HLT                     ;INSTRUCTION COMPLETED BEFORE ABORT OCCURRED
010440 016777 172372 172366 DONE21: MOV     KTSTA,KTVEC ;RESTORE TRAP RETURN TO CAUSE HALT
010446 005077 172364          CLR     KTSTA      ;ON AN UNEXPECTED TRAP
010452 005077 172346          CLR     JSRO       ;INITIALIZE SRO
010456 005037 177776          CLR     JPS        ;INITIALIZE PROCESSOR STATUS

;SHOW THAT A DATI TO A NR PAGE WITH MEMORY MANAGEMENT
;TRAP ENABLE SET ABORTS WITHOUT COMPLETING
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE
;PDR'S FOR THE PAGE REFERENCED ARE CORRECT
010462 104400          TEST22: SCOPE
010464 012737 000022 177570 MOV     #22,J#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
010472 005037 177776          CLR     JPS        ;INITIALIZE PROCESSOR STATUS
010476 012706 001000          MOV     #KSTACK,SP  ;INITIALIZE KERNEL STACK POINTER
010502 005077 172316          CLR     JSRO       ;INITIALIZE SRO
010506 004767 011576          JSR     %7,SETUP    ;MAKE KERNEL PAGE 1 NR, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;SETUP ABORT RETURN
010512 012777 010560 172314 MOV     #RET22,KTVEC
010520 005077 172312          CLR     KTSTA
010524 012767 125252 172660 MOV     #125252,DESTAD ;INITIALIZE LOCATION TO BE READ
010532 005003          CLR     R3         ;CLEAR REGISTER TO SAVE WHAT WAS READ
;ALLOWS CHECKING TO SEE THAT THE
;INSTRUCTION DIDN'T COMPLETE
;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
;TO BE REFERENCED THRU KERNEL PAGE 1
010534 012701 023412          MOV     #DESTAD+20000,R1 ;TURN ON KT11-C, SET MMGT TRAP ENABLE
;DATI TO NR PAGE - SHOULD ABORT
;IF NO ABORT, TURN OFF KT11-C
;DATI TO NR PAGE WITH MEMORY
;MANAGEMENT TRAP ENABLE SET DIDN'T
;CAUSE AN ABORT
;SAVE CONTENTS OF SRO
;TURN OFF KT11-C
;CHECK SAVED CONTENTS OF SRO
010540 012777 001001 172256 AD22: MOV     #1001,JSRO
010546 012103          MOV     (R1)+,R3
010550 105077 172250          CLRB   JSRO
010554 104006          HLT
010556 000445          BR     DONE22
;SRO INCORRECT-SHOULD HAVE LOCKED ON NR
;REFERENCE TO DATA SPACE, KERNEL PAGE 1
;CHECK SR1
010560 017702 172240          RET22: MOV     JSRO,R2
010564 005377 172234          DEC     JSRO
010570 022702 101023          CMP     #101023,R2
010574 001401          BEQ     .+4
010576 104006          HLT
;SR1 INCORRECT-SHOULD HAVE LOCKED ON THE
;NR REFERENCE WHICH AUTO INCREMENTED R1 BY ONE
;CHECK SR2
010600 022777 000021 172220 CMP     #21,JSR1
010606 001401          BEQ     .+4
010610 104006          HLT
;SR2 INCORRECT-SHOULD HAVE LOCKED
;ON THE NR REFERENCE
;MOVE CONTENTS OF KIPDR1 TO R4
;TO MASK OFF THE ACCESS KEY
;CHECK INSTRUCTION SPACE PDR
;(BITS 0-2 MASKED OUT)
;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
;MOVE CONTENTS OF KDPDR1 TO R5
;TO MASK OFF THE ACCESS KEY
010612 022777 010546 172210 CMP     #AD22,JSR2
010620 001401          BEQ     .+4
010622 104006          HLT
010624 017704 172412          MOV     #KIPDR1,R4
010630 042704 000007          BIC     #7,R4
010634 022704 077400          CMP     #77400,R4
010640 001401          BEQ     .+4
010642 104006          HLT
010644 017705 172412          MOV     #KDPDR1,R5
010650 042705 000007          BIC     #7,R5

```



```

010654 022705 077400      CMP      #77400,R5      ;CHECK DATA SPACE PDR
010660 001401              BEQ      .+4          ;(BITS 0-2 MASKED OUT)
010662 104006              HLT                      ;KIPDR1 INCORRECT- SHOULD NOT
                                ;HAVE BEEN CHANGED
                                ;MAKE SURE INSTRUCTION DIDN'T COMPLETE

010664 005703              TST      R3
010666 001401              BEQ      .+4
010670 104006              HLT                      ;THE INSTRUCTION REFERENCING THE NR
                                ;PAGE DIDN'T ABORT BEFORE COMPLETING
010672 016777 172140 172134 DONE22: MOV      KTSTA,KTVEC      ;CHANGE KT11-C FAULT RETURN TO
010700 005077 172132      CLR      KTSTA          ;CAUSE A HALT ON AN UNEXPECTED TRAP
010704 005077 172114      CLR      JSRO
010710 005037 177776      CLR      J#PS

                                ;SHOW THAT A DATO (NO DATIP) TO A NR PAGE WITHOUT
                                ;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS WITHOUT COMPLETING THE DATO
                                ;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                ;CORRESPONDING TO THE REFERENCE IS CORRECT
010714 104400              TEST23: SCOPE
010716 012737 000023 177570 MOV      #23,J#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
010724 005037 177776      CLR      J#PS          ;INITIALIZE PROCESSOR STATUS
010730 012706 001000      MOV      #KSTACK,SP   ;INITIALIZE KERNEL STACK POINTER
010734 005077 172064      CLR      JSRO          ;INITIALIZE SRO
010740 004767 011344      JSR      %7,SETUP      ;MAKE KERNEL PAGE 1 NR, BANK 0
                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ;MAKE ALL OTHER PAGES RW, BANK 0
                                ;SETUP ABORT RETURN

010744 012777 011012 172062 MOV      #RET23,KTVEC
010752 005077 172060      CLR      KTSTA
010756 005067 172430      CLR      DESTAD        ;INITIALIZE LOCATION TO BE ADDRESSED
                                ;BY DATO TO NR PAGE
010762 012701 023412      MOV      #DESTAD+20000,R1 ;R1 CONTAINS ADDRESS OF LOCATION
                                ;TO BE REFERENCED THRU KERNEL PAGE 1
010766 112777 000001 172030 MOVVB   #1,JSRO        ;TURN ON KT11-C
010774 012721 125252 AD23:  MOV      #125252,(R1)+ ;DATO TO NR PAGE-SHOULD ABORT
011000 042777 000001 172016 BIC     #1,JSRO        ;TURN OFF KT11-C
011006 104006              HLT                      ;DATO TO NR PAGE FAILED TO ABORT
011010 000446              BR
011012 017702 172006 RET23: MOV      JSRO,R2   ;SAVE CONTENTS OF SRO
011016 005377 172002      DEC      JSRO          ;TURN OFF KT11-C
011022 022702 100023      CMP      #100023,R2   ;CHECK SAVED CONTENTS OF SRO
011026 001401              BEQ      .+4
011030 104006              HLT                      ;SRO INCORRECT-SHOULD HAVE LOCKED
                                ;ON DATO TO KERNEL DATA PAGE 1(NR)
                                ;NR FAULT SHOULD BE SET
011032 022777 010427 171766 CMP      #10427,JSR1   ;CHECK SR1
011040 001401              BEQ      .+4
011042 104006              HLT                      ;SR1 INCORRECT-SHOULD HAVE LOCKED
                                ;ON THE ABORTED REFERENCE, WHICH
                                ;AUTOINCREMENTED R7 AND THEN R1
011044 022777 010774 171756 CMP      #AD23,JSR2   ;CHECK SR2
011052 001401              BEQ      .+4
011054 104006              HLT                      ;SR2 INCORRECT-SHOULD HAVE LOCKED
                                ;ON THE ABORTED REFERENCE, CONTAINING THE
                                ;VIRTUAL ADDRESS OF THE INSTRUCTION
011056 017703 172160      MOV      KIPDR1,R3    ;MOVE CONTENTS OF KIPDR1 TO R3
011062 042703 000007      BIC     #7,R3         ;TO MASK OFF THE ACCESS KEY
011066 022703 077400      CMP      #77400,R3    ;CHECK INSTRUCTION SPACE PDR

```



```

011072 001401      BEQ      .+4      ;(BITS 0-2 MASKED OUT)
011074 104006      HLT
011076 017704 172160  MOV      @KDPDR1,R4 ;KIPDR1 INCORRECT-SHOULD NOT HAVE
011102 042704 000007  BIC      #7,R4      ;BEEN CHANGED
011106 022704 077400  CMP      #77400,R4 ;MOVE CONTENTS OF KDPDR1 TO R4
011112 001401      BEQ      .+4      ;TO MASK OFF THE ACCESS KEY
011114 104006      HLT      ;CHECK DATA SPACE PDR
011116 005767 172270  TST      DESTAD    ;(BITS 0-2 MASKED OUT)
011122 001401      BEQ      .+4      ;KDPDR1 INCORRECT-SHOULD NOT
011124 104006      HLT      ;HAVE BEEN CHANGED
011126 016777 171704 171700 DONE23: MOV      KTSTA,@KTVEC ;MAKE CERTAIN THAT DESTINATION
011134 005077 171676  CLR      @KTSTA    ;LOCATION WAS NOT WRITTEN
011140 005077 171660  CLR      @SRO      ;DATO TO NR PAGE WROTE
011144 005037 177776  CLR      @#PS      ;INTO THE DESTINATION LOCATION
                                ;CHANGE KT11-C FAULT RETURN
                                ;TO CAUSE A HALT ON AN UNEXPECTED TRAP
                                ;SHOW THAT A DATO (NO DATIP) TO A NR PAGE WITH
                                ;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
                                ;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                ;CORRESPONDING TO THE REFERENCE IS CORRECT
011150 104400      TEST24: SCOPE
011152 012737 000024 177570  MOV      #24,@#SR ;LOAD TEST NUMBER INTO THE DISPLAY
011160 005037 177776  CLR      @#PS      ;INITIALIZE PROCESSOR STATUS
011164 012706 001000  MOV      #KSTACK,SP ;INITIALIZE KERNEL STACK POINTER
011170 005077 171630  CLR      @SRO      ;INITIALIZE SRO
011174 004767 011110  JSR      %7,SETUP  ;MAKE KERNEL PAGE 1 NR, BANK 0
                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ;MAKE ALL OTHER PAGES RW, BANK 0
                                ;SETUP ABORT RETURN
011200 012777 011244 171626  MOV      #RET24,@KTVEC
011206 005077 171624  CLR      @KTSTA
011212 005067 172174  CLR      DESTAD    ;INITIALIZE LOCATION TO BE ADDRESSED
                                ;BY DATO TO NR PAGE
011216 012702 023412  MOV      #DESTAD+20000,R2 ;R2 CONTAINS ADDRESS OF LOCATION
                                ;TO BE REFERENCED THRU KERNEL PAGE 1
011222 012777 001001 171574  MOV      #1001,@SRO ;TURN ON KT11-C, MMGT TRAP ENABLE
011230 012722 125252  AD24:  MOV      #125252,(R2)+ ;DATO TO NR PAGE-SHOULD ABORT
011234 105377 171564  DEC      @SRO      ;TURN OFF KT11-C
011240 104006  HLT      ;DATO TO NR PAGE FAILED TO ABORT
011242 000446  BR       DONE24
011244 017701 171554  RET24: MOV      @SRO,R1 ;SAVE CONTENTS OF SRO
011250 005377 171550  DEC      @SRO      ;TURN OFF KT11-C
011254 022701 101023  CMP      #101023,R1 ;CHECK SAVED CONTENTS OF SRO
011260 001401      BEQ      .+4
011262 104006      HLT
                                ;SRO INCORRECT-SHOULD HAVE LOCKED
                                ;ON DATO TO KERNEL DATA PAGE 1(NR)
                                ;AND NR FAULT SHOULD BE SET
011264 022777 011027 171534  CMP      #11027,@SR1 ;CHECK SR1
011272 001401      BEQ      .+4
011274 104006      HLT
                                ;SR1 INCORRECT-SHOULD HAVE LOCKED
                                ;ON THE ABORTED REFERENCE, WHICH AUTO-
                                ;INCREMENTED R7 AND THEN R2
011276 022777 011230 171524  CMP      #AD24,@SR2 ;CHECK SR2
011304 001401      BEQ      .+4
011306 104006      HLT      ;SR2 INCORRECT-SHOULD HAVE LOCKED

```



```

011310 017703 171726      MOV      @KIPDR1,R3
011314 042703 000007      BIC      #7,R3
011320 022703 077400      CMP      #77400,R3
011324 001401      BEQ      .+4
011326 104006      HLT

011330 017704 171726      MOV      @KDPDR1,R4
011334 042704 000007      BIC      #7,R4
011340 022704 077400      CMP      #77400,R4
011344 001401      BEQ      .+4
011346 104006      HLT

011350 005767 172036      TST      DESTAD
011354 001401      BEQ      .+4
011356 104006      HLT

011360 016777 171452 171446  DONE24: MOV      KTSTA,@KTVEC
011366 005077 171444      CLR      @KTSTA
011372 005077 171426      CLR      @SRO
011376 005037 177776      CLR      @#PS

```

```

;ON THE ABORTED REFERENCE, CONTAINING THE
;VIRTUAL ADDRESS OF THE INSTRUCTION
;MOVE CONTENTS OF I-SPACE PDR TO R3
;TO MASK OFF THE ACCESS KEY
;CHECK INSTRUCTION SPACE PDR
;WITH BITS 0-2 MASKED OUT
;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
;MOVE CONTENTS OF D-SPACE PDR TO R4
;TO MASK OFF ACCESS KEY
;CHECK DATA SPACE PDR
;WITH BITS 0-2 MASKED OFF
;KDPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
;MAKE CERTAIN THAT DESTINATION
;LOCATION WAS NOT WRITTEN
;DATO TO NR PAGE WROTE
;INTO THE DESTINATION LOCATION
;CHANGE KT11-C FAULT RETURN
;TO CAUSE A HALT ON AN UNEXPECTED TRAP

```

```

;SHOW THAT A DATIP, DATO SEQUENCE TO A NR PAGE WITHOUT
;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT
TEST25: SCOPE
011402 104400      MOV      #25,@#SR
011404 012737 000025 177570  CLR      @#PS
011412 005037 177776      MOV      #KSTACK,SP
011416 012706 001000      CLR      @SRO
011422 005077 171376      JSR      %7,SETUP
011426 004767 010656      ;LOAD TEST NUMBER INTO THE DISPLAY
;INITIALIZE PROCESSOR STATUS
;INITIALIZE KERNEL STACK POINTER
;INITIALIZE SRO
;MAKE KERNEL PAGE 1 NR,BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;SETUP ABORT RETURN

011432 012777 011476 171374  MOV      #RET25,@KTVEC
011440 005077 171372  CLR      @KTSTA
011444 005067 171742  CLR      DESTAD
;INITIALIZE LOCATION TO BE ADDRESSED
;BY DATIP, DATO TO NR PAGE
;R3 CONTAINS ADDRESS+2 OF LOCATION
;TO BE REFERENCED THRU KERNEL PAGE 1
;TURN ON KT11-C
AD25: 011454 052777 000001 171342  BIS      #1,@SRO ;TURN ON KT11-C
011462 005243      INC      -(R3)
011464 042777 000001 171332  BIC      #1,@SRO
;DATIP, DATO TO NR PAGE-SHOULD ABORT
;TURN OFF KT11-C
011472 104006      HLT
;DATIP, DATO TO NR PAGE FAILED TO
;ABORT
011474 000447      BR      DONE25
RET25: 011476 017701 171322  MOV      @SRO,R1
011502 042777 000001 171314  BIC      #1,@SRO
;SAVE CONTENTS OF SRO
;TURN OFF KT11-C
011510 022701 100023  CMP      #100023,R1
;CHECK SAVED CONTENTS OF SRO
011514 001401      BEQ      .+4
;SRO INCORRECT-SHOULD HAVE LOCKED
;ON DATO TO KERNEL DATA PAGE 1(NR)
;NR FAULT SHOULD BE SET
011520 022777 000363 171300  CMP      #363,@SR1
011526 001401      BEQ      .+4
;CHECK SR1

```



```

011530 104006          HLT          ;SR1 INCORRECT-SHOULD HAVE LOCKED
;ON THE ABORTED REFERENCE, WHICH
;AUTODECREMENTED R3 BY TWO
;CHECK SR2

011532 022777 011462 171270  CMP      #AD25,SR2
011540 001401          BEQ      .+4
011542 104006          HLT          ;SR2 INCORRECT-SHOULD HAVE LOCKED
;ON THE ABORTED REFERENCE, CONTAINING THE
;VIRTUAL ADDRESS OF THE INSTRUCTION
;MOVE CONTENTS OF I-SPACE PDR TO R4
;TO MASK OFF THE ACCESS KEY
;CHECK INSTRUCTION SPACE PDR
;WITH BITS 0-2 MASKED OFF
;KIPDR1 INCORRECT-SHOULD NOT HAVE
;BEEN CHANGED

011544 017704 171472  MOV      QKIPDR1,R4
011550 042704 000007  BIC      #7,R4
011554 022704 077400  CMP      #77400,R4
011560 001401          BEQ      .+4
011562 104006          HLT          ;KIPDR1 INCORRECT-SHOULD NOT HAVE
;BEEN CHANGED

