

KT11-D

KT11-D LOGIC TEST

MD-11-DBKTA-C

EP-DBKTA-C-DL-A

OCT 1976

COPYRIGHT ©1976

FICHE 1 OF 1

digital

Made In U.S.A.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35
36	37	38	39	40
41	42	43	44	45
46	47	48	49	50
51	52	53	54	55
56	57	58	59	60
61	62	63	64	65
66	67	68	69	70
71	72	73	74	75
76	77	78	79	80
81	82	83	84	85
86	87	88	89	90
91	92	93	94	95
96	97	98	99	100

801

.REM#

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DBKTA-C-D
PRODUCT NAME: KT11-D BASIC LOGIC TEST
DATE REVISED: SEPTEMBER 20, 1974
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: ROBERT WHITTON

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS MANUAL.

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED TO THE PURCHASER UNDER A LICENSE FOR USE ON A SINGLE COMPUTER SYSTEM AND CAN BE COPIED (WITH INCLUSION OF DIGITAL'S COPYRIGHT NOTICE) ONLY FOR USE IN SUCH A SYSTEM, EXCEPT AS MAY OTHERWISE BE PROVIDED IN WRITING BY DIGITAL.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1972,1973,1974, BY DIGITAL EQUIPMENT CORPORATION

1.0 ABSTRACT

THIS PROGRAM INCREMENTALLY TESTS THE BASIC LOGIC FUNCTIONS OF THE KT11-D MEMORY MANAGEMENT OPTION FOR THE PDP-11/40. THEY FULLY TEST RELOCATION, DIRECT AND INDIRECT ADDRESSING OF THE MEMORY MANAGEMENT REGISTERS, AND CORRECT OPERATION OF ALL THE BITS IN THE REGISTERS. THE VARIOUS ABORTS ARE TESTED, AS IS PROPER "LOCKING" AND "UNLOCKING" OF THE ERROR TRACKING LOGIC.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP-11/40 WITH KT11-D OPTION

2.2 STORAGE

THE PROGRAM REQUIRES MEMORY LOCATIONS 0 TO 17474.

3.0 LOADING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER.

4.0 STARTING PROCEDURE

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.

5.0 OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SW 15=1 OR UP -- HALT ON ERROR
 SW 14=1 OR UP -- SCOPE LOOP
 SW 13=1 OR UP -- INHIBIT PRINTOUT
 SW 12=1 OR UP -- INHIBIT BELL AT END OF PASS, TYPE ASTERICK
 SW 12=0 OR DOWN -- RING BELL AT END OF EACH PASS
 SW 11=1 OR UP -- INHIBIT ITERATIONS
 SW 10=1 OR UP -- HALT AT END OF CURRENT TEST
 WITH NEXT TEST NUMBER IN DATA LIGHTS

5.2 SUBROUTINE ABSTRACTS

5.2.1 SCOPE

THIS SUBROUTINE CALL IS PLACED BETWEEN EACH SUBTEST. IT RECORDS THE STARTING ADDRESS OF EACH SUBTEST 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 ENT 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 EMTSRV (EMT DECODER)

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

5.2.5 CLRALL

THIS ROUTINE CLEARS ALL THE PAR'S AND PDR'S OF THE KT11-D, AS WELL AS SR0.

5.2.6 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.

5.3 PROGRAM AND/OR OPERATOR ACTION

THE PROGRAM FIRST CHECKS THOSE PROPERTIES OF THE KT11-D WHICH CAN BE TESTED WITH MEMORY MANAGEMENT TURNED OFF. THEN, DESTINATION ONLY RELOCATION IS USED TO SHOW THAT BASIC RELOCATION IS WORKING CORRECTLY. FINALLY, FULL RELOCATION IS ENABLED AND MISCELLANEOUS ASPECTS OF THE KT11-D'S OPERATION ARE CHECKED.

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 HAS 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.

6.3 BRANCH SELF

A BRANCH TO SELF IS USED IN THE KT11-D DIAGNOSTICS TO INDICATED A FAILURE WHEN A HALT OR A HLT WORD TRAP CALL COULD LEAD TO PROBLEM.

7.0 RESTRICTIONS

PROGRAM MUST BE LOADED INTO LOWER 4K OF MEMORY.

8.0 MISCELLANEOUS

8.1 EXECUTION TIME

EACH PASS TAKES APPROXIMATELY 1 MINUTE WITH CORE MEMORY.

8.2 STACK POINTERS

THE KERNEL STACK POINTER IS USUALLY INITIALIZED TO 1000. HOWEVER, IN CERTAIN TESTS IT MAY BE INITIALIZED TO A LOWER ADDRESS (VIRTUAL) TO MAKE UP FOR RELOCATION OF THE BANK.

THE USER STACK POINTER IS INITIALIZED TO 400.

8.4 EXECUTION ORDER CHECKING

SINCE THE KT11-D MAY CAUSE AN INCORRECT FETCH IF IT IS NOT WORKING CORRECTLY, THE ORDER OF EXECUTION OF ALL SUBTESTS IS CHECKED. THE SCOPE ROUTINE, WHEN IT CHANGES FROM ONE SUBTEST TO THE NEXT, INCREMENTS A COUNTER CALLED TESTCT. AT THE START OF EACH SUBTEST, THIS COUNTER IS CHECKED FOR THE CORRECT VALUE FOR THAT SUBTEST. IF TESTS ARE NOT EXECUTED IN THE CORRECT ORDER, TESTCT WILL NOT CONTAIN THE EXPECTED VALUE, AND AN ERROR PRINTOUT WILL OCCUR.

9.0 PROGRAM DESCRIPTION

THE PROGRAM INITIALLY TESTS THOSE FEATURES OF THE KT11-D OPTION WHICH CAN BE TESTED WITHOUT TURNING ON MEMORY MANAGEMENT. IT THEN USES THE MAINTENANCE MODE (DESTINATION ONLY RELOCATION) TO TEST TURNING MEMORY MANAGEMENT ON AND OFF AND TO FULLY CHECK OUT RELOCATION. ONCE RELOCATION HAS BEEN FULLY TESTED, FULL PAGING IS USED TO TEST THE REMAINING OPERATIONS OF THE OPTION.

*

H01

:BASIC LOGIC TEST OF THE KT11-0
:COPYRIGHT 1972, 1973, 1974, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
:THIS PROGRAM WAS REVISED ON SEPTEMBER 30, 1974 TO CHECK FOR THE
:IMPLEMENTATION OF ECO #1-7236-00005. THE ECO WAS NEEDED TO ALLOW THE
:RELOCATED REFERENCE TO THE USER PAGE ADDRESS AND PAGE DESCRIPTOR REGISTERS
:WITH BIT SIX OF THE VIRTUAL ADDRESS EQUAL TO A ONE. THE REVISION
:WAS ACCOMPLISHED BY ADDING TEST NUMBER 61.

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

:SW15=1 CAUSES HALT ON ERROR
:SW14=1 CAUSES SCOPE LOOPING
:SW13=1 INHIBITS ERROR PRINTOUT
:SW11=1 INHIBITS ITERATIONS
:SW10=1 HALT AT END OF CURRENT TEST WITH TEST NUMBER IN DATA LIGHTS OF NEXT
:TEST. PRESS CONTINUE TO ADVANCE TO NEXT TEST. (WITH SW11=1)

:DEFINITIONS
:SCOPE=TRAP
:NOP=240
:R0=X0
:R1=X1
:R2=X2
:R3=X3
:R4=X4
:R5=X5
:R6=X6
:R7=X7
:SP=X6
:PC=X7
:SR=177570
:PS=177776
:STATUS=PS
:HLT=104006
:BIT0=1
:BIT1=2
:BIT2=4
:BIT3=10
:BIT4=20
:BIT5=40
:BIT6=100
:BIT7=200
:BIT8=400
:BIT9=1000
:BIT10=2000
:BIT11=4000
:BIT12=10000
:BIT13=20000
:BIT14=40000
:BIT15=100000

104400
000240
000000
000001
000002
000003
000004
000005
000006
000007
000006
000007
177570
177776
177776
104006
000001
000002
000004
000010
000020
000040
000100
000200
000400
001000
002000
004000
010000
020000
040000
100000


```

;LOAD TRAP CATCHER INTO 0 THRU 777
;LOAD EACH VECTOR ADDRESS WITH THE ADDRESS OF THE NEXT
;LOCATION, AND LOAD EACH LOCATION IMMEDIATELY FOLLOWING
;A VECTOR ADDRESS WITH A HALT INSTRUCTION

```

```

;LOAD VECTOR AREA

```

000030	000030		
000032	016246		
000034	000340		
000036	000034		
000040	015456		
000042	000000		
000044	000046		
000046	015156		

```

;LOAD STARTING AREA

```

000200	000200	000774	
000202	000167		
000204	000210		
000206	000167	015144	

```

;LOAD DATA AREA

```

000400	000400		
000402	000000		
000404	001000		
000406	000000		
000408	000000		
000410	000000		
000412	123456		
000414	134567		
000416	177564		
000418	177566		
000420	000000		

```

USTACK: 0
KSTACK: 0
.WORD 0,0,0,0

```

```

K123: 123456
K134: 134567
TCSR: 177564
TDBR: 177566
TEMP: 0

```

001024	177572		
001026	177573		
001028	177574		
001030	177576		

```

SR0: 177572
SR0H: 177573
SR1: 177574
SR2: 177576

```

```

;KT11-D STATUS REGISTER ADDRESSES

```

001034	177600		
001036	177602		
001038	177604		
001040	177606		
001042	177610		
001044	177612		
001046	177614		
001048	177616		

```

AORTAB:
UPDR0: 177600
UPDR1: 177602
UPDR2: 177604
UPDR3: 177606
UPDR4: 177610
UPDR5: 177612
UPDR6: 177614
UPDR7: 177616

```

```

;USER PAGE DESCRIPTOR REGISTERS

```

001054	177640		
001056	177642		
001058	177644		
001060	177646		
001062	177650		
001064	177652		
001066	177654		

```

UPAR0: 177640
UPAR1: 177642
UPAR2: 177644
UPAR3: 177646
UPAR4: 177650
UPAR5: 177652
UPAR6: 177654

```

```

;USER PAGE ADDRESS REGISTERS

```


DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 9
DBKTAC.P11

001072	177656	UPAR7:	177656	
001074	172300	;		
001076	172302	KPOR0:	172300	;KERNEL PAGE DESCRIPTOR REGISTERS
001100	172304	KPOR1:	172302	
001102	172306	KPOR2:	172304	
001104	172310	KPOR3:	172306	
001106	172312	KPOR4:	172310	
001110	172314	KPOR5:	172312	
001112	172316	KPOR6:	172314	
		KPOR7:	172316	
		;		
001114	172340	KPAR0:	172340	;KERNEL PAGE ADDRESS REGISTERS
001116	172342	KPAR1:	172342	
001120	172344	KPAR2:	172344	
001122	172346	KPAR3:	172346	
001124	172350	KPAR4:	172350	
001126	172352	KPAR5:	172352	
001130	172354	KPAR6:	172354	
001132	172356	KPAR7:	172356	
	001132	ADREND=	.-2	
		;		
001134	177600	POR0TAB:	177600	;STARTING ADDRESSES OF PDR'S FOR EACH MODE
001136	172300	POREND:	172300	
001140	177640	PAR0TAB:	177640	;STARTING ADDRESSES OF PAR'S FOR EACH MODE
001142	172340		172340	
001144	001074	STATAB:	KPOR0	;ADDRESS OF KERNEL TABLE OF PDR'S AND PAR'S
001146	000000		0	
001150	001034		UPOR0	;ADDRESS OF USER TABLE OF PDR'S AND PAR'S
001152	140000	STAEND:	140000	
001154	000000	STAPNT:	0	
001156	000000	PAGES:	0	
001160	000000	SAVEA:	0	
001162	000000	SAVEB:	0	
001164	000250	KTVEC:	250	
001166	000252	KTSTA:	252	
001170	100361	PDRM2:	100361	
001172	000000	FTITLE:	0	
001174	000000	TESTCT:	0	
001176	000000	BLOCKS:	0	
		:SET UP FOR START OF BASIC LOGIC TESTS		
001200	005037	START:	CLR	#PS
001204	012706		MOV	#KSTACK, SP
001210	012767		MOV	#2000, ICOUNT
001216	012767		MOV	#TEST1+2, RETURN
001224	012767		MOV	#1, TESTCT
001232	005767		TST	FTITLE
001236	001007		BNE	TEST1+2
001240	004767		JSR	PC, TYPE
001244	015172		MTIT	
001246	005267		INC	FTITLE
001252	000401		BR	+.4
				;INITIALIZE STATUS
				;SETUP KERNEL STACK
				;INITIALIZE ITERATION COUNT
				;SETUP SCOPE AND ITERATION LOOP RETURN
				;INITIALIZE TEST COUNT
				;DID TITLE PRINT
				;YES, START TEST
				;NO, PRINT TITLE
				;SKP SCOPE INSTRUCTION

Address	PC	Order	Instruction	Comments
:SRO AND SRI SHOULD BE INITIALIZED TO 0				
001254	104400		TEST1: SCOPE	
001256	012706	001000	MOV #KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
001262	004767	015030	JSR PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
001266	000001		1	:TEST NUMBER
001270	104006		HLT	:TEST EXECUTED OUT OF SEQUENCE
001272	000005		RESET	:ISSUE INIT
001274	005777	177524	TST 2SR0	:CHECK SRO
001300	001401		BEQ .+4	
001302	104006		HLT	:SRO WAS NOT INITIALIZED TO ZERO
001304	005777	177520	TST 2SR1	:CHECK SR1
001310	001401		BEQ .+4	
001312	104006		HLT	:SR1 WAS NOT INITIALIZED TO ZERO
001314	012767	000010 014246	MOV #10, ICOUNT	:DROP ITERATION COUNT SINCE RESET IS USED
:CHECK READ/WRITE PROPERTIES OF ALL BITS IN SRO EXCEPT 0 AND 8				
:BY ROTATING A ONE THRU THE BIT POSITIONS BEING CHECKED				
001322	104400		TEST2: SCOPE	
001324	012706	001000	MOV #KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
001330	004767	014762	JSR PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
001334	000002		2	:TEST NUMBER
001336	104006		HLT	:TEST EXECUTED OUT OF SEQUENCE
001340	005777	177460	TST 2SR0	:CHECK SRO INITIALLY
001344	001402		BEQ .+6	
001346	104006		HLT	:SRO NOT ZERO AT START OF TEST
001350	000422		BR EXIT2	
001352	012700	000001	MOV #1, R0	:R0 CONTAINS BIT INDICATING POSITION BEING TESTED
001356	010001		MOV R0, R1	
001360	010102		MOV R1, R2	
001362	042701	000401	BIC #401, R1	:DON'T SET THE BIT IN SRO IF IT'S BIT 0 OR BIT 8
001366	042702	017777	BIC #17777, R2	:CLEAR THE BIT IN R2 IF IT SHOULDN'T SET IN SRO
001372	010177	177426	MOV R1, 2SR0	
001376	020277	177422	CMP R2, 2SR0	:CHECK SRO
001402	001401		BEQ .+4	
001404	104006		HLT	:SRO INCORRECT WHEN VALUE IN R1 WAS LOADED INTO IT
001406	006300		ASL R0	
001410	103362		BCC LOOP2	
001412	005077	177406	CLR 2SR0	
001416			EXIT2:	
:BITS 0-11 OF ALL PAR'S SHOULD BE READ/WRITE				
:TEST BY ROTATING A BIT THRU EACH PAR				
:ALSO SHOWS THAT OUTPUT PATHS FROM PAR'S ARE OK				
:AND THAT EVERY PAR ADDRESS IS RESPONDED TO				
001416	104400		TEST3: SCOPE	
001420	012706	001000	MOV #KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
001424	004767	014666	JSR PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
001430	000003		3	:TEST NUMBER
001432	104006		HLT	:TEST EXECUTED OUT OF SEQUENCE
001434	012767	002000 014126	MOV #2000, ICOUNT	:RESTORE ICOUNT
001442	004767	013624	JSR %7, CLALL	:INITIALIZE KT11-D REGISTERS
001446	012703	001140	MOV #PARTAB, R3	:R3 POINTS TO TABLE OF PAR ADDRESSES
001452	012700	000002	MOV #2, R0	:R0 IS COUNTER OF STATES LEFT TO TEST
001456	012301		MOV (R3)+, R1	:PUT ADDRESS OF 1ST PAR IN SET IN R1
			LOOP3:	

001460	012702	000010		MOV	#10, R2	:R2 IS COUNTER OF PAR'S LEFT TO TEST IN SET
001464	012704	000001	LOOP3A:	MOV	#1, R4	:R4 IS BIT OF PAR BEING TESTED
001470	010411		LOOP3B:	MOV	R4, #R1	:SET BIT IN PAR
001472	020411			CMP	R4, #R1	:CHECK PAR
001474	001401			BEG	.+4	:BRANCH IF OK
001476	104006			HLT		:PAR WHOSE ADDRESS IS IN R1 FAILED WHEN THE VALUE IN R4 WAS LOADED INTO IT
001500	006304			ASL	R4	
001502	020427	010000		CMP	R4, #10000	
001506	001370			BNE	LOOP3B	
001510	005011			CLR	#R1	
001512	005721			TST	(R1)+	:MOVE POINTER
001514	077215			SQB	R2, LOOP3A	:TEST ALL PAR'S IN SET
001516	077021			SQB	R0, LOOP3	:TEST ALL 3 REGISTER SETS
:BITS 1-3, 8-14 OF ALL PDR'S SHOULD BE READ/WRITE						
:BITS 0, 4, 5, 7 AND 15 SHOULD ALWAYS BE ZERO						
:BIT 6 SHOULD BE ZERO IF PDR IS WRITTEN						
:ACTUAL CLEARING AND SETTING OF 6 TESTED LATER						
:ALSO SHOWS THAT OUTPUT PATHS FROM PDR'S ARE OK						
:AND THAT EVERY PDR ADDRESS IS RESPONDED TO						
001520	104400		TEST4:	SCOPE		
001522	012706	001000		MOV	#KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
001526	004767	014564		JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SR0
001532	000004				4	:TEST NUMBER
001534	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
001536	004767	013530		JSR	%7, CLRALL	:INITIALIZE KT11-D REGISTERS
001542	012703	001134		MOV	#PDRTAB, R3	
001546	012301		LOOP4:	MOV	(R3)+, R1	:LOAD ADDRESS OF 1ST PDR IN STATE
001550	012702	000010		MOV	#10, R2	:USE R2 AS A COUNTER OF PDR'S LEFT TO TEST
001554	012700	000001	LOOP4A:	MOV	#1, R0	:SETUP R0 TO ROTATE A BIT THRU
001560	010005		LOOP4B:	MOV	R0, R5	
001562	046705	177402		BIC	PDR#2, R5	:R5 CONTAINS EXPECTED RESULTING CONTENTS OF PDR
001566	010011			MOV	R0, #R1	:LOAD PDR
001570	021105			CMP	#R1, R5	:CHECK RESULTING CONTENTS OF PDR
001572	001401			BEG	.+4	
001574	104006			HLT		:PDR WHOSE ADDRESS IS IN R1 WAS INCORRECT AFTER VALUE IN R0 WAS LOADED INTO IT
001576	006300			ASL	R0	:ROTATE BIT
001600	103367			BCC	LOOP4B	:BRANCH IF NOT DONE WITH THIS PDR
001602	005011			CLR	#R1	:IF DONE WITH THIS PDR, CLEAR IT
001604	005721			TST	(R1)+	:MOVE POINTER TO ADDRESS NEXT PDR
001606	077216			SQB	R2, LOOP4A	:TEST ALL PDR'S IN THIS GROUP
001610	020327	001136		CMP	R3, #PDREND	:TEST ALL 2 GROUPS OF PDRS-USER, KERNEL
001614	003754			BLE	LOOP4	
:NO DUAL ADDRESSING TEST FOR PAR'S AND PDR'S						
001616	104400		TEST5:	SCOPE		
001620	012706	001000		MOV	#KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
001624	004767	014466		JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SR0
001630	000005				5	:TEST NUMBER
001632	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
001634	004767	013432		JSR	%7, CLRALL	:CLEAR ALL PAR'S AND PDR'S

MO1

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 12
DBKTAC.P11

```

001640 012701 001034          MOV      #ADRTAB,R1
001644 012702 001034      LOP5AA: MOV      #ADRTAB,R2

001650 012703 000040          MOV      #32,R3
001654 012771 010421 000000      MOV      #10421,R1

001662 020201          LOP5B: CMP      R2,R1
001664 001406          BEQ      CONT5
001666 005772 000000          TST      @R2

001672 001403          BEQ      CONT5
001674 104006          HLT

001676 005072 000000          CLR      @R2
001702 005722          CONT5: TST      (R2)+
001704 077312          SOB      R3,LOP5B

001706 022701 001132          CMP      #ADREND,R1

001712 001402          BEQ      DONE5A
001714 005031          CLR      @R1)+
001716 000752          BR       LOP5AA

001720 012767 000100 013642  DONE5A: MOV      #100,ICOUNT

001726 104400          :SHOW THAT BYTE ADDRESSING OF PAR'S WORKS FOR HIGH AND LOW BYTES
001730 012706 001000      TEST6: SCOPE
001734 004767 014356          MOV      #KSTACK,SP
001740 000006          JSR      PC,ORDER
001742 104006          B
001744 012767 002000 013616      MOV      #2000,ICOUNT
001752 004767 013314          JSR      X7,CLALL
001756 012703 001140          MOV      #PARTAB,R3
001762 012700 000002          MOV      #2,R0
001766 012301          LOOP6: MOV      (R3)+,R1
001770 012702 000010          MOV      #10,R2
001774 012711 177777      LOOP6A: MOV      #-1,@R1
002000 105011          CLRB      @R1
002002 022711 007400          CMP      #7400,@R1
002006 001401          BEQ      .+4
002010 104006          HLT

002012 012711 177777          MOV      #-1,@R1
002016 105061 000001          CLRB      1(R1)
002022 022711 000377          CMP      #377,@R1
002026 001401          BEQ      .+4
002030 104006          HLT

```

```

;R1 POINTS TO ADDRESS OF LOCATION
;LOADED WITH 1 BIT SET IN EACH 4 BITS
;R2 USED AS A POINTER TO CYCLE THRU
;ALL OTHER ADDRESSES OF PAR/PDR PAIR'S TO
;CHECK FOR DUAL ADDRESSING
;R3 USED AS A COUNTER
;LOAD A PAR OR PDR - SET ONE BIT
;IN EACH CHIP (4 BITS PER CHIP) IF R/W
;SKIP CHECKING THIS ADDRESS TO SEE IF
;IT'S A DUAL, SINCE IT WAS THE ONE LOADED
;OTHERWISE, CHECK TO SEE IF THIS
;REGISTER RESPONDED TO THE ADDRESS
;OF THE ONE LOADED AS A DUAL
;BRANCH IF OK
;DUAL ADDRESSING - ADDRESS POINTED
;TO BY R2 RESPONDED TO THE ADDRESS
;POINTED TO BY R1 IN AT LEAST ONE
;4 BIT SECTION (1 CHIP)
;REINITIALIZE FAULTY LOCATION
;MOVE POINTER R2
;CHECK ALL PAR'S AND PDR'S
;TO SEE IF THEY RESPONDED TO THE
;ADDRESS POINTED TO BY R1
;HAVE ALL ADDRESSES BEEN CHECKED
;FOR DUALS?
;YES - GO TO NEXT TEST
;NO - MOVE POINTER R1
;CHECK TO SEE IF ANY OTHER ADDRESS
;ALSO RESPONDS TO THE ADDRESS POINTED
;TO BY R1
;DROP ITERATION COUNT

;INITIALIZE KERNEL STACK POINTER
;CHECK TEST SEQUENCE + INIT SRD
;TEST NUMBER
;TEST EXECUTED OUT OF SEQUENCE
;RESTORE ITERATION COUNT
;INITIALIZE KT11-D REGISTERS
;R3 POINTS TO TABLE OF PAR ADDRESSES
;R0 IS COUNTER OF STATES LEFT TO TEST
;PUT ADDRESS OF 1ST PAR IN SET IN R1
;R2 IS COUNTER OF PAR'S LEFT TO TEST IN SET
;SET UP PAR BEING TESTED
;CLEAR LOW BYTE OF PAR
;CHECK PAR
;BRANCH IF OK
;DATOB TO PAR WHOSE ADDRESS IS IN
;R1 FAILED
;SET UP PAR TO TEST HIGH BYTE
;CLEAR HIGH BYTE
;CHECK PAR

;DATOB TO HIGH BYTE OF PAR WHOSE
;ADDRESS IS IN R1 FAILED

```


002032	005721		TST	(R1)+	:MOVE POINTER
002034	077221		SOB	R2,LOOP6A	:TEST ALL PAR'S IN SET
002036	077025		SOB	R0,LOOP6	:TEST ALL 2 REGISTER SETS
:SHOW THAT BYTE ADDRESSING OF PDR'S WORKS FOR HIGH AND LOW BYTES					
002040	104400		TEST7: SCOPE		
002042	012706	001000	MOV	#KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
002046	004767	014244	JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
002052	000007		7		:TEST NUMBER
002054	104006		HLT		:TEST EXECUTED OUT OF SEQUENCE
002056	004767	013210	JSR	%7, CLRALL	:INITIALIZE KT11-D REGISTERS
002062	012703	001134	MOV	#PORTAB, R3	:R3 POINTS TO TABLE OF PDR ADDRESSES
002066	012700	000002	MOV	#2, R0	:R0 IS COUNTER OF STATES LEFT TO TEST
002072	012301		LOOP7: MOV	(R3)+, R1	:PUT ADDRESS OF 1ST PDR IN SET INTO R1
002074	012702	000010	MOV	#10, R2	:R2 IS COUNTER OF PDR'S LEFT TO TEST IN SET
002100	012711	177777	LOOP7A: MOV	#-1, R1	:SET UP PDR BEING TESTED
002104	105011		CLRB	R1	:CLEAR LOW BYTE OF PDR
002106	022711	077400	CMP	#77400, R1	:CHECK PDR
002112	001401		BEQ	.+4	:BRANCH IF OK
002114	104006		HLT		:DATOB TO PDR WHOSE ADDRESS IS
					:IN R1 FAILED
002116	012711	177777	MOV	#-1, R1	:SET UP PDR TO TEST HIGH BYTE
002122	105061	000001	CLRB	1(R1)	:CLEAR HIGH BYTE
002126	022711	000016	CMP	#16, R1	:CHECK PDR
002132	001401		BEQ	.+4	
002134	104006		HLT		:DATOB TO HIGH BYTE OF PDR WHOSE
					:ADDRESS IS IN R1 FAILED
002136	005721		TST	(R1)+	:MOVE POINTER
002140	077221		SOB	R2, LOOP7A	:TEST ALL PDR'S IN SET
002142	077025		SOB	R0, LOOP7	:TEST ALL 2 REGISTER SETS
:INIT SHOULD HAVE NO EFFECT ON PAR'S					
002144	104400		TEST10: SCOPE		
002146	012706	001000	MOV	#KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
002152	004767	014140	JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
002156	000010		10		:TEST NUMBER
002160	104006		HLT		:TEST EXECUTED OUT OF SEQUENCE
002162	012767	000010	MOV	#10, ICOUNT	:DROP ITERATION COUNT
002170	005067	000104	CLR	TST10F	
002174	012704	005252	MOV	#5252, R4	
002200	012703	001140	TST10: MOV	#PARTAB, R3	
002204	012700	000002	MOV	#2, R0	
002210	012301		LOOP10: MOV	(R3)+, R1	
002212	012702	000010	MOV	#10, R2	:COUNTER TO LOAD PAR'S
002216	010421		LOP10A: MOV	R4, (R1)+	:LOAD PAR WITH PATTERN
002220	077202		SOB	R2, LOP10A	:LOAD ALL 16 IN THIS SET
002222	077006		SOB	R0, LOOP10	:INITIALIZE ALL 2 SETS
002224	000005		RESET		:ISSUE INIT
002226	012703	001140	MOV	#PARTAB, R3	
002232	012700	000002	MOV	#2, R0	
002236	012301		LOP10B: MOV	(R3)+, R1	
002240	012702	000010	MOV	#10, R2	:COUNTER TO CHECK PAR'S
002244	020411		LOP10C: CMP	R4, R1	:CHECK DATA
002246	001401		BEQ	.+4	
002250	104006		HLT		:PAR WHOSE ADDRESS IS IN R1
					:WAS INCORRECT AFTER INIT

002252 005721
002254 077205
002256 077011
002260 005767 000014
002264 001006
002266 005267 000006
002272 012704 002525
002276 000740
002300 000000
002302

TST (R1)+
SOB R2,LOP10C
SOB R0,LOP10B
TST TST10F
BNE EXIT10
INC TST10F
MOV #2525,R4
BR TST10
TST10F: 0
EXIT10:

;MOVE POINTER
;TEST ALL 8 PAR'S IN THIS SET
;TEST ALL 2 REGISTER SETS
;CHECK FOR BOTH PATTERNS USED
;IF DONE, GO TO NEXT TEST
;IF NOT, SET FLAG
;LOAD OTHER PATTERN
;REPEAT TEST WITH 2ND PATTERN

002302 104400
002304 012706 001000
002310 004767 014002
002314 000011
002316 104006
002320 005067 000104
002324 012704 025012
002330 012703 001134
002334 012700 000002
002340 012301
002342 012702 000010
002346 010421
002350 077202
002352 077006
002354 000005
002356 012703 001134
002362 012700 000002
002366 012301
002370 012702 000010
002374 020411
002376 001401
002400 104006

;INIT SHOULDN'T CLEAR OR SET ANY OF THE R/W BITS IN THE PDR'S

TEST11: SCOPE
MOV #KSTACK,SP
JSR PC,ORDER
11
HLT
CLR TST11F
MOV #25012,R4
TST11: MOV #PORTAB,R3
MOV #2,R0
LOOP11: MOV (R3)+,R1
MOV #10,R2
LOP11A: MOV R4,(R1)+
SOB R2,LOP11A
SOB R0,LOOP11
RESET
MOV #PORTAB,R3
MOV #2,R0
LOP11B: MOV (R3)+,R1
MOV #10,R2
LOP11C: CMP R4,R1
BEQ .+4
HLT

;INITIALIZE KERNEL STACK POINTER
;CHECK TEST SEQUENCE + INIT SR0
;TEST NUMBER
;TEST EXECUTED OUT OF SEQUENCE

;LOAD PATTERN IN R4

;COUNTER TO LOAD PDR'S
;LOAD PDR WITH PATTERN
;LOAD ALL 8 IN THIS SET
;INITIALIZE ALL 2 SETS
;ISSUE INIT

;COUNTER TO CHECK PDR'S
;CHECK DATA

;PDR WHOSE ADDRESS IS IN R1
;WAS INCORRECT AFTER INIT
;MOVE POINTER
;TEST ALL 8 PDR'S IN THIS SET
;TEST ALL 2 REGISTER SETS
;CHECK FOR BOTH PATTERNS USED
;IF DONE, GO TO NEXT TEST
;IF NOT, SET FLAG
;LOAD 2ND PATTERN

002402 005721
002404 077205
002406 077011
002410 005767 000014
002414 001006
002416 005267 000006
002422 012704 052404
002426 000740
002430 000000
002432 000240

TST (R1)+
SOB R2,LOP11C
SOB R0,LOP11B
TST TST11F
BNE EXIT11
INC TST11F
MOV #52404,R4
BR TST11
TST11F: 0
EXIT11: NOP

;SHOW THAT SR1 IS ONLY = 0 AND CANNOT BE LOADED

002434 104400
002436 012706 001000
002442 004767 013650
002446 000012
002450 104006
002452 012767 002000 013110
002460 012777 177777 176342
002466 005777 176336
002472 001401

TEST12: SCOPE
MOV #KSTACK,SP
JSR PC,ORDER
12
HLT
MOV #2000,ICOUNT
MOV #1,JSR1
TST JSR1
BEQ .+4

;INITIALIZE KERNEL STACK POINTER
;CHECK TEST SEQUENCE + INIT SR0
;TEST NUMBER
;TEST EXECUTED OUT OF SEQUENCE
;RESTORE ITERATION COUNT
;TRY TO LOAD SR1


```

002474 104006          HLT
                        :SR2 SHOULD CONTAIN ADDRESS OF LAST FETCH WITH KT11-D TURNED OFF
                        :SR1 INCORRECT - SHOULD HAVE TRACKED
                        :CHECK THAT ABORT FREEZES SR2
TEST13: SCOPE
002476 104400          MOV      #KSTACK, SP      :INITIALIZE KERNEL STACK POINTER
002500 012706 001000    JSR      PC, ORDER      :CHECK TEST SEQUENCE + INIT SR0
002504 004767 013606    13                      :TEST NUMBER
002510 000013          HLT                      :TEST EXECUTED OUT OF SEQUENCE
002512 104006          MOV      @SR2, R1        :PICK UP SR2 - SHOULD CONTAIN ADDRESS
002514 017701 176312    AD13:  CMP      @AD13, R1 :OF THIS INSTRUCTION
002520 022701 002514    BEQ      .+4
002524 001401          HLT                      :SR2 DID NOT CONTAIN FETCH ADDRESS
002526 104006          BIS      @BIT15, @SR0     :SET NR ABORT
002530 052777 100000 176266 AD13A: NOP
002536 000240          CMP      @AD13A, @SR2     :CHECK IF SR2 FROZE
002540 022777 002530 176264 BEQ      .+4
002546 001401          HLT                      :SR2 NOT BEING DISABLED BY NR ABORT
002550 104006          BIC      @BIT15, @SR0     :CLEAR NR ABORT
002552 042777 100000 176244 AD13B: BIS      @BIT14, @SR0 :SET PL ABORT
002560 052777 040000 176236 NOP
002566 000240          CMP      @AD13B, @SR2     :DID SR2 FREEZE
002570 022777 002560 176234 BEQ      .+4
002576 001401          HLT                      :SR2 NOT BEING DISABLED BY PL ABORT
002600 104006          BIC      @BIT14, @SR0     :CLEAR PL ABORT
002602 042777 040000 176214 AD13C: BIS      @BIT13, @SR0 :SET RO ABORT
002610 052777 020000 176206 NOP
002616 000240          CMP      @AD13C, @SR2     :DID SR2 FREEZE
002620 022777 002610 176204 BEQ      .+4
002626 001401          HLT                      :SR2 NOT BEING DISABLED BY RO ABORT
002630 104006
                        :SHOW THAT DESTINATION ONLY RELOCATION DOESN'T RELOCATE AN INSTRUCTION
                        :FETCH (ONE CASE), AND THAT RESET CLEARS SR0(8)
                        :AND TURNS OFF DESTINATION ONLY RELOCATION
                        :IF THAT MUCH WORKS, YOU'LL GET THRU TO THE NEXT TEST
TEST14: SCOPE
002632 104400          MOV      #KSTACK, SP      :INITIALIZE KERNEL STACK POINTER
002634 012706 001000    JSR      PC, ORDER      :CHECK TEST SEQUENCE + INIT SR0
002640 004767 013452    14                      :TEST NUMBER
002644 000014          HLT                      :TEST EXECUTED OUT OF SEQUENCE
002646 104006          JSR      x7, CLRALL       :THIS TEST SHOULDN'T GO THRU ANY PAR/PDR PAIR'S
002650 004767 012416    MOV      @1006, @KPDRO :SO MAKE THEM ALL GIVE NON-RESIDENT
002654 012777 001006 176212 MOV      @10, ICOUNT :AND PAGE LENGTH ERRORS IF ACCESSED
002662 012767 000010 012700 MOV      @400, @SR0 :3 BLOCKS OF KERNEL PDR0 MUST BE MAPPED
002670 012777 000400 176126 RESET           :TO ALLOW TRAPS AND ABORTS
002676 000005          :DROP THE ITERATION COUNT
                        :TURN ON DESTINATION ONLY RELOCATION
                        :SHOULD CLEAR DEST ONLY BIT, AND A
                        :SOLID PLACE TO START
                        :IF THE FETCH IS RELOCATED
                        :THIS WILL GIVE A PL ABORT
002700 032777 000400 176116 BIT      @400, @SR0 :IF KT11-D STILL ON, THIS SHOULD CAUSE
002706 001401          BEQ      .+4             :PL AND NR ERRORS
002710 000000          HALT                    :IF KT11-D IS OFF, BIT 8 OF SR0 READS
                        :AS STILL SET OR ANOTHER BIT IS INCORRECT
                        :IF KT11-D IS ON, NO NR OR SL ABORT
                        :OCCURRED AND RESET FAILED TO TURN KT11-D OFF

```


002712 005077 176106

CLR JSR0

:SHOW THAT DESTINATION ONLY RELOCATION DOESN'T RELOCATE THE SOURCE
:ADDRESS AND DOES RELOCATE THE DESTINATION

TEST15: SCOPE

002716 104400
002720 012706 001000
002724 004767 013366
002730 000015
002732 104006
002734 012767 000010 012626
002742 004767 012324
002746 012777 000001 176140
002754 012777 077406 176112
002762 012701 003034
002766 012777 000400 176030
002774 021111
002776 001001
003000 000000
003002 000005
003004 012701 002734
003010 012702 003034
003014 012777 000400 176002
003022 021211
003024 001401
003026 000000

MOV #KSTACK, SP
JSR PC, ORDER
15
HLT
MOV #10, ICOUNT
JSR X7, CLRA11
MOV #1, #KPAIR0
MOV #77406, #KPAIR0
MOV #DATA16, R1
MOV #400, JSR0
CMP #R1, #R1
BNE .+4
HALT
RESET
MOV #DATA16-100, R1
MOV #DATA16, R2
MOV #400, JSR0
CMP #R2, #R1
BEQ .+4
HALT

:INITIALIZE KERNEL STACK POINTER
:CHECK TEST SEQUENCE + INIT SR0
:TEST NUMBER
:TEST EXECUTED OUT OF SEQUENCE
:KEEP THE NUMBER OF LOOPS DOWN
:
:OFFSET KERNEL PAR/PDR PAIR 0 ONE BLOCK FROM BAN
:
:LOAD A BANK 0 ADDRESS
:TURN ON DESTINATION ONLY RELOCATION
:THIS TEST WILL FAIL IF BOTH ARE
:RELOCATED OR BOTH ARE NOT RELOCATED
:SOURCE AND DESTINATION BOTH ADDRESSED SAME LOCA
:TURN OFF DESTINATION-ONLY RELOCATION
:LOAD DESTINATION ADDRESS MINUS RELOCATION FACTO
:LOAD SOURCE ADDRESS
:TURN ON DESTINATION-ONLY RELOCATION
:USE SAME INSTRUCTION AND ADDRESS
:MODES AS BEFORE
:DESTINATION NOT RELOCATED OR INCORRECTLY
:RELOCATED OR SOURCE RELOCATED
:TURN OFF RELOCATION

003030 000005
003032 000401
003034 132465

RESET
BR .+4

DATA16: 132465

:SHOW THAT A DATO OF 0 TO BIT 8, SR0 THRU KERNEL PAGE 7 WILL
:CLEAR THE DESTINATION ONLY RELOCATION BIT AND TURN OFF DESTINATION ONLY RELOCATION

TEST16: SCOPE

003036 104400
003040 012706 001000
003044 004767 013246
003050 000016
003052 104006
003054 004767 012212
003060 012777 000001 176026
003066 012777 077406 176000
003074 012701 003034
003100 004767 013276
003104 016702 175714
003110 012777 000400 175706
003116 005012
003120 021111
003122 001401
003124 000000
003126 032777 000400 175670
003134 001402
003136 104006
003140 000005

MOV #KSTACK, SP
JSR PC, ORDER
16
HLT
JSR X7, CLRA11
MOV #1, #KPAIR0
MOV #77406, #KPAIR0
MOV #DATA16, R1
JSR PC, KERN7
MOV SR0, R2
MOV #400, JSR0
CLR #R2
CMP #R1, #R1
BEQ .+4
HALT
BIT #400, JSR0
BEQ .+6
HLT
RESET

:INITIALIZE KERNEL STACK POINTER
:CHECK TEST SEQUENCE + INIT SR0
:TEST NUMBER
:TEST EXECUTED OUT OF SEQUENCE
:INITIALIZE
:MAP KERNEL PAR/PDR PAIR 0
:TO BANK 0 OFFSET BY 1 PAGE
:USED TO PROVE KT11-D IS
:TURNED OFF AFTER CLEARING BIT 8, SR0
:SETUP R1 TO REFERENCE KERNEL PAR/PDR PAIR 0
:MAP KERNEL PAR/PDR 7 TO EXT BANK
:SETUP R2 TO ADDRESS SR0
:TURN ON DESTINATION ONLY RELOCATION
:CLEAR SR0 THRU KERNEL PAR/PDR PAIR7
:SHOW THAT KT11-D IS OFF
:
:KT11-D STILL ON
:SHOW THAT BIT 8, SR0 IS NOW ZERO
:
:DESTINATION ONLY RELOCATION BIT IS STILL ON
:MAKE SURE THAT KT11-D IS OFF

:SHOW THAT A DATO OF 0 TO BIT 8, SR0 THRU USER PAGE 7
:WILL TURN OFF DESTINATION - ONLY PAGING

003142 004767 012124

JSR X7, CLRA11

:INITIALLY CLEAR ALL PAR/PDR PAIRS

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 17
DBKTAC.P11

003146	012777	000001	175700	MOV	81, 2UPAR0	:MAP USER 0 TO
003154	012777	077406	175652	MOV	877406, 2UPDR0	:BANK 0 OFFSET BY 1 PAGE, RM
003162	012701	003034		MOV	8DATA16, R1	:SETUP R1 TO REFERENCE USER 0
003166	012777	007600	175676	MOV	87600, 2UPAR7	:MAP USER 7 TO THE
003174	012777	077406	175650	MOV	877406, 2UPDR7	:EXTERNAL BANK
003202	016702	175616		MOV	SRO, R2	:SETUP R2 TO ADDRESS SRO
003206	012737	140000	177776	MOV	8140000, 28PS	:SET MODE TO USER
003214	012777	000400	175602	MOV	8400, 2SRO	:TURN ON DESTINATION - ONLY PAGING
003222	005012			CLR	2R2	:CLEAR SRO THRU USER ASR7
003224	021111			CMP	2R1, 2R1	:SHOW THAT KT11-D IS OFF
003226	001401			BEG	.+4	
003230	000777			BR	.	:PRELOCATION STILL ON

:SHOW THAT ALL PAGE BOUNDARY REFERENCES REFERENCE THE CORRECT PAR
:AND RELOCATE CORRECTLY
:USE DESTINATION - ONLY PAGING
:MAP ALL PAR/PDR PAIR'S RESIDENT READ WRITE

003232	104400			RO	- POINTS TO THE ADDRESS OF THE CURRENT PAR IN THE ADDRESS TABLE	
003234	012706	001000		R1	- CONTAINS VIRTUAL ADDRESS BEING USED TO REFERENCE START OF PAGE	
003240	004767	013052		R2	- CONTAINS VIRTUAL ADDRESS BEING USED TO REFERENCE END OF PAGE	
003244	000017			R3		
003246	104006			R4		
003250	004767	012016		R5	- USED TO REFERENCE SRO TO TURN OFF DESTINATION ONLY PAGING	
003254	004767	012036		TEST17: SCOPE		
003260	013767	017700	175672	MOV	8KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
003266	013767	017776	175666	JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SRO
003274	012737	123456	017700	17		:TEST NUMBER
003302	012737	134567	017776	HLT		:TEST EXECUTED OUT OF SEQUENCE
003310	012703	001012		JSR	x7, CLRAL	:INITIALIZE
003314	012704	001014		JSR	x7, RMALL	:MAKE ALL PAR/PDR PAIR'S RM, BANK 0, 4K
003320	012767	000100	012242	MOV	2817700, SAVEA	:SAVE CONTENTS OF LOCATIONS TO BE USED
003326	012737	140000	177776	MOV	2817776, SAVEB	
003334	012706	000400		MOV	8123456, 2817700	:SET UP LOCATIONS TO BE REFERENCED
003340	005037	177776		MOV	8134567, 2817776	
003344	012767	001144	175602	MOV	8K123, R3	
003352	017700	175576		MOV	8K134, R4	
003356	062700	000020		MOV	8100, 1COUNT	:CHANGE ITERATION COUNT
003362	062767	000002	175564	MOV	8140000, 28PS	:CHANGE TO USER
003370	017737	175560	177776	MOV	8USTACK, SP	:SET UP USER STACK POINTER
003376	062767	000002	175550	CLR	28PS	:RETURN TO KERNEL
003404	012767	000010	175544	MOV	8STATAB, STAPNT	:SET UP TO REFERENCE STATE TABLE
003412	012770	007600	000016	MOV	2STAPNT, RD	:PICK UP ADDRESS OF START OF
003420	016705	175400		ADD	820, RD	:ADDRESS TABLE FOR NEW STATE
003424	005001			ADD	82, STAPNT	
003426	012702	000076		MOV	2STAPNT, 28PS	:SET UP NEW STATE
003432	012767	000200	175536	ADD	82, STAPNT	
003440	012770	000177	000000	MOV	88, 1PAGES	:SET UP COUNTER OF ASR'S LEFT TO TEST
003446	022767	000001	175502	MOV	87600, 216(RD)	:SET UP SEGMENTED REFERENCE TO SRO
				MOV	SRO, R5	:USED TO TURN DESTINATION - ONLY PAGING OFF
				CLR	R1	
				MOV	876, R2	
				MOV	8128, 1BLOCKS	:SET UP BLOCK COUNT
				MOV	8177, 2(RD)	:SET UP PAR
				CMP	81, 1PAGES	:IS THIS PAGE 7? (WAS USED FOR REFERENCE TO SRO)