011564 017705 171472  MOV      QKDPDR1,R5
011570 042705 000007  BIC      #7,R5
011574 022705 077400  CMP      #77400,R5
011600 001401          BEQ      .+4
011602 104006          HLT          ;KDPDR1 INCORRECT- SHOULD NOT HAVE
;BEEN CHANGED

011604 005767 171602  TST      DESTAD
011610 001401          BEQ      .+4
011612 104006          HLT          ;MAKE CERTAIN THAT DESTINATION
;LOCATION WAS NOT WRITTEN
;DATO TO NR PAGE WROTE INTO
;THE DESTINATION LOCATION
;CHANGE PAGE FAULT RETURN
;TRAP

011614 016777 171216 171212 DONE25: MOV      KTSTA,QKTVEC
011622 005077 171210  CLR      QKTSTA
011626 005077 171172  CLR      QSR0
011632 005037 177776  CLR      Q#PS

```

```

;SHOW THAT A DATIP, DATO SEQUENCE TO A NR PAGE WITH
;MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT

```

```

011636 104400          TEST26: SCOPE
011640 012737 000026 177570  MOV      #26,Q#SR
011646 005037 177776  CLR      Q#PS
011652 012706 001000  MOV      #KSTACK,SP
011656 005077 171142  CLR      QSR0
011662 004767 010422  JSR      %7,SETUP
;LOAD TEST NUMBER INTO THE DISPLAY
;INITIALIZE PROCESSOR STATUS
;INITIALIZE KERNEL STACK POINTER
;INITIALIZE SR0
;MAKE KERNEL PAGE 1 NR,BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;SETUP ABORT RETURN

011666 012777 011732 171140  MOV      #RET26,QKTVEC
011674 005077 171136  CLR      QKTSTA
011700 005067 171506  CLR      DESTAD
;INITIALIZE LOCATION TO BE ADDRESSED
;BY DATIP, DATO TO NR PAGE
;R3 CONTAINS ADDRESS+2 OF LOCATION
;TO BE REFERENCED THRU KERNEL PAGE 1
;TURN ON KT11-C
;DATIP, DATO TO NR PAGE-SHOULD ABORT
;TURN OFF KT11-C
;DATIP, DATO TO NR PAGE FAILED TO
;ABORT

011704 012703 023414  MOV      #DESTAD+20002,R3
;SAVE CONTENTS OF SR0
;TURN OFF KT11-C
;CHECK SAVED CONTENTS OF SR0

011710 052777 001001 171106  AD26:  BIS      #1001,QSR0
011716 005243          INC      -(R3)
011720 042777 000001 171076  BIC      #1,QSR0
011726 104006          HLT
011730 000447          BR      DONE26
011732 017701 171066          RET26: MOV      QSR0,R1
011736 042777 000001 171060  BIC      #1,QSR0
011744 022701 101023  CMP      #101023,R1
011750 001401          BEQ      .+4

```


012160	104006				HLT				:DATIP, DATO TO NR PAGE FAILED
012162	000446				BR	DONE27			: TO ABORT
012164	017701	170634		RET27:	MOV	SR0, R1			:SAVE CONTENTS OF SR0
012170	005377	170630			DEC	SR0			:TURN OFF KT11-C
012174	022701	100023			CMP	#100023, R1			:CHECK SAVED CONTENTS OF SR0
012200	001401				BEQ	.+4			
012202	104006				HLT				:SR0 INCORRECT-SHOULD HAVE LOCKED ON
									:DATIP, DATOB TO KERNEL DATA PAGE 1 (NR)
									:NR FAULT SHOULD BE SET
012204	022777	000014	170614		CMP	#14, SR1			:CHECK SR1
012212	001401				BEQ	.+4			
012214	104006				HLT				:SR1 INCORRECT-SHOULD HAVE LOCKED
									:ON THE ABORTED REFERENCE, WHICH AUTO-
									:INCREMENTED R4 BY ONE
012216	022777	012152	170604		CMP	#AD27, SR2			:CHECK SR2
012224	001401				BEQ	.+4			
012226	104006				HLT				:SR2 INCORRECT SHOULD HAVE LOCKED
									:ON THE ABORTED REFERENCE, CONTAINING THE
									:VIRTUAL ADDRESS OF THE INSTRUCTION
012230	017702	171006			MOV	KIPDR1, R2			:MOVE CONTENTS OF I-SPACE PDR 1 TO R2
012234	042702	000007			BIC	#7, R2			:TO MASK OFF THE ACCESS KEY
012240	022702	077400			CMP	#77400, R2			:CHECK INSTRUCTION SPACE PDR
012244	001401				BEQ	.+4			:WITH BITS 0-2 MASKED OFF
012246	104006				HLT				:KIPDR1 INCORRECT-SHOULD NOT HAVE
									:BEEN CHANGED
012250	017703	171006			MOV	KDPDR1, R3			:MOVE CONTENTS OF D-SPACE PDR TO R3
012254	042703	000007			BIC	#7, R3			:TO MASK OFF THE ACCESS KEY
012260	022703	077400			CMP	#77400, R3			:CHECK DATA SPACE PDR
012264	001401				BEQ	.+4			:WITH BITS 0-2 MASKED OFF
012266	104006				HLT				:KDPDR1 INCORRECT- SHOULD NOT
									:HAVE BEEN CHANGED
012270	005767	171116			TST	DESTAD			:MAKE CERTAIN THAT DESTINATION
012274	001401				BEQ	.+4			:LOCATION WAS NOT WRITTEN
012276	104006				HLT				:DATOB TO NR PAGE WROTE INTO
									:THE DESTINATION LOCATION
012300	016777	170532	170526	DONE27:	MOV	KTSTA, KTVEC			:CHANGE KT11-C FAULT
012306	005077	170524			CLR	KTSTA			:RETURN TO CAUSE A HALT ON AN
012312	005077	170506			CLR	SR0			:UNEXPECTED TRAP
012316	005037	177776			CLR	PS			
									:SHOW THAT A DATIP, DATOB SEQUENCE TO A NR PAGE WITH
									:MEMORY MANAGEMENT TRAP ENABLE SET ABORTS
									:SHOW THAT THE KT11-C STATUS REGISTERS LOCK UP, AND THAT THE PDR
									:CORRESPONDING TO THE REFERENCE IS CORRECT
012322	104400			TEST30:	SCOPE				
012324	012737	000030	177570		MOV	#30, SR			:LOAD TEST NUMBER INTO THE DISPLAY
012332	005037	177776			CLR	PS			:INITIALIZE PROCESSOR STATUS
012336	012706	001000			MOV	KSTACK, SP			:INITIALIZE KERNEL STACK POINTER
012342	005077	170456			CLR	SR0			:INITIALIZE SR0
012346	004767	007736			JSR	%7, SETUP			:MAKE KERNEL PAGE 1 NR, BANK 0
									:MAKE KERNEL PAGE 7 RW, EXTERNAL
									:MAKE ALL OTHER PAGES RW, BANK 0
									:SETUP ABORT RETURN
012352	012777	012414	170454		MOV	#RET30, KTVEC			
012360	005077	170452			CLR	KTSTA			:INITIALIZE LOCATION TO BE ADDRESSED
012364	005067	171022			CLR	DESTAD			:BY DATIP, DATOB TO NR PAGE

012370	012704	023412		MOV	#DESTAD+20000,R4		:R4 CONTAINS ADDRESS OF LOCATION
012374	052777	001001	170422	BIS	#1001,SR0		:TO BE REFERENCED THRU KERNEL PAGE 1
012402	105224			INCB	(R4)+	AD30:	:TURN ON KT11-C
012404	005377	170414		DEC	SR0		:DATIP, DATOB TO NR PAGE-SHOULD ABORT
012410	104006			HLT			:TURN OFF KT11-C
012412	000446			BR	DONE30		:DATIP, DATO TO NR PAGE FAILED
012414	017701	170404		MOV	SR0,R1	RET30:	:TO ABORT
012420	005377	170400		DEC	SR0		:SAVE CONTENTS OF SR0
012424	022701	101023		CMP	#101023,R1		:TURN OFF KT11-C
012430	001401			BEQ	.+4		:CHECK SAVED CONTENTS OF SR0
012432	104006			HLT			:SR0 INCORRECT-SHOULD HAVE LOCKED ON
							:DATIP, DATOB TO KERNEL DATA PAGE 1 (NR)
							:NR FAULT SHOULD BE SET
012434	022777	000014	170364	CMP	#14,SR1		:CHECK SR1
012442	001401			BEQ	.+4		
012444	104006			HLT			:SR1 INCORRECT-SHOULD HAVE LOCKED
							:ON THE ABORTED REFERENCE, WHICH AUTO-
							:INCREMENTED R4 BY ONE
							:CHECK SR2
012446	022777	012402	170354	CMP	#AD30,SR2		
012454	001401			BEQ	.+4		
012456	104006			HLT			:SR2 INCORRECT SHOULD HAVE LOCKED
							:ON THE ABORTED REFERENCE, CONTAINING THE
							:VIRTUAL ADDRESS OF THE INSTRUCTION
012460	017702	170556		MOV	SR1,R2		:MOVE CONTENTS OF I-SPACE PDR 1 TO R2
012464	042702	000007		BIC	#7,R2		:TO MASK OFF THE ACCESS KEY
012470	022702	077400		CMP	#77400,R2		:CHECK INSTRUCTION SPACE PDR
012474	001401			BEQ	.+4		:WITH BITS 0-2 MASKED OFF
012476	104006			HLT			:KIPDR1 INCORRECT-SHOULD NOT HAVE
							:BEEN CHANGED
012500	017703	170556		MOV	SR2,R3		:MOVE CONTENTS OF D-SPACE PDR TO R3
012504	042703	000007		BIC	#7,R3		:TO MASK OFF THE ACCESS KEY
012510	022703	077400		CMP	#77400,R3		:CHECK DATA SPACE PDR
012514	001401			BEQ	.+4		:WITH BITS 0-2 MASKED OFF
012516	104006			HLT			:KDPDR1 INCORRECT- SHOULD NOT
							:HAVE BEEN CHANGED
012520	005767	170666		TST	DESTAD		:MAKE CERTAIN THAT DESTINATION
012524	001401			BEQ	.+4		:LOCATION WAS NOT WRITTEN
012526	104006			HLT			:DATOB TO NR PAGE WROTE INTO
							:THE DESTINATION LOCATION
012530	016777	170302	170276	MOV	KTSTA,KTVEC	DONE30:	:CHANGE KT11-C FAULT
012536	005077	170274		CLR	KTSTA		:RETURN TO CAUSE A HALT ON AN
012542	005077	170256		CLR	SR0		:UNEXPECTED TRAP
012546	005037	177776		CLR	#PS		
012552	104400			SCOPE			
012554	005267	170622		INC	NRcnt		:COUNT HOW MANY NR KEYS HAVE BEEN TESTED
012560	022767	000003	170614	CMP	#3,NRcnt		
012566	001413			BEQ	NXTST		:IF ALL 3 HAVE BEEN TESTED, BRANCH
012570	016701	170606		MOV	NRcnt,R1		:OTHERWISE, CALCULATE OFFSET TO GET NEXT KEY
012574	006301			ASL	R1		
012576	016137	003404	001000	MOV	NRKEYS(R1),SR0		:PUT NEXT NR KEY ON STACK
012604	012767	010234	010006	MOV	#TEST21+6,RETURN		:PUT NEW SCOPE LOOP ADDRESS IN RETURN
012612	000167	175416		JMP	TEST21+6	NXTST:	:JUMP TO EXECUTE TESTS WITH NEXT NR KEY
012616	005067	170560		CLR	NRcnt		
012622	012767	012632	007770	MOV	#TEST31+2,RETURN		

: SHOW THAT DATI TO A RW PAGE (ACF=6) WITHOUT MEMORY
: MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
: SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
: THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT

012630	104400			TEST31: SCOPE		
012632	012737	000031	177570	MOV	#31, @#SR	: LOAD TEST NUMBER INTO THE DISPLAY
012640	005037	177776		CLR	@#PS	: INITIALIZE PROCESSOR STATUS
012644	012706	001000		MOV	#KSTACK, SP	: INITIALIZE KERNEL STACK POINTER
012650	005077	170150		CLR	@SRO	: INITIALIZE SRO
012654	012746	000006		MOV	#6, -(SP)	: PUSH RW KEY ON STACK
012660	004767	007424		JSR	%7, SETUP	: MAKE KERNEL PAGE 1 RW, BANK 0
						: MAKE KERNEL PAGE 7 RW, EXTERNAL
						: MAKE ALL OTHER PAGES RW, BANK 0
						: RESTORE STACK POINTER
012664	005726			TST	(SP)+	: SETUP ABORT RETURN IN CASE
012666	012777	013026	170140	MOV	#RET31, @KTVEC	
012674	005077	170136		CLR	@KTSTA	
012700	012767	125252	170504	MOV	#125252, DESTAD	: INITIALIZE LOCATION TO BE READ
012706	012701	023412		MOV	#DESTAD+20000, R1	: R1 CONTAINS VIRTUAL ADDRESS OF
						: LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
012712	005277	170106		INC	@SRO	: TURN ON KT11-C
012716	022721	125252		CMP	#125252, (R1)+	: DATI TO RW PAGE-SHOULDN'T TRAP OR ABORT
012722	001404			BEQ	OK31	
012724	005377	170074		DEC	@SRO	: ON ERROR, TURN OFF KT11-C
012730	104006			HLT		: RELOCATION FAILED THRU KERNEL PAGE 1
012732	000441			BR	DONE31	
012734	017702	170064		MOV	@SRO, R2	: SAVE CONTENTS OF SRO
012740	105377	170060		DECB	@SRO	: TURN OFF KT11-C
012744	022702	000021		CMP	#21, R2	: CHECK SAVED CONTENTS OF SRO
012750	001401			BEQ	+.4	
012752	104006			HLT		: SRO INCORRECT-SHOULD HAVE
						: TRACKED REFERENCE TO DATA SPACE,
						: PAGE 0, WHICH GOT THE ADDRESS
						: OF SRO TO TURN OFF KT11-C
						: CHECK SR1
012754	022777	000027	170044	CMP	#27, @SR1	
012762	001401			BEQ	+.4	
012764	104006			HLT		: SR1 INCORRECT-SHOULD KEEP
						: TRACKING EVEN WITH KT11-C OFF
012766	022777	012766	170034	CMP	#., @SR2	: CHECK SR2
012774	001401			BEQ	+.4	
012776	104006			HLT		: SR2 INCORRECT-SHOULD TRACK EVEN
						: WHEN KT11-C IS OFF
013000	022777	077406	170234	CMP	#77406, @KIPDR1	: CHECK INSTRUCTION SPACE PDR FOR
013006	001401			BEQ	+.4	: THE RW PAGE REFERENCED
013010	104006			HLT		: KIPDR1 INCORRECT-SHOULD NOT
						: HAVE BEEN CHANGED
013012	022777	077406	170242	CMP	#77406, @KDPDR1	: CHECK DATA SPACE PDR CORRESPONDING
013020	001401			BEQ	+.4	: TO THE RW REFERENCE
013022	104006			HLT		: KDPDR1 INCORRECT - SHOULD NOT
						: HAVE BEEN CHANGED
013024	000404			BR	DONE31	
013026	042777	000001	167770	RET31: BIC	#1, @SRO	: TURN OFF KT11-C
013034	104006			HLT		: DATI TO RW PAGE CAUSED
						: A TRAP OR ABORT
013036	016777	167774	167770	DONE31: MOV	KTSTA, @KTVEC	: RESTORE TRAP RETURN TO CAUSE HALT
013044	005077	167766		CLR	@KTSTA	: ON AN UNEXPECTED TRAP


```

013270 016777 167542 167536 DONE32: MOV      KTSTA, @KTVEC      ;RESTORE TRAP RETURN TO CAUSE HALT
013276 005077 167534          CLR      @KTSTA        ;ON AN UNEXPECTED TRAP
013302 005077 167516          CLR      @SRO          ;INITIALIZE SRO
013306 005037 177776          CLR      @#PS         ;INITIALIZE PROCESSOR STATUS

;SHOW THAT A DATC (NO DATIP) TO A RW PAGE (ACF=6) WITHOUT MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
013312 104400          TEST33: SCOPE
013314 012737 000033 177570      MOV      #33, @#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
013322 005037 177776          CLR      @#PS         ;INITIALIZE PROCESSOR STATUS
013326 012706 001000          MOV      #KSTACK, SP  ;INITIALIZE KERNEL STACK POINTER
013332 005077 167466          CLR      @SRO          ;INITIALIZE SRO
013336 012746 000006          MOV      #6, -(SP)    ;PUSH RW KEY ON THE STACK
013342 004767 006742          JSR      %7, SETUP    ;MAKE KERNEL PAGE 1 RW, BANK 0
                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ;MAKE ALL OTHER PAGES RW, BANK 0
013346 005726          TST      (SP)+        ;RESTORE STACK POINTER
013350 012777 013506 167456      MOV      #RET33, @KTVEC ;SETUP ABORT RETURN IN CASE
013356 005077 167454          CLR      @KTSTA
013362 005067 170024          CLR      DESTAD
013366 012701 023412          MOV      #DESTAD+20000, R1 ;INITIALIZE LOCATION TO BE REFERENCED
                                ;R1 CONTAINS VIRTUAL ADDRESS OF
                                ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
013372 005277 167426          INC      @SRO        ;TURN ON KT11-C
013376 012721 125252          MOV      #125252, (R1)+ ;DATO TO RW PAGE-SHOULDN'T TRAP OR ABORT
013402 017702 167416          MOV      @SRO, R2    ;SAVE CONTENTS OF SRO
013406 105377 167412          DECB   @SRO         ;TURN OFF KT11-C
013412 022702 000021          CMP      #21, R2    ;CHECK SAVED CONTENTS OF SRO
013416 001401          BEQ     .+4
013420 104006          HLT

;SRO INCORRECT-SHOULD HAVE
;TRACKED REFERENCE TO DATA SPACE,
;PAGE 0, WHICH GOT THE ADDRESS
;OF SRO TO TURN OFF KT11-C
;CHECK SR1
013422 022777 000027 167376      CMP      #27, @SR1
013430 001401          BEQ     .+4
013432 104006          HLT

;SR1 INCORRECT-SHOULD KEEP
;TRACKING EVEN WITH KT11-C OFF
;CHECK SR2
013434 022777 013434 167366      CMP      #., @SR2
013442 001401          BEQ     .+4
013444 104006          HLT

;SR2 INCORRECT-SHOULD TRACK EVEN
;WHEN KT11-C IS OFF
;CHECK INSTRUCTION SPACE PDR FOR
;THE RW PAGE REFERENCED
;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
013446 022777 077406 167566      CMP      #77406, @KIPDR1
013454 001401          BEQ     .+4
013456 104006          HLT

;CHECK DATA SPACE PDR CORRESPONDING
;TO THE RW REFERENCE
;KDPDR1 INCORRECT - "W" BIT SHOULD
;BE SET SINCE PAGE WAS WRITTEN INTO
;MAKE SURE THAT THE WRITE ACTUALLY OCCURRED
013460 022777 077506 167574      CMP      #77506, @KDPDR1
013466 001401          BEQ     .+4
013470 104006          HLT

;DATO TO RW PAGE FAILED TO WRITE CORRECT LOCATION
013472 022767 125252 167712      CMP      #125252, DESTAD
013500 001401          BEQ     .+4
013502 104006          HLT
013504 000404          BR     DONE33
013506 042777 000001 167310 RET33: BIC     #1, @SRO ;TURN OFF KT11-C
013514 104006          HLT ;DATO TO RW PAGE CAUSED

```



```

013516 016777 167314 167310 DONE33: MOV      KTSTA, &KTVEC      ; A TRAP OR ABORT
013524 005077 167306                CLR      &KTSTA      ; RESTORE TRAP RETURN TO CAUSE HALT
013530 005077 167270                CLR      &SRO        ; ON AN UNEXPECTED TRAP
013534 005037 177776                CLR      &#PS        ; INITIALIZE SRO
                                ; INITIALIZE PROCESSOR STATUS

                                ; SHOW THAT A DATO (NO DATIP) TO A RW PAGE (ACF=6) WITH MEMORY
                                ; MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
                                ; SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
                                ; THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
013540 104400                TEST34: SCOPE
013542 012737 000034 177570      MOV      #34, &#SR      ; LOAD TEST NUMBER INTO THE DISPLAY
013550 005037 177776                CLR      &#PS          ; INITIALIZE PROCESSOR STATUS
013554 012706 001000                MOV      &KSTACK, SP  ; INITIALIZE KERNEL STACK POINTER
013560 005077 167240                CLR      &SRO        ; INITIALIZE SRO
013564 012746 000006                MOV      #6, -(SP)    ; PUSH RW KEY ON STACK
013570 004767 006514                JSR      %7, SETUP    ; MAKE KERNEL PAGE 1 RW, BANK 0
                                ; MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ; MAKE ALL OTHER PAGES RW, BANK 0
                                ; RESTORE STACK POINTER
                                ; SETUP ABORT RETURN IN CASE
013574 005726                TST      (SP)+
013576 012777 013736 167230      MOV      &RET34, &KTVEC
013604 005077 167226                CLR      &KTSTA
013610 005067 167576                CLR      DESTAD
013614 012701 023412                MOV      &DESTAD+20000, R1 ; INITIALIZE LOCATION TO BE WRITTEN INTO
                                ; R1 CONTAINS VIRTUAL ADDRESS OF
                                ; LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
013620 012777 001001 167176      MOV      #1001, &SRO  ; TURN ON KT11-C, MMGT TRAP ENABLE SET
013626 012721 125252                MOV      #125252, (R1)+ ; DATO TO RW PAGE-SHOULD NOT TRAP OR ABORT
013632 017702 167166                MOV      &SRO, R2    ; SAVE CONTENTS OF SRO
013636 105377 167162                DECB    &SRO         ; TURN OFF KT11-C
013642 022702 001021                CMP      #1021, R2   ; CHECK SAVED CONTENTS OF SRO
013646 001401                BEQ
013650 104006                HLT
                                ; SRO INCORRECT-SHOULD HAVE
                                ; TRACKED REFERENCE TO DATA SPACE,
                                ; PAGE 0, WHICH GOT THE ADDRESS
                                ; OF SRO, AND MMGT TRAP ENABLE SHOULD BE SET
                                ; CHECK SR1
013652 022777 000027 167146      CMP      #27, &SR1
013660 001401                BEQ
013662 104006                HLT
                                ; SR1 INCORRECT-SHOULD KEEP
                                ; TRACKING EVEN WITH KT11-C OFF
                                ; CHECK SR2
013664 022777 013664 167136      CMP      #, &SR2
013672 001401                BEQ
013674 104006                HLT
                                ; SR2 INCORRECT-SHOULD TRACK EVEN
                                ; WHEN KT11-C IS OFF
                                ; CHECK INSTRUCTION SPACE PDR FOR
                                ; THE RW PAGE REFERENCED
                                ; KIPDR1 INCORRECT-SHOULD NOT
                                ; HAVE BEEN CHANGED
013676 022777 077406 167336      CMP      #77406, &KIPDR1
013704 001401                BEQ
013706 104006                HLT
                                ; CHECK DATA SPACE PDR CORRESPONDING
                                ; TO THE RW REFERENCE
                                ; KDPDR1 INCORRECT - "W" BIT SHOULD
                                ; HAVE SET
013710 022777 077506 167344      CMP      #77506, &KDPDR1
013716 001401                BEQ
013720 104006                HLT
                                ; MAKE SURE THAT THE WRITE ACTUALLY OCCURRED
013722 022767 125252 167462      CMP      #125252, DESTAD
013730 001401                BEQ
013732 104006                HLT
013734 000404                BR      DONE34
                                ; DATO TO RW PAGE FAILED TO WRITE CORRECT LOCATION

```


013736	042777	000001	167060	RET34:	BIC	#1,SR0	:TURN OFF KT11-C
013744	104006				HLT		:DATO TO RW PAGE CAUSED
013746	016777	167064	167060	DONE34:	MOV	KTSTA,KTVEC	:A TRAP OR ABORT
013754	005077	167056			CLR	KTSTA	:RESTORE TRAP RETURN TO CAUSE HALT
013760	005077	167040			CLR	SR0	:ON AN UNEXPECTED TRAP
013764	005037	177776			CLR	SRPS	:INITIALIZE SR0
							:INITIALIZE PROCESSOR STATUS
:SHOW THAT A DATIP, DATO SEQUENCE TO A RW PAGE (ACF=E) WITHOUT MEMORY							
:MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS							
:SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT							
:THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT							
013770	104400			TEST35:	SCOPE		
013772	012737	000035	177570		MOV	#35,SR	:LOAD TEST NUMBER INTO THE DISPLAY
014000	005037	177776			CLR	SRPS	:INITIALIZE PROCESSOR STATUS
014004	012706	001000			MOV	#KSTACK,SP	:INITIALIZE KERNEL STACK POINTER
014010	005077	167010			CLR	SR0	:INITIALIZE SR0
014014	012746	000006			MOV	#6,-(SP)	:PUSH RW KEY ON THE STACK
014020	004767	006264			JSR	%7,SETUP	:MAKE KERNEL PAGE 1 RW, BANK 0
							:MAKE KERNEL PAGE 7 RW, EXTERNAL
							:MAKE ALL OTHER PAGES RW, BANK 0
014024	005726				TST	(SP)+	:RESTORE STACK POINTER
014026	012777	014162	167000		MOV	#RET35,KTVEC	:SETUP ABORT RETURN IN CASE
014034	005077	166776			CLR	KTSTA	
014040	005067	167346			CLR	DESTAD	:INITIALIZE LOCATION TO BE REFERENCED
014044	012704	023414			MOV	#DESTAD+20002,R4	:R4 CONTAINS VIRTUAL ADDRESS+2 OF
							:LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
014050	005277	166750			INC	SR0	:TURN ON KT11-C
014054	005244				INC	-(R4)	:DATIP, DATO TO RW PAGE-SHOULDN'T TRAP OR ABORT
014056	017702	166742			MOV	SR0,R2	:SAVE CONTENTS OF SR0
014062	105077	166736			CLRB	SR0	:TURN OFF KT11-C
014066	022702	000021			CMP	#21,R2	:CHECK SAVED CONTENTS OF SR0
014072	001401				BEQ	+.4	
014074	104006				HLT		:SR0 INCORRECT-SHOULD HAVE
							:TRACKED REFERENCE TO DATA SPACE,
							:PAGE 0, WHICH GOT THE ADDRESS
							:OF SR0 TO TURN OFF KT11-C
014076	022777	000027	166722		CMP	#27,SR1	:CHECK SR1
014104	001401				BEQ	+.4	
014106	104006				HLT		:SR1 INCORRECT-SHOULD KEEP
							:TRACKING EVEN WITH KT11-C OFF
014110	022777	014110	166712		CMP	#,SR2	:CHECK SR2
014116	001401				BEQ	+.4	
014120	104006				HLT		:SR2 INCORRECT-SHOULD TRACK EVEN
							:WHEN KT11-C IS OFF
014122	022777	077406	167112		CMP	#77406,JKIPDR1	:CHECK INSTRUCTION SPACE PDR FOR
014130	001401				BEQ	+.4	:THE RW PAGE REFERENCED
014132	104006				HLT		:KIPDR1 INCORRECT-SHOULD NOT
							:HAVE BEEN CHANGED
014134	022777	077506	167120		CMP	#77506,JKDPDR1	:CHECK DATA SPACE PDR CORRESPONDING
014142	001401				BEQ	+.4	:TO THE RW REFERENCE
014144	104006				HLT		:KDPDR1 INCORRECT - "W" BIT SHOULD
							:HAVE BEEN SET
014146	022767	000001	167236		CMP	#1,DESTAD	:MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
014154	001401				BEQ	+.4	


```

014156 104006          HLT          ;DATIP, DATO TO RW PAGE DIDN'T EXECUTE CORRECTLY
014160 000404          BR          DONE35
014162 042777 000001 166634 RET35: BIC        #1, JSRO
014170 104006          HLT          ;TURN OFF KT11-C
;DATIP, DATO TO RW PAGE CAUSED
;A TRAP OR ABORT
014172 016777 166640 166634 DONE35: MOV      KTSTA, JKTVEC
014200 005077 166632          CLR      JKTSTA
014204 005077 166614          CLR      JSRO
014210 005037 177776          CLR      J#PS
;RESTORE TRAP RETURN TO CAUSE HALT
;ON AN UNEXPECTED TRAP
;INITIALIZE SRO
;INITIALIZE PROCESSOR STATUS

```

```

;SHOW THAT DATIP, DATO SEQUENCE TO A RW PAGE (ACF=6) WITH MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
TEST36: SCOPE

```

```

014214 104400          MOV      #36, J#SR
014216 012737 000036 177570 CLR      J#PS
014224 005037 177776          MOV      #KSTACK, SP
014230 012706 001000          CLR      JSRO
014234 005077 166564          MOV      #6, -(SP)
014240 012746 000006          JSR      %7, SETUP
014244 004767 006040          ;LOAD TEST NUMBER INTO THE DISPLAY
;INITIALIZE PROCESSOR STATUS
;INITIALIZE KERNEL STACK POINTER
;INITIALIZE SRO
;PUSH RW KEY ON THE STACK
;MAKE KERNEL PAGE 1 RW, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;RESTORE STACK POINTER
;SETUP ABORT RETURN IN CASE

014250 005726          TST      (SP)+
014252 012777 014412 166554 MOV      #RET36, JKTVEC
014260 005077 166552          CLR      JKTSTA
014264 005067 167122          CLR      DESTAD
014270 012705 023414          MOV      #DESTAD+20002, R5
;INITIALIZE LOCATION TO BE REFERENCED
;R5 CONTAINS VIRTUAL ADDRESS+2 OF
;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1

014274 012777 001001 166522 MOV      #1001, JSRO
014302 005245          INC      -(R5)
014304 017702 166514          MOV      JSRO, R2
014310 042777 000001 166506 BIC      #1, JSRO
014316 022702 001021          CMP      #1021, R2
014322 001401          BEQ
014324 104006          HLT
;CHECK SAVED CONTENTS OF SRO
;SRO INCORRECT-SHOULD HAVE
;TRACKED REFERENCE TO DATA SPACE,
;PAGE 0, WHICH GOT THE ADDRESS
;OF SRO, AND MGMT TRAP ENABLE SHOULD BE SET
;CHECK SR1

014326 022777 000027 166472 CMP      #27, JSR1
014334 001401          BEQ
014336 104006          HLT
;SR1 INCORRECT-SHOULD KEEP
;TRACKING EVEN WITH KT11-C OFF
;CHECK SR2

014340 022777 014340 166462 CMP      #, JSR2
014346 001401          BEQ
014350 104006          HLT
;SR2 INCORRECT-SHOULD TRACK EVEN
;WHEN KT11-C IS OFF
;CHECK INSTRUCTION SPACE PDR FOR
;THE RW PAGE REFERENCED
;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED

014352 022777 077406 166662 CMP      #77406, JKIPDR1
014360 001401          BEQ
014362 104006          HLT
;CHECK DATA SPACE PDR CORRESPONDING
;TO THE RW REFERENCE
;KDPDR1 INCORRECT - "W" BIT SHOULD
;HAVE BEEN SET

014364 022777 077506 166670 CMP      #77506, JKDPDR1
014372 001401          BEQ
014374 104006          HLT

```



```

014376 022767 000001 167006      CMP      #1,DESTAD      ;MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
014404 001401          BEQ      .+4
014406 104006          HLT
014410 000404          BR
014412 042777 000001 166404 RET36: BIC      #1,JSRO      ;DATIP, DATO TO RW PAGE DIDN'T EXECUTE CORRECTLY
014420 104006          HLT      ;TURN OFF KT11-C
;DATIP, DATO TO RW PAGE CAUSED
;A TRAP OR ABORT
014422 016777 166410 166404 DONE36: MOV     KTSTA,JSKTVEC ;RESTORE TRAP RETURN TO CAUSE HALT
014430 005077 166402          CLR     JSKTSTA    ;ON AN UNEXPECTED TRAP
014434 005077 166364          CLR     JSRO      ;INITIALIZE SRO
014440 005037 177776          CLR     JSPS      ;INITIALIZE PROCESSOR STATUS

```

```

;SHOW THAT A DATIP, DATOB SEQUENCE TO A RW PAGE (ACF=6) WITHOUT MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT

```