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 18
DBKTAC.P11

003454	001005			BNE	BLK20				
003456	012770	007600	177776	MOV	87600, 2-2(R0)				: IF NOT, BRANCH
003464	042705	020000		BIC	820000, R5				: YES, SET UP PAGE 6 FOR REFERENCES TO SRO
003470	012777	000400	175326	MOV	8400, 2SR0	BLK20:			: CHANGE R5 TO POINT TO SRO THRU PAR/PDR PAIR6
003476	021311			CMP	2R3, 2R1				: TURN ON DESTINATION ONLY PAGING
003500	001401			BEQ	.+4				: CK BOTTOM PAGE BOUNDARY
003502	000000			HALT					: RELOCATION FAILED
003504	021412			CMP	2R4, 2R2				: CK UPPER PAGE BOUNDARY
003506	001401			BEQ	.+4				: RELOCATION FAILED
003510	000000			HALT					: TURN OFF KT11-0
003512	005015			CLR	2RS				: MAP PAR 1 PAGE LOWER
003514	005370	000000		DEC	2(R0)				: SET UP R1 AND R2 TO REFERENCE
003520	062701	000100		ADD	8100, R1				: NEXT VIRTUAL PAGE
003524	062702	000100		ADD	8100, R2				: DECREMENT COUNT OF PAGES LEFT
003530	005367	175442		DEC	BLOCKS				: BRANCH IF NOT DONE WITH THIS PAR/PDR PAIR
003534	001355			BNE	BLK20				
003536	005070	000000		CLR	2(R0)				: DECREMENT COUNT OF PAR/PDR PAIR'S LEFT
003542	005367	175410		DEC	PAGES				: BRANCH IF ALL PAR/PDR PAIR'S IN THIS STATE DONE
003546	001402			BEQ	END20				: MOVE ADDRESS TABLE POINTER
003550	005720			TST	(R0)+				
003552	000727			BR	PAG20				: CHECK FOR ALL STATES TESTED
003554	026727	175374	001152	CMP	STAPNT, #STAEND	END20:			: IF NOT, BRANCH
003562	003673			BLE	STAT20				: IF DONE, REINITIALIZE
003564	005037	177776		CLR	2#PS				
003570	005077	175230		CLR	2SR0				
003574	016727	175360	017700	MOV	SAVEA, 817700				
003602	016727	175354	017776	MOV	SAVEB, 817776				
003610	016777	175352	175346	MOV	KTSTA, 2KTVEC				
003616	005077	175344		CLR	2KTSTA				

: SHOW THAT THE INSTRUCTIONS USED IN THE NEXT TEST RELOCATE CORRECTLY IN
: DESTINATION ONLY RELOCATION

003622	104400			TEST20: SCOPE					
003624	012706	001000		MOV	#KSTACK, SP				: INITIALIZE KERNEL STACK POINTER
003630	004767	012462		JSR	PC, ORDER				: CHECK TEST SEQUENCE + INIT SRO
003634	000020			20					: TEST NUMBER
003636	104006			HLT					: TEST EXECUTED OUT OF SEQUENCE
003640	012767	002000	011722	MOV	82000, ICOUNT				: RESTORE ITERATION COUNT
003646	004767	011420		JSR	X7, CLALL				: CLEAR ALL KT11-0 REGISTERS
003652	012777	000001	175234	MOV	81, 2KPAR0				: OFFSET KERNEL I-SPACE PAGE 0
003660	012777	077406	175206	MOV	877406, 2KPDRO				: BY 1 BLOCK FROM BANK 0
003666	004767	012510		JSR	PC, KERN7				: MAP KERNEL PAR/PDR 7 TO EXT BANK
003672	016701	175126		MOV	SR0, R1				: SETUP R1 TO REFERENCE SRO
003676	016746	000054		MOV	DST21A-100, -(SP)				
003702	016746	000052		MOV	DST21B-100, -(SP)				
003706	016746	000050		MOV	DST21C-100, -(SP)				
003712	005067	000140		CLR	DST21A				: INITIALIZE LOCATIONS TO BE
003716	012767	177777	000134	MOV	8-1, DST21B				: WRITTEN INTO
003724	012767	177777	000130	MOV	8-1, DST21C				
003732	012777	000400	175054	MOV	8400, 2SR0				: TURN ON DESTINATION - ONLY RELOCATION
003740	022737	176543	003642	CMP	8176543, 2#AD21A-100				: COMPARE THE CONTENTS OF AD21A
	003742			AD21A=-4					: WITH ITSELF, RELOCATED THRU KERNEL 0
003746	001401			BEQ	.+4				
003750	104006			HLT					: DESTINATION - ONLY RELOCATION FAILED
									: TO RELOCATE ONLY THE LAST CALCULATION
									: OF THE CMP INSTRUCTION

003752	122737	165432	003654	CMPB	#165432,2#AD21B-100	:COMPARE THE CONTENTS OF AD21B
003760	003754			AD21B=-4		:WITH ITSELF, RELOCATED THRU KERNEL 0
003762	001401			BEQ	.+4	
	104006			HLT		:DESTINATION - ONLY RELOCATION
						:FAILED TO RELOCATE ONLY THE FINAL
						:CALCULATION OF THE CMPB INSTRUCTION
						:EXECUTE REMAINING INSTRUCTIONS
003764	012737	077711	003756	MOV	#77711,2#DST21A-100	
003772	005077	000066		CLR	2#AD21C	
003776	105037	003762		CLRB	2#DST21C-100	
004002	005011			CLR	2#R1	:TURN OFF KT11-D
004004	022767	077711	000044	CMP	#77711,DST21A	:CHECK LOCATION ADDRESSED BY MOV
004012	001401			BEQ	.+4	
004014	104006			HLT		:MOV INSTRUCTION FAILED TO RELOCATE
						:ONLY THE FINAL ADDRESS CALCULATION
						:CHECK LOCATION ADDRESSED BY CLR
004016	005767	000036		TST	DST21B	
004022	001401			BEQ	.+4	
004024	104006			HLT		:CLR INSTRUCTION FAILED TO RELOCATE
						:CORRECTLY IN DESTINATION - ONLY RELOCATION
						:CHECK LOCATION ADDRESSED BY CLRB
004026	022767	177400	000026	CMP	#177400,DST21C	
004034	001401			BEQ	.+4	
004036	104006			HLT		:CLRB INSTRUCTION FAILED TO RELOCATE
						:CORRECTLY IN DESTINATION - ONLY RELOCATION
						:RESTORE LOCATIONS IN CASE OF ERROR
004040	012667	177716		MOV	(SP)+,DST21C-100	
004044	012667	177710		MOV	(SP)+,DST21B-100	
004050	012667	177702		MOV	(SP)+,DST21A-100	
004054	000404			BR	EXIT21	
004056	000000					
004060	000000					
004062	000000					
004064	003760					
004066	000240					
				DST21A:	0	
				DST21B:	0	
				DST21C:	0	
				AD21C:	DST21B-100	
				EXIT21:	NOP	
						:TEST OF RELOCATION ADDERS - CHECK CORRECT PROPAGATION OF CARRY, AND CORRECT
						:OUTPUT FOR EACH POSSIBLE COMBINATION FOR EACH BIT POSITION
						:USE DESTINATION - ONLY RELOCATION, KERNEL
						:TEST BY USING THE NECESSARY VALUE IN KERNEL PAR 1, WITH THE SECOND
						:NECESSARY VALUE BEING THE VIRTUAL ADDRESS REFERENCE TO KERNEL PAR 1
						:CHECK THE RESULTING PHYSICAL ADDRESS BY READING THE CONTENTS OF THE LOCATION,
						:AND WRITING INTO THE LOCATION
						:NOTE THAT THIS INCLUDES CHECKS OF ADDRESS WRAP AROUND
004070	104400			TEST21:	SCOPE	
004072	012706	001000		MOV	#KSTACK,SP	:INITIALIZE KERNEL STACK POINTER
004076	004767	012214		JSR	PC,ORDER	:CHECK TEST SEQUENCE + INIT SRD
004102	000021			21		:TEST NUMBER
004104	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
004106	004767	011160		JSR	X7,CLRALL	:CLEAR ALL KT11-D REGISTERS
004112	012777	077406	174754	MOV	#77406,2#KPD0	:MAP KERNEL 0 TO BANK 0, 4K, RW
004120	012777	077406	174750	MOV	#77406,2#KPD1	:MAKE KERNEL 1 4K, RW
004126	004767	012250		JSR	PC,KERN7	:MAP KERNEL PAR/PDR 7 TO EXT BANK
						:CHECK VIRTUAL ADDRESS OF 0 ADDED TO PAR OF -1 (FOR BIT POSITIONS
						:RELEVANT TO THE ADDERS ONLY)
004132	012777	007777	174756	MOV	#7777,2#KPAR1	:SET PAR TO -1
004140	012737	030000	177776	MOV	#30000,2#PS	:SET UP LOCATION TO BE REFERENCED
004146	012777	000400	174650	MOV	#400,2#SRD	:TURN ON DESTINATION - ONLY PAGING
004154	122737	000060	020077	CMPB	#60,2#20077	:CHECK HIGH BYTE OF RESULTING ADDRESS

PC	PC+1	PC+2	PC+3	PC+4	PC+5	PC+6	PC+7	PC+8	PC+9	PC+10	PC+11	PC+12	PC+13	PC+14	PC+15	PC+16	PC+17	PC+18	PC+19	PC+20	PC+21	PC+22	PC+23	PC+24	PC+25	PC+26	PC+27	PC+28	PC+29	PC+30	PC+31	PC+32	PC+33	PC+34	PC+35	PC+36	PC+37	PC+38	PC+39	PC+40	PC+41	PC+42	PC+43	PC+44	PC+45	PC+46	PC+47	PC+48	PC+49	PC+50	PC+51	PC+52	PC+53	PC+54	PC+55	PC+56	PC+57	PC+58	PC+59	PC+60	PC+61	PC+62	PC+63	PC+64	PC+65	PC+66	PC+67	PC+68	PC+69	PC+70	PC+71	PC+72	PC+73	PC+74	PC+75	PC+76	PC+77	PC+78	PC+79	PC+80	PC+81	PC+82	PC+83	PC+84	PC+85	PC+86	PC+87	PC+88	PC+89	PC+90	PC+91	PC+92	PC+93	PC+94	PC+95	PC+96	PC+97	PC+98	PC+99	PC+100	PC+101	PC+102	PC+103	PC+104	PC+105	PC+106	PC+107	PC+108	PC+109	PC+110	PC+111	PC+112	PC+113	PC+114	PC+115	PC+116	PC+117	PC+118	PC+119	PC+120	PC+121	PC+122	PC+123	PC+124	PC+125	PC+126	PC+127	PC+128	PC+129	PC+130	PC+131	PC+132	PC+133	PC+134	PC+135	PC+136	PC+137	PC+138	PC+139	PC+140	PC+141	PC+142	PC+143	PC+144	PC+145	PC+146	PC+147	PC+148	PC+149	PC+150	PC+151	PC+152	PC+153	PC+154	PC+155	PC+156	PC+157	PC+158	PC+159	PC+160	PC+161	PC+162	PC+163	PC+164	PC+165	PC+166	PC+167	PC+168	PC+169	PC+170	PC+171	PC+172	PC+173	PC+174	PC+175	PC+176	PC+177	PC+178	PC+179	PC+180	PC+181	PC+182	PC+183	PC+184	PC+185	PC+186	PC+187	PC+188	PC+189	PC+190	PC+191	PC+192	PC+193	PC+194	PC+195	PC+196	PC+197	PC+198	PC+199	PC+200	PC+201	PC+202	PC+203	PC+204	PC+205	PC+206	PC+207	PC+208	PC+209	PC+210	PC+211	PC+212	PC+213	PC+214	PC+215	PC+216	PC+217	PC+218	PC+219	PC+220	PC+221	PC+222	PC+223	PC+224	PC+225	PC+226	PC+227	PC+228	PC+229	PC+230	PC+231	PC+232	PC+233	PC+234	PC+235	PC+236	PC+237	PC+238	PC+239	PC+240	PC+241	PC+242	PC+243	PC+244	PC+245	PC+246	PC+247	PC+248	PC+249	PC+250	PC+251	PC+252	PC+253	PC+254	PC+255	PC+256	PC+257	PC+258	PC+259	PC+260	PC+261	PC+262	PC+263	PC+264	PC+265	PC+266	PC+267	PC+268	PC+269	PC+270	PC+271	PC+272	PC+273	PC+274	PC+275	PC+276	PC+277	PC+278	PC+279	PC+280	PC+281	PC+282	PC+283	PC+284	PC+285	PC+286	PC+287	PC+288	PC+289	PC+290	PC+291	PC+292	PC+293	PC+294	PC+295	PC+296	PC+297	PC+298	PC+299	PC+300	PC+301	PC+302	PC+303	PC+304	PC+305	PC+306	PC+307	PC+308	PC+309	PC+310	PC+311	PC+312	PC+313	PC+314	PC+315	PC+316	PC+317	PC+318	PC+319	PC+320	PC+321	PC+322	PC+323	PC+324	PC+325	PC+326	PC+327	PC+328	PC+329	PC+330	PC+331	PC+332	PC+333	PC+334	PC+335	PC+336	PC+337	PC+338	PC+339	PC+340	PC+341	PC+342	PC+343	PC+344	PC+345	PC+346	PC+347	PC+348	PC+349	PC+350	PC+351	PC+352	PC+353	PC+354	PC+355	PC+356	PC+357	PC+358	PC+359	PC+360	PC+361	PC+362	PC+363	PC+364	PC+365	PC+366	PC+367	PC+368	PC+369	PC+370	PC+371	PC+372	PC+373	PC+374	PC+375	PC+376	PC+377	PC+378	PC+379	PC+380	PC+3
----	------	------	------	------	------	------	------	------	------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	------

004410	012777	000400	174406	MOV	#400, 2SR0	: BE REFERENCED (0)
004416	022737	043434	037700	CMP	#43434, 2#37700	: TURN ON DESTINATION-ONLY PAGING
004424	001013			BNE	ERR220	: ALL HIGH BITS OF VA ARE 1, ADDED TO
004426	012737	000002	037700	MOV	#2, 2#37700	: A ONE IN LOWEST BIT OF PAR TO PROPAGATE
004434	005077	174364		CLR	2SR0	: CARRY - RESULTING PHYSICAL ADDRESS 0
004440	022737	000002	000000	CMP	#2, 2#0	: BRANCH ON FAILURE
004446	001401			BEQ	.+4	: WRITE SAME LOCATION
004450	104006			HLT		: TURN OFF KT11-D
004452	000406			BR	CNT22E	: CHECK LOCATION WHICH SHOULD HAVE
004454	005077	174344		CLR	2SR0	: BEEN REFERENCED
004460	104006			HLT		: RELOCATION FAILED WHEN WRITING PA 0
004462	012737	000002	000000	MOV	#2, 2#0	: GO TO NEXT CHECK
						: TURN OFF KT11-D
						: RELOCATION FAILED IN THE COMPARE
						: AT LOCATION ADR220
						: RESTORE LOCATION REFERENCED
						: CHECK VIRTUAL ADDRESS -1 ADDED TO PAR OF -1
						: SHOULD GIVE RESULTING PA 17677
						: NOTE THAT THIS IS A CASE OF ADDRESS WRAP AROUND
004470	012777	007777	174420	CNT22E: MOV	#7777, 2KPAR1	: SET UP PAR TO -1
004476	013746	017676		MOV	2#17676, -(SP)	: SAVE CONTENTS OF LOCATION TO BE
004502	012737	076767	017676	MOV	#76767, 2#17676	: REFERENCED
004510	012777	000400	174306	MOV	#400, 2SR0	: LOAD LOCATION TO BE REFERENCED
004516	122737	000175	037777	CMPB	#175, 2#37777	: TURN ON DESTINATION-ONLY PAGING
004524	001012			BNE	ERR22E	: READ LOCATION (VA=-1, PAR=-1)
004526	105037	037777		CLRB	2#37777	: SHOULD GIVE PA 17677 (THRU KERNEL PAR1)
004532	005077	174266		CLR	2SR0	: BRANCH ON FAILURE
004536	022737	000367	017676	CMP	#367, 2#17676	: WRITE SAME LOCATION
004544	001401			BEQ	.+4	: TURN OFF KT11-D
004546	104006			HLT		: CHECK TO SEE IF CORRECT LOCATION
004550	000403			BR	END22E	: WAS CLEARED (HIGH BYTE)
004552	005077	174246		CLR	2SR0	: RELOCATION FAILED WHEN CLEARING
004556	104006			HLT		: PHYSICAL ADDRESS 17667 (THRU
						: KERNEL PAR1)
						: TURN OFF KT11-D
						: RELOCATION FAILED IN THE COMPARE AT
						: LOCATION ADR22E
004560	012637	017676		END22E: MOV	(SP)+, 2#17676	: RESTORE LOCATION REFERENCED
						: SHOW THAT SETTING SR0(0) TURNS ON FULL RELOCATION
						: SHOW THAT ALL ADDRESS CALCULATIONS ARE RELOCATED
						: SHOW THAT INIT CLEARS SR0(0) AND TURNS OFF RELOCATION
004564	104400			TEST22: SCOPE		: INITIALIZE KERNEL STACK POINTER
004566	012706	001000		MOV	#KSTACK, SP	: CHECK TEST SEQUENCE + INIT SR0
004572	004767	011520		JSR	PC, ORDER	: TEST NUMBER
004576	000022			22		: TEST EXECUTED OUT OF SEQUENCE
004600	104006			HLT		: DROP ITERATION COUNT
004602	012767	000010	010760	MOV	#10, ICOUNT	: INITIALLY CLEAR ALL KT11-D REGISTERS
004610	004767	010456		JSR	%7, CLRAL	: MAP KERNEL PAGE 0 TO
004614	012777	000001	174272	MOV	#1, 2KPAR0	: BANK 0 OFFSET BY 1 BLOCK
004622	012777	077406	174244	MOV	#77406, 2KPDRO	: MAP KERNEL PAR/PDR 7 TO EXT BANK
004630	004767	011546		JSR	PC, KERN7	: INITIALIZE LOCATION TO BE REFERENCED
004634	012767	052525	013050	MOV	#52525, DESTAD	: TURN ON RELOCATION
004642	012777	000001	174154	MOV	#1, 2SR0	

Address	Instruction	Comments
004650	000000	ADD23: HALT
004652	000000	HALT
004654	000000	HALT
004656	000000	HALT
004660	000000	HALT
004662	000000	HALT
004664	032777	000001 174132 BIT #1, SRO
004672	001401	BEQ .+4
004674	104006	HLT
004676	005077	174122 CLR SRO
004702	000432	BR EXIT23
004750	022737	052525 017612 CMP #52525, D#DESTAD-100
004756	001401	BEQ .+4
004760	000000	HALT
004762	000005	RESET
004764	000000	HALT
004766	000777	BR
004770	000240	EXIT23: NOP
;SHOW THAT A DATO OF 0 TO SRO<0> WILL CLEAR SRO<0> AND ;TURN OFF RELOCATION		
004772	104400	TEST23: SCOPE
004774	012706	001000 MOV #KSTACK, SP
005000	004767	011312 JSR PC, ORDER
005004	000023	23
005006	104006	HLT
005010	012767	002000 010552 MOV #2000, ICOUNT
005016	004767	010250 JSR %7, CLALL
005022	012777	000001 174064 MOV #1, KPAR
005030	012777	077406 174036 MOV #77406, KPDRO
005036	004767	011340 JSR PC, KERN7
005042	012777	000001 173754 MOV #1, SRO
005050	000000	ADD24: HALT
005052	000000	HALT
005054	000000	HALT
005056	000240	NOP
075060	000240	NOP
005062	032777	000001 173734 BIT #1, SRO
005070	001401	BEQ .+4
005072	104006	HLT
005074	000433	BR EXIT24
005150	042777	000001 173646 BIC #1, SRO
005156	000000	HALT
005160	000005	RESET

005162 000777
005164 000240BR
EXIT24: NOP

;SHOW THAT A REFERENCE TO A NON-RESIDENT PAGE
;WILL ABORT TO THE KT11-D ABORT VECTOR ADDRESS (250)
;WITH BIT 15 OF SRO SET. SRO AND SR2 ARE CHECKED FOR
;THE CORRECT VALUES, AS ARE KPDR0 AND KPDR1
;SHOW THAT BIT 15 OF SRO CAN BE CLEARED
;SHOW THAT SR2 IS READ ONLY

005166 104400
005170 012706 001000
005174 004767 011116
005200 000024
005202 104006
005204 004767 010062
005210 012777 077406 173656
005216 004767 011160
005222 012777 005256 173734
005230 005077 173732
005234 012704 020000
005240 005277 173560
005244 005724
005246 000000
005250 005077 173550
005254 000442
005256 017701 173542
005262 005377 173536
005266 022701 100003
005272 001401
005274 104006