```

014444 104400          TEST37: SCOPE
014446 012737 000037 177570      MOV     #37,JSR      ;LOAD TEST NUMBER INTO THE DISPLAY
014454 005037 177776          CLR     JSPS        ;INITIALIZE PROCESSOR STATUS
014460 012706 001000          MOV     #KSTACK,SP  ;INITIALIZE KERNEL STACK POINTER
014464 005077 166334          CLR     JSRO        ;INITIALIZE SRO
014470 012746 000006          MOV     #6,-(SP)    ;PUSH RW KEY ON THE STACK
014474 004767 005610          JSR     %7,SETUP    ;MAKE KERNEL PAGE 1 RW, BANK 0
;MAKE KERNEL PAGE 7 RW, EXTERNAL
;MAKE ALL OTHER PAGES RW, BANK 0
;RESTORE STACK POINTER
014500 005726          TST     (SP)+
014502 012777 014636 166324      MOV     #RET37,JSKTVEC ;SETUP ABORT RETURN IN CASE
014510 005077 166322          CLR     JSKTSTA
014514 005067 166672          CLR     DESTAD
014520 012703 023413          MOV     #DESTAD+20001,R3 ;INITIALIZE LOCATION TO BE REFERENCED
;R3 CONTAINS VIRTUAL ADDRESS+1 OF
;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
014524 005277 166274          INC     JSRO
014530 105343          DECB   -(R3)
014532 017702 166266          MOV     JSRO,R2
014536 105377 166262          DECB   JSRO
014542 022702 000021          CMP     #21,R2
014546 001401          BEQ     .+4
014550 104006          HLT
;SR0 INCORRECT-SHOULD HAVE
;TRACKED REFERENCE TO DATA SPACE,
;PAGE 0, WHICH GOT THE ADDRESS
;OF SR0 TO TURN OFF KT11-C
;CHECK SR1
014552 022777 000027 166246      CMP     #27,JSR1
014560 001401          BEQ     .+4
014562 104006          HLT
;SR1 INCORRECT-SHOULD KEEP
;TRACKING EVEN WITH KT11-C OFF
;CHECK SR2
014564 022777 014564 166236      CMP     #,JSR2
014572 001401          BEQ     .+4
014574 104006          HLT
;SR2 INCORRECT-SHOULD TRACK EVEN
;WHEN KT11-C IS OFF
014576 022777 077406 166436      CMP     #77406,JKIPDR1 ;CHECK INSTRUCTION SPACE PDR FOR
014604 001401          BEQ     .+4      ;THE RW PAGE REFERENCED
014606 104006          HLT      ;KIPDR1 INCORRECT-SHOULD NOT
;HAVE BEEN CHANGED
014610 022777 077506 166444      CMP     #77506,JKDPDR1 ;CHECK DATA SPACE PDR CORRESPONDING
014616 001401          BEQ     .+4      ;TO THE RW REFERENCE

```


014620	104006			HLT						;KDPDR1 INCORRECT - "W" BIT SHOULD ;HAVE BEEN SET
014622	022767	000377	166562	CMP	#377,DESTAD					;MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
014630	001401			BEQ	+.4					
014632	104006			HLT						;DATIP, DATOB TO RW PAGE DIDN'T EXECUTE CORRECTLY
014634	000404			BR	DONE37					
014636	042777	000001	166160	RET37:	BIC	#1,SR0				;TURN OFF KT11-C
014644	104006			HLT						;DATIP, DATOB TO RW PAGE CAUSED ;A TRAP OR ABORT
014646	016777	166164	166160	DONE37:	MOV	KTSTA,KTVEC				;RESTORE TRAP RETURN TO CAUSE HALT
014654	005077	166156		CLR	KTSTA					;ON AN UNEXPECTED TRAP
014660	005077	166140		CLR	SR0					;INITIALIZE SR0
014664	005037	177776		CLR	PS					;INITIALIZE PROCESSOR STATUS

;SHOW THAT A DATIP, DATOB SEQUENCE TO A RW PAGE (ACF=6) WITH MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT

014670	104400									
014672	012737	000040	177570	TEST40:	SCOPE					
014700	005037	177776		MOV	#40,SR					;LOAD TEST NUMBER INTO THE DISPLAY
014704	012706	001000		CLR	PS					;INITIALIZE PROCESSOR STATUS
014710	005077	166110		MOV	KSTACK,SP					;INITIALIZE KERNEL STACK POINTER
014714	012746	000006		CLR	SR0					;INITIALIZE SR0
014720	004767	005364		MOV	#6,-(SP)					;PUSH RW KEY ON THE STACK
				JSR	%7,SETUP					;MAKE KERNEL PAGE 1 RW, BANK 0
										;MAKE KERNEL PAGE 7 RW, EXTERNAL
										;MAKE ALL OTHER PAGES RW, BANK 0
014724	005726			TST	(SP)+					;RESTORE STACK POINTER
014726	012777	015064	166100	MOV	#RET40,KTVEC					;SETUP ABORT RETURN IN CASE
014734	005077	166076		CLR	KTSTA					
014740	005067	166446		CLR	DESTAD					;INITIALIZE LOCATION TO BE REFERENCED
014744	012700	023413		MOV	#DESTAD+20001,R0					;R0 CONTAINS VIRTUAL ADDRESS OF ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
014750	012777	001001	166046	MOV	#1001,SR0					;TURN ON KT11-C, SET MMGT TRAP ENABLE
014756	105310			DECB	R0					;DATIP, DATOB TO RW PAGE-SHOULDN'T TRAP OR ABORT
014760	017702	166040		MOV	SR0,R2					;SAVE CONTENTS OF SR0
014764	105377	166034		DECB	SR0					;TURN OFF KT11-C
014770	022702	001021		CMP	#1021,R2					;CHECK SAVED CONTENTS OF SR0
014774	001401			BEQ	+.4					
014776	104006			HLT						;SR0 INCORRECT-SHOULD HAVE ;TRACKED REFERENCE TO DATA SPACE, ;PAGE 0, WHICH GOT THE ADDRESS ;OF SR0, AND MMGT TRAP ENABLE SHOULD BE SET
015000	022777	000027	166020	CMP	#27,SR1					;CHECK SR1
015006	001401			BEQ	+.4					
015010	104006			HLT						;SR1 INCORRECT-SHOULD KEEP ;TRACKING EVEN WITH KT11-C OFF
015012	022777	015012	166010	CMP	#,SR2					;CHECK SR2
015020	001401			BEQ	+.4					
015022	104006			HLT						;SR2 INCORRECT-SHOULD TRACK EVEN ;WHEN KT11-C IS OFF
015024	022777	077406	166210	CMP	#77406,KIPDR1					;CHECK INSTRUCTION SPACE PDR FOR ;THE RW PAGE REFERENCED
015032	001401			BEQ	+.4					;KIPDR1 INCORRECT-SHOULD NOT ;HAVE BEEN CHANGED
015034	104006			HLT						


```

015036 022777 077506 166216      CMP      #77506, @KDPDR1  ;CHECK DATA SPACE PDR CORRESPONDING
015044 001401                      BEQ      .+4          ;TO THE RW REFERENCE
015046 104006                      HLT                               ;KDPDR1 INCORRECT - "W" BIT SHOULD
                                       ;HAVE BEEN SET
015050 022767 177400 166334      CMP      #177400, DESTAD ;MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
015056 001401                      BEQ      .+4          ;
015060 104006                      HLT                               ;DATIP, DATOB TO RW PAGE FAILED TO EXECUTE CORRECTLY
015062 000404                      BR       DONE40
015064 042777 000001 165732  RET40: BIC      #1, @SRO
015072 104006                      HLT                               ;TURN OFF KT11-C
                                       ;DATIP, DATOB TO RW PAGE CAUSED
                                       ;A TRAP OR ABORT
015074 016777 165736 165732  DONE40: MOV     KTSTA, @KTVEC ;RESTORE TRAP RETURN TO CAUSE HALT
015102 005077 165730                      CLR     @KTSTA        ;ON AN UNEXPECTED TRAP
015106 005077 165712                      CLR     @SRO         ;INITIALIZE SRO
015112 005037 177776                      CLR     @#PS        ;INITIALIZE PROCESSOR STATUS

;SHOW THAT DATI TO A RRWT PAGE (ACF=4) WITHOUT MEMORY
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
015116 104400
015120 012737 000041 177570  TEST41: MOV     #41, @#SR ;LOAD TEST NUMBER INTO THE DISPLAY
015126 005037 177776                      CLR     @#PS        ;INITIALIZE PROCESSOR STATUS
015132 012706 001000                      MOV     #KSTACK, SP ;INITIALIZE KERNEL STACK POINTER
015136 005077 165662                      CLR     @SRO        ;INITIALIZE SRO
015142 012746 000004                      MOV     #4, -(SP)   ;PUSH RRWT KEY ON STACK
015146 004767 005136                      JSR     %7, SETUP   ;MAKE KERNEL PAGE 1 RRWT, BANK 0
                                       ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                       ;MAKE ALL OTHER PAGES RW, BANK 0
015152 005726
015154 012777 015314 165652  TST     (SP)+
015162 005077 165650                      MOV     #RET41, @KTVEC ;SETUP ABORT RETURN IN CASE
015166 012767 125252 166216  CLR     @KTSTA
015174 012701 023412                      MOV     #125252, DESTAD ;INITIALIZE LOCATION TO BE READ
                                       ;R1 CONTAINS VIRTUAL ADDRESS OF
                                       ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
015200 005277 165620                      INC     @SRO
015204 022721 125252                      CMP     #125252, (R1)+ ;TURN ON KT11-C
                                       ;DATI TO RRWT PAGE-SHOULDN'T TRAP SINCE
                                       ;TRAP ENABLE ISN'T SET
015210 001404                      BEQ     OK41
015212 005377 165606                      DEC     @SRO
015216 104006                      HLT                               ;ON ERROR, TURN OFF KT11-C
015220 000441                      BR      DONE41          ;RELOCATION FAILED THRU KERNEL PAGE 1
015222 017702 165576  OK41: MOV     @SRO, R2 ;SAVE CONTENTS OF SRO
015226 105377 165572                      DEC     @SRO          ;TURN OFF KT11-C
015232 022702 010021                      CMP     #10021, R2   ;CHECK SAVED CONTENTS OF SRO
015236 001401                      BEQ     .+4
015240 104006                      HLT                               ;SRO INCORRECT-SHOULD HAVE
                                       ;TRACKED REFERENCE TO DATA SPACE,
                                       ;PAGE 0, WHICH GOT THE ADDRESS
                                       ;OF SRO, AND MMGT TRAP SHOULD BE SET
015242 022777 000027 165556      CMP     #27, @SR1    ;CHECK SR1
015250 001401                      BEQ     .+4
015252 104006                      HLT
015254 022777 015254 165546      CMP     #, @SR2
015262 001401                      BEQ     .+4
                                       ;SR1 INCORRECT-SHOULD KEEP
                                       ;TRACKING EVEN WITH KT11-C OFF
                                       ;CHECK SR2

```


015264	104006			HLT						:SR2 INCORRECT-SHOULD TRACK EVEN :WHEN KT11-C IS OFF
015266	022777	077404	165746	CMP	#77404, @KIPDR1					:CHECK INSTRUCTION SPACE PDR FOR
015274	001401			BEQ	.+4					:THE RRWT PAGE REFERENCED
015276	104006			HLT						:KIPDR1 INCORRECT-SHOULD NOT :HAVE BEEN CHANGED SINCE THE :RRWT REFERENCE WAS TO DATA SPACE
015300	022777	077604	165754	CMP	#77604, @KDPDR1					:CHECK DATA SPACE PDR CORRESPONDING
015306	001401			BEQ	.+4					:TO THE RRWT REFERENCE
015310	104006			HLT						:KDPDR1 INCORRECT-"A" BIT SHOULD :BE SET SINCE DATA SPACE WAS READ :AND WAS RRWT
015312	000404			BR	DONE41					
015314	042777	000001	165502	RET41:	BIC	#1, @SR0				:TURN OFF KT11-C
015322	104006			HLT						:DATI TO RRWT PAGE CAUSED :A TRAP OR ABORT ALTHOUGH MEMORY :MANAGEMENT TRAP ENABLE WAS NOT SET
015324	016777	165506	165502	DONE41:	MOV	KTSTA, @KTVEC				:RESTORE TRAP RETURN TO CAUSE HALT
015332	005077	165500			CLR	@KTSTA				:ON AN UNEXPECTED TRAP
015336	005077	165462			CLR	@SR0				:INITIALIZE SR0
015342	005037	177776			CLR	@#PS				:INITIALIZE PROCESSOR STATUS
:SHOW THAT A DATI TO A RRWT PAGE (ACF=4) WITH MEMORY MANAGEMENT :TRAP ENABLE SET CAUSES A TRAP AT THE END OF THE INSTRUCTION :SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE :PDR'S FOR THE PAGE REFERENCED ARE CORRECT										
015346	104400			TEST42:	SCOPE					
015350	012737	000042	177570		MOV	#42, @#SR				:LOAD TEST NUMBER INTO THE DISPLAY
015356	005037	177776			CLR	@#PS				:INITIALIZE PROCESSOR STATUS
015362	012706	001000			MOV	#KSTACK, SP				:INITIALIZE KERNEL STACK POINTER
015366	005077	165432			CLR	@SR0				:INITIALIZE SR0
015372	012746	000004			MOV	#4, -(SP)				:PUSH RRWT KEY ON STACK
015376	004767	004706			JSR	%7, SETUP				:MAKE KERNEL PAGE 1 RRWT, BANK 0 :MAKE KERNEL PAGE 7 RW, EXTERNAL :MAKE ALL OTHER PAGES RW, BANK 0
015402	005726				TST	(SP)+				:RESTORE STACK POINTER
015404	012777	015452	165422		MOV	#RET42, @KTVEC				:SETUP TRAP RETURN
015412	005077	165420			CLR	@KTSTA				
015416	012767	125252	165766		MOV	#125252, DESTAD				:INITIALIZE LOCATION TO BE READ
015424	005003				CLR	R3				:CLEAR REGISTER TO SAVE WHAT WAS READ :ALLOWS CHECKING TO SEE THAT THE :INSTRUCTION COMPLETED BEFORE :TRAPPING
015426	012701	023412			MOV	#DESTAD+20000, R1				:R1 CONTAINS VIRTUAL ADDRESS OF :LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
015432	012777	001001	165364		MOV	#1001, @SR0				:TURN ON KT11-C, SET MMGT TRAP ENABLE
015440	012103				MOV	(R1)+, R3				:DATI TO RRWT PAGE-SHOULD TRAP
015442	105077	165356			CLRB	@SR0				:IF NO TRAP, TURN OFF KT11-C
015446	104006				HLT					:DATI TO RRWT PAGE WITH MEMORY
015450	000440				BR	DONE42				:MANAGEMENT TRAP ENABLE SET DIDN'T :CAUSE A TRAP
015452	017702	165346		RET42:	MOV	@SR0, R2				:SAVE CONTENTS OF SR0
015456	005377	165342			DEC	@SR0				:TURN OFF KT11-C
015462	022702	011021			CMP	#11021, R2				:CHECK SAVED CONTENTS OF SR0
015466	001401				BEQ	.+4				
015470	104006				HLT					:SR0 INCORRECT-SHOULD HAVE TRACKED

015700	001401			BEQ	.+4				
015702	104006			HLT					;SR0 INCORRECT-SHOULD HAVE TRACKED
									;THE REFERENCE TO DATA SPACE, PAGE 0,
									;WHICH GOT THE ADDRESS OF SR0, AND MMGT TRAP
									;SHOULD BE SET
015704	022777	000027	165114	CMP	#27,@SR1				;CHECK SR1
015712	001401			BEQ	.+4				;SR1 INCORRECT-SHOULD KEEP TRACKING
015714	104006			HLT					;EVEN WITH KT11-C OFF
									;CHECK SR2
015716	022777	015716	165104	CMP	#,@SR2				;SR2 INCORRECT-SHOULD KEEP TRACKING
015724	001401			BEQ	.+4				;CHECK INSTRUCTION SPACE PDR
015726	104006			HLT					
015730	022777	077404	165304	CMP	#77404,@KIPDR1				;KIPDR1 INCORRECT-SHOULD NOT HAVE
015736	001401			BEQ	.+4				;BEEN CHANGED SINCE THE RRWT REFERENCE
015740	104006			HLT					;WAS TO DATA SPACE
									;CHECK DATA SPACE PDR
015742	022777	077704	165312	CMP	#77704,@KDPDR1				;KDPDR1 INCORRECT- "A" BIT SHOULD BE SET SINCE PAGE
015750	001401			BEQ	.+4				;WAS ACCESSED, AND "W" BIT SHOULD
015752	104006			HLT					;BE SET SINCE IT WAS WRITTEN INTO
									;MAKE CERTAIN THAT DESTINATION
015754	026727	165432	125252	CMP	DESTAD,#125252				;LOCATION WAS WRITTEN INTO
015762	001401			BEQ	.+4				;DATO TO RRWT PAGE DIDN'T WRITE
015764	104006			HLT					;INTO THE DESTINATION LOCATION
015766	000404			BR	DONE43				;TURN OFF KT11-C
015770	042777	000001	165026	RET43: BIC	#1,@SR0				;DATO TO RRWT PAGE TRAPPED WITHOUT MMGT TRAP ENABLED
015776	104006			HLT					;CHANGE KT11-C FAULT RETURN
016000	016777	165032	165026	DONE43: MOV	KTSTA,@KTVEC				;TO CAUSE A HALT ON AN UNEXPECTED TRAP
016006	005077	165024		CLR	@KTSTA				
016012	005077	165006		CLR	@SR0				
016016	005037	177776		CLR	@#PS				
									;SHOW THAT A DATO (NO DATIP) TO A RRWT PAGE (ACF=4) WITH
									;MEMORY MANAGEMENT TRAP ENABLE SET TRAPS AFTER THE INSTRUCTION IS COMPLETED
									;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE PDR
									;CORRESPONDING TO THE REFERENCE IS CORRECT
									TEST44: SCOPE
016022	104400								
016024	012737	000044	177570	MOV	#44,@#SR				;LOAD TEST NUMBER INTO THE DISPLAY
016032	005037	177776		CLR	@#PS				;INITIALIZE PROCESSOR STATUS
016036	012706	001000		MOV	#KSTACK,SP				;INITIALIZE KERNEL STACK POINTER
016042	005077	164756		CLR	@SR0				;INITIALIZE SR0
016046	012746	000004		MOV	#4,-(SP)				;PUSH RRWT KEY ON STACK
016052	004767	004232		JSR	%7,SETUP				;MAKE KERNEL PAGE 1 RRWT, BANK 0
									;MAKE KERNEL PAGE 7 RW, EXTERNAL
									;MAKE ALL OTHER PAGES RW, BANK 0
									;RESTORE STACK POINTER
									;SETUP TRAP RETURN
016056	005726			TST	(SP)+				
016060	012777	016124	164746	MOV	#RET44,@KTVEC				
016066	005077	164744		CLR	@KTSTA				
016072	005067	165314		CLR	DESTAD				;INITIALIZE LOCATION TO BE ADDRESSED
									;BY DATO TO RRWT PAGE
016076	012702	023412		MOV	#DESTAD+20000,R2				;R2 CONTAINS VIRTUAL ADDRESS OF
									;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
016102	012777	001001	164714	MOV	#1001,@SR0				;TURN ON KT11-C, SET MMGT TRAP ENABLE
016110	012722	125252		MOV	#125252,(R2)+				;DATO TO RRWT PAGE-SHOULD TRAP

016532	005726			TST	(SP)+		;RESTORE STACK POINTER
016534	012777	016604	164272	MOV	#RET46, @KTVEC		;SETUP TRAP RETURN
016542	005077	164270		CLR	@KTSTA		
016546	012767	125252	164636	MOV	#125252, DESTAD		;INITIALIZE LOCATION TO BE READ
016554	005003			CLR	R3		;CLEAR REGISTER TO SAVE WHAT WAS READ
							;ALLOWS CHECKING TO SEE THAT THE
							;INSTRUCTION COMPLETED BEFORE
							;TRAPPING
016556	012704	023412		MOV	#DESTAD+20000, R4		;R4 CONTAINS VIRTUAL ADDRESS OF
							;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
016562	012777	001001	164234	MOV	#1001, @SRO		;TURN ON KT11-C, SET MMGT TRAP ENABLE
016570	062724	052526		ADD	#52526, (R4)+		;DATIP, DATO TO RRWT PAGE-SHOULD TRAP
							;SINCE TRAP ENABLE IS SET
016574	105077	164224		CLRB	@SRO		;IF NO TRAP, TURN OFF KT11-C
016600	104006			HLT			;DATIP, DATO TO RRWT PAGE WITH MEMORY
016602	000444			BR	DONE46		;MANAGEMENT TRAP ENABLE SET DIDN'T
							;CAUSE A TRAP
016604	017702	164214		MOV	@SRO, R2		;SAVE CONTENTS OF SRO
016610	005377	164210		DEC	@SRO		;TURN OFF KT11-C
016614	022702	011021		CMP	#11021, R2		;CHECK SAVED CONTENTS OF SRO
016620	001401			BEQ	+.4		
016622	104006			HLT			;SRO INCORRECT-SHOULD HAVE TRACKED
							;THE REFERENCE TO DATA SPACE, PAGE
							;0, WHICH GOT THE ADDRESS OF SRO,
							;AND MMGT TRAP SHOULD BE SET
							;CHECK SR1
016624	022777	000027	164174	CMP	#27, @SR1		
016632	001401			BEQ	+.4		
016634	104006			HLT			;SR1 INCORRECT-SHOULD CONTINUE
							;TRACKING WITH KT11-C OFF
016636	022777	016636	164164	CMP	#., @SR2		;CHECK SR2
016644	001401			BEQ	+.4		
016646	104006			HLT			;SR2 INCORRECT-SHOULD STILL BE
							;TRACKING EVEN WITH KT11-C OFF
016650	022777	077404	164364	CMP	#77404, @KIPDR1		;CHECK INSTRUCTION SPACE PDR
016656	001401			BEQ	+.4		
016660	104006			HLT			;KIPDR1 INCORRECT-SHOULD NOT
							;HAVE BEEN CHANGED SINCE THE RRWT
							;REFERENCE WAS TO DATA SPACE
							;CHECK DATA SPACE PDR
016662	022777	077704	164372	CMP	#77704, @KDPDR1		
016670	001401			BEQ	+.4		
016672	104006			HLT			;KDPDR1 INCORRECT-"A" AND "W" BITS SHOULD
							;BE SET SINCE DATA SPACE WAS RRWT
							;AND WAS READ AND WRITTEN
							;CHECK LOCATION WRITTEN INTO
016674	005767	164512		TST	DESTAD		
016700	001401			BEQ	+.4		
016702	104006			HLT			;THE INSTRUCTION REFERENCING THE RRWT
							;PAGE TRAPPED BEFORE COMPLETING
016704	022704	023414		CMP	#DESTAD+20002, R4		;CHECK TO SEE THAT R4 AUTOINCREMENTED
016710	001401			BEQ	+.4		
016712	104006			HLT			;AUTOINCREMENT OF R4 ON TRAPPED INSTRUCTION DIDN'T OCCUR
016714	016777	164116	164112	MOV	KTSTA, @KTVEC		;CHANGE KT11-C FAULT RETURN TO
016722	005077	164110		CLR	@KTSTA		;CAUSE A HALT ON AN UNEXPECTED TRAP
016726	005077	164072		CLR	@SRO		
016732	005037	177776		CLR	@#PS		

;SHOW THAT DATIP, DATOB SEQUENCE TO A RRWT PAGE (ACF=4) WITHOUT MEMORY

:MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
:SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
:THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT

016736	104400								
016740	012737	000047	177570	MOV	#47, @#SR				:LOAD TEST NUMBER INTO THE DISPLAY
016746	005037	177776		CLR	@#PS				:INITIALIZE PROCESSOR STATUS
016752	012706	001000		MOV	#KSTACK, SP				:INITIALIZE KERNEL STACK POINTER
016756	005077	164042		CLR	@SRO				:INITIALIZE SRO
016762	012746	000004		MOV	#4, -(SP)				:PUSH RRWT KEY ON STACK
016766	004767	003316		JSR	%7, SETUP				:MAKE KERNEL PAGE 1 RRWT, BANK 0
									:MAKE KERNEL PAGE 7 RW, EXTERNAL
									:MAKE ALL OTHER PAGES RW, BANK 0
016772	005726			TST	(SP)+				:RESTORE STACK POINTER
016774	012777	017130	164032	MOV	#RET47, @KTVEC				:SETUP ABORT RETURN IN CASE
017002	005077	164030		CLR	@KTSTA				
017006	005067	164400		CLR	DESTAD				:INITIALIZE LOCATION TO BE REFERENCED
017012	012701	023413		MOV	#DESTAD+20001, R1				:R1 CONTAINS VIRTUAL ADDRESS OF
									:LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
017016	005277	164002		INC	@SRO				:TURN ON KT11-C
017022	105221			INCB	(R1)+				:DATIP, DATOB TO RRWT PAGE-SHOULDN'T TRAP
									:SINCE TRAP ENABLE ISN'T SET
017024	017702	163774		MOV	@SRO, R2				:SAVE CONTENTS OF SRO
017030	105377	163770		DECB	@SRO				:TURN OFF KT11-C
017034	022702	010021		CMP	#10021, R2				:CHECK SAVED CONTENTS OF SRO
017040	001401			BEQ	.+4				
017042	104006			HLT					:SRO INCORRECT-SHOULD HAVE
									:TRACKED REFERENCE TO DATA SPACE,
									:PAGE 0, WHICH GOT THE ADDRESS
									:OF SRO, AND MGMT TRAP SHOULD BE SET
017044	022777	000027	163754	CMP	#27, @SR1				:CHECK SR1
017052	001401			BEQ	.+4				
017054	104006			HLT					:SR1 INCORRECT-SHOULD KEEP
									:TRACKING EVEN WITH KT11-C OFF
017056	022777	017056	163744	CMP	#., @SR2				:CHECK SR2
017064	001401			BEQ	.+4				
017066	104006			HLT					:SR2 INCORRECT-SHOULD TRACK EVEN
									:WHEN KT11-C IS OFF
017070	022777	077404	164144	CMP	#77404, @KIPDR1				:CHECK INSTRUCTION SPACE PDR FOR
017076	001401			BEQ	.+4				:THE RRWT PAGE REFERENCED
017100	104006			HLT					:KIPDR1 INCORRECT-SHOULD NOT
									:HAVE BEEN CHANGED SINCE THE
									:RRWT REFERENCE WAS TO DATA SPACE
017102	022777	077704	164152	CMP	#77704, @KDPDR1				:CHECK DATA SPACE PDR CORRESPONDING
017110	001401			BEQ	.+4				:TO THE RRWT REFERENCE
017112	104006			HLT					:KDPDR1 INCORRECT-"A" AND "W" BITS SHOULD
									:BE SET SINCE DATA SPACE WAS WRITTEN INTO
									:AND WAS RRWT
017114	022767	000400	164270	CMP	#400, DESTAD				:CHECK TO SEE THAT INSTRUCTION WAS CORRECTLY EXECUTED
017122	001401			BEQ	.+4				
017124	104006			HLT					:DATIP, DATOB TO RRWT PAGE LEFT WRONG VALUE
									:IN DESTINATION ADDRESS
017126	000404			BR	DONE47				:TURN OFF KT11-C
017130	042777	000001	163666	BIC	#1, @SRO				:DATIP, DATOB TO RRWT PAGE CAUSED
017136	104006			HLT					:A TRAP OR ABORT ALTHOUGH MEMORY
									:MANAGEMENT TRAP ENABLE WAS NOT SET


```

017354 022767 125652 164030      CMP      #125652,DESTAD      ;AND WAS WRITTEN
017362 001401                      BEQ      .+4              ;CHECK LOCATION WRITTEN INTO
017364 104006                      HLT                               ;THE INSTRUCTION REFERENCING THE RRWT
                                ;PAGE TRAPPED BEFORE COMPLETING

017366 022702 023414      CMP      #DESTAD+20002,R2
017372 001401                      BEQ      .+4
017374 104006                      HLT                               ;AUTOINCREMENT IN THE INSTRUCTION
                                ;REFERENCING THE RRWT PAGE
                                ;FAILED TO COMPLETE
                                ;CHANGE KT11-C FAULT RETURN TO
                                ;CAUSE A HALT ON AN UNEXPECTED TRAP

017376 016777 163434 163430  DONE50: MOV      KTSTA, @KTVEC
017404 005077 163426                      CLR      @KTSTA
017410 005077 163410                      CLR      @SRO
017414 005037 177776                      CLR      @#PS

                                ;SHOW THAT DATI TO A RRWTW PAGE (ACF=5) WITHOUT MEMORY
                                ;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
                                ;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT
                                ;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
017420 104400
017422 012737 000051 177570  TESTS1: SCOPE
017430 005037 177776                      MOV      #51, @#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
017434 012706 001000                      CLR      @#PS          ;INITIALIZE PROCESSOR STATUS
017440 005077 163360                      MOV      #KSTACK, SP   ;INITIALIZE KERNEL STACK POINTER
017444 012746 000005                      CLR      @SRO         ;INITIALIZE SRO
017450 004767 002634                      MOV      #5, -(SP)     ;PUSH RRWTW KEY ON STACK
                                ;MAKE KERNEL PAGE 1 RRWTW, BANK 0
                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                ;MAKE ALL OTHER PAGES RW, BANK 0
                                ;RESTORE STACK POINTER
                                ;SETUP ABORT RETURN IN CASE
017454 005726
017456 012777 017616 163350  TST      (SP)+
017464 005077 163346                      MOV      #RET51, @KTVEC
017470 012767 125252 163714  CLR      @KTSTA
017476 012701 023412  MOV      #125252, DESTAD ;INITIALIZE LOCATION TO BE REFERENCED
                                ;R1 CONTAINS ADDRESS OF LOCATION TO
                                ;BE REFERENCED THRU KERNEL PAGE 1
017502 005277 163316                      MOV      #DESTAD+20000, R1
017506 022721 125252                      INC      @SRO          ;TURN ON KT11-C
017512 001404                      CMP      #125252, (R1)+ ;DATI TO RRWTW PAGE-SHOULDN'T TRAP OR ABORT
017514 005377 163304                      BEQ      OK51
017520 104006                      DEC      @SRO
017522 000441                      HLT                               ;ON ERROR, TURN OFF KT11-C
                                ;RELOCATION FAILED THRU KERNEL PAGE 1
017524 017702 163274  OK51:  MOV      DONE51
017530 105377 163270                      MOV      @SRO, R2
017534 022702 000021                      DEC      @SRO
017540 001401                      CMP      #21, R2
017542 104006                      BEQ      .+4
                                ;SAVE CONTENTS OF SRO
                                ;TURN OFF KT11-C
                                ;CHECK SAVED CONTENTS OF SRO
                                ;SRO INCORRECT-SHOULD HAVE
                                ;TRACKED REFERENCE TO DATA SPACE,
                                ;PAGE 0, WHICH GOT THE ADDRESS
                                ;OF SRO
                                ;CHECK SR1
017544 022777 000027 163254  CMP      #27, @SR1
017552 001401                      BEQ      .+4
017554 104006                      HLT                               ;SR1 INCORRECT-SHOULD KEEP
                                ;TRACKING EVEN WITH KT11-C OFF
                                ;CHECK SR2
017556 022777 017556 163244  CMP      #., @SR2
017564 001401                      BEQ      .+4
017566 104006                      HLT                               ;SR2 INCORRECT-SHOULD TRACK EVEN
                                ;WHEN KT11-C IS OFF

```


DCKTCA

```

017570 022777 077405 163444      CMP      #77405, @KIPDR1  ;CHECK INSTRUCTION SPACE PDR FOR
017576 001401      BEQ      .+4          ;THE RRWTW PAGE REFERENCED
017600 104006      HLT                               ;KIPDR1 INCORRECT-SHOULD NOT
                                       ;HAVE BEEN CHANGED
017602 022777 077405 163452      CMP      #77405, @KDPDR1 ;CHECK DATA SPACE PDR CORRESPONDING
017610 001401      BEQ      .+4          ;TO THE RRWTW REFERENCE
017612 104006      HLT                               ;KDPDR1 INCORRECT - SHOULD NOT
                                       ;HAVE BEEN CHANGED
017614 000404      BR       DONE51
017616 042777 000001 163200 RET51: BIC      #1, @SRO      ;TURN OFF KT11-C
017624 104006      HLT                               ;DATI TO RRWTW PAGE CAUSED
                                       ;A TRAP OR ABORT
017626 016777 163204 163200 DONE51: MOV     KTSTA, @KTVEC ;RESTORE TRAP RETURN TO CAUSE HALT
017634 005077 163176      CLR     @KTSTA      ;ON AN UNEXPECTED TRAP
017640 005077 163160      CLR     @SRO        ;INITIALIZE SRO
017644 005037 177776      CLR     @PS         ;INITIALIZE PROCESSOR STATUS

;SHOW THAT A DATI TO A RRWTW PAGE (ACF=5) WITH MEMORY MANAGEMENT
;TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE
;PDR'S FOR THE PAGE REFERENCED ARE CORRECT
TEST52: SCOPE
017650 104400      MOV     #52, @SR      ;LOAD TEST NUMBER INTO THE DISPLAY
017652 012737 000052 177570 CLR     @PS          ;INITIALIZE PROCESSOR STATUS
017660 005037 177776      MOV     @KSTACK, SP ;INITIALIZE KERNEL STACK POINTER
017664 012706 001000      CLR     @SRO        ;INITIALIZE SRO
017670 005077 163130      MOV     #6, -(SP)   ;PUSH RW KEY ON STACK
017674 012746 000006      JSR     %7, SETUP   ;MAKE KERNEL PAGE 7 RW, EXTERNAL
017700 004767 002404      TST     (SP)+       ;MAKE ALL OTHER PAGES RW, BANK 0
                                       ;RESTORE STACK POINTER
017704 005726      MOV     #200, @KDPAR1 ;MAP KERNEL PAGE 1
017706 012777 000200 163406 MOV     #200, @KIPAR1 ;TO BANK 1
017714 012777 000200 163360 MOV     #77405, @KDPDR2 ;CHANGE MAP TO MAKE PAGE 2 RRWTW
017722 012777 077405 163334 MOV     #77405, @KIPDR2
017730 012777 077405 163306 MOV     @RET52, @KTVEC ;SETUP TRAP RETURN IN CASE
017736 012777 020072 163070 CLR     @KTSTA
017744 005077 163066      MOV     #125252, DESTAD ;INITIALIZE LOCATION TO BE READ
017750 012767 125252 163434 MOV     #DESTAD+40000, R1 ;R1 CONTAINS VIRTUAL ADDRESS OF
017756 012701 043412      MOV     #1001, @SRO  ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 2
017762 012777 001001 163034 MOV     #125252, (R1)+ ;TURN ON KT11-C, SET MMGT TRAP ENABLE
017770 022721 125252      BEQ     .+4          ;DATI TO RRWTW PAGE-SHOULDN'T TRAP OR ABORT
017774 001401      HLT                               ;RELOCATION FAILED THRU KERNEL PAGE 2
017776 104006      MOV     @SRO, R2    ;SAVE CONTENTS OF SRO
020000 017702 163020      DEC     @SRO        ;TURN OFF KT11-C
020004 005377 163014      CMP     #1021, R2   ;CHECK SAVED CONTENTS OF SRO
020010 022702 001021      BEQ     .+4
020014 001401      HLT                               ;SRO INCORRECT-SHOULD HAVE TRACKED
020016 104006      ;THE REFERENCE TO DATA SPACE, PAGE
                                       ;0, WHICH GOT THE ADDRESS OF SRO
020020 022777 000027 163000 CMP     #27, @SR1   ;CHECK SR1
020026 001401      BEQ     .+4
020030 104006      HLT                               ;SR1 INCORRECT-SHOULD CONTINUE
                                       ;TRACKING WITH KT11-C OFF
020032 022777 020032 162770 CMP     #, @SR2     ;CHECK SR2
020040 001401      BEQ     .+4

```



```

020042 104006          HLT          ;SR2 INCORRECT-SHOULD STILL BE
020044 022777 077405 163172    CMP      #77405, @KIPDR2 ;TRACKING EVEN WITH KT11-C OFF
020052 001401          BEQ      .+4           ;CHECK INSTRUCTION SPACE PDR
020054 104006          HLT          ;KIPDR2 INCORRECT-SHOULD NOT
                                ;HAVE BEEN CHANGED
020056 022777 077405 163200    CMP      #77405, @KDPDR2 ;CHECK DATA SPACE PDR
020064 001401          BEQ      .+4
020066 104006          HLT          ;KDPDR2 INCORRECT - SHOULD NOT
                                ;HAVE BEEN CHANGED
020070 000404          BR        DONE52
020072 042777 000001 162724    RET52:  BIC      #1, @SRO ;TURN OFF KT11-C
020100 104006          HLT          ;DATI TO RRWTW PAGE TRAPPED OR ABORTED
020102 016777 162730 162724    DONE52: MOV      KTSTA, @KTVEC ;CHANGE KT11-C FAULT RETURN TO
020110 005077 162722          CLR      @KTSTA        ;CAUSE A HALT ON AN UNEXPECTED TRAP
020114 005077 162704          CLR      @SRO
020120 005037 177776          CLR      @#PS