TEST24: SCOPE

MOV #KSTACK, SP
JSR PC, ORDER
24
HLT
JSR X7, CLALL
MOV #77406, KPDR0
JSR PC, KERN7
MOV #INT25, KTVEC
CLR #KTSTA
MOV #20000, R4
INC #SRO
TST (R4)+
ADR25: HALT
ADR25A: HALT
CLR #SRO
BR DON25
INT25: MOV #SRO, R1
DEC #SRO
CMP #100003, R1
BEQ .+4
HLT

;INITIALIZE KERNEL STACK POINTER
;CHECK TEST SEQUENCE + INIT SRO
;TEST NUMBER
;TEST EXECUTED OUT OF SEQUENCE
;CLEAR ALL KT11-D REGISTERS
;MAP KERNEL 0 TO BANK 0, RW 4K
;MAP KERNEL PAR/PDR 7 TO EXT BANK
;SETUP RETURN VECTOR

;USE R4 TO REFERENCE NR KERNEL 1
;TURN ON KT11-D
;REFERENCE NR KERNEL 1
;SHOULD HAVE ABORTED ALREADY
;TURN OFF KT11-D

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

;SRO INCORRECT AFTER NR ABORT
;(SEE SAVED CONTENTS IN R1)
;CK SR2

;SR2 INCORRECT-SHOULD CONTAIN ADDRESS
;OF LAST FETCH BEFORE THE ABORT
;TRY TO WRITE INTO SR2
;SR2 SHOULD BE READ ONLY

;SR2 NOT READ ONLY

;KERNEL PDR 0 INCORRECT
;W BIT SHOULD HAVE BEEN SET BY THE STACK WRITE

;KERNEL PDR 1 INCORRECT
;CHECK VALUE PUSHED ON STACK

;INCORRECT VALUE ON STACK
;RESTORE STACK
;CHANGE TRAP VECTOR TO CAUSE A
;HALT ON A FALSE TRAP

DON25:

CLR #KTSTA

MOV #KTSTA, KTVEC
;SHOW THAT WRITING A PAGE WILL SET THE W BIT IN THE CORRESPONDING
;PDR, AND THAT NO OTHER W BITS SET AT THE SAME TIME
;SHOW THAT WRITING THE PDR (VIA A DATO) WILL CLEAR THE W BIT

005276 022777 005244 173526
005304 001401
005306 104006
005310 005077 173516
005314 022777 005244 173510
005322 001401
005324 104006
005326 022777 077506 173540
005334 001401
005336 104006
005340 005777 173532
005344 001401
005346 104006
005350 021627 005246
005354 001401
005356 104006
005360 022626
005362 005077 173600
005366 016777 173574 173570


```

;SINCE THIS IS DONE FOR ALL PDR'S, THIS IS ALSO
;A TEST OF INDIRECT ADDRESSING (VIA A VIRTUAL ADDRESS) OF THE PDR'S
TEST25: SCOPE
005374 104400
005376 012706 001000
005402 004767 010710
005406 000025
005410 104006
005412 012767 000400 010150
005420 004767 007672
005424 004767 010752
005430 012777 007600 173434
005436 012737 140000 177776
005444 012706 000400
005450 005037 177776
005454 012704 001034
005460 012705 000010
005464 022734 077406
005470 001401
005472 104006

005474 077505
005476 062704 000020
005502 020427 001132
005506 003001
005510 000763
005512 012700 001144
005516 012001
005520 012702 017776
005524 012037 177776
005530 005277 173270
005534 011212
005536 005077 173262
005542 032771 000100 000000
005550 001001
005552 104006
005554 012703 001034
005560 012704 000010
005564 020103
005566 001405
005570 032773 000100 000000
005576 001401
005600 104006

005602 005723
005604 077411
005606 062703 000020
005612 020327 001132
005616 002760
005620 012771 077406 000000
005626 032771 000100 000000
005634 001401
005636 104006

005640 005721

;INITIALIZE KERNEL STACK POINTER
;CHECK TEST SEQUENCE + INIT SRD
;TEST NUMBER
;TEST EXECUTED OUT OF SEQUENCE
;LOAD ITERATION COUNT
;MAP ALL PAR/PDR PAIR'S 4K, BANK 0, RW
;MAP KERNEL PAR/PDR 7 TO EXT BANK
;MAP USER 7 TO EXTERNAL BANK
;SET MODE TO USER
;SET UP USER STACK
;REINITIALIZE STATUS TO KERNEL MODE

;LOAD R4 WITH ADDRESS OF ADR TABLE
;INIT COUNTER OF PDR'S LEFT TO CHECK
;CHECK ALL PDR W BITS BITS CLEAR
;PDR INCORRECT - W BIT SET OR ANOTHER
;BIT INCORRECT IN PDR WHOSE ADDRESS
;IS IN THE LOCATION POINTED TO BY R4
;MOVE POINTER TO FIRST ADR OF NEXT SET

;BRANCH IF DONE

;SET UP START OF STATE TABLE
;R1 CONTAINS ADDRESS OF PDR OF ADDRESS
;SET UP VIRTUAL ADDRESS TO BE REFERENCED
;SET UP STATUS FOR CURRENT MODE
;TURN ON KT11-D
;REFERENCE PAGE TO SET W BIT
;TURN OFF KT11-D
;CHECK W BIT

;W BIT NOT SET IN PDR AFTER PAGE WRITTEN
;SET UP ADDRESS OF ADDRESS TABLE
;NOW CHECK ALL PDR TO SHOW NO OTHER
;W BITS WERE SET

;W BIT SET IN THE PDR WHOSE ADDRESS IS POINTED T
;AS WELL AS THE W BIT IN THE PDR
;FOR THE PAGE THAT WAS WRITTEN
;UPDATE ADDRESS POINTER
;TEST NEW PDR
;UPDATE POINTER TO NEXT SET

;CLEAR W BIT VIA DATO TO PDR
;CHECK W BIT

;W BIT DIDN'T CLEAR WHEN PDR
;WAS WRITTEN (ADDRESS OF ADDRESS
;OF PDR IS IN R1)
;UPDATF POINTER

MOV #KSTACK, SP
JSR PC, ORDER
25
HLT
MOV #400, ICOUNT
JSR X7, R4ALL
JSR PC, KERN7
MOV #7600, JUPAR7
MOV #140000, J#PS
MOV #USTACK, R6
CLR J#PS
MOV #ADRTAB, R4
LOP31A: MOV #10, R5
LOP31B: CMP #77406, J(R4)+
        BEQ .+4
        HLT

SOB R5, LOP31B
ADD #20, R4
CMP R4, #ADREND
BGT CNT31A
BR LOP31A
CNT31A: MOV #STATAB, R0
LOP31C: MOV (R0)+, R1
        MOV #17776, R2
        MOV (R0)+, J#PS
LOP31D: INC JSR0
        MOV (R2), (R2)
        CLR JSR0
        BIT #100, J(R1)
        BNE .+4
        HLT
        MOV #ADRTAB, R3
LOP31E: MOV #10, R4
LOP31F: CMP R1, R3
        BEQ CNT31B
        BIT #100, J(R3)
        BEQ .+4
        HLT

CNT31B: TST (R3)+
        SOB R4, LOP31F
        ADD #20, R3
        CMP R3, #ADREND
        BLT LOP31E
        MOV #77406, J(R1)
        BIT #100, J(R1)
        BEQ .+4
        HLT

TST (R1)+

```


005642	062702	020000		ADD	#20000,R2	;	CHANGE VA TO REFERENCE NEXT PAGE
005646	103330			BCC	LOP31D	;	BRANCH TO TEST NEXT PAGE IN THIS MODE
005650	020027	001152		CMP	RD,#STAEND	;	IF DONE THIS MODE, CHECK NEXT MODE
005654	002720			BLT	LOP31C	;	LOOP UNTIL ALL STATES HAVE BEEN TESTED
005656	005077	173142		CLR	JSRO	;	REINITIALIZE SRO

;

SHOW THAT A REFERENCE TO A NR PAGE WILL SET BOTH THE NR AND PL

ERROR BITS IF IT IS OUTSIDE THE MAPPED PAGE LENGTH

005662	104400			TEST26: SCOPE				
005664	012706	001000		MOV	#KSTACK, SP	;	INITIALIZE KERNEL STACK POINTER	
005670	004767	010422		JSR	PC, ORDER	;	CHECK TEST SEQUENCE + INIT SRO	
005674	000026			26		;	TEST NUMBER	
005676	104006			HLT		;	TEST EXECUTED OUT OF SEQUENCE	
005700	004767	007412		JSR	%7, RWall	;	MAP ALL PAGES RW, 4K, BANK 0	
005704	012777	000004	173164	MOV	#4, AKPDR1	;	MAP KERNEL 1 NR, 1 PAGE	
005712	004767	010464		JSR	PC, KERN7	;	MAP KERNEL PAR/PDR 7 TO EXT BANK	
005716	012777	005742	173240	MOV	#RET33, AKTVEC	;	SETUP ABORT RETURN	
005724	005077	173236		CLR	AKTSTA			
005730	005277	173070		INC	JSRO	;	TURN ON KT11-D	
005734	005737	030000		TST	#30000	;	REFERENCE NR KERNEL 1 - SHOULD ABORT	
005740	000000			HALT		;	NO NR ABORT	
005742	022777	140003	173054	RET33: CMP	#140003, JSRO	;	CHECK SRO	
005750	001401			BEQ	.+4			
005752	104006			HLT		;	SRO INCORRECT - SHOULD SHOW KERNEL	
						;	PAGE 1, AND BOTH NR + PL ERRORS SET	
005754	005077	173044		CLR	JSRO			
005760	016777	173202	173176	MOV	KTSTA, AKTVEC	;	RESTORE TRAP CATCHER	

;

SHOW THAT KERNEL AND USER STACKS ARE ACCESSED CORRECTLY. AN IOT IS DONE TO

EACH MODE. THE LOCATION WRITTEN INTO WHEN THE STACK IS PUSHED

SHOWS WHICH STACK WAS USED.

005766	104400			TEST27: SCOPE				
005770	012706	001000		MOV	#KSTACK, SP	;	INITIALIZE KERNEL STACK POINTER	
005774	004767	010316		JSR	PC, ORDER	;	CHECK TEST SEQUENCE + INIT SRO	
006000	000027			27		;	TEST NUMBER	
006002	104006			HLT		;	TEST EXECUTED OUT OF SEQUENCE	
006004	004767	007262		JSR	%7, CLWall	;	INITIALIZE ALL KT11-D REGISTERS	
006010	012706	000500		MOV	#500, SP	;	SET THE KERNEL STACK TO VIRTUAL ADDRESS 500	
006014	012737	140000	177776	MOV	#140000, APS			
006022	012706	000100		MOV	#100, SP	;	SET THE USER STACK TO VA 100	
006026	005037	177776		CLR	APS			
006032	012777	077406	173034	MOV	#77406, AKPDR0	;	MAP KERNEL, AND USER TO BANK 0, 4K, RW	
006040	012777	077406	172766	MOV	#77406, AKPDR0			
006046	012737	006114	000020	MOV	#KRET34, A#20	;	TEST USING IOT TRAP (THRU KERNEL SPACE)	
006054	005037	000022		CLR	A#22	;	RETURN FROM TRAP IN KERNEL MODE	
006060	016701	172740		MOV	SRO, R1	;	REFERENCE SRO THRU R1	
006064	004767	010312		JSR	PC, KERN7	;	MAP KERNEL PAR/PDR 7 TO EXT BANK	
006070	012777	077406	172754	MOV	#77406, AKPDR7	;	MAP USER PAGE 7	
006076	012777	007600	172766	MOV	#7600, AKPAR7	;	TO THE EXTERNAL BANK	
006104	005277	172714		INC	JSRO	;	TURN ON KT11-D	
006110	000004			IOT		;	SHOULD USE STACK IN KERNEL ADDRESS SPACE	
006112	000240			NOP				
006114	005011			KRET34: CLR	A#1	;	TURN OFF KT11-D	
006116	012737	006150	000020	MOV	#URET34, A#20	;	SETUP FOR IOT TO USER	
006124	012737	140000	000022	MOV	#140000, A#22			
006132	012737	140000	177776	MOV	#140000, APS			

006140	005277	172660		INC	2SR0		:TURN ON KT11-D
006144	000004			NOT			:SHOULD USE STACK IN USER SPACE
006146	000240			NOP			
006150	005011			CLR	2R1		:TURN OFF KT11-D
006152	022737	006112	000474	CMP	#KRET34-2,2#474		
006160	001401			BEQ	.+4		
006162	104006			HLT			:KERNEL STACK CONTENTS WRONG. PC NOT WHERE IT
006164	022737	000000	000476	CMP	#0,2#476		:SHOULD HAVE BEEN PUSHED OR
006172	001401			BEQ	.+4		:VALUE WRONG
006174	104006			HLT			:KERNEL STACK WRONG-TRAP STATUS NOT
006176	022737	006146	000074	CMP	#URET34-2,2#74		:NOT WHERE IT SHOULD HAVE BEEN PUSHED
006204	001401			BEQ	.+4		:OR VALUE WRONG
006206	104006			HLT			:USER STACK WRONG-PC NOT WHERE
006210	022737	140000	000076	CMP	#140000,2#76		:IT SHOULD HAVE BEEN PUSHED
006216	001401			BEQ	.+4		:OR VALUE WRONG
006220	104006			HLT			:USER STACK WRONG-TRAP STATUS
							:NOT WHERE IT SHOULD HAVE BEEN
							:PUSHED OR VALUE WRONG
							:REINITIALIZE LOCATIONS CHECKED
006222	012737	000076	000074	MOV	#76,2#74		
006230	005037	000076		CLR	2#76		
006234	012737	000476	000474	MOV	#476,2#474		
006242	005037	000476		CLR	2#476		
006246	012706	001000		MOV	#KSTACK,SP		

:SHOW THAT TRAP, EMT, AND INTERRUPTS TAKE VECTORS FROM KERNEL
:IRREGARDLESS OF THE MODE AT THE TIME OF THE TRAP SEQUENCE
:ALSO SHOW THAT ODD-ADDRESS TRAP (AN "INTERNAL"
:TRAP) TAKES ITS VECTOR FROM KERNEL
:NOTE THAT IF DUAL ADDRESSING OCCURS, THE ERROR
:ADDRESS WILL BE USED (THE 0 OVERRIDES THE 1)

006252	104400			TEST30: SCOPE			
006254	012706	001000		MOV	#KSTACK,SP		:INITIALIZE KERNEL STACK POINTER
006260	004767	010032		JSR	PC,ORDER		:CHECK TEST SEQUENCE + INIT SR0
006264	000030			30			:TEST NUMBER
006266	104006			HLT			:TEST EXECUTED OUT OF SEQUENCE
006270	005077	172530		CLR	2SR0		
006274	004767	007016		JSR	X7,RWALL		:MAP ALL PAR/PDR PAIR'S RW, 4K, BANK 0
006300	012777	000001	172546	MOV	#1,2UPAR0		:OFFSET USER 0 1 PAGE
006306	004767	010070		JSR	PC,KERN7		:MAP KERNEL PAR/PDR 7 TO EXT BANK
006312	012777	007600	172552	MOV	#7600,2UPAR7		:MAP USER 7 TO THE EXTERNAL BANK
006320	016701	172500		MOV	SR0,R1		:SETUP R1 TO REFERENCE SR0
006324	012737	140000	177776	MOV	#140000,2#PS		:SETUP USER STACK
006332	012706	000400		MOV	#USTACK,SP		
006336	005037	177776		CLR	2#PS		
006342	012706	001000		MOV	#KSTACK,SP		:SETUP THE KERNEL STACK POINTER
006346	012737	006506	000130	MOV	#NG358,2#130		:SETUP FAILURE RETURN
006354	012737	006524	000030	MOV	#OK358,2#30		:SETUP SUCCESS RETURN
006362	005037	000132		CLR	2#132		
006366	005037	000032		CLR	2#32		
006372	012737	140000	177776	MOV	#140000,2#PS		:SET MODE TO USER
006400	005277	172420		INC	2SR0		:TURN ON KT11-D
006404	000000			0			
006406	000000			0			
006410	000000			0			
006412	000000			0			
006414	000000			0			


```

006416 000000
006420 000000
006422 000000
006424 000000
006426 000000
006430 000000
006432 000000
006434 000000
006436 000000
006440 000000
006442 000000
006444 000000
006446 000000
006450 000000
006452 000000
006454 000000
006456 000000
006460 000000
006462 000000
006464 000000
006466 000000
006470 000000
006472 000000
006474 000000
006476 000000
006500 000000
006502 000000
006504 104000
006506 022626
006510 005011
006512 012737
006520 104006
006522 000402
006524 022626
006526 005011
006530 012737
006536 012737
006544 012737
006552 005037
006556 012737
006564 012737
006572 005037
006576 005037
006602 012737
006610 005277
006614 000000
006616 000000
006620 000000
006622 000000
006624 000000
006626 000000
006630 000000
006632 000000
006634 000000
006636 000000
006640 000000

```

```

016246 000030
016246 000030
000340 000032
000132 000130
000132 000132
006716 000120
006726 000020
000122
000022
140000 177776
172210

```

NG35B:

OK35B:

IOT35:

```

ENT
CMP
CLR
MOV
HIT
BR
CMP
CLR
MOV
MOV
MOV
CLR
MOV
MOV
CLR
CLR
MOV
INC

```

```

(SP)+,(SP)+
R1
SEMTSRV,2#30
IOT35
(SP)+,(SP)+
R1
SEMTSRV,2#30
R340,2#32
R132,2#130
R132
RNC35C,2#120
ROK35C,2#20
R122
R22
R140000,2#PS
R5R0

```

```

;SHOULD PICK UP RETURN ADDRESS FROM KERNEL
;RESTORE STACK POINTER
;TURN OFF KT11-D

```

```

;ENT VECTOR DIDN'T GO THRU KERNEL

```

```

;RESTORE STACK POINTER
;TURN OFF KT11-D
;RESTORE ENT SERVICE POINTER

```

```

;SETUP IOT FAILURE RETURN
;SETUP IOT SUCCESS RETURN

```

```

;SET MODE TO USER
;TURN ON KT11-D

```


006642	000000
006644	000000
006646	000000
006650	000000
006652	000000
006654	000000
006656	000000
006660	000000
006662	000000
006664	000000
006666	000000
006670	000000
006672	000000
006674	000000
006676	000000
006700	000000
006702	000000
006704	000000
006706	000000
006710	000000
006712	000000
006714	000004
006716	022626
006720	005011
006722	104006
006724	000402
006726	022626
006730	005011
006732	012737
006740	005037
006744	012737
006752	005037
006756	012737
006764	012737
006772	005037
006776	005037
007002	012737
007010	005277
007014	000000
007016	000000
007020	000000
007022	000000
007024	000000
007026	000000
007030	000000
007032	000000
007034	000000
007036	000000
007040	000000
007042	000000
007044	000000
007046	000000
007050	000000
007052	000000
007054	000000
007056	000000

[illegible]

INT35:

000022	000020
000022	
000122	000120
000122	
007140	000164
007154	000064
000166	
000066	
140000	177776
172010	

```
(SP)+,(SP)+
AR1
INT35
(SP)+,(SP)+
AR1
$22,$20
$22
$122,$120
$122
$NC350,$164
$OK350,$64
$166
$66
$140000,$PS
$SR0
```

```

;SHOULD PICK UP RETURN ADDRESS FROM KERNEL
;RESTORE STACK POINTER
;TURN OFF KT11-D
;TRAP VECTOR DIDN'T GO THRU KERNEL

;RESTORE STACK POINTER
;TURN OFF KT11-D

;SETUP TTY FAILURE RETURN
;SETUP TTY SUCCESS RETURN

;SET MODE TO USER
;TURN ON KT11-D

```


[illegible]

[illegible]

```

;SHOW THAT THE ABORT LOGIC "LOCKS" SR0 AND SR2 AFTER A NR
;ABORT UNTIL THE CORRESPONDING ABORT BIT IS CLEARED IN SR0, WHEN
;THEY RESUME TRACKING. A NR ERROR SHOULD STILL ABORT TO 250 EVEN
;WHEN BIT 15 (SR0) IS ALREADY SET
TEST31: SCOPE

```

ADDRESS	HEX	ASSEMBLY	OPERANDS	COMMENT
007422	104400			
007424	012706	001000		
007430	004767	006662		
007434	000031			
007436	104006			
007440	004767	005626		
007444	004767	006732		
007450	012777	077406	171416	
007456	012777	077400	171412	
007464	012777	007520	171472	
007472	005077	171470		
007476	005277	171322		
007502	013737	037776	037776	ADR36:
007510	005077	171310		
007514	104006			
007516	000510			
007520	042777	000001	171276	INT36:
007526	022777	100002	171270	
007534	001401			
007536	104006			

ADDRESS	HEX	ASSEMBLY	OPERANDS	COMMENT
TEST31:		SCOPE		
		MOV	%STACK, SP	
		JSR	PC, ORDER	
		31		
		HLT		
		JSR	%7, CLRALL	
		JSR	PC, KERN7	
		MOV	%77406, %KPDRO	
		MOV	%77400, %KPDRI	
		MOV	%INT36, %KTVEC	
		CLR	%KTSTA	
		INC	%SRO	
		MOV	%37776, %37776	
		CLR	%SRO	
		HLT		
		BR	DONE36	
		BIC	%1, %SRO	
		CMP	%100002, %SRO	
		BEQ	.+4	
		HLT		

ADDRESS	HEX	ASSEMBLY	OPERANDS	COMMENT
				INITIALIZE KERNEL STACK POINTER
				CHECK TEST SEQUENCE + INIT SRO
				TEST NUMBER
				TEST EXECUTED OUT OF SEQUENCE
				CLEAR ALL KT11-D REGISTERS
				MAP KERNEL PAR/PDR 7 TO EXT BANK
				MAP KERNEL 0 RM, RK, BANK0
				MAP KERNEL 1 NR, 4 K, BANK0
				SETUP RETURN VECTOR
				TURN ON KT11-D
				REFERENCE KERNEL 1 - 1ST ABORT
				TURN OFF KT11-D
				REFERENCE TO KERNEL 1
				DIDN'T ABORT
				TURN OFF KT11-D
				CHECK SRO
				SRO INCORRECT AFTER NR ABORT

007540	012777	007574	171416	MOV	%INT36A,%KTVEC	SETUP NEW RETURN VECTOR
007546	022626			CHP	(R6)+,(R6)+	RESTORE STACK POINTER
007550	012702	037776		MOV	%37776,R2	SETUP R2 TO REFERENCE KERNEL 1
007554	052777	000001	171242	BIS	%1,%SR0	TURN ON KT11-0
007562	012242			MOV	(R2)+,-(R2)	REFERENCE KERNEL 1 -2ND ABORT
007564	005077	171234		ADR36A: CLR	%SR0	;TURN OFF KT11-0
007570	104006			HLT		2ND REFERENCE TO KERNEL 1
007572	000462			BR	DONE36	DIDN'T ABORT
007574	042777	000001	171222	INT36A: BIC	%1,%SR0	;TURN OFF KT11-0
007602	022777	100002	171214	CHP	%100002,%SR0	;CHECK SR0
007610	001401			BEQ	.+4	
007612	104006			HLT		SR0 INCORRECT AFTER 2ND NR ABORT
007614	022777	007502	171210	CHP	%ADR36,%SR2	;CHECK SR2
007622	001401			BEQ	.+4	
007624	104006			HLT		SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
007626	021627	007564		CHP	(R6),%ADR36A	;CHECK ADDRESS PUSHED ON STACK
007632	001401			BEQ	.+4	
007634	104006			HLT		INCORRECT ADDRESS ON STACK
007636	022626			CHP	(R6)+,(R6)+	RESTORE STACK POINTER
007640	012777	007674	171316	MOV	%INT36B,%KTVEC	CHANGE RETURN ADDRESS
007646	005077	171152		CLR	%SR0	CLEAR NR ERROR BIT-SHOULD
						"UNLOCK" ERROR TRACKING
007652	012702	037776		MOV	%37776,R2	SETUP R2 TO REFERENCE KERNEL 1
007656	005277	171142		INC	%SR0	TURN ON KT11-0
007662	012242			ADR36B: MOV	(R2)+,-(R2)	3RD NR REFERENCE, ERROR BIT WAS CLEARED
007664	005077	171134		ADR36C: CLR	%SR0	;TURN OFF KT11-0
007670	104006			HLT		3RD REFERENCE TO KERNEL 1
007672	000422			BR	DONE36	DIDN'T ABORT
007674	042777	000001	171122	INT36B: BIC	%1,%SR0	;TURN OFF KT11-0
007702	022777	100002	171114	CHP	%100002,%SR0	;CHECK SR0
007710	001401			BEQ	.+4	
007712	104006			HLT		SR0 INCORRECT
007714	022777	007662	171110	CHP	%ADR36B,%SR2	;CHECK SR2
007722	001401			BEQ	.+4	
007724	104006			HLT		SR2 INCORRECT - SHOULD CONTAIN
						LAST FETCH ADDRESS BEFORE ABORT
007726	022716	007664		CHP	%ADR36C,(SP)	;CHECK STACK
007732	001401			BEQ	.+4	
007734	104006			HLT		PC ON STACK INCORRECT
007736	022626			CHP	(R6)+,(R6)+	RESTORE STACK POINTER
007740	005077	171060		DONE36: CLR	%SR0	CLEAR ERROR BIT
007744	005077	171216		CLR	%KTSTA	CHANGE TRAP RETURN TO CAUSE A HALT
007750	016777	171212	171206	MOV	%KTSTA,%KTVEC	ON A FALSE INTERRUPT
						SHOW THAT THE ABORT LOGIC "LOCKS" SR0 AND SR2 AFTER A PL
						ABORT UNTIL THE CORRESPONDING ABORT BIT IS CLEARED IN SR0 WHEN
						THEY RESUME TRACKING. A PL ERROR SHOULD STILL ABORT TO 250 EVEN
						WHEN BIT 14 (SR0) IS ALREADY SET
007756	104400			TEST32: SCOPE		
007760	012706	001000		MOV	%KSTACK,SP	INITIALIZE KERNEL STACK POINTER
007764	004767	006326		JSR	PC,ORDER	CHECK TEST SEQUENCE + INIT SR0
007770	000032			32		TEST NUMBER
007772	104006			HLT		TEST EXECUTED OUT OF SEQUENCE
007774	004767	005272		JSR	%7,CLRALL	CLEAR ALL KT11-0 REGISTERS
010000	004767	006376		JSR	PC,KERN7	MAP KERNEL PAR/PDR 7 TO EXT BANK
010004	012777	077406	171062	MOV	%77406,%KPDRO	MAP KERNEL 0 RW,RK,BANK0

010012	012777	017406	171056	MOV	017406, 0KPDR1	;MAP KERNEL 1 PL 1 K, BANK0
010020	012777	010054	171136	MOV	0INT37, 0KTVEC	;SETUP RETURN VECTOR
010026	005077	171134		CLR	0KTSTA	
010032	005277	170766		INC	0SR0	;TURN ON KT11-D
010036	013737	037776	037776	ADR37: MOV	037776, 037776	;REFERENCE KERNEL 1 - 1ST ABORT
010044	005077	170754		CLR	0SR0	;TURN OFF KT11-D
010050	104006			HLT		;REFERENCE TO KERNEL 1
010052	000510			BR	DONE37	;DIDN'T ABORT
010054	042777	000001	170742	INT37: BIC	01, 0SR0	;TURN OFF KT11-D
010062	022777	040002	170734	CHP	040002, 0SR0	;CHECK SR0
010070	001401			BEQ	.+4	
010072	104006			HLT		;SR0 INCORRECT AFTER PL ABORT
010074	012777	010130	171062	MOV	0INT37A, 0KTVEC	;SETUP NEW RETURN VECTOR
010102	022626			CHP	(R6)+, (R6)+	;RESTORE STACK POINTER
010104	012702	037776		MOV	037776, R2	;SETUP R2 TO REFERENCE KERNEL 1
010110	052777	000001	170706	BIS	01, 0SR0	;TURN ON KT11-D
010116	012242			MOV	(R2)+, -(R2)	;REFERENCE KERNEL 1 -2ND ABORT
010120	005077	170700		ADR37A: CLR	0SR0	;TURN OFF KT11-D
010124	104006			HLT		;2ND REFERENCE TO KERNEL 1
010126	000462			BR	DONE37	;DIDN'T ABORT
010130	042777	000001	170666	INT37A: BIC	01, 0SR0	;TURN OFF KT11-D
010136	022777	040002	170660	CHP	040002, 0SR0	;CHECK SR0
010144	001401			BEQ	.+4	
010146	104006			HLT		;SR0 INCORRECT AFTER 2ND PL ABORT
010150	022777	010036	170654	CHP	0ADR37, 0SR2	;CHECK SR2
010156	001401			BEQ	.+4	
010160	104006			HLT		;SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
010162	021627	010120		CHP	(R6), 0ADR37A	;CHECK ADDRESS PUSHED ON STACK
010166	001401			BEQ	.+4	
010170	104006			HLT		;INCORRECT ADDRESS ON STACK
010172	022626			CHP	(R6)+, (R6)+	;RESTORE STACK POINTER
010174	012777	010230	170762	MOV	0INT37B, 0KTVEC	;CHANGE RETURN ADDRESS
010202	005077	170616		CLR	0SR0	;CLEAR PL ERROR BIT-SHOULD
						;UNLOCK ERROR TRACKING
010206	012702	037776		MOV	037776, R2	;SETUP R2 TO REFERENCE KERNEL 1
010212	005277	170606		INC	0SR0	;TURN ON KT11-D
010216	012242			ADR37B: MOV	(R2)+, -(R2)	;3RD PL REFERENCE, ERROR BIT WAS CLEARED
010220	005077	170600		ADR37C: CLR	0SR0	;TURN OFF KT11-D
010224	104006			HLT		;3RD REFERENCE TO KERNEL 1
010226	000422			BR	DONE37	;DIDN'T ABORT
010230	042777	000001	170566	INT37B: BIC	01, 0SR0	;TURN OFF KT11-D
010236	022777	040002	170560	CHP	040002, 0SR0	;CHECK SR0
010244	001401			BEQ	.+4	
010246	104006			HLT		;SR0 INCORRECT
010250	022777	010216	170554	CHP	0ADR37B, 0SR2	;CHECK SR2
010256	001401			BEQ	.+4	
010260	104006			HLT		;SR2 INCORRECT - SHOULD CONTAIN
						;LAST FETCH ADDRESS BEFORE ABORT
010262	022716	010220		CHP	0ADR37C, (SP)	;CHECK STACK
010266	001401			BEQ	.+4	
010270	104006			HLT		;PC ON STACK INCORRECT
010272	022626			CHP	(R6)+, (R6)+	;RESTORE STACK POINTER
010274	005077	170524		CLR	0SR0	;CLEAR ERROR BIT
010300	005077	170662		CLR	0KTSTA	;CHANGE TRAP RETURN TO CAUSE A HALT
010304	016777	170656	170652	MOV	KTSTA, 0KTVEC	;ON A FALSE INTERRUPT

SHOW THAT THE ABORT LOGIC "LOCKS" SR0 AND SR2 AFTER A ACC
ABORT UNTIL THE CORRESPONDING ABORT BIT IS CLEARED IN SR0, WHEN
THEY RESUME TRACKING. A ACC ERROR SHOULD STILL ABORT TO 250 EVEN
WHEN BIT 13 (SR0) IS ALREADY SET
TEST33: SCOPE

010312	104400				MOV	%STACK, SP		INITIALIZE KERNEL STACK POINTER
010314	012706	001000			JSR	PC, ORDER		CHECK TEST SEQUENCE + INIT SR0
010320	004767	005772			33			TEST NUMBER
010324	000033				HLT			TEST EXECUTED OUT OF SEQUENCE
010326	104006				JSR	X7, CLALL		CLEAR ALL KT11-D REGISTERS
010330	004767	004736			JSR	PC, KERN7		MAP KERNEL PAR/PDR 7 TO EXT BANK
010334	004767	006042			MOV	%77406, %KPDOR0		MAP KERNEL 0 RM, RK, BANK0
010340	012777	077406	170526		MOV	%77402, %KPDOR1		MAP KERNEL 1 ACC, 4 K, BANK0
010346	012777	077402	170522		MOV	%INT40, %KTVEC		SETUP RETURN VECTOR
010354	012777	010410	170602		CLR	%KTSTA		
010362	005077	170600			INC	%SR0		TURN ON KT11-D
010366	005277	170432			MOV	%37776, %37776		REFERENCE KERNEL 1 - 1ST ABORT
010372	013737	037776	037776	ADR40:	CLR	%SR0		TURN OFF KT11-D
010400	005077	170420			HLT			REFERENCE TO KERNEL 1
010404	104006				BR	DONE40		DIDN'T ABORT
010406	000510				BIC	%1, %SR0		TURN OFF KT11-D
010410	042777	000001	170406	INT40:	CMF	%20002, %SR0		CHECK SR0
010416	022777	020002	170400		BEQ	+.4		
010424	001401				HLT			SR0 INCORRECT AFTER ACC ABORT
010426	104006				MOV	%INT40A, %KTVEC		SETUP NEW RETURN VECTOR
010430	012777	010464	170526		CMF	(R6)+, (R6)+		RESTORE STACK POINTER
010436	022626				MOV	%37776, R2		SETUP R2 TO REFERENCE KERNEL 1
010440	012702	037776			BIS	%1, %SR0		TURN ON KT11-D
010444	052777	000001	170352		MOV	(R2)+, -(R2)		REFERENCE KERNEL 1 - 2ND ABORT
010452	012242				CLR	%SR0		TURN OFF KT11-D
010454	005077	170344		ADR40A:	HLT			2ND REFERENCE TO KERNEL 1
010460	104006				BR	DONE40		DIDN'T ABORT
010462	000462				BIC	%1, %SR0		TURN OFF KT11-D
010464	042777	000001	170332	INT40A:	CMF	%20002, %SR0		CHECK SR0
010472	022777	020002	170324		BEQ	+.4		
010500	001401				HLT			SR0 INCORRECT AFTER 2ND ACC ABORT
010502	104006				CMF	%ADR40, %SR2		CHECK SR2
010504	022777	010372	170320		BEQ	+.4		
010512	001401				HLT			SR2 DOESN'T CONTAIN VALUE FROM 1ST ABORT
010514	104006				CMF	(R6), %ADR40A		CHECK ADDRESS PUSHED ON STACK
010516	021627	010454			BEQ	+.4		
010522	001401				HLT			INCORRECT ADDRESS ON STACK
010524	104006				CMF	(R6)+, (R6)+		RESTORE STACK POINTER
010526	022626				MOV	%INT40B, %KTVEC		CHANGE RETURN ADDRESS
010530	012777	010564	170426		CLR	%SR0		CLEAR ACC ERROR BIT-SHOULD
010536	005077	170262						"UNLOCK" ERROR TRACKING
010542	012702	037776			MOV	%37776, R2		SETUP R2 TO REFERENCE KERNEL 1
010546	005277	170252			INC	%SR0		TURN ON KT11-D
010552	012242				MOV	(R2)+, -(R2)		3RD ACC REFERENCE, ERROR BIT WAS CLEARED
010554	005077	170244		ADR40B:	CLR	%SR0		TURN OFF KT11-D
010560	104006			ADR40C:	HLT			3RD REFERENCE TO KERNEL 1
010562	000422				BR	DONE40		DIDN'T ABORT
010564	042777	000001	170232	INT40B:	BIC	%1, %SR0		TURN OFF KT11-D
010572	022777	020002	170224		CMF	%20002, %SR0		CHECK SR0
010600	001401				BEQ	+.4		
010602	104006				HLT			SR0 INCORRECT

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 34
DBKTAC.P11

```

010604 022777 010552 170220      CMP      #ADR40B,SR2      ;CHECK SR2
010612 001401                      BEQ          .+4
010614 104006                      HLT
                                ;SR2 INCORRECT - SHOULD CONTAIN
                                ;LAST FETCH ADDRESS BEFORE ABORT
                                ;CHECK STACK
010616 022716 010554              CMP      #ADR40C,(SP)
010622 001401                      BEQ          .+4
010624 104006                      HLT
010626 022626                      CMP      (R6)+,(R6)+
010630 005077 170170      DONE40: CLR      SR0
010634 005077 170326          CLR      KTSTA
010640 016777 170322 170316      MOV      KTSTA,KTVEC
                                ;PC ON STACK INCORRECT
                                ;RESTORE STACK POINTER
                                ;CLEAR ERROR BIT
                                ;CHANGE TRAP RETURN TO CAUSE A HALT
                                ;ON A FALSE INTERRUPT
                                ;SHOW THAT INIT CLEARS SR0(13-15)
010646 104400      TEST34: SCOPE
010650 012706 001000      MOV      #KSTACK,SP
010654 004767 005436      JSR      PC,ORDER
                                ;INITIALIZE KERNEL STACK POINTER
                                ;CHECK TEST SEQUENCE + INIT SR0
010660 000034                      34
010662 104006                      HLT
                                ;TEST NUMBER
                                ;TEST EXECUTED OUT OF SEQUENCE
010664 112777 000340 170134      MOV      #340,SR0H
010672 122777 000340 170126      CMP      #340,SR0H
                                ;SET SR0 BITS 13-15
                                ;MAKE SURE THEY SET CORRECTLY
010700 001401                      BEQ          .+4
010702 104006                      HLT
                                ;SR0 INCORRECT (HIGH BYTE)
010704 000005                      RESET
                                ;ISSUE INIT
010706 122777 000000 170112      CMP      #0,SR0H
                                ;CHECK SR0 HIGH BYTE
010714 001401                      BEQ          .+4
010716 104006                      HLT
                                ;SR0 INCORRECT AFTER INIT
010720 012767 000010 004642      MOV      #10,ICOUNT
                                ;DROP ITERATION COUNT
                                ;SHOW THAT INIT CLEARS SR0 AFTER ABORT
010726 104400      TEST35: SCOPE
010730 012706 001000      MOV      #KSTACK,SP
010734 004767 005356      JSR      PC,ORDER
                                ;INITIALIZE KERNEL STACK POINTER
                                ;CHECK TEST SEQUENCE + INIT SR0
010740 000035                      35
010742 104006                      HLT
                                ;TEST NUMBER
                                ;TEST EXECUTED OUT OF SEQUENCE
010744 004767 004346 170116      JSR      X7,RWALL
010750 012777 000416          MOV      #416,PKPDR0
                                ;MAP ALL PAR/PDR PAIR'S 4K,RW,BANK 0
                                ;MAP KERNEL 0 RW,4K LESS 1 PAGE
                                ;DOWN (100-17776 RW)
                                ;MAP KERNEL PAR/PDR 7 TO EXT BANK
010756 004767 005420          JSR      PC,KERN7
010762 012777 077400 170106      MOV      #77400,PKPDR1
010770 012777 011024 170166      MOV      #RET2,KTVEC
                                ;MAP KERNEL PAGE 1 NR
                                ;SETUP ABORT RETURN
010776 005077 170164          CLR      KTSTA
011002 012746 000020          MOV      #20,-(SP)
                                ;SET T BIT IN STATUS ON STACK
011006 012746 011020          MOV      #ADR2,-(SP)
                                ;SETUP ADDRESS ON STACK
011012 005277 170006          INC      SR0
                                ;TURN ON KT11-D
                                ;SHOULD TRACE TRAP IMMEDIATELY SINCE T-BIT
                                ;IS SET - SINCE T-BIT VECTOR IS OUTSIDE ALLOWED
                                ;PAGE LENGTH, SHOULD DO A MEMORY
                                ;MANAGEMENT ABORT
011016 000002          RTI
                                ;NO PL ABORT OCCURRED
011020 000000      ADR2:  HALT
011022 000412          BR      DONE2
011024 022777 040001 167772      RET2: CMP      #40001,SR0
011032 001401                      BEQ          .+4
011034 104006                      HLT
                                ;CHECK SR0
                                ;SR0 INCORRECT - SHOULD SHOW
                                ;REFERENCE TO KERNEL 0
                                ;AND PL ABORT SHOULD BE SET
                                ;ISSUE INIT - SHOULD CLEAR SR0
011036 000005          RESET

```



```

011040 005777 167760          TST      2SR0          ;CHECK SR0
011044 001401          BEQ      .+4
011046 104006          HLT
011050 005077 167750          CLR      2SR0          ;SR0 INCORRECT AFTER INIT
011054 016777 170106 170102 DONE2: MOV      KTSTA,2KTVEC ;REINITIALIZE SR0
011062 012737 000016 000014 MOV      2SR0,2SR0 ;RESTORE T-BIT TRAP CATCHER

;SHOW THAT INIT CLEARS SR0(0-3,5-6)
;REFERENCE NR USER PAGE 7 TO SET ALL BITS(0-6)
;THEN ISSUE INIT
TEST36: SCOPE
011070 104400          MOV      2KSTACK,SP          ;INITIALIZE KERNEL STACK POINTER
011072 012706 001000          JSR      PC,ORDER          ;CHECK TEST SEQUENCE + INIT SR0
011076 004767 005214          36          ;TEST NUMBER
011102 000036          HLT          ;TEST EXECUTED OUT OF SEQUENCE
011104 104006          JSR      X7,RWALL          ;MAP ALL PAR/PDR PAIR'S INITIALLY RW,4K,
011106 004767 004204          BANK 0
;MAKE USER 7 NR
;MAP KERNEL PAR/PDR 7 TO EXT BANK
011112 012777 077400 167732 MOV      277400,2UPDR7
011120 004767 005256          JSR      PC,KERN7
011124 012777 011162 170032 MOV      2RET3,2KTVEC ;SETUP ABORT RETURN
011132 005077 170030          CLR      2KTSTA
011136 012737 140000 177776 MOV      2140000,22PS ;SET MODE TO USER
011144 012706 000400          MOV      2USTACK,R6 ;SETUP USER STACK IN CASE NEEDED
011150 005277 167650          INC      2SR0          ;TURN ON KT11-D
011154 005737 160000          TST      22160000 ;REFERENCE PAGE 7
011160 000777          BR
011162 022777 100157 167634 RET3: CMP      2100157,2SR0 ;NO ABORT ON NR REFERENCE
011170 001401          BEQ      .+4 ;CHECK SR0
011172 104006          HLT          ;SR0 INCORRECT - SHOULD HAVE TRACKED
;NR REFERENCE TO USER 7
;ISSUE INIT
;CHECK SR0
011174 000005          RESET
011176 005777 167622          TST      2SR0
011202 001401          BEQ      .+4
011204 104006          HLT          ;SR0 INCORRECT AFTER INIT
011206 005077 167612          CLR      2SR0
011212 012767 000010 004350 MOV      210,ICOUNT ;DROP ITERATION COUNT
011220 016777 167742 167736 MOV      KTSTA,2KTVEC

;SHOW THAT BYTE ADDRESSING OF SR0 WORKS
TEST37: SCOPE
011226 104400          MOV      2KSTACK,SP          ;INITIALIZE KERNEL STACK POINTER
011230 012706 001000          JSR      PC,ORDER          ;CHECK TEST SEQUENCE + INIT SR0
011234 004767 005056          37          ;TEST NUMBER
011240 000037          HLT          ;TEST EXECUTED OUT OF SEQUENCE
011242 104006          JSR      X7,RWALL          ;MAP ALL PAR/PDR PAIRS RW,4K,BANK 0
011244 004767 004046          JSR      PC,KERN7          ;MAP KERNEL PAR/PDR 7 TO EXT BANK
011250 004767 005126          MOV      2160001,2SR0 ;TURN ON KT11-D AND SET ERROR FLAGS
011254 012777 160001 167542 CLR      2SR0 ;DATOB (LOW) TO SR0
011262 105077 167536          BIT      2160000,2SR0 ;CHECK SR0
011266 032777 160000 167530 BNE      .+4
011274 001001          HLT          ;SR0 INCORRECT AFTER DATOB
011276 104006          MOV      2160001,2SR0 ;DATOB (HIGH) TO SR0
011300 012777 160001 167516 CLR      2SR0H ;CHECK SR0
011306 105077 167514          CMP      217,2SR0
011312 022777 000017 167504 BEQ      .+4
011320 001401          HLT
011322 104006