;SHOW THAT A DATO (NO DATIP) TO A RRWTW PAGE (ACF=5) WITHOUT
;MEMORY MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE PDR
;CORRESPONDING TO THE REFERENCE IS CORRECT
TEST53: SCOPE
020124 104400          MOV      #53, @#SR      ;LOAD TEST NUMBER INTO THE DISPLAY
020126 012737 000053 177570    CLR      @#PS          ;INITIALIZE PROCESSOR STATUS
020134 005037 177776          CLR      @#PS          ;INITIALIZE KERNEL STACK POINTER
020140 012706 001000          MOV      #KSTACK, SP  ;INITIALIZE SRO
020144 005077 162654          CLR      @SRO         ;PUSH RW KEY ON STACK
020150 012746 000006          MOV      #6, -(SP)    ;MAKE KERNEL PAGE 7 RW, EXTERNAL
020154 004767 002130          JSR      %7, SETUP    ;MAKE ALL OTHER PAGES RW, BANK 0
                                ;RESTORE STACK POINTER
                                ;CHANGE MAP TO RUN CODE IN SECOND BANK
020160 005726          TST      (SP)+
020162 012777 000200 163132    MOV      #200, @KDPAR1
020170 012777 000200 163104    MOV      #200, @KIPAR1
020176 012777 077405 163060    MOV      #77405, @KDPDR2 ;MAP KERNEL PAGE 2 RRWTW
020204 012777 077405 163032    MOV      #77405, @KIPDR2
020212 012777 020352 162614    MOV      #RET53, @KTVEC ;SETUP ABORT RETURN IN CASE
020220 005077 162612          CLR      @KTSTA
020224 005067 163162          CLR      DESTAD      ;INITIALIZE LOCATION TO BE ADDRESSED
                                ;BY DATO TO RRWTW PAGE
                                ;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
                                ;TO BE REFERENCED THRU KERNEL PAGE 2
020230 012701 043412          MOV      #DESTAD+40000, R1 ;TURN ON KT11-C
020234 112777 000001 162562    MOV      #1, @SRO     ;DATO TO RRWTW PAGE-SHOULDN'T TRAP
020242 012721 125252          MOV      #125252, (R1)+ ;SINCE TRAP ENABLE ISN'T SET
                                ;SAVE CONTENTS OF SRO
020246 017702 162552          MOV      @SRO, R2    ;TURN OFF KT11-C
020252 005377 162546          DEC      @SRO        ;CHECK SAVED CONTENTS OF SRO
020256 022702 010021          CMP      #10021, R2
020262 001401          BEQ      .+4
020264 104006          HLT          ;SRO INCORRECT-SHOULD HAVE TRACKED
                                ;THE REFERENCE TO DATA SPACE, PAGE 0,
                                ;WHICH GOT THE ADDRESS OF SRO, AND MGMT
                                ;TRAP SHOULD BE SET
020266 022777 000027 162532    CMP      #27, @SR1   ;CHECK SR1
020274 001401          BEQ      .+4
020276 104006          HLT          ;SR1 INCORRECT-SHOULD KEEP TRACKING

```


020534	000441			BR	DONE54		
020536	017701	162262		MOV	SR0,R1		;SAVE CONTENTS OF SR0
020542	005377	162256		DEC	SR0		;TURN OFF KT11-C
020546	022701	011021		CMP	#11021,R1		;CHECK SAVED CONTENTS OF SR0
020552	001401			BEQ	.+4		
020554	104006			HLT			;SR0 INCORRECT-SHOULD HAVE TRACKED THE ;REFERENCE TO DATA SPACE, PAGE 0, ;WHICH GOT THE ADDRESS OF SR0, AND MMGT TRAP ;SHOULD BE SET
020556	022777	000027	162242	CMP	#27,SR1		;CHECK SR1
020564	001401			BEQ	.+4		
020566	104006			HLT			;SR1 INCORRECT-SHOULD ;KEEP TRACKING EVEN WITH KT11-C OFF
020570	022777	020570	162232	CMP	#,SR2		;CHECK SR2
020576	001401			BEQ	.+4		
020600	104006			HLT			;SR2 INCORRECT-SHOULD KEEP TRACKING
020602	022777	077405	162434	CMP	#77405,KIPDR2		;CHECK INSTRUCTION SPACE PDR
020610	001401			BEQ	.+4		
020612	104006			HLT			;KIPDR2 INCORRECT-SHOULD NOT ;HAVE BEEN CHANGED SINCE THE RRWTW ;REFERENCE WAS TO DATA SPACE
020614	022777	077705	162442	CMP	#77705,KDPDR2		;CHECK DATA SPACE PDR
020622	001401			BEQ	.+4		
020624	104006			HLT			;KDPDR2 INCORRECT-"A" AND "W" BITS ;SHOULD BE SET SINCE PAGE WAS WRITTEN INTO
020626	026727	162560	125252	CMP	DESTAD,#125252		;MAKE CERTAIN THAT DESTINATION
020634	001401			BEQ	.+4		;LOCATION WAS WRITTEN
020636	104006			HLT			;DATO TO RRWTW PAGE DIDN'T WRITE ;INTO THE DESTINATION LOCATION
020640	016777	162172	162166	MOV	KTSTA,KTVEC		;CHANGE KT11-C FAULT RETURN
020646	005077	162164		CLR	KTSTA		;TO CAUSE A HALT ON AN UNEXPECTED TRAP
020652	005077	162146		CLR	SR0		
020656	005037	177776		CLR	PS		
;SHOW THAT A DATIP,DATO SEQUENCE TO A RRWTW PAGE (ACF=5) WITHOUT MEMORY							
;MANAGEMENT TRAP ENABLE SET NEITHER TRAPS NOR ABORTS							
;SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT							
;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT							
020662	104400			TEST55:	SCOPE		
020664	012737	000055	177570	MOV	#55,SR		;LOAD TEST NUMBER INTO THE DISPLAY
020672	005037	177776		CLR	PS		;INITIALIZE PROCESSOR STATUS
020676	012706	001000		MOV	KSTACK,SP		;INITIALIZE KERNEL STACK POINTER
020702	005077	162116		CLR	SR0		;INITIALIZE SR0
020706	012746	000006		MOV	#6,-(SP)		;PUSH RW KEY ON STACK
020712	004767	001372		JSR	%7,SETUP		;MAKE KERNEL PAGE 7 RW, EXTERNAL
020716	005726			TST	(SP)+		;MAKE ALL OTHER PAGES RW, BANK 0
020720	012777	000200	162374	MOV	#200,KDPA1		;RESTORE STACK POINTER
020726	012777	000200	162346	MOV	#200,KIPA1		;NOW CHANGE MAP TO ALLOW RUNNING CODE
020734	012777	077405	162322	MOV	#77405,KDPDR2		;IN BANK 1
020742	012777	077405	162274	MOV	#77405,KIPDR2		;MAP KERNEL PAGE 1 TO BANK 1
020750	012777	021106	162056	MOV	RET55,KTVEC		;MAKE KERNEL PAGE 2 RRWTW
020756	005077	162054		CLR	KTSTA		;SETUP ABORT RETURN IN CASE
020762	012767	125252	162422	MOV	#125252,DESTAD		;INITIALIZE LOCATION TO BE REFERENCED


```

021646 000404          BR      DONE57
021650 042777 000001 161146 RET57: BIC      #1, @SRO      ; TURN OFF KT11-C
021656 104006          HLT      ; DATIP, DATOB TO RRWTW PAGE CAUSED
; A TRAP OR ABORT ALTHOUGH MEMORY
; MANAGEMENT TRAP ENABLE WAS NOT SET
; RESTORE TRAP RETURN TO CAUSE HALT
; ON AN UNEXPECTED TRAP
; INITIALIZE SRO
; INITIALIZE PROCESSOR STATUS

021660 016777 161152 161146 DONE57: MOV     KTSTA, @KTVEC
021666 005077 161144          CLR     @KTSTA
021672 005077 161126          CLR     @SRO
021676 005037 177776          CLR     @#PS

; SHOW THAT A DATIP, DATOB SEQUENCE TO A RRWTW PAGE (ACF=5) WITH MEMORY MANAGEMENT
; TRAP ENABLE SET CAUSES A TRAP AT THE END OF THE INSTRUCTION
; SHOW THAT THE KT11-C STATUS REGISTERS CONTINUE TO TRACK, AND THAT THE
; PDR'S FOR THE PAGE REFERENCED ARE CORRECT
TEST60: SCOPE

021702 104400          MOV     #60, @#SR      ; LOAD TEST NUMBER INTO THE DISPLAY
021704 012737 000060 177570  CLR     @#PS          ; INITIALIZE PROCESSOR STATUS
021712 005037 177776          MOV     #KSTACK, SP   ; INITIALIZE KERNEL STACK POINTER
021716 012706 001000          CLR     @SRO          ; INITIALIZE SRO
021722 005077 161076          MOV     #6, -(SP)     ; PUSH RW KEY ON STACK
021726 012746 000006          JSR     %7, SETUP     ; MAKE KERNEL PAGE 7 RW, EXTERNAL
021732 004767 000352          TST     (SP)+         ; MAKE ALL OTHER PAGES RW, BANK 0
; RESTORE STACK POINTER
; ALTER MAP TO ALLOW EXECUTING CODE IN BANK 1
; MAP KERNEL PAGE 1 TO BANK 1

021736 005726          TST     (SP)+

021740 012777 000200 161354  MOV     #200, @KDPAR1
021746 012777 000200 161326  MOV     #200, @KIPAR1
021754 012777 077405 161302  MOV     #77405, @KDPDR2 ; MAKE KERNEL PAGE 2 RRWTW
021762 012777 077405 161254  MOV     #77405, @KIPDR2
021770 012777 022034 161036  MOV     @RET60, @KTVEC ; SETUP TRAP RETURN
021776 005077 161034          CLR     @KTSTA
022002 012767 125252 161402  MOV     #125252, DESTAD ; INITIALIZE LOCATION TO BE ACCESSED
022010 012702 043413          MOV     @DESTAD+40001, R2 ; R2 CONTAINS VIRTUAL ADDRESS OF
; LOCATION TO BE REFERENCED THRU KERNEL PAGE 2

022014 012777 001001 161002  MOV     #1001, @SRO
022022 105222          INCB   (R2)+
; TURN ON KT11-C, SET MMGT TRAP ENABLE
; DATIP, DATOB TO RRWTW PAGE-SHOULD TRAP
; SINCE TRAP ENABLE IS SET
; IF NO TRAP, TURN OFF KT11-C
; DATIP, DATOB TO RRWTW PAGE WITH MEMORY
; MANAGEMENT TRAP ENABLE SET DIDN'T
; CAUSE A TRAP
; SAVE CONTENTS OF SRO
; TURN OFF KT11-C
; CHECK SAVED CONTENTS OF SRO

022024 105077 160774          CLRB   @SRO
022030 104006          HLT
022032 000445          BR     DONE60

022034 017703 160764          RET60: MOV     @SRO, R3
022040 005377 160760          DEC     @SRO
022044 022703 011021          CMP     #11021, R3
022050 001401          BEQ    .+4
022052 104006          HLT

; SRO INCORRECT-SHOULD HAVE TRACKED
; THE REFERENCE TO DATA SPACE, PAGE
; 0, WHICH GOT THE ADDRESS OF SRO,
; AND MMGT TRAP SHOULD BE SET
; CHECK SR1

022054 022777 000027 160744  CMP     #27, @SR1
022062 001401          BEQ    .+4
022064 104006          HLT

; SR1 INCORRECT-SHOULD CONTINUE
; TRACKING WITH KT11-C OFF
; CHECK SR2

022066 022777 022066 160734  CMP     #., @SR2
022074 001401          BEQ    .+4
022076 104006          HLT

; SR2 INCORRECT-SHOULD STILL BE
; TRACKING EVEN WITH KT11-C OFF

```



```

022100 022777 077405 161136    CMP    #77405, @KIPDR2 ;CHECK INSTRUCTION SPACE PDR
022106 001401    BEQ    .+4
022110 104006    HLT
                                ;KIPDR2 INCORRECT-SHOULD NOT
                                ;HAVE BEEN CHANGED SINCE THE RRWTW
                                ;REFERENCE WAS TO DATA SPACE
022112 022777 077705 161144    CMP    #77705, @KDPDR2 ;CHECK DATA SPACE PDR
022120 001401    BEQ    .+4
022122 104006    HLT
                                ;KDPDR2 INCORRECT-"A" AND "W" BITS SHOULD
                                ;BE SET SINCE DATA SPACE WAS RRWTW
                                ;AND WAS WRITTEN
022124 022767 125652 161260    CMP    #125652, DESTAD ;CHECK LOCATION WRITTEN INTO
022132 001401    BEQ    .+4
022134 104006    HLT
                                ;THE INSTRUCTION REFERENCING THE RRWTW
                                ;PAGE TRAPPED BEFORE COMPLETING
022136 022702 043414    CMP    #DESTAD+40002, R2
022142 001401    BEQ    .+4
022144 104006    HLT
                                ;THE AUTOINCREMENT IN THE INSTRUCTION
                                ;REFERENCING THE RRWTW PAGE
                                ;FAILED TO COMPLETE
                                ;CHANGE KT11-C FAULT RETURN TO
                                ;CAUSE A HALT ON AN UNEXPECTED TRAP
022146 016777 160664 160660  DONE60: MOV    KTSTA, @KTVEC
022154 005077 160656    CLR    @KTSTA
022160 005077 160640    CLR    @SR0
022164 005037 177776    CLR    @#PS
022170 104400    SCOPE
022172 004767 001076    JSR    %7, BELL
022176 013701 000042    MOV    @#42, R1 ;MONITOR HOOK
022202 001405    BEQ    END
022204 000005    RESET
022206 004711    LOGIC: JSR    %7, @R1
022210 000240    NOP
022212 000240    NOP
022214 000240    NOP
022216 000167 161172    END:   JMP    START
                                ;SUBROUTINE TO CLEAR ALL KT11-C REGISTERS (EXCEPT SR1, SR2, SR3)
022222 005077 160576    CLRALL: CLR    @SR0
022226 005000    CLR    RO
022230 012701 000140    MOV    #96, R1 ;COUNT OF REGISTERS TO BE CLEARED
022234 005070 003040    CLRLP: CLR    @ADRTAB(RO) ;CLEAR REGISTERS THRU ADDRESS TABLE
022240 005720    TST    (RO)+ ;MOVE POINTER
022242 077104    SOB    R1, CLRLP ;LOOP TILL DONE
022244 000207    RTS    %7
                                ;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, UP
022246 005077 160552    RWALL: CLR    @SR0
022252 012701 003040    MOV    #ADRTAB, R1
022256 012700 000020    RWL1: MOV    #20, RO
022262 005071 000040    RWL2: CLR    @40(R1)
022266 012731 077406    MOV    #77406, @ (R1)+
022272 077005    SOB    RO, RWL2
022274 062701 000040    ADD    #40, R1
022300 020127 003336    CMP    R1, #ADREND

```



```

022304 003764      BLE      RWL1
022306 000207      RTS      %7

;SUBROUTINE TO SET ALL PAGES RW EXCEPT KERNEL PAGE 1
;KERNEL PAGE 1 IS SET TO DESIRED KEY
;KEY IS PASSED VIA THE STACK
;ALL PAGES ARE MAPPED TO BANK 0 EXCEPT KERNEL PAGE 7, WHICH IS MAPPED TO
;THE EXTERNAL BANK
022310 004767 177732  SETUP: JSR      %7,RWALL      ;INITIALLY MAP ALL PAGES RW, BANK 0
022314 012777 077400 160720  MOV      #77400,@KIPDR1    ;MAKE KERNEL PAGE ONE 4K, UP
022322 012777 077400 160732  MOV      #77400,@KDPDR1
022330 056677 000002 160704  BIS      2(SP),@KIPDR1     ;SET TO DESIRED KEY
022336 056677 000002 160716  BIS      2(SP),@KDPDR1
022344 012777 007600 160744  MOV      #7600,@KIPAR7    ;MAP KERNEL PAGE 7 EXTERNAL
022352 012777 007600 160756  MOV      #7600,@KDPAR7
022360 000207      RTS      %7

;ROUTINE TO LOOP THRU A SINGLE INSTRUCTION TEST
;LOAD THE STARTING ADDRESS OF THE TEST
;YOU WISH TO RUN (THE ADDRESS OF THE TESTXX
;TAG) AT THE 1ST HALT, SET SWITCH REGISTER
;OPTIONS AT THE 2ND HALT.
;NOTE THAT SW11 MUST BE DOWN AFTER THE 2ND HALT
022362 005037 177776  TESTX: CLR      @#PS
022366 012706 001000  MOV      #KSTACK,SP
022372 012737 040000 177776  MOV      #40000,@#PS      ;SETUP SUPERVISOR STACK POINTER
022400 012706 002000  MOV      #SSTACK,SP
022404 012737 140000 177776  MOV      #140000,@#PS    ;SETUP USER STACK POINTER
022412 012706 003000  MOV      #USTACK,SP
022416 005037 177776  CLR      @#PS
022422 000000  HALT
022424 016767 155140 000036  MOV      SR,RETRNX      ;WAIT FOR STARTING ADDRESS
022432 062767 000002 000030  ADD      #2,RETRNX      ;LOAD STARTING ADDRESS IN RETRNX
022440 000000  HALT      ;ADD 2 TO POINT TO INSTRUCTION AFTER
022442 005067 000150  CLR      SCOPEF          ;SET SR OPTIONS
022446 012767 022460 000144  MOV      #XLOOP,RETURN   ;KEEP COUNT AT ZERO
022454 000177 000010  JMP      @RETRNX        ;LOAD SCOPE LOOP RETURN POINTER
022460 005067 000132  XLOOP: CLR      SCOPEF   ;JUMP TO TEST
022464 000177 000000  JMP      @RETRNX        ;KEEP COUNT AT ZERO
022470 000000  RETRNX: 0              ;JUMP TO TEST