```


K03

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 36
DBKTAC.P11

011324 005077 167474

CLR JSR0

;SHOW THAT SRO <1-3> TRACK PAGE REFERENCED IF
 ;KT11-D IS ON AND REFERENCE IS NOT TO A KT11-D REGISTER
 ;SHOW THAT EACH VALUE IS CORRECTLY "LOCKED" IN SRO AFTER AN ABORT

011330 104400
 011332 012706 001000
 011336 004767 004754
 011342 000040
 011344 104006
 011346 004767 003744
 011352 004767 005024
 011356 012777 011434 167600
 011364 005077 167576
 011370 016701 167440
 011374 005002
 011376 012703 100141
 011402 012704 000010
 011406 012711 077400
 011412 012737 140000 177776
 011420 005277 167400
 011424 005712
 011426 000777
 011430 000005
 011432 000423
 011434 017705 167364
 011440 005077 167360
 011444 020503
 011446 001401
 011450 104006
 011452 020167 167356
 011456 001002
 011460 012711 077406
 011464 022626
 011466 005721
 011470 062703 000002
 011474 062702 020000
 011500 077436
 011502 016777 167460 167454
 011510 005077 167452

TEST40: SCOPE
 MOV #KSTACK, SP ;INITIALIZE KERNEL STACK POINTER
 JSR PC, ORDER ;CHECK TEST SEQUENCE + INIT SRO
 40 ;TEST NUMBER
 HLT ;TEST EXECUTED OUT OF SEQUENCE
 JSR %7, RWall ;MAP KERNEL PAR/PDR 7 TO EXT BANK
 JSR PC, KERN7
 MOV #RETS, JKTVEC
 CLR JKTSTA
 MOV UPDR0, R1
 CLR R2
 MOV #100141, R3
 MOV #10, R4
 MOV #77400, JRI ;MAKE USER NR
 MOV #140000, JPS ;ENTER USER MODE
 INC JSR0
 TST JRI
 BR . ;REFERENCE TO NR PAGE DIDN'T ABORT
 RESET ;AFTER ERROR, TURN OFF KT11-D
 BR DONES
 RETS: MOV JSR0, RS ;SAVE CONTENTS OF SRO
 CLR JSR0 ;TURN OFF KT11-D
 CMP RS, R3 ;CHECK SAVED CONTENTS OF SRO
 BEQ .+4
 HLT ;SRO INCORRECT
 CMP R1, UPDR0 ;IS USER 0 UNDER TEST
 BNE LOPSA ;NO, CONTINUE
 MOV #77406, JRI ;MAKE USER 0 RESIDENT
 LOPSA: CMP (R6)+, (R6)+
 TST (R1)+
 ADD #2, R3
 ADD #20000, R2
 SOB R4, LOPSA
 DONES: MOV KTSTA, JKTVEC
 CLR JKTSTA

;SHOW THAT SRO <5-6> TRACK PAGE REFERENCED (MODE) IF
 ;KT11-D IS ON AND THE REFERENCE IS NOT TO A KT11-D REGISTER
 ;SHOW THAT EACH VALUE IS CORRECTLY "LOCKED" IN SRO AFTER AN ABORT

011514 104400
 011516 012706 001000
 011522 004767 004570
 011526 000041
 011530 104006
 011532 004767 003560
 011536 004767 004640
 011542 012777 077400 167326
 011550 012777 077400 167260
 011556 012777 011604 167400
 011564 005277 167234
 011570 005737 020000

TEST41: SCOPE
 MOV #KSTACK, SP ;INITIALIZE KERNEL STACK POINTER
 JSR PC, ORDER ;CHECK TEST SEQUENCE + INIT SRO
 41 ;TEST NUMBER
 HLT ;TEST EXECUTED OUT OF SEQUENCE
 JSR %7, RWall ;MAP ALL PAGES RW, 4K, BANK 0
 JSR PC, KERN7 ;MAP KERNEL PAR/PDR 7 TO EXT BANK
 MOV #77400, JKPDR1 ;SETUP PAGE 1 IN EACH MODE TO BE NR
 MOV #77400, JUPDR1
 MOV #RET7A, JKTVEC ;SETUP ABORT RETURN
 INC JSR0 ;TURN ON KT11-D
 TST J#20000 ;REFERENCE PAGE 1 (NR)


```

011574 005077 167224          CLR      2SR0          ;TURN OFF KT11-D
011600 104006          HLT              ;NR REFERENCE DIDN'T ABORT
011602 000436          BR              DONE7
011604 017701 167214      RET7A: MOV      2SR0,R1      ;SAVE SR0 CONTENTS IN R1
011610 005077 167210      CLR      2SR0          ;TURN OFF KT11-D
011614 022701 100003      CMP      2SR0,R1          ;CHECK SAVED CONTENTS OF SR0
011620 001401          BEQ      .+4
011622 104006          HLT              ;SR0 INCORRECT SHOULD SHOW NR ERR, KERNEL PAGE 1
011624 012777 011660 167332  MOV      2RET7C,2KTVEC  ;SETUP NEXT ABORT RETURN
011632 012737 140000 177776  MOV      2SR0,2PS      ;CHANGE MODE TO USER
011640 005277 167160      INC      2SR0          ;TURN ON KT11-D
011644 005737 020000      TST      2SR0          ;REFERENCE USER PAGE 1 (NR)
011650 005077 167150      CLR      2SR0          ;TURN OFF KT11-D
011654 104006          HLT              ;NR REFERENCE DIDN'T ABORT
011656 000410          BR              DONE7
011660 017701 167140      RET7C: MOV      2SR0,R1      ;SAVE CONTENTS OF SR0
011664 005077 167134      CLR      2SR0          ;TURN OFF KT11-D
011670 022701 100143      CMP      2SR0,R1          ;CHECK SAVED CONTENTS OF SR0
011674 001401          BEQ      .+4
011676 104006          HLT              ;SR0 INCORRECT - SHOULD SHOW NR
011700 016777 167262 167256 DONE7: MOV      KTSTA,2KTVEC ;ERROR, USER PAGE 1
;RESTORE TRAP CATCHER
;SHOW THAT SR0 <1-3,5-6> DOESN'T TRACK IF KT11-D IS OFF BUT DOES IF REFERENCE IS TO
;AN INTERNAL (KT11-D) REGISTER
011706 104400          TEST42: SCOPE
011710 012706 001000      MOV      2KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
011714 004767 004376      JSR      PC,ORDER      ;CHECK TEST SEQUENCE + INIT SR0
011720 000042          42              ;TEST NUMBER
011722 104006          HLT              ;TEST EXECUTED OUT OF SEQUENCE
011724 004767 003366      JSR      2X7,RWALL      ;SET ALL PAR/POR PAIRS RW, 4K, BANK 0
011730 012777 007600 167134  MOV      2SR0,2PAR7  ;MAP USER 7 TO THE EXT. BANK
011736 012737 140000 177776  MOV      2SR0,2PS      ;SET MODE TO USER
011744 005277 167054      INC      2SR0          ;TURN ON KT11-D
011750 042777 000001 167046  BIC      2SR0          ;TURN OFF KT11-D
011756 005037 177776      CLR      2PS          ;CHANGE TO KERNEL MODE
011762 022777 000156 167034  CMP      2SR0          ;CHECK SR0
011770 001401          BEQ      .+4
011772 104006          HLT              ;SR0 INCORRECT - SHOULD SHOW REFERENCE
;TO USER 7
;IF IT SHOWS USER 0
;IT DID NOT TRACK THE INTERNAL REFERENCE
;IF IT SHOWS KERNEL 0, IT IS
;TRACKING WITH KT11-D OFF
011774 005077 167024          CLR      2SR0
;SHOW THAT IF AN INSTRUCTION IS COMPLETED BEFORE A MEMORY MANAGEMENT FAULT
;OCCURS, SR2 WILL CONTAIN THE ADDRESS OF LAST FETCH BEFORE ABORT
;TO TEST THIS, TRACE TRAP IS USED. THE VECTOR IS MADE NON-RESIDENT BY MAKING
;KERNEL PAGE 0 MAPPED DOWN FROM 17776 TO 100. THUS THE MEMORY MANAGEMENT
;VECTOR IS RESIDENT WHILE THE TRACE TRAP VECTOR IS OUTSIDE THE ALLOWED
;PAGE LENGTH.
012000 104400          TEST43: SCOPE
012002 012706 001000      MOV      2KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
012006 004767 004304      JSR      PC,ORDER      ;CHECK TEST SEQUENCE + INIT SR0
012012 000043          43              ;TEST NUMBER

```


012014	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
012016	004767	003274		JSR	%7,RWALL	:INITIALIZE ALL PAGES RW,4K,BANK 0
012022	012777	000416	167044	MOV	#416,%KPDR0	:MAP KERNEL TO EXCLUDE
						:LOCATIONS 0 TO 77
012030	004767	004346		JSR	PC,KERN7	:MAP KERNEL PAR/PDR 7 TO EXT BANK
012034	012777	012072	167122	MOV	#RET11,%KTVEC	:SETUP MEMORY MANAGEMENT ABORT RETURN
012042	005077	167120		CLR	%KTSTA	
012046	012746	000020		MOV	#20,-(SP)	:PREPARE STACK TO TURN ON T-BIT
012052	012746	012060		MOV	#+6,-(SP)	
012056	000006			RTT		:SET T-BIT VIA RTT
012060	012777	000001	166736	ADR11: MOV	#1,%SRO	:TURN ON KT11-D - SHOULD
						:ATTEMPT TO TRACE TRAP AT END OF
						:INSTRUCTION - SHOULD GET A PAGE
						:LENGTH ERROR ON THAT ATTEMPT
						:NO PAGE LENGTH ERROR ON TRACE TRAP
012066	000000			HALT		
012070	000415			BR	CONT11	
012072	042777	000001	166724	RET11: BIC	#1,%SRO	:TURN OFF KT11-D
012100	022777	040000	166716	CMP	#40000,%SRO	:CK SRO
012106	001401			BEG	.+4	
012110	104006			HLT		:SRO INCORRECT - PL FAULT,KERNEL 0 REFERENCE COMPLETED
012112	022777	012060	166712	CMP	#ADR11,%SR2	:CK SR2
012120	001401			BEG	.+4	
012122	104006			HLT		:SR2 INCORRECT - SHOULD CONTAIN
						:ADDRESS OF LAST FETCH BEFORE ABORT
012124	005077	166674		CONT11: CLR	%SRO	:REINITIALIZE SRO
012130	016777	167032	167026	MOV	KTSTA,%KTVEC	:RESTORE TRAP CATCHER
						:SHOW THAT HAVING THE ABORT ERROR
						:BITS SET WILL NOT PREVENT A MEMORY MANAGEMENT TRAP
012136	104400			TEST44: SCOPE		
012140	012706	001000		MOV	#KSTACK,SP	:INITIALIZE KERNEL STACK POINTER
012144	004767	004146		JSR	PC,ORDER	:CHECK TEST SEQUENCE + INIT SRO
012150	000044			44		:TEST NUMBER
012152	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
012154	004767	003136		JSR	%7,RWALL	:INITIALIZE ALL PAR/PDR PAIRS TO RW,4K, BANK 0
012160	012777	077402	166712	MOV	#77402,%KPDR2	:SET KERNEL PAR/PDR PAIR 2 RRO,4K
012166	004767	004210		JSR	PC,KERN7	:MAP KERNEL PAR/PDR 7 TO EXT BANK
012172	012777	012234	166764	MOV	#RET13A,%KTVEC	:SETUP MEMORY MANAGEMENT ABORT RETURN
012200	005077	166762		CLR	%KTSTA	
012204	005277	166614		INC	%SRO	:TURN ON KT11-D
012210	012777	160001	166606	MOV	#160001,%SRO	:SET ABORT ERROR BITS
012216	013737	007000	047000	MOV	%#7000,%#47000	:WRITE KERNEL PAR/PDR PAIR 2 (RRO)-SHOULD TRAP
012224	005077	166574		CLR	%SRO	
012230	104006			HLT		:NO TRAP OCCURRED
012232	000416			BR	DONE13	
012234	022626			RET13A: CMP	(SP)+,(SP)+	:RESTORE THE STACK POINTER
012236	017701	166562		MOV	%SRO,R1	:SAVE CONTENTS OF SRO
012242	005077	166556		CLR	%SRO	:TURN OFF KT11-D
012246	022701	160017		CMP	#160017,R1	
012252	001401			BEG	.+4	
012254	104006			HLT		:SAVED CONTENTS OF SRO INCORRECT
012256	022777	077402	166614	CMP	#77402,%KPDR2	:CHECK THE PDR CORRESPONDING TO THE TRAP REFERENCE
012264	001401			BEG	.+4	
012266	104006			HLT		:THE PDR CORRESPONDING TO THE TRAP REFERENCE IS INCORREC
012270	016777	166672	166666	DONE13: MOV	KTSTA,%KTVEC	:RESTORE MEMORY MANAGEMENT TRAP RETURN
						:TO CAUSE A HALT ON A FALSE TRAP OR ABORT


```

012276 005077 166522          CLR      JSRO          ;REINITIALIZE SRO

;SHOW THAT MEMORY MANAGEMENT WILL NOT TRAP ON AN INTERNAL REFERENCE
TEST45: SCOPE
012302 104400          MOV      #KSTACK, SP          ;INITIALIZE KERNEL STACK POINTER
012304 012706 001000    JSR      PC, ORDER          ;CHECK TEST SEQUENCE + INIT SRO
012310 004767 004002    45          ;TEST NUMBER
012314 000045          HLT          ;TEST EXECUTED OUT OF SEQUENCE
012316 104006          JSR      %7, RWall          ;MAP ALL PAR/PDR PAIRS 4K, RW, BANK 0
012320 004767 002772    JSR      PC, KERN7          ;MAP KERNEL PAR/PDR 7 TO EXT BANK
012324 004767 004052    MOV      #RET16, &KTVEC      ;SETUP TRAP RETURN IN CASE
012330 012777 012372 166626    CLR      &KTSTA
012336 005077 166624    INC      JSRO          ;TURN ON KT11-D
012342 005277 166456    TST      JSRO          ;TRAP REFERENCE TO A KT11-D REGISTER
012346 005777 166452    CLR      JSRO
012352 005077 166446    CMP      #77406, &KPDR7
012356 022777 077406 166526    BEQ      .+4
012364 001401          HLT
012366 104006          BR      DONE16
012370 000404          RET16: BIC      #1, JSRO
012372 012777 000001 166424    HLT
012400 104006          DONE16: CLR      JSRO
012402 005077 166416          MOV      KTSTA, &KTVEC
012406 016777 166554 166550

;TEST PAGE LENGTH ERROR CHECKING (EXPAND DOWN NOT SET)
;KERNEL PAR/PDR PAIR1 IS USED WITH ALL PAGE LENGTH VALUES
;SHOW THAT REFERENCES TO BOTH BOUNDARIES OF THE ALLOWED AREA DON'T TRAP OR ABORT
;SHOW THAT A REFERENCE TO THE FIRST WORD BEYOND THE ALLOWABLE AREA DOES TRAP
TEST46: SCOPE
012414 104400          MOV      #KSTACK, SP          ;INITIALIZE KERNEL STACK POINTER
012416 012706 001000    JSR      PC, ORDER          ;CHECK TEST SEQUENCE + INIT SRO
012422 004767 003670    46          ;TEST NUMBER
012426 000046          HLT          ;TEST EXECUTED OUT OF SEQUENCE
012430 104006          JSR      %7, RWall          ;INITIALIZE ALL PAR/PDR PAIRS TO RW 4K, BANK 0
012432 004767 002660    JSR      PC, KERN7          ;MAP KERNEL PAR/PDR 7 TO EXT BANK
012436 004767 003740    MOV      #6, R2          ;R2 CONTAINS VALUE TO BE LOADED IN THE
012442 012702 000006          MOV      #20076, R1      ;PDR BEING CHECKED (INCLUDING PLF)
012446 012701 020076          MOV      #20076, R1      ;R1 IS USED TO REFERENCE THE TOP ADDRESS
012452 012777 012532 166504    MOV      #RET23A, &KTVEC  ;WITHIN THE ALLOWED AREA
012460 005077 166502    CLR      &KTSTA          ;SETUP ABORT RETURN IN CASE REFERENCE
012464 005277 166334    LOOP23: INC      JSRO        ;WITHIN ALLOWED AREA ABORTS
012470 010277 166402    MOV      R2, &KPDR1        ;TURN ON KT11-D
012474 005727 020000    TST      #20000          ;SET KERNEL PAR/PDR PAIR 1 TO NEW PAGE LENGTH
012500 005711          TST      &R1              ;READ LOWER BOUNDARY-SHOULDN'T ABORT
012502 012777 012552 166454    MOV      #RET23B, &KTVEC  ;READ UPPER ALLOWED BOUNDARY-SHOULDN'T
012510 020127 037776    CMP      R1, #37776        ;ABORT
012514 103041          SETUP ABORT RETURN
012516 005761 000002    BHIS     DONE23          ;CHECK FOR DONE (TO AVOID REFERENCING
                                ;NEXT PAR/PDR PAIR)
                                ;EXIT LOOP IF DONE
                                ;REFERENCE OUTSIDE ALLOWED AREA -
                                ;SHOULD ABORT
012522 005077 166276    CLR      JSRO          ;TURN KT11-D OFF
012526 104006          HLT          ;NO ABORT OCCURRED ON A REFERENCE
012530 000426          BR      CONT23          ;OUTSIDE THE ALLOWED PAGE LENGTH
012532 042777 000001 166264    RET23A: BIC      #1, JSRO  ;TURN OFF KT11-D

```


804

012540	022626			CMP	(SP)+, (SP)+	: RESTORE STACK POINTER
012542	104006			HLT		: REFERENCE WITHIN ALLOWED AREA
012544	005077	166254		CLR	JSRO	: CLEAR ERROR BITS
012550	000416			BR	CONT23	: CAUSED A TRAP OR ABORT
012552	022626			RET238:	CMP	: RESTORE STACK POINTER
012554	017703	166244		MOV	(SP)+, (SP)+	: SAVE CURRENT SRD
012556	005077	166240		CLR	JSRO, R3	: TURN OFF KT11-D
012558	022703	040003		CMP	JSRO	: CK SAVED SRD
012570	001401			BEQ	#40003, R3	
012572	104006			HLT	.+4	: CONTENTS OF SRD INCORRECT AFTER
012574	022777	000002	166222	CMP	#2, JSRO	: PAGE LENGTH ERROR ABORT
012602	001401			BEQ	.+4	: CHECK SRD TO BE SURE PL BIT CLEARED
012604	104006			HLT		
012606	062701	000100		CONT23:	ADD	: SRD INCORRECT AFTER CLEARING IT
012612	062702	000400			#100, R1	: ONLY KERNEL PAGE 1 SHOULD STILL BE SET
012616	000722					: SETUP R1 TO REFERENCE BOUNDARY OF
012620	005077	166200			#400, R2	: NEXT PAGE
012624	016777	166336	166332	DONE23:	BR	: ADD 1 TO VALUE TO BE LOADED IN
012632	005077	166330		CLR	LOOP23	: PAGE LENGTH FIELD
					JSRO	: CHECK NEXT PAGE LENGTH VALUE
					KTSTA, #KTVEC	: TURN OFF KT11-D
					KTSTA	: RESTORE MEMORY MANAGEMENT ABORT RETURN
						: TO CAUSE HALT ON A FALSE TRAP
						: OR ABORT

: TEST PAGE LENGTH ERROR CHECKING (EXPAND DOWN SET)
: KERNEL PAR/PDR PAIR1 IS TESTED WITH ALL VALUES OF PAGE LENGTH FIELD
: SHOW THAT REFERENCES TO BOTH BOUNDARIES OF THE ALLOWED AREA DON'T TRAP OR ABORT
: SHOW THAT A REFERENCE TO THE WORD IMMEDIATELY BELOW THE ALLOWED AREA DOES TRAP

012636	104400			TEST47:	SCOPE	
012640	012706	001000		MOV	#KSTACK, SP	: INITIALIZE KERNEL STACK POINTER
012644	004767	003446		JSR	PC, ORDER	: CHECK TEST SEQUENCE + INIT SRD
012650	000047			47		: TEST NUMBER
012652	104006			HLT		: TEST EXECUTED OUT OF SEQUENCE
012654	004767	002436		JSR	#7, RALL	: INITIALIZE ALL PAR/PDR PAIRS TO RM 4K, BANK 0
012660	004767	003516		JSR	PC, KERN7	: MAP KERNEL PAR/PDR 7 TO EXT BANK
012664	012702	077416		MOV	#77416, R2	: R2 CONTAINS VALUE TO BE LOADED IN THE
012670	012701	037700		MOV	#37700, R1	: PDR BEING CHECKING (INCLUDING PLF)
012674	012777	012754	166262	MOV	#RET24A, #KTVEC	: R1 IS USED TO REFERENCE THE LOWEST
012702	005077	166260		CLR	KTSTA	: ALLOWED ADDRESS IN THE PAGE
012706	005277	166112		LOOP24:	INC	: SETUP ABORT RETURN IN CASE REFERENCE
012712	010277	166160		MOV	JSRO	: WITHIN ALLOWED AREA ABORTS
012716	005727	037776		TST	R2, #KPDRI	: TURN ON KT11-D
012722	005711			TST	#37776	: SET KERNEL PAR/PDR PAIR 1 TO NEW PAGE LENGTH
012724	012777	012766	166232	MOV	#RET24B, #KTVEC	: REFERENCE UPPER ALLOWED BOUNDARY
012732	020127	020000		CMP	R1, #20000	: REFERENCE LOWER ALLOWED BOUNDARY
012736	001436			BEQ	DONE24	: - NEITHER REFERENCE SHOULD ABORT
012740	005761	177776		TST	-2(R1)	: SETUP ABORT RETURN
012744	005077	166054		CLR	JSRO	: CHECK FOR DONE
012750	104006			HLT		: EXIT LOOP IF DONE
012752	000423			BR	CONT24	: REFERENCE BELOW ALLOWED AREA -
012754	005077	166044		RET24A:	CLR	: SHOULD ABORT
					JSRO	: TURN KT11-D OFF
						: NO ABORT OCCURRED ON A REFERENCE
						: OUTSIDE THE ALLOWED PAGE LENGTH
						: TURN OFF KT11-D AND CLEAR