;SCOPE AND/OR ITERATION LOOP FOR EACH TEST 4000 TIMES
022472 032737 040000 177570  SCOPEC: BIT      #40000,@#SR ;TEST SR FOR SCOPE
022500 001015  BNE      SCOPEB          ;YES SCOPE
022502 032737 004000 177570  BIT      #4000,@#SR      ;NO-TEST FOR ITERATION
022510 001025  BNE      SCOPEB          ;INHIBIT ITERATION
022512 026767 000100 000074  CMP      SCOPEF,ICOUNT   ;COMPARE CURRENT COUNT TO MAX NUMBER
022520 100021  BPL      SCOPEG          ;EXIT-DONE
022522 005267 000070  INC      SCOPEF          ;INCREMENT COUNT
022526 012737 000340 177776  MOV      #340,@#PS      ;PREVENT TRAPPING WHILE MOVING STACK
022534 022606  SCOPEB: CMP      (6)+,%6   ;REPOSITION STACK
022536 012637 177776  MOV      (6)+,@#PS      ;RESTORE PREVIOUS PROCESSOR STATUS
022542 032737 000400 177570  BIT      #400,@#SR      ;TEST FOR LOAD MICROBREAK REGISTER
022550 001403  BEQ      .+10
022552 113777 177570 160620  MOVB    @#SR,@UBRK      ;LOAD MICROBREAK REGISTER IF SW08 IS SET
022560 000177 000034  JMP      @RETURN        ;REPEAT TEST

```



```

022564 005067 000026 SCOPEG: CLR SCOPEF :CLEAR COUNT
022570 011667 000024 MOV 3%6, RETURN :SAVE SCOPE RETURN POINTER
022574 032737 000400 177570 BIT #400, 3#SR :TEST FOR LOAD MICROBREAK REGISTER
022602 001403 BEQ +10
022604 113777 177570 160566 MOVB 3#SR, 3UBRK :LOAD MICROBREAK REGISTER IF SW08 IS SET
022612 000002 RTI :RETURN INLINE-NEXT TEST
022614 004000 ICOUNT: 4000 :ITERATION COUNT
022616 000000 SCOPEF: 0 :COUNT LOCATION FOR ITERATION LOOP
022620 000000 RETURN: 0 :ADDRESS OF LAST TEST

```

```

:ENTERED WITH SYSTEM TRAP CALL (HLT)
:PRINT OUT THE ERROR PC+2 AND STATUS REGISTER
022622 012767 000340 155146 PRINT: MOV #340, PS :SET PRIORITY TO 7
022630 036727 154734 020000 BIT SR, #20000 :TEST FOR INHIBIT PRINT OUT
022636 001401 BEQ +4 :BRANCH TO PRINT
022640 000432 BR CK :INHIBIT, CHECK FOR HALT
022642 012667 000100 MOV (6)+, SAVPC :PC OF FAILING ROUTINE
022646 012667 000076 MOV (6)+, SAVPSR :PSR OF ERROR CONDITION
022652 024646 CMP -(6), -(6) :RESTORE STACK
022654 012767 000200 155114 MOV #200, PS
022662 004767 000424 JSR %7, CRLF :OUTPUT CARRIAGE RETURN AND LINE FEED
022666 016767 000054 000322 MOV SAVPC, PTEMP1 :LOAD WITH FAILING PC+2
022674 004767 000104 JSR %7, PROCT :PRINT FAILING PC+2
022700 105777 160106 TSTB 3TCSR :WAIT FOR TTY READY
022704 100375 BPL -4
022706 012777 000240 160100 MOV #240, 3TDBR :OUTPUT A SPACE
022714 016767 000030 000274 MOV SAVPSR, PTEMP1 :LOAD PROCESSOR STATUS
022722 004767 000056 JSR %7, PROCT :PRINT PROCESSOR STATUS
022726 005767 154636 CK: TST SR :CHECK SR FOR HALT SWITCH
022732 100001 BPL +4 :BRANCH IF NOT SET
022734 000000 HALT :HALT ON ERROR UP
022736 000002 RTI :RETURN TO MAIN LINE
022740 000000 SAVR2: 0
022742 000000 SAVR3: 0
022744 000000 SAVR4: 0
022746 000000 SAVPC: 0
022750 000000 SAVPSR: 0

```

```

:SUBROUTINE TO PRINT OUT OCTAL NUMBER
:PRSHRT DELETES LEADING ZEROS
:PROCT PRINTS OUT 6 OCTAL DIGITS
022752 012767 000001 000232 PRSHRT: MOV #1, PRSFLG :SET FLAG TO INDICATE SHORT PRINTOUT
022760 005767 000232 TST PTEMP1 :CHECK FOR ZERO
022764 001011 BNE PROCT+4 :BRANCH IF NOT ZERO
022766 105777 160020 TSTB 3TCSR :WAIT FOR TTY READY
022772 100375 BPL -4
022774 012777 000260 160012 MOV #260, 3TDBR :OUTPUT A SINGLE ZERO
023002 000207 RTS %7 :RETURN
023004 005067 000202 PROCT: CLR PRSFLG :CLEAR FLAG TO INDICATE FULL PRINTOUT
023010 005067 000206 CLR PTEMP3 :CLEAR R4 FOR COUNTING CHARACTERS OUTPUT
023014 005067 000174 CLR PRFLG :INITIALIZE CARRY FLAG FOR ROTATES
023020 012767 000260 000172 MOV #260, PTEMP2 :SETUP R3
023026 005767 000164 TST PTEMP1 :CHECK BIT 15 OF NUMBER
023032 100002 BPL +6 :BRANCH IF ZERO
023034 005267 000160 INC PTEMP2 :INCREMENT R3 IF ONE

```



```

023040 006167 000152          ROL    PTEMP1      ;ROTATE LEFT MOST OCTAL TO RIGHT END
023044 006167 000146          ROL    PTEMP1
023050 005567 000140          ADC    PRFLG      ;STORE CARRY
023054 005767 000132          P.CK:  TST    PRSFLG  ;CHECK FOR SHORT PRINTOUT
023060 001404          BEQ    P.WAIT    ;BRANCH IF NOT SET
023062 026727 000132 000260      CMP    PTEMP2,#260 ;CHECK FOR ZERO IF SET
023070 001410          BEQ    P.CONT    ;IF SET, GO TO NEXT CHARACTER
023072 105777 157714          P.WAIT: TSTB   @TCSR  ;WAIT FOR TTY READY
023076 100375          BPL    P.WAIT
023100 016777 000114 157706      MOV    PTEMP2,@TDBR ;OUTPUT NEXT CHARACTER
023106 005067 000100          CLR    PRSFLG    ;PRINT REST OF NUMBER AFTER A NON-ZERO DIGIT
023112 005267 000104          P.CONT: INC   PTEMP3 ;COUNT
023116 026727 000100 000006      CMP    PTEMP3,#6  ;CHECK FOR DONE
023124 001001          BNE   P.CNT1    ;BRANCH IF NOT DONE
023126 000207          RTS
023130 000241          P.CNT1: CLC     ;CLEAR CARRY
023132 005767 000056          TST    PRFLG     ;CHECK FOR PREVIOUS CARRY
023136 001403          BEQ    .+10     ;BRANCH IF PREVIOUSLY ZERO
023140 005067 000050          CLR    PRFLG    ;INITIALIZE FLAG
023144 000261          SEC
023146 006167 000044          ROL    PTEMP1    ;ROTATE NEXT CHARACTER INTO RIGHT END OF REGISTER
023152 006167 000040          ROL    PTEMP1
023156 006167 000034          ROL    PTEMP1
023162 005567 000026          ADC    PRFLG     ;STORE CARRY
023166 016767 000024 000024      MOV    PTEMP1,PTEMP2 ;LOAD DATA INTO R3
023174 042767 177770 000016      BIC   #177770,PTEMP2 ;CLEAR ALL BUT LOWEST OCTAL DIGIT
023202 052767 000260 000010      BIS   #260,PTEMP2  ;SET TO ASCII EQUIVALENT
023210 000721          BR    P.CK      ;LOOP
023212 000000          PRSFLG: 0
023214 000000          PRFLG: 0
023216 000000          PTEMP1: 0
023220 000000          PTEMP2: 0
023222 000000          PTEMP3: 0
;CONTAINS VALUE TO BE OUTPUT
;SCRATCH
;USED TO COUNT CHARACTERS OUTPUT

;EMT HANDLER
;FIRST 3 CALLS LEFT OPEN IN TABLE FOR EASY PATCHES
023224 011667 000032 000024      EMTSRV: MOV   @SP,EPC ;GET CALL
023230 162767 000002 000016      SUB   #2,EPC
023236 017767 000020 000016      MOV   @EPC,EPC
023244 105067 000013          CLRB  EPC+1
023250 062767 023264 000004      ADD   @EMTAB,EPC ;SAVE OFFSET ONLY
023256 017707 000000          MOV   @EPC,PC   ;POINT TO TABLE OF ADDRESSES
023262 000000          EPC:  0        ;JUMP TO DESIRED ROUTINE
000000          PATCH1=0
000000          PATCH2=0
000000          PATCH3=0
;SUBSTITUTE 104000 WHERE 1ST PATCH IS NEEDED
;104002 FOR 2ND PATCH
;104004 FOR 3RD PATCH
023264 000000          EMTAB: PATCH1 ;LOAD ADDRESS OF 1ST PATCH HERE
023266 000000          PATCH2 ;LOAD ADDRESS OF 2ND PATCH HERE
023270 000000          PATCH3 ;LOAD ADDRESS OF 3RD PATCH HERE
023272 022622          PRINT