012760	022626			CMP	(SP)+, (SP)+	:ERROR BITS
012762	104006			HLT		:RESTORE STACK POINTER
012764	000416			BR	CONT24	:REFERENCE WITHIN ALLOWED AREA CAUSED
012766	022626			RET24B: CMP	(SP)+, (SP)+	:A TRAP OR ABORT
012770	017703	166030		MOV	3SR0, R3	:RESTORE STACK POINTER
012774	005077	166024		CLR	3SR0	:SAVE CURRENT SR0
013000	022703	040003		CMP	#40003, R3	:TURN OFF KT11-D
013004	001401			BEQ	.+4	:CK SAVED SR0
013006	104006			HLT		:CONTENTS OF SR0 INCORRECT AFTER
						:PAGE LENGTH ERROR ABORT
013010	022777	000002	166006	CMP	#2, 3SR0	:CHECK SR0 TO BE SURE PL BIT CLEARED
013016	001401			BEQ	.+4	
013020	104006			HLT		:SR0 INCORRECT AFTER CLEARING IT
013022	162701	000100		CONT24: SUB	#100, R1	:SETUP R1 TO REFERENCE BOUNDARY
						:OF NEXT PAGE DOWN
013026	162702	000400		SUB	#400, R2	:INCREASE ALLOWED PAGE LENGTH
						: (DOWN) BY 1 PAGE
013032	000725			BR	LOOP24	:CHECK NEXT PAGE LENGTH VALUE
013034	005077	165764		CLR	3SR0	:TURN OFF KT11-D
013040	016777	166122	166116	MOV	KTSTA, 3KTVEC	:RESTORE MEMORY MANAGEMENT ABORT RETURN
013046	005077	166114		CLR	3KTSTA	:TO CAUSE A HALT ON A FALSE TRAP
						:OR ABORT
						:TEST ALL COMBINATIONS OF VALUES FOR THE PAGE LENGTH COMPARATORS-
						:USE KERNEL PAGE PAGE 1
013052	104400			TEST50: SCOPE		
013054	012706	001000		MOV	3KSTACK, SP	:INITIALIZE KERNEL STACK POINTER
013060	004767	003232		JSR	PC, ORDER	:CHECK TEST SEQUENCE + INIT SR0
013064	000050			SO		:TEST NUMBER
013066	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
013070	012767	000020	002472	MOV	#20, ICOUNT	:DROP ITERATION COUNT
013076	004767	002214		JSR	X7, 3RALL	:INITIALIZE ALL PAGES RW, BANK 0
013102	004767	003274		JSR	PC, KERN7	:MAP KERNEL PAR/PDR 7 TO EXT BANK
013106	012777	013220	166050	MOV	3RET25, 3KTVEC	:SETUP ABORT RETURN
013114	005077	166046		CLR	3KTSTA	
013120	012701	000006		MOV	#6, R1	:R1 CONTAINS THE VALUE TO BE
						:LOADED INTO THE PDR
013124	012777	000001	165672	MOV	#1, 3SR0	:TURN ON KT11-D
013132	012703	020000		L25A: MOV	#20000, R3	:R3 CONTAINS VA USED
013136	010177	165734		MOV	R1, 3KPOR1	:LOAD NEW PAGE LENGTH FIELD
013142	010102			L25B: MOV	R1, R2	:R2 IS A COPY OF R1
013144	010304			MOV	R3, R4	:R4 IS A COPY OF R3
013146	042704	160000		BIC	#160000, R4	
013152	005713			TST	(R3)	:USE VA IN R3 TO REFERENCE PAGE 1
013154	000302			SWAB	R2	:NO TRAP-CHECK TO MAKE SURE
013156	042702	177400		BIC	#177400, R2	:VIRTUAL ADDRESS WAS WITHIN
013162	006304			ASL	R4	
013164	006304			ASL	R4	
013166	000304			SWAB	R4	
013170	020402			CMP	R4, R2	:ALLOWED PAGE LENGTH
013172	003401			BLE	.+4	:REFERENCE OUTSIDE ALLOWED PAGE LENGTH
013174	104006			HLT		:DIDN'T ABORT
013176	062703	000100		C25: ADD	#100, R3	
013202	020327	037776		CMP	R3, #37776	


```

013206 003755 BLE L258
013210 062701 000400 ADD #400,R1
013214 100346 BPL L25A
013216 000413 BR DONE25
013220 022626 RET25: CMP (SP)+,(SP)+ ;RESTORE STACK POINTER
013222 001302 SWAB R2 ;CHECK TO MAKE SURE VIRTUAL
013224 042702 177400 BIC #177400,R2 ;ADDRESS WAS OUTSIDE ALLOWED
013230 006304 ASL R4
013232 006304 ASL R4
013234 000304 SWAB R4
013236 020402 CMP R4,R2 ;PAGE LENGTH
013240 003001 BGT .+4
013242 104006 HLT ;REFERENCE WITHIN ALLOWED
013244 000754 BR C25 ;PAGE LENGTH ABORTED-R3 CONTAINS
;VA USED, R1 CONTAINS VALUE
;LOADED INTO THE PDR

013246 016777 165714 165710 DONE25: MOV KTSTA,AKTVEC
013254 005077 165544 CLR ASRO

;SHOW THAT THE W BIT DOESN'T SET IF THE KT11-D IS OFF
013260 104400 TEST51: SCOPE
013262 012706 001000 MOV #KSTACK,SP ;INITIALIZE KERNEL STACK POINTER
013266 004767 003024 JSR PC,ORDER ;CHECK TEST SEQUENCE + INIT SRO
013272 000051 S1 ;TEST NUMBER
013274 104006 HLT ;TEST EXECUTED OUT OF SEQUENCE
013276 012767 002000 002264 MOV #2000,ICOUNT ;RESTORE ITERATION COUNT
013304 004767 001762 JSR X7,CLALL ;CLEAR ALL KT11-D REGISTERS
013310 013737 010000 010000 MOV #10000,#10000 ;WRITE BANK 0
013316 005777 165552 TST AKPDR
013322 001401 BEQ .+4
013324 104006 HLT ;W BIT SET OR ANOTHER BIT INCORRECT
;IN KERNEL 0 PDR

;SHOW THAT THE W BIT IS CLEARED BY WRITING (VIA DATO) THE CORRESPONDING PAR
;CHECK EACH PDR
013326 104400 TEST52: SCOPE
013330 012706 001000 MOV #KSTACK,SP ;INITIALIZE KERNEL STACK POINTER
013334 004767 002756 JSR PC,ORDER ;CHECK TEST SEQUENCE + INIT SRO
013340 000052 S2 ;TEST NUMBER
013342 104006 HLT ;TEST EXECUTED OUT OF SEQUENCE
013344 004767 001746 JSR X7,RNALL
013350 004767 003026 JSR PC,KERN7 ;MAP KERNEL PAR/PDR 7 TO EXT BANK
013354 012777 007600 165510 MOV #7600,APAR7 ;MAP USER 7 TO EXTERNAL BANK
013362 012737 140000 177776 MOV #140000,#PS ;SET MODE TO USER
013370 012706 000400 MOV #USTACK,R6 ;SETUP USER STACK
013374 012700 001144 MOV #STATAB,R0 ;SET UP KT REG TABLE POINTER
013400 012001 LOP27: MOV (R0)+,R1 ;R1 CONTAINS ADDRESS OF
;ADDRESS OF CURRENT PDR
013402 012702 017776 MOV #17776,R2 ;R2 CONTAINS VIRTUAL ADDRESS TO
;REFERENCE DESIRED PAGE
013406 012037 177776 LOP27A: MOV (R0)+,#PS ;SETUP STATUS FOR CURRENT MODE
013412 005277 165406 INC ASRO ;TURN ON KT11-D
013416 011212 MOV (R2),(R2) ;WRITE
013420 005077 165400 CLR ASRO ;TURN OFF KT11-D
013424 004767 000016 JSR X7,CKMBIT ;TEST W BIT
013430 062702 020000 ADD #20000,R2 ;CHANGE VA TO REFERENCE NEXT PAGE

```


013434	103366		BCC	LOP27A		: LOOP UNTIL ALL PDR'S HAVE BEEN : CHECKED IN THE CURRENT MODE
013436	020027	001152	CMP	RO, #STAREND		
013442	002756		BLT	LOP27		
013444	000416		BR	EXT27		
013446	032771	000100	CKMBIT: BIT	#100, 2(R1)		: CHECK W BIT
013454	001001		BNE	.+4		
013456	104006		HLT			: W BIT DIDN'T SET IN PDR WHOSE : ADDRESS IS POINTED TO BY R1
013460	005071	000020	CLR	220(R1)		: CLEAR W BIT BY WRITING CORRESPONDING : PAR VIA DATO
013464	032771	000100	BIT	#100, 2(R1)		: CHECK W BIT
013472	001401		BEG	.+4		
013474	104006		HLT			: W BIT DIDN'T CLEAR IN PDR WHOSE : ADDRESS IS POINTED TO BY R1
013476	005721		TST	(R1)+		
013500	000207		RTS	X7		
013502			EXT27:			
: SHOW THAT THE W BIT IS CLEARED BY A DATOB TO THE PDR : CHECK BOTH HIGH AND LOW DATOB'S, ON KERNEL 0						
013502	104400		TEST53: SCOPE			
013504	012706	001000	MOV	#KSTACK, SP		: INITIALIZE KERNEL STACK POINTER
013510	004767	002602	JSR	PC, ORDER		: CHECK TEST SEQUENCE + INIT SRO
013514	000053		53			: TEST NUMBER
013516	104006		HLT			: TEST EXECUTED OUT OF SEQUENCE
013520	004767	001572	JSR	X7, R0ALL		: MAP ALL PAR/PDR PAIRS 4K, RW, BANK 0
013524	004767	002652	JSR	PC, KERN7		: MAP KERNEL PAR/PDR 7 TO EXT BANK
013530	005277	165270	INC	2SR0		: TURN ON KT11-D
013534	013737	000000	MOV	2#0, 2#0		: WRITE INTO PAGE 0
013542	005077	165256	CLR	2SR0		: TURN OFF KT11-D
013546	032777	000100	BIT	#100, 2KPDR0		: CHECK W BIT
013554	001001		BNE	.+4		
013556	104006		HLT			: W BIT NOT SET AFTER WRITING PAGE
013560	112777	000106	MOVB	#106, 2KPDR0		: DATOB SHOULD CLEAR W BIT
013566	032777	000100	BIT	#100, 2KPDR0		
013574	001401		BEG	.+4		
013576	104006		HLT			: W BIT DIDN'T CLEAR VIA DATOB (LOW) : TO THE PDR
013600	005277	165220	INC	2SR0		: TURN ON KT11-D
013604	013737	017776	MOV	2#17776, 2#17776		: WRITE INTO PAGE 0 AGAIN
013612	005077	165206	CLR	2SR0		: TURN OFF KT11-D
013616	032777	000100	BIT	#100, 2KPDR0		: CHECK W BIT
013624	001001		BNE	.+4		
013626	104006		HLT			: W BIT NOT SET AFTER WRITING PAGE
013630	016701	165240	MOV	KPDR0, R1		: SETUP R1 TO REFERENCE HIGH BYTE : OF KPDR0
013634	005201		INC	R1		: DATOB TO HIGH BYTE OF KPDR0
013636	112711	000177	MOVB	#177, 2R1		: CHECK W BIT
013642	032777	000100	BIT	#100, 2KPDR0		
013650	001401		BEG	.+4		
013652	104006		HLT			: W BIT DIDN'T CLEAR VIA DATOB : TO HIGH BYTE OF PDR
: SHOW THAT THE W BIT IS CLEARED BY A DATOB TO THE PAR : CHECK BOTH HIGH AND LOW DATOB'S, ON KERNEL 0						
013654	104400		TEST54: SCOPE			
013656	012706	001000	MOV	#KSTACK, SP		: INITIALIZE KERNEL STACK POINTER
013662	004767	002430	JSR	PC, ORDER		: CHECK TEST SEQUENCE + INIT SRO

Address	Instruction	Comment
013666	000054	54
013670	104006	HLT
013672	004767	JSR
013676	004767	JSR
013702	005277	165116
013706	013737	000000
013714	005077	165104
013720	032777	000100
013726	001001	165146
013730	104006	
013732	112777	000000
013740	032777	000100
013746	001401	165154
013750	104006	165126
013752	005277	165046
013756	013737	017776
013764	005077	165034
013770	032777	000100
013776	001001	165076
014000	104006	
014002	016701	165106
014006	005201	
014010	112711	000000
014014	032777	000100
014022	001401	165052
014024	104006	
014026	104400	
014030	012706	001000
014034	004767	002256
014040	000055	
014042	104006	
014044	012767	000020
014052	004767	001240
014056	004767	002320
014062	012777	007600
014070	012737	140000
014076	012706	000400
014102	012700	001144
014106	005720	
014110	012037	177776
014114	012702	017776
014120	005277	164700
014124	011212	
014126	062702	020000
014132	103374	
014134	005077	164664
014140	020027	001152
014144	002760	
014146	012701	001034

014152	012702	000010		LOP32D: MOV	#10,R2	:USE R2 AS COUNTER TO CHANGE ADDRESS
014156	032771	000100	000000	LOP32E: BIT	#100,2(R1)	:AT END OF EACH SET OF REGISTERS
014164	001001			BNE	.+4	:CHECK W BIT
014166	104006			HLT		:W BIT NOT SET IN PDR WHOSE
						:ADDRESS IS POINTED TO BY R1-
						:SHOULD HAVE BEEN SET WHEN
						:PAGE WAS WRITTEN INTO
014170	005721			TST	(R1)+	:MOVE POINTER
014172	077207			SQB	R2,LOP32E	:CHECK ALL PDR'S IN THIS SET
014174	062701	000020		ADD	#20,R1	:CHANGE R1 TO REFERENCE NEXT
						:SET OF PDR ADDRESSES
014200	020127	001132		CMP	R1,#ADREND	:CHECK FOR DONE
014204	002762			BLT	LOP32D	:IF NOT, CHECK NEXT SET OF PDR'S
014206	005037	177776		CLR	#PS	:SET MODE TO KERNEL
014212	005277	164606		INC	2SR0	:TURN KT11-D ON
014216	000005			RESET		:INIT WITH KT11-D ON
014220	000005			RESET		:INIT WITH KT11-D OFF
014222	012701	001034		MOV	#ADRTAB,R1	:R1 REFERENCES ADDRESS OF PDR
014226	012702	000010		LOP32F: MOV	#10,R2	:R2 KEEPS TRACK OF WHEN TO CHANGE
						:REGISTER SETS
014232	032771	000100	000000	LOP32G: BIT	#100,2(R1)	:CHECK W BIT
014240	001001			BNE	.+4	
014242	104006			HLT		:INIT CLEARED W BIT IN PDR WHOSE
						:ADDRESS IS POINTED TO BY R1
						:MOVE POINTER
014244	005721			TST	(R1)+	:CHECK ALL PDR'S IN THIS SET
014246	077207			SQB	R2,LOP32G	:CHANGE R1 TO REFERENCE NEXT SET
014250	062701	000020		ADD	#20,R1	:OF PDR ADDRESSES
						:CHECK FOR DONE
014254	020127	001132		CMP	R1,#ADREND	:IF NOT, CHECK NEXT SET OF PDR'S
014260	002762			BLT	LOP32F	:REINITIALIZE SR0
014262	005077	164536		CLR	2SR0	
						:SHOW THAT A DATO TO A PDR WILL CLEAR THE W BIT
						:EVEN WHEN THE INSTRUCTION ALSO CAUSES A TRAP REFERENCE TO
						:THE CORRESPONDING PAGE
						:MAP KERNEL PAGE 1 RRM AND MAKE A WRITE ACCESS TO PAGE 1
						:TO SET THE W BIT
						:THEN LOAD THE PDR, MAKING A TRAP REFERENCE TO PAGE 1 IN THE SOURCE
						:FETCH OF THE SAME INSTRUCTION-THE W BIT SHOULD BE CLEARED DUE
						:TO THE DATO TO THE PDR
014266	104400			TEST56: SCOPE		
014270	012706	001000		MOV	#KSTACK,SP	:INITIALIZE KERNEL STACK POINTER
014274	004767	002016		JSR	PC,ORDER	:CHECK TEST SEQUENCE + INIT SR0
014300	000056			56		:TEST NUMBER
014302	104006			HLT		:TEST EXECUTED OUT OF SEQUENCE
014304	012767	002000	001256	MOV	#2000,ICOUNT	
014312	004767	001000		JSR	X7,RRALL	:INITIALIZE ALL PAGES RRM, BANK 0
014316	004767	002060		JSR	PC,KERN7	:MAP KERNEL PAR/PDR 7 TO EXT BANK
014322	012777	077406	164546	MOV	#77406,2KPDR1	:MAKE KERNEL PAGE 1 RRM
014330	012777	000001	164466	MOV	#1,2SR0	:TURN ON KT11-D
014336	013737	020000	020000	MOV	2#20000,2#20000	:READ AND WRITE PAGE 1
014344	022777	077506	164524	CMP	#77506,2KPDR1	:CHECK PDR OF PAGE 1
014352	001401			BEG	.+4	
014354	104006			HLT		:KERNEL PAGE 1 PDR
						:INCORRECT - W BIT SHOULD

H04

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 46
DBKTAC.P11

```

014356 012767 077506 164436      MOV      #77506,TEMP      ;BE SET DUE TO PREVIOUS MOVE INSTRUCTION
014364 016777 004432 164504      MOV      TEMP+20000,2KPDR1 ;LOAD TEMP WITH VALUE TO BE MOVED TO KPDR1
                                ;PAGE 1 REFERENCE SHOULD SET
                                ;BUT DATA TO THE PDR CLEARS W BIT
014372 022777 077406 164476      CMP      #77406,2KPDR1 ;CHECK PAGE 1 PDR
014400 001401                      BEQ      .+4
014402 104006                      HLT
014404 005077 164414                      CLR      2SR0      ;PDR INCORRECT - W BIT
                                ;SHOULD HAVE BEEN CLEARED

                                ;CHECK TO SEE THAT MULTIPLE ACCESSES TO A PAGE AFTER SETTING THE
                                ;W BIT DON'T CLEAR THE W BIT
TEST57: SCOPE
014410 104400                      MOV      #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
014412 012706 001000                      JSR      PC,ORDER      ;CHECK TEST SEQUENCE + INIT SR0
014416 004767 001674                      57                      ;TEST NUMBER
014422 000057                      HLT                      ;TEST EXECUTED OUT OF SEQUENCE
014424 104006
014426 012767 000010 001134      MOV      #10,ICOUNT
014434 004767 000656                      JSR      x7,RWALL
014440 004767 001736                      JSR      PC,KERN7
014444 012777 077406 164424      MOV      #77406,2KPDR1 ;INITIALIZE ALL PAGES 4K, RW, BANK 0
014452 012777 000001 164344      MOV      #1,2SR0      ;MAP KERNEL PAR/PDR 7 TO EXT BANK
014460 013737 020000 020000      MOV      #20000,2#20000 ;MAP KERNEL PAGE 1 RW
014466 022777 077506 164402      CMP      #77506,2KPDR1 ;TURN ON SEGMENTATION
014474 001401                      BEQ      .+4      ;READ AND WRITE PAGE 1
014476 104006                      HLT      ;CHECK THE PDR
                                ;KERNEL PDR1 INCORRECT
                                ;W BIT SHOULD BE SET
014500 012701 020000                      MOV      #20000,R1
014504 012702 000100                      MOV      #100,R2
014510 005721                      TST      (R1)+
014512 077202                      SOB      R2,L40
014514 022777 077506 164354      CMP      #77506,2KPDR1 ;READ PAGE 1 REPEATEDLY
014522 001401                      BEQ      .+4      ;CHECK W BIT AGAIN
014524 104006                      HLT
                                ;KERNEL PDR 1
                                ;INCORRECT AFTER REPEATEDLY READING PAGE 1
                                ;TURN OFF SEGMENTATION
014526 005077 164272                      CLR      2SR0

                                ;SHOW THAT IF KT11-D IS ON, SETTING THE CURRENT MODE TO 10 WILL
                                ;CAUSE A MEMORY MANAGEMENT ABORT. NON RESIDENT SHOULD BE SET, AND ALSO PL SHOULD
                                ;BE SET
TEST60: SCOPE
014532 104400                      MOV      #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
014534 012706 001000                      JSR      PC,ORDER      ;CHECK TEST SEQUENCE + INIT SR0
014540 004767 001552                      60                      ;TEST NUMBER
014544 000060                      HLT                      ;TEST EXECUTED OUT OF SEQUENCE
014546 104006
014550 012767 002000 001012      MOV      #2000,ICOUNT ;RESTORE ITERATION COUNT
014556 004767 000534                      JSR      x7,RWALL
014562 004767 001614                      JSR      PC,KERN7
014566 012777 014634 164370      MOV      #RET42,2KTVEC ;MAP KERNEL PAR/PDR 7 TO EXT BANK
014574 005077 164366                      CLR      2KTSTA ;SETUP MEMORY MANAGEMENT ABORT RETURN
014600 012777 000001 164216      MOV      #1,2SR0
014606 012737 040000 177776 ADD42: MOV      #40000,2#PS
014614 000240                      NOP
014616 005077 163154                      CLR      2PS
014622 042777 000001 164174      BIC      #1,2SR0
014630 104006                      HLT
014632 000415                      BR      CONT42
                                ;TURN ON KT11-D
                                ;SET MODE TO 01-FETCH OF NEXT
                                ;INSTRUCTION SHOULD ABORT
                                ;RESTORE MODE TO KERNEL
                                ;TURN OFF KT11-D
                                ;NO ABORT WHEN MODE WAS SET
                                ;TO 01 (ILLEGAL)

```


DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 47
DBKTAC.P11

```

014634 042777 000001 164162 RET42: BIC      #1,JSRO      ;TURN OFF KT11-D AFTER ABORT
014642 022777 100040 164154      CMP      #100040,JSRO ;CK SR1
014650 001401      BEQ      .+4
014652 104006      HLT
                                ;SI  ;CORRECT AFTER MODE 01 ABORT
                                ;NF  ;D MODE 01 SHOULD BE SET
                                ;CI  ;X SR2

014654 022777 014606 164150      CMP      #ADD42,JSR2
014662 001401      BEQ      .+4
014664 104006      HLT
                                ;SR2 INCORRECT - SHOULD CONTAIN
                                ;ADDRESS OF THE INSTRUCTION
                                ;IMMEDIATELY AFTER THE ONE SETTING
                                ;THE MODE TO 01
                                ;REINITIALIZE SR0
                                ;RESTORE TRAP CATCHER

014666 005077 164132      CONT42: CLR      JSRO
014672 016777 164270 164264      MOV      KTSTA,KTVEC