;BELL ON PASS COMPLETE
023274 105777 157512          BELL:  TSTB   @TCSR
023300 100375          BPL    .-4
023302 012777 000207 157504      MOV   #207,@TDBR

```


023310 000207

RTS %7

023312 105777 157474
023316 100375
023320 012777 000215 157466
023326 105777 157460
023332 100375
023334 012777 000212 157452
023342 000207
000001

:SUBROUTINE TO OUTPUT CARRIAGE RETURN AND LINEFEED
CRLF: TSTB @TCSR ;WAIT FOR TTY READY
BPL .-4
MOV #215,@DDBR ;ROUTPUT CARRIAGE RETURN
TSTB @TCSR ;WAIT FOR TTY READY
BPL .-4
MOV #212,@DDBR ;OUTPUT LINEFEED
RTS %7 ;RETURN
.END

		2798	2802	2833	2840	2846	2850	2854	2859	2864	2868	2899	2905	2911
		2915	2919	2923	2927	2959	2964	2969	2973	2977	2981	2985	3022	3028
		3032	3035	3040	3045	3049	3084	3090	3096	3100	3103	3108	3112	3150
		3156	3160	3164	3169	3173	3177	3212	3219	3225	3229	3233	3238	3243
		3247	3283	3289	3293	3297	3302	3307	3311	3346	3353	3359	3363	3367
		3372	3377	3381										
ICOUNT	022614	432*	3467	3483*										
KDPAR0	003320	391#												
KDPAR1	003322	392#	2947*	3005*	3070*	3134*	3199*	3267*	3333*					
KDPAR2	003324	393#												
KDPAR3	003326	394#												
KDPAR4	003330	395#												
KDPAR5	003332	396#												
KDPAR6	003334	397#												
KDPAR7	003336	398#	3435*											
KDPDR0	003260	375#												
KDPDR1	003262	376#	483	548	611	672	735	796	857	917	975	1030	1087	1146
		1206	1266	1327	1387	1455	1515	1576	1637	1699	1760	1822	1883	1955
		2013	2067	2125	2183	2241	2299	2357	2420	2485	2542	2604	2661	2731
		2791	2857	2921	3431*	3433*								
KDPDR2	003264	377#	2949*	2979	3007*	3038	3072*	3106	3136*	3167	3201*	3236	3269*	3300
		3335#	3370											
KDPDR3	003266	378#												
KDPDR4	003270	379#												
KDPDR5	003272	380#												
KDPDR6	003274	381#												
KDPDR7	003276	382#												
KIPAR0	003300	383#												
KIPAR1	003302	384#	2948*	3006*	3071*	3135*	3200*	3268*	3334*					
KIPAR2	003304	385#												
KIPAR3	003306	386#												
KIPAR4	003310	387#												
KIPAR5	003312	388#												
KIPAR6	003314	389#												
KIPAR7	003316	390#	3434*											
KIPDR0	003240	367#	407											
KIPDR1	003242	368#	478	543	606	667	730	791	853	913	971	1027	1083	1142
		1202	1262	1323	1383	1449	1509	1570	1631	1693	1754	1816	1877	1951
		2009	2063	2121	2179	2237	2295	2353	2415	2480	2537	2599	2656	2726
		2786	2852	2917	3430*	3432*								
KIPDR2	003244	369#	2950*	2975	3008*	3033	3073*	3101	3137*	3162	3202*	3231	3270*	3295
		3336#	3365											
KIPDR3	003246	370#												
KIPDR4	003250	371#												
KIPDR5	003252	372#												
KIPDR6	003254	373#												
KIPDR7	003256	374#												
KSTACK	001000	284#	426	444	505	571	632	695	756	818	878	938	994	1048
		1107	1167	1227	1288	1348	1411*	1416	1476	1537	1598	1660	1721	1783
		1844	1904*	1917	1975	2033	2091	2149	2207	2265	2323	2380	2442	2508
		2566	2625	2687	2755	2817	2883	2941	2999	3062	3126	3192	3260	3326
		3445												
KTSTA	003036	301#	452*	493	494*	513*	559	560*	579*	620	621*	640*	682	683*
		703#	744	745*	764*	805	806*	826*	866	867*	886*	926	927*	946*
		982	983*	1002*	1036	1037*	1056*	1095	1096*	1115*	1154	1155*	1175*	1215
		1216*	1235*	1275	1276*	1296*	1336	1337*	1356*	1396	1397*	1422*	1464	1465*

		1482*	1525	1526*	1543*	1586	1587*	1604*	1647	1648*	1666*	1709	1710*	1727*
		1770	1771*	1789*	1832	1833*	1850*	1893	1894*	1925*	1963	1964*	1983*	2021
		2022*	2041*	2078	2079*	2099*	2136	2137*	2157*	2194	2195*	2215*	2252	2253*
		2273*	2310	2311*	2331*	2368	2369*	2388*	2430	2431*	2450*	2496	2497*	2515*
		2554	2555*	2574*	2613	2614*	2633*	2675	2676*	2695*	2743	2744*	2763*	2805
		2806*	2825*	2871	2872*	2891*	2929	2930*	2952*	2986	2987*	3010*	3050	3051*
		3075*	3114	3115*	3139*	3180	3181*	3204*	3248	3249*	3272*	3314	3315*	3338*
		3384	3385*											
KTVEC	003034	300#	451*	493*	512*	559*	578*	620*	639*	682*	702*	744*	763*	805*
		825*	866*	885*	926*	945*	982*	1001*	1036*	1055*	1095*	1114*	1154*	1174*
		1215*	1234*	1275*	1295*	1336*	1355*	1396*	1421*	1464*	1481*	1525*	1542*	1586*
		1603*	1647*	1665*	1709*	1726*	1770*	1788*	1832*	1849*	1893*	1924*	1963*	1982*
		2021*	2040*	2078*	2098*	2136*	2156*	2194*	2214*	2252*	2272*	2310*	2330*	2368*
		2387*	2430*	2449*	2496*	2514*	2554*	2573*	2613*	2632*	2675*	2694*	2743*	2762*
		2805*	2824*	2871*	2890*	2929*	2951*	2986*	3009*	3050*	3074*	3114*	3138*	3180*
		3203*	3248*	3271*	3314*	3337*	3384*							
		3396#												
LOGIC	022206	247#												
NOP	= 000240	418#	434*	1899*	1900	1902	1907*							
NRCNT	003402	419#	1904											
NRKEYS	003404	1901	1907#											
NXTST	012616	952	956#											
OK11	006056	1008	1012#											
OK12	006310	1931	1935#											
OK31	012734	1989	1993#											
OK32	013166	2395	2399#											
OK41	015222	2897	2901#											
OK51	017524	403#												
PARTAB	003346	3576#	3579											
PATCH1=	000000	3577#	3580											
PATCH2=	000000	3578#	3581											
PATCH3=	000000	257#	3574*											
PC	=%000007	400#												
PDRTAB	003340	3528*	3535*	3549	3551*	3556*	3562#							
PRFLG	023214	3490#	3582											
PRINT	022622	3500	3505	3521	3526#									
PROCT	023004	3519*	3526*	3536	3543*	3561#								
PRFLG	023212	3519#												
PRSHRT	022752	259#	260	425*	427*	429*	431*	443*	496*	504*	562*	570*	623*	631*
PS	= 177776	685*	694*	747*	755*	808*	817*	869*	877*	929*	937*	985*	993*	1039*
		1047*	1098*	1106*	1157*	1166*	1218*	1226*	1278*	1287*	1339*	1347*	1399*	1415*
		1467*	1475*	1528*	1536*	1589*	1597*	1650*	1659*	1712*	1720*	1773*	1782*	1835*
		1843*	1896*	1916*	1966*	1974*	2024*	2032*	2081*	2090*	2139*	2148*	2197*	2206*
		2255*	2264*	2313*	2322*	2371*	2379*	2433*	2441*	2499*	2507*	2557*	2565*	2616*
		2624*	2678*	2686*	2746*	2754*	2808*	2816*	2874*	2882*	2932*	2940*	2989*	2998*
		3053*	3061*	3117*	3125*	3183*	3191*	3251*	3259*	3317*	3325*	3387*	3444*	3446*
		3448*	3450*	3470*	3472*	3490*	3497*							
PTEMP1	023216	3499*	3504*	3520	3530	3533*	3534*	3553*	3554*	3555*	3557	3563#		
PTEMP2	023220	3529*	3532*	3538	3542	3557*	3558*	3559*	3564#					
PTEMP3	023222	3527*	3544*	3545	3565#									
P. CK	023054	3536#	3560											
P. CNT1	023130	3546	3548#											
P. CONT	023112	3539	3544#											
P. WAIT	023072	3537	3540#	3541										
RETRNX	022470	3452*	3453*	3457	3459	3460#								
RETURN	022620	433*	1905*	1908*	3456*	3476	3478*	3485#						

DCKTCA CROSS REFERENCE TABLE -- USER SYMBOLS

SIPAR1	003202	352#												
SIPAR2	003204	353#												
SIPAR3	003206	354#												
SIPAR4	003210	355#												
SIPAR5	003212	356#												
SIPAR6	003214	357#												
SIPAR7	003216	358#												
SIPDR0	003140	335#	409											
SIPDR1	003142	336#												
SIPDR2	003144	337#												
SIPDR3	003146	338#												
SIPDR4	003150	339#												
SIPDR5	003152	340#												
SIPDR6	003154	341#												
SIPDR7	003156	342#												
SP	=%000006	256#	426*	428*	430*	444*	446*	450	505*	507*	511	571*	573*	577
		632#	634*	638	695*	697*	701	756*	758*	762	818*	820*	824	878*
		880#	884	938*	940*	944	994*	996*	1000	1048*	1050*	1054	1107*	1109*
		1113	1167*	1169*	1173	1227*	1229*	1233	1288*	1290*	1294	1348*	1350*	1354
		1416*	1476*	1537*	1598*	1660*	1721*	1783*	1844*	1917*	1919*	1923	1975*	1977*
		1981	2033*	2035*	2039	2091*	2093*	2097	2149*	2151*	2155	2207*	2209*	2213
		2265*	2267*	2271	2323*	2325*	2329	2380*	2382*	2386	2442*	2444*	2448	2508*
		2510*	2566*	2568*	2572	2625*	2627*	2631	2687*	2689*	2693	2755*	2757*	2761
		2817*	2819*	2823	2883*	2885*	2889	2941*	2943*	2946	2999*	3001*	3004	3062*
		3064*	3067	3126*	3128*	3131	3192*	3194*	3197	3260*	3262*	3265	3326*	3328*
		3331	3432	3433	3445*	3447*	3449*	3569						
SR	= 177570	258#	442*	503*	569*	630*	693*	754*	816*	876*	936*	992*	1046*	1105*
		1165*	1225*	1286*	1346*	1414*	1474*	1535*	1596*	1658*	1719*	1781*	1842*	1915*
		1973*	2031*	2089*	2147*	2205*	2263*	2321*	2378*	2440*	2506*	2564*	2623*	2685*
		2753*	2815*	2881*	2939*	2997*	3060*	3124*	3190*	3258*	3324*	3452	3463	3465
		3473	3475	3479	3481	3491	3506							
SRO	003024	296#	445*	456*	459*	462	463*	489*	495*	506*	521*	523*	527	528*
		561*	572*	584*	586*	589	590*	622*	633*	645*	647*	650	651*	684*
		696*	708*	710*	713	714*	746*	757*	769*	771*	774	775*	807*	819*
		831*	833*	836	837*	868*	879*	891*	893*	896	897*	928*	939*	950*
		953*	956	957*	979*	984*	995*	1006*	1009*	1012	1013*	1034*	1038*	1049*
		1061*	1063*	1066	1067*	1097*	1108*	1120*	1122*	1125	1126*	1156*	1168*	1180*
		1182*	1185	1186*	1217*	1228*	1240*	1242*	1245	1246*	1277*	1289*	1301*	1303*
		1306	1307*	1338*	1349*	1361*	1363*	1366	1367*	1398*	1417*	1427*	1429*	1432
		1433*	1466*	1477*	1489*	1491*	1495	1496*	1527*	1538*	1548*	1550*	1553	1554*
		1588*	1599*	1609*	1611*	1614	1615*	1649*	1661*	1671*	1673*	1676	1677*	1711*
		1722*	1732*	1734*	1737	1738*	1772*	1784*	1794*	1796*	1799	1800*	1834*	1845*
		1855*	1857*	1860	1861*	1895*	1918*	1929*	1932*	1935	1936*	1960*	1965*	1976*
		1987*	1990*	1993	1994*	2018*	2023*	2034*	2045*	2047	2048*	2075*	2080*	2092*
		2103*	2105	2106*	2133*	2138*	2150*	2161*	2163	2164*	2191*	2196*	2208*	2219*
		2221	2222*	2249*	2254*	2266*	2277*	2279	2280*	2307*	2312*	2324*	2335*	2337
		2338*	2365*	2370*	2381*	2392*	2396*	2399	2400*	2426*	2432*	2443*	2458*	2460*
		2464	2465*	2498*	2509*	2520*	2522	2523*	2552*	2556*	2567*	2579*	2581*	2584
		2585*	2615*	2626*	2637*	2640	2641*	2671*	2677*	2688*	2703*	2706*	2710	2711*
		2745*	2756*	2767*	2770	2771*	2801*	2807*	2818*	2829*	2832*	2836	2837*	2873*
		2884*	2895*	2898*	2901	2902*	2926*	2931*	2942*	2956*	2960	2961*	2984*	2988*
		3000*	3015*	3018	3019*	3048*	3052*	3063*	3080*	3083*	3086	3087*	3116*	3127*
		3143*	3146	3147*	3176*	3182*	3193*	3208*	3211*	3215	3216*	3250*	3261*	3276*
		3279	3280*	3310*	3316*	3327*	3342*	3345*	3349	3350*	3386*	3404*	3413*	
SPDH	003372	414#												
SR1	003026	297#	470	535	596	657	720	781	843	903	963	1019	1073	1132

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 79
 DCKTCA CROSS REFERENCE TABLE -- USER SYMBOLS

741	777	782	787	792	797	802	839	844	849	854	858	863
899	904	909	914	918	923	959	964	967	968	972	976	1015
1020	1023	1024	1028	1031	1069	1074	1079	1084	1088	1092	1128	1133
1138	1143	1147	1151	1188	1193	1198	1203	1207	1212	1248	1253	1258
1263	1267	1272	1309	1314	1319	1324	1328	1333	1369	1374	1379	1384
1388	1393	1435	1440	1446	1452	1458	1462	1498	1502	1506	1512	1518
1522	1556	1561	1566	1573	1579	1583	1617	1622	1627	1634	1640	1644
1679	1684	1689	1696	1702	1706	1740	1745	1750	1757	1763	1767	1802
1807	1812	1819	1825	1829	1863	1868	1873	1880	1886	1890	1938	1944
1947	1948	1952	1956	1996	2002	2005	2006	2010	2014	2050	2056	2059
2060	2064	2068	2072	2108	2114	2117	2118	2122	2126	2130	2166	2172
2175	2176	2180	2184	2188	2224	2230	2233	2234	2238	2242	2246	2282
2288	2291	2292	2296	2300	2304	2340	2346	2349	2350	2354	2358	2362
2402	2408	2411	2412	2416	2421	2467	2473	2476	2477	2481	2486	2491
2525	2531	2534	2535	2538	2543	2548	2587	2593	2596	2597	2600	2605
2610	2643	2649	2652	2653	2657	2662	2667	2713	2719	2722	2723	2727
2732	2737	2741	2773	2779	2782	2783	2787	2792	2797	2839	2845	2848
2849	2853	2858	2863	2867	2904	2910	2913	2914	2918	2922	2958	2963
2968	2971	2972	2976	2980	3021	3027	3030	3031	3034	3039	3044	3089
3095	3098	3099	3102	3107	3111	3149	3155	3158	3159	3163	3168	3172
3218	3224	3227	3228	3232	3237	3242	3246	3282	3288	3291	3292	3296
3301	3306	3352	3358	3361	3362	3366	3371	3376	3380	3474	3480	3492
3502	3507	3523	3531	3550	3587	3593	3596					

.SRAND	18
.SRDDE	18
.SRDOC	18
.SREAO	18
.SR2AZ	18
.SSAVE	18
.SSB20	18
.SSB20	18
.SSCOP	18
.SSIZE	18
.SSUPR	18
.STRAP	18
.STYPB	18
.STYPD	18
.STYPE	18
.STYPD	18
.S4OCA	18
.1170	18

	2808	2816	2818	2825	2872	2873	2874	2882	2884	2891	2930	2931	2932	2940	2942
	2952	2987	2988	2989	2998	3000	3010	3011	3051	3052	3053	3061	3063	3075	3076
	3115	3116	3117	3125	3127	3139	3181	3182	3183	3191	3193	3204	3249	3250	3251
	3259	3261	3272	3273	3315	3316	3317	3325	3327	3338	3385	3386	3387	3404	3405
	3407	3413	3416	3444	3450	3455	3458	3477	3526	3527	3528	3543	3551		
CLRB	523	1491	2164	2460	2706	2832	3211	3345	3572						
CMP	457	464	470	474	478	483	529	535	539	543	548	553	591	596	601
	606	611	652	657	662	667	672	715	720	725	730	735	776	781	786
	791	796	838	843	848	853	857	898	903	908	913	917	951	958	963
	967	971	975	1007	1014	1019	1023	1027	1030	1068	1073	1078	1083	1087	1127
	1132	1137	1142	1146	1187	1192	1197	1202	1206	1247	1252	1257	1262	1266	1308
	1313	1318	1323	1327	1368	1373	1378	1383	1387	1434	1439	1445	1451	1457	1497
	1501	1505	1511	1517	1555	1560	1565	1572	1578	1616	1621	1626	1633	1639	1678
	1683	1688	1695	1701	1739	1744	1749	1756	1762	1801	1806	1811	1818	1824	1862
	1867	1872	1879	1885	1900	1930	1937	1943	1947	1951	1955	1988	1995	2001	2005
	2009	2013	2049	2055	2059	2063	2067	2071	2107	2113	2117	2121	2125	2129	2165
	2171	2175	2179	2183	2187	2223	2229	2233	2237	2241	2245	2281	2287	2291	2295
	2299	2303	2339	2345	2349	2353	2357	2361	2393	2401	2407	2411	2415	2420	2466
	2472	2476	2480	2485	2490	2524	2530	2534	2537	2542	2547	2586	2592	2596	2599
	2604	2609	2642	2648	2652	2656	2661	2712	2718	2722	2726	2731	2740	2772	2778
	2782	2786	2791	2796	2838	2844	2848	2852	2857	2862	2866	2896	2903	2909	2913
	2917	2921	2957	2962	2967	2971	2975	2979	3020	3026	3030	3033	3038	3043	3088
	3094	3098	3101	3106	3110	3148	3154	3158	3162	3167	3217	3223	3227	3231	3236
	3245	3281	3287	3291	3295	3300	3305	3351	3357	3361	3365	3370	3375	3379	3420
	3467	3471	3496	3538	3545										
DEC	459	528	590	647	651	833	837	893	897	953	1009	1013	1067	1126	1303
	1307	1363	1367	1429	1496	1554	1615	1796	1800	1957	1861	1932	1990	2396	2465
DECB	2523	2585	2711	2837	2898	2961	3019	3087	3216	3350					
	463	957	1122	1433	1611	1936	1994	2048	2106	2278	2280	2336	2338	2400	2581
	2641	2771	2902	3083	3147	3280									
HALT															
INC	267	3451	3454	3508											
	456	709	770	950	1181	1241	1427	1672	1733	1899	1929	2045	2161	2162	2220
INCB	2277	2392	2637	2767	2895	3143	3276	3469	3532	3544					
JMP	832	892	1302	1362	1795	1856	2768	2830	3277	3343					
JSR	278	280	1906	3401	3457	3459	3476								
	447	508	574	635	698	759	821	881	941	997	1051	1110	1170	1230	1291
	1351	1418	1478	1539	1600	1662	1723	1785	1846	1920	1978	2036	2094	2152	2210
	2268	2326	2383	2445	2511	2569	2628	2690	2758	2820	2886	2944	3002	3065	3129
	3195	3263	3329	3391	3396	3429	3498	3500	3505						
NOV	426	427	428	429	430	432	433	435	442	444	446	451	453	454	462
	493	503	505	507	512	514	519	521	522	527	559	569	571	573	578
	582	585	589	620	630	632	634	639	643	645	646	650	682	693	695
	697	702	706	713	744	754	756	758	763	767	774	805	816	818	820
	825	829	836	866	876	878	880	885	889	896	926	936	938	940	945
	947	948	956	982	992	994	996	1001	1003	1004	1006	1012	1036	1046	1048
	1050	1055	1059	1062	1066	1095	1105	1107	1109	1114	1118	1120	1121	1125	1154
	1165	1167	1169	1174	1178	1185	1215	1225	1227	1229	1234	1238	1245	1275	1286
	1288	1290	1295	1299	1306	1336	1346	1348	1350	1355	1359	1366	1396	1414	1416
	1421	1424	1425	1428	1432	1449	1455	1464	1474	1476	1481	1483	1487	1489	1490
	1495	1509	1515	1525	1535	1537	1542	1546	1549	1553	1570	1576	1586	1596	1598
	1603	1607	1609	1610	1614	1631	1637	1647	1658	1660	1665	1669	1676	1693	1699
	1709	1719	1721	1726	1730	1737	1754	1760	1770	1781	1783	1788	1792	1799	1816
	1822	1832	1842	1844	1849	1853	1860	1877	1883	1893	1902	1904	1905	1908	1915
	1917	1919	1924	1926	1927	1935	1963	1973	1975	1977	1982	1984	1985	1993	2021
	2031	2033	2035	2040	2043	2046	2047	2078	2089	2091	2093	2098	2101	2103	2104
	2105	2136	2147	2149	2151	2156	2159	2163	2194	2205	2207	2209	2214	2217	2219

	2221	2252	2263	2265	2267	2272	2275	2279	2310	2321	2323	2325	2330	2333	2335
	2337	2368	2378	2380	2382	2387	2389	2390	2399	2430	2440	2442	2444	2449	2451
	2456	2458	2459	2464	2496	2506	2508	2510	2514	2518	2521	2522	2554	2564	2566
	2568	2573	2577	2579	2580	2584	2613	2623	2625	2627	2632	2634	2635	2640	2675
	2685	2687	2689	2694	2696	2701	2703	2710	2743	2753	2755	2757	2762	2765	2770
	2805	2815	2817	2819	2824	2826	2827	2829	2836	2871	2881	2893	2885	2890	2892
	2893	2901	2929	2939	2941	2943	2947	2948	2949	2950	2951	2953	2954	2956	2960
	2986	2997	2999	3001	3005	3006	3007	3008	3009	3013	3016	3018	3050	3060	3062
	3064	3070	3071	3072	3073	3074	3078	3080	3081	3086	3114	3124	3126	3128	3134
	3135	3136	3137	3138	3140	3141	3146	3180	3190	3192	3194	3199	3200	3201	3202
	3203	3205	3206	3208	3215	3248	3258	3260	3262	3267	3268	3269	3270	3271	3274
	3279	3314	3324	3326	3328	3333	3334	3335	3336	3337	3339	3340	3342	3349	3384
	3393	3406	3414	3415	3417	3430	3431	3434	3435	3445	3446	3447	3448	3449	3452
	3456	3470	3472	3478	3490	3494	3495	3497	3499	3503	3504	3519	3524	3529	3542
	3557	3569	3571	3574	3588	3594	3597								
MOV8	584	1061	1548	2520	3015	3475	3481								
NO8	3397	3398	3399												
RESET	3395														
ROL	3533	3534	3553	3554	3555										
RTI	3482	3509													
RTS	3410	3422	3436	3525	3547	3589	3598								
SEC	3552														
SO8	3409	3418													
SUB	3570														
TRAP	246														
TST	450	511	577	616	638	678	701	740	762	801	824	862	884	922	944
	1000	1054	1091	1113	1150	1173	1211	1233	1271	1294	1332	1354	1392	1461	1521
	1582	1643	1705	1766	1828	1889	1923	1981	2039	2097	2155	2213	2271	2329	2386
	2448	2572	2631	2666	2693	2736	2761	2823	2889	2946	3004	3067	3131	3171	3197
	3241	3265	3331	3408	3506	3520	3530	3536	3549						
TSTB	3501	3522	3540	3586	3592	3595									
.ABS	1														
.ENABL	1														
.END	3599														
.LIST	1	267	423	442	503	569	630	693	754	816	876	936	992	1046	1105
	1165	1225	1286	1346	1414	1474	1535	1596	1658	1719	1781	1842	1915	1973	2031
	2089	2147	2205	2263	2321	2378	2440	2506	2564	2623	2685	2753	2815	2881	2939
	2997	3060	3124	3190	3258	3324									
.MACR	423	687	810	1159	1280	1652	1775								
.MACRO	1														
.NLIST	1	267	423	442	503	569	630	693	754	816	876	936	992	1046	1105
	1165	1225	1286	1346	1414	1474	1535	1596	1658	1719	1781	1842	1915	1973	2031
	2089	2147	2205	2263	2321	2378	2440	2506	2564	2623	2685	2753	2815	2881	2939
	2997	3060	3124	3190	3258	3324									
.REM	1														
.REPT	267														
.TITLE	1														
.WORD	289														

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*,DCKTCA.SEG/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.CO,DCKTCA

DCKTC-A MACY11 27(732) 01-OCT-76 13:43 PAGE 87
DCKTCA CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

RUN-TIME: 33 45 5 SECONDS
RUN-TIME RATIO: 169/84=2.0
CORE USED: 36K (71 PAGES)