```

;*THIS TEST WAS WRITTEN TO CHECK-OUT ECO #M-7236-00005. IT USES KPAR'S 0
 ;*AND 2 TO REFERENCE KPAR1 AND UPAR1 RESPECTIVELY. A COUNT PATTERN IS
 ;*RUN THROUGH THE VIRTUAL ADDRESS STARTING AT BIT6 AND THE RECIPROCAL
 ;*COUNT PATTERN IS SIMULTANEOUSLY RUN THROUGH THE PAR'S. AFTER A
 ;*RELOCATED REFERENCE IS MADE THE KT-11 IS TURNED OFF AND THE DATA IS
 ;*CHECKED TO ENSURE THAT, WHATEVER THE CONDITION OF THE BITS IS IN THE
 ;*VIRTUAL ADDRESS, THE DECODING FOR USER AND KERNEL PAR'S IS DONE BY
 ;*THE PHYSICAL ADDRESS.

```

014700 104400      TEST61: SCOPE
014702 012706 001000      MOV      #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
014706 004767 001404      JSR      PC,ORDER      ;CHECK TEST SEQUENCE + INIT SR0
014712 000061      B1      ;TEST NUMBER
014714 104006      HLT      ;TEST EXECUTED OUT OF SEQUENCE
014716 004767 000374      JSR      X7,RHALL
014722 004767 001454      JSR      PC,KERN7
014726 012777 007723 164160      MOV      #7723,2KPAR0 ;SETUP ALL PAR'S FOR 4K R/M
014734 012777 007776 164156      MOV      #7776,2KPAR2 ;SET UP KERNEL 7 REGISTERS
014742 005000      CLR      R0      ;LOAD KPAR0 WITH ADDR OF KPAR1
014744 012701 000042      MOV      #42,R1      ;LOAD KPAR2 WITH ADDR OF UPAR1
014750 012702 040042      MOV      #40042,R2      ;CLEAR COUNTER REGISTER
014754 052777 000400 164042 3S:  BIS      #400,JSRO      ;LOAD OFFSET & BIT TO SELECT KPAR0
014762 012711 005252      MOV      #5252,(R1)      ;LOAD OFFSET & BIT TO SELECT KPAR2
014766 005077 164032      CLR      JSRO      ;TURN ON MAINTENANCE MODE
014772 027727 164120 005252      CMP      2KPAR1,#5252 ;LOAD PATTERN IN KERNEL PAR1
015000 001401      BEQ      1S      ;TURN OFF MAINTENANCE MODE
015002 104006      HLT      ;DID DATA GET STORED IN KPAR1?
                                ;BRANCH IF DATA STORED CORRECTLY
                                ;A HALT HERE INDICATES THAT THE
                                ;RELOCATION TO KPAR1 WAS NOT
                                ;SUCCESSFUL R1 HAS VIRTUAL ADDR AND
                                ;KPAR0 HAS THE BASE.
                                ;CLEAR KPAR1 FOR NEXT TEST
                                ;TURN ON MAINTENANCE MODE
                                ;LOAD PATTERN IN USER PAR1
                                ;TURN OFF MAINTENANCE MODE
                                ;DID DATA GET STORED IN UPAR1?
                                ;BRANCH IF DATA STORED CORRECTLY
                                ;A HALT HERE INDICATES THAT THE
                                ;RELOCATION TO UPAR1 DID NOT WORK
                                ;R2 HAS THE VIRTUAL ADDR AND KPAR2
                                ;HAS THE BASE
                                ;CLEAR UPAR1 FOR NEXT TEST
                                ;CHECK TO SEE IF TEST IS DONE
                                ;BRANCH IF TEST IS OVER

015004 005077 164106      1S:  CLR      2KPAR1
015010 052777 000400 164006      BIS      #400,JSRO
015016 012712 005252      MOV      #5252,(R2)
015022 005077 163776      CLR      JSRO
015026 027727 164024 005252      CMP      2UPAR1,#5252
015034 001401      BEQ      2S
015036 104006      HLT

015040 005077 164012      2S:  CLR      2UPAR1
015044 022700 010000      CMP      #10000,R0
015050 001415      BEQ      EOP

```



```

015052 062700 000100      ADD      #100,R0      ;ADD BIT6 TO COUNTER
015056 062701 000100      ADD      #100,R1      ;ADD BIT6 TO KPAR1'S VIRTUAL ADDR
015062 062702 000100      ADD      #100,R2      ;ADD BIT6 TO UPAR1'S VIRTUAL ADDR
015066 162777 000001 164020 SUB      #1,2KPAR0    ;SUBTRACT BIT1 FROM KPAR1'S BASE
015074 162777 000001 164016 SUB      #1,2KPAR2    ;SUBTRACT BIT1 FROM UPAR1'S BASE
015102 000724          BR      3$      ;CONTINUE TEST

015104 104400      EOP:  SCOPE
015106 032767 010000 162454 BIT      #BIT12,SR
015114 001003      BNE      1$      ;INHIBIT BELL?
015116 012700 015261      MOV      #BELL,R0      ;BRANCH IF BELL IS INHIBITED
015122 000402      BR      2$      ;PUT ADDRESS OF BELL CHARS IN R0
015124 012700 015265      1$:  MOV      #ASTER,R0    ;BRANCH TO OUTPUT CODE
015130 112001      2$:  MOV      (R0)+,R1    ;PUT ADDRESS OF ASTERICK CHARS IN R0
015132 001405      BEQ      LOGICT      ;CHECK FOR TERMINATOR CODE
015134 010177 163660      3$:  MOV      R1,2TDBR    ;BRANCH IF BYTE IS ZERO
015140 105777 163652      TSTB      2TCSR      ;OUTPUT CHARACTER TO BUFFER
015144 100373      BPL      3$      ;SEE IF STATUS REG GETS SET
015146 013701 000042      LOGICT: MOV      2#42,R1    ;BRANCH UNTIL IT DOES
015152 001405      BEQ      END      ;MONITOR HOOK
015154 000005      RESET
015156 004711      LOGIC: JSR      PC,2R1
015160 000240      NOP
015162 000240      NOP
015164 000240      NOP
015166 000167 164006      END:  JMP      START

```

```

;MESSAGE AREA
015172 005015 052113 030461 MTIT:  .ASCII  <15><12>'KT11-D LOGIC TEST MAINDEC-11-DBKTA-C'<15><12>'a'
015200 042055 046040 043517
015206 041511 052040 051505
015214 020124 040515 047111
015222 042504 026503 030461
015230 042055 045502 040524
015236 041455 005015 100
015243 015 050012 036503 MPC:  .ASCII  <15><12>'PC= a'
015250 040040
015252 020040 051520 020075 MPS:  .ASCII  ' PS= a'
015260 100
015261 207 177777 000 BELL:  .ASCIIZ <207><377><377>
015265 052 177777 000 ASTER: .ASCIIZ /#/<377><377>
015272          .EVEN

```

```

;SUBROUTINE TO CLEAR ALL KT11-D REGISTERS (EXCEPT SR1,SR2)
015272 005077 163526 CLRALL: CLR      2SR0
015276 005000      CLR      R0
015300 012701 000040      MOV      #32,R1      ;COUNT OF REGISTERS TO BE CLEARED
015304 005070 001034      CLRLP: CLR      2ADR+TAB(R0)    ;CLEAR REGISTERS THRU ADDRESS TABLE
015310 005720      TST      (R0)+      ;MOVE POINTER
015312 077104      SOB      R1,CLRLP      ;LOOP TILL DONE
015314 000207      RTS      %7

```

```

;SUBROUTINE TO MAKE ALL PAGES RW, BANK 0, 4K, UP

```


K04

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 49
DBKTAC.P11

015316 005077 163502
015322 012701 001034
015326 012700 000010
015332 005071 000020
015336 012731 077406
015342 077005
015344 062701 000020
015350 020127 001132
015354 002764
015356 000207

RWALL: CLR 2SR0
MOV 8ADRTAB,R1 ;R1 POINTS TO ADDRESS TABLE
RML1: MOV 810,R0 ;R0 IS COUNTER
RML2: CLR 220(R1) ;CLEAR PAR
MOV 877406,2(R1)+ ;SET PDR RW, 4K
SOB R0,RML2
ADD 820,R1
CMP R1,8ADREND ;POINTER TO NEXT GROUP
BLT RML1
RTS X7

ROUTINE TO LOOP THRU A SINGLE INSTRUCTION TEST
LOAD THE STARTING ADDRESS OF THE TEST
YOU WISH TO RUN (THE ADDRESS OF THE TESTX
TAG) AT THE 1ST HALT, SET SWITCH REGISTER
OPTIONS AT THE 2ND HALT.
NOTE THAT SW11 MUST BE DOWN AFTER THE 2ND HALT

015360 005037 177776
015364 012706 001000
015370 012737 140000 177776
015376 012706 000400
015402 005037 177776
015406 000000
015410 016767 162154 000036
015416 062767 000002 000030
015424 000000
015426 005067 000140
015432 012767 015444 000134
015440 000177 000010
015444 005067 000122
015450 000177 000000
015454 000000

TESTX: CLR 2#PS
MOV 8KSTACK,SP
MOV 8140000,2#PS ;SETUP USER TRAP
MOV 8USTACK,SP
CLR 2#PS
HALT ;WAIT FOR STARTING ADDRESS
MOV SR,RETRNX ;LOAD STARTING ADDRESS IN RETRNX
ADD 82,RETRNX ;ADD 2 TO POINT TO INSTRUCTION AFTER
HALT ;SET SR OPTIONS
CLR SCOPEF ;KEEP COUNT AT ZERO
MOV 8XLOOP,RETURN ;LOAD SCOPE LOOP RETURN POINTER
JMP 2RETRNX ;JUMP TO TEST
XLOOP: CLR SCOPEF ;KEEP COUNT AT ZERO
JMP 2RETRNX ;JUMP TO TEST
RETRNX: 0

015456 032737 040000 177570
015464 001015
015466 032737 004000 177570
015474 001020
015476 026767 000070 000064
015504 100014
015506 005267 000060
015512 012737 000340 177776
015520 022626
015522 005037 177776
015526 005077 163272
015532 000177 000036
015536 005067 000030
015542 005267 163426

SCOPE AND/OR ITERATION LOOP FOR EACH TEST 4000 TIMES
SCOPEC: BIT 8BIT14,2#SR ;TEST SR FOR SCOPE
BNE SCOPEB ;YES, SCOPE
BIT 8BIT11,2#SR ;NO-TEST FOR ITERATION
BNE SCOPEB ;INHIBIT ITERATION
CMP SCOPEF, ICOUNT ;COMPARE CURRENT COUNT TO MAX NUMBER
BPL SCOPEB ;EXIT-DONE
INC SCOPEF ;INCREMENT COUNT
MOV 8340,2#PS ;PREVENT TRAPPING WHILE MOVING STACK
SCOPEB: CMP (6)+,(6)+ ;REPOSITION STACK
CLR 2#PS
CLR 2SR0
JMP 2RETURN
SCOPEF: CLR SCOPEF
INC TESTCT

015546 011667 000022
015552 022626
015554 005037 177776
015560 005077 163240
015564 000177 000004
015570 004000
015572 000000
015574 000000

MOV 2#6,RETURN
CMP (6)+,(6)+
CLR 2#PS
CLR 2SR0
JMP 2RETURN
ICOUNT: 4000
SCOPEF: 0
RETURN: 0
REPEAT TEST
CLEAR COUNT
STEP TEST COUNTER TO ALLOW CHECKING
ORDER OF EXECUTION.
SAVE SCOPE RETURN POINTER
RETURN INLINE-NEXT TEST
ITERATION COUNT
COUNT LOCATION FOR ITERATION LOOP
ADDRESS OF LAST TEST


```

; ENTERED WITH SYSTEM TRAP CALL (HLT)
; PRINT OUT THE ERROR PC+2 AND STATUS REGISTER
015576 012767 000340 162172 PRINT: MOV #340, PS ; SET PRIORITY TO 7
015604 032737 020000 177570 BIT #BIT13, 2*SR ; TEST FOR INHIBIT PRINT OUT
015612 001401 BEQ .+4 ; BRANCH TO PRINT
015614 000430 BR CK ; INHIBIT, CHECK FOR HALT
015616 012667 000066 MOV (6)+, SAVPC ; PC OF FAILING ROUTINE
015622 012667 000064 MOV (6)+, SAVPSR ; PSR OF ERROR CONDITION
015626 024646 CMP -(6), -(6) ; RESTORE STACK
015630 012767 000200 162140 MOV #200, PS ; LOAD WITH FAILING PC+2
015636 016767 000046 000374 MOV SAVPC, PTEMP1
015644 004767 000044 JSR PC, TYPE
015650 015243 MPC
015652 004767 000116 JSR PC, PRSHRT ; PRINT FAILING PC+2
015656 004767 000032 JSR PC, TYPE
015662 015252 MPS
015664 016767 000022 000346 MOV SAVPSR, PTEMP1 ; LOAD PROCESSOR STATUS
015672 004767 000130 JSR PC, PROCT ; PRINT PROCESSOR STATUS
015676 005767 161666 CK: TST SR ; CHECK SR FOR HALT SWITCH
015702 100001 BPL .+4 ; BRANCH IF NOT SET
015704 000000 HALT ; HALT ON ERROR UP
015706 000002 RTI ; RETURN TO MAIN LINE
015710 000000 SAVPC: 0
015712 000000 SAVPSR: 0

; SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE
015714 010067 000052 TYPE: MOV %D, SAVRO
015720 011600 MOV (6), %D ; GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
015722 062716 000002 ADD #2, 2*%D ; SET UP EXIT
015726 011000 MOV 2*%D, %D
015730 112067 000034 TYPB: MOVB (0)+, TYPDAT ; GET CHARACTER
015734 122767 000100 000026 CMPEB #100, TYPDAT ; CHECK FOR "3" CHARACTER
015742 001003 BNE TYPB ; BRANCH IF NOT "3"
015744 016700 000022 MOV SAVRO, %D ; RESTORE RO
015750 000207 RTS PC ; TERMINATOR CHAR, EXIT
015752 116777 000012 163040 TYPB: MOVB TYPDAT, 2TDBR ; OUTPUT CHAR TO PRINTER
015760 105777 163032 TSTB 2TCSR ; WAIT FOR TTY READY
015764 100375 BPL .-4
015766 000760 BR TYPB
015770 000000 TYPDAT: 0
015772 000000 SAVRO: 0

; SUBROUTINE TO PRINT OUT OCTAL NUMBER
; PRSHRT DELETES LEADING ZEROS
; PROCT PRINTS OUT 6 OCTAL DIGITS
015774 012767 000001 000232 PRSHRT: MOV #1, PRSFLG ; SET FLAG TO INDICATE SHORT PRINTOUT
016002 005767 000232 TST PTEMP1 ; CHECK FOR ZERO
016006 001011 BNE PROCT+4 ; BRANCH IF NOT ZERO
016010 012777 000260 163002 MOV #260, 2TDBR ; OUTPUT A SINGLE ZERO
016016 105777 162774 TSTB 2TCSR ; WAIT FOR TTY READY
016022 100375 BPL .-4
016024 000207 RTS %7 ; RETURN
016026 005067 000202 PROCT: CLR PRSFLG ; CLEAR FLAG TO INDICATE FULL PRINTOUT
016032 005067 000206 CLR PTEMP3 ; CLEAR R4 FOR COUNTING CHARACTERS OUTPUT
016036 005067 000174 CLR PRFLG ; INITIALIZE CARRY FLAG FOR ROTATES

```



```

016042 012767 000260 000172      MOV      #260, PTEMP2
016050 005767 000164              TST      PTEMP1
016054 100002                      BPL      +6
016056 005267 000160              INC      PTEMP2
016062 006167 000152              ROL      PTEMP1
016066 006167 000146              ROL      PTEMP1
016072 005567 000140              ADC      PRFLG
016076 005767 000132      P.CK:   TST      PRSFLG
016102 001404                      BEQ      P.WAIT
016104 026727 000132 000260      CMP      PTEMP2, #260
016112 001410                      BEQ      P.CONT
016114 016777 000122 162676      P.WAIT: MOV      PTEMP2, @TDBR
016122 105777 162670              TSTB    @TCSR
016126 100375                      BPL      -4
016130 005067 000100              CLR      PRSFLG
016134 005267 000104      P.CONT: INC      PTEMP3
016140 026727 000100 000006      CMP      PTEMP3, #6
016146 001001                      BNE      P.CNT1
016150 000207                      RTS
016152 000241      P.CNT1:   CLC
016154 005767 000056              TST      PRFLG
016160 001403                      BEQ      +10
016162 005067 000050              CLR      PRFLG
016166 000261                      SEC
016170 006167 000044              ROL      PTEMP1
016174 006167 000040              ROL      PTEMP1
016200 006167 000034              ROL      PTEMP1
016204 005567 000026              ADC      PRFLG
016210 016767 000024 000024      MOV      PTEMP1, PTEMP2
016216 042767 177770 000016      BIC      #177770, PTEMP2
016224 052767 000260 000010      BIS      #260, PTEMP2
016232 000721                      BR      P.CK
016234 000000      PRSFLG: 0
016236 000000      PRFLG:  0
016240 000000      PTEMP1: 0
016242 000000      PTEMP2: 0
016244 000000      PTEMP3: 0

; SETUP R3
; CHECK BIT 15 OF NUMBER
; BRANCH IF ZERO
; INCREMENT R3 IF ONE
; ROTATE LEFT MOST OCTAL TO RIGHT END

; STORE CARRY
; CHECK FOR SHORT PRINTOUT
; BRANCH IF NOT SET
; CHECK FOR ZERO IF SET
; IF SET, GO TO NEXT CHARACTER
; OUTPUT NEXT CHARACTER
; WAIT FOR TTY READY

; PRINT REST OF NUMBER AFTER A NON-ZERO DIGIT
; COUNT
; CHECK FOR DONE
; BRANCH IF NOT DONE

; CLEAR CARRY
; CHECK FOR PREVIOUS CARRY
; BRANCH IF PREVIOUSLY ZERO
; INITIALIZE FLAG
; SET CARRY
; ROTATE NEXT CHARACTER INTO RIGHT END OF REGISTE

; STORE CARRY
; LOAD DATA INTO R3
; CLEAR ALL BUT LOWEST OCTAL DIGIT
; SET TO ASCII EQUIVALENT
; LOOP

; CONTAINS VALUE TO BE OUTPUT
; SCRATCH
; USED TO COUNT CHARACTERS OUTPUT

; EMT HANDLER
; FIRST 3 CALLS LEFT OPEN IN TABLE FOR EASY PATCHES
EMTSRV: MOV      @SP, EPC
          SUB      #2, EPC
          MOV      @EPC, EPC
          CLRB     EPC+1
          ADD      @EMTAB, EPC
          MOV      @EPC, PC

; SAVE OFFSET ONLY
; POINT TO TABLE OF ADDRESSES
; JUMP TO DESIRED ROUTINE

EPC:      0
          PATCH1=EMT+0
          PATCH2=EMT+2
          PATCH3=EMT+4

EMTAB:    PATCH1
          PATCH2
          PATCH3
          PRINT

; SUBROUTINE TO CHECK TEST SEQUENCE

```


N04

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 52
DBKTAC.P11

016316	005037	177776		ORDER:	CLR	3#PS		:CLEAR PROCESSOR STATUS
016322	011667	000052			MOV	(SP),TEMPN		:GET TEST NUMBER ADDRESS
016326	017767	000046	000044		MOV	3TEMPN,TEMPN		:GET TEST NUMBER
016334	032737	002000	177570		BIT	#BIT10,3#SR		
016342	001404				BEQ	ORDERB		
016344	016700	000030			MOV	TEMPN,R0		
016350	000005				RESET			
016352	000000				HALT			
016354	026767	162614	000016	ORDERB:	CMF	TESTCT,TEMPN		:IS TEST SEQUENCE CORRECT
016362	001403				BEQ	ORDERA		:YES, CONTINUE
016364	062716	000002			ADD	#2,(SP)		:UPDATE FOR ERROR RETURN
016370	000207				RTS	PC		
016372	062716	000004		ORDERA:	ADD	#4,(SP)		:UPDATE FOR GOOD RETURN
016376	000207				RTS	PC		
016400	000000			TEMPN:	0			
					:MAP KERNEL PAR/PDR 7 TO EXTERNAL BANK			
016402	012777	007600	162522	KERN7:	MOV	#7600,3KPAR7		
016410	012777	077406	162474		MOV	#77406,3KPDR7		
016416	000207				RTS	PC		
	017712				.=17712			
017712	125252			DESTAD:	125252			
	000001				.END			

ADD23	004650	1084	1097																
ADD24	005050	1123	1134																
ADD42	014606	2478	2489																
ADREND	001132	375	547	1218	1243	2384	2401	2603											
ADRTAB	001034	339	524	526	1210	1231	2371	2390	2590#	2597									
ADR11	012060	1990	2000																
ADR2	011020	1798	1804																
ADR25	005244	1162	1172	1177															
ADR25A	005246	1163	1187																
ADR36	007502	1580	1600																
ADR36A	007564	1593	1603																
ADR36B	007662	1612	1620																
ADR36C	007664	1613	1624																
ADR37	010036	1648	1668																
ADR37A	010120	1661	1671																
ADR37B	010216	1680	1688																
ADR37C	010220	1681	1692																
ADR40	010372	1716	1736																
ADR40A	010454	1729	1739																
ADR40B	010552	1748	1756																
ADR40C	010554	1749	1760																
AD13	002514	700	701																
AD13A	002530	704	706																
AD13B	002560	710	712																
AD13C	002610	716	718																
AD21A	003742	910	911																
AD21B	003794	916	917																
AD21C	004064	923	945																
ASTER	015265	2553	2582																
BELL	015261	2551	2581																
BIT0	000001	283																	
BIT1	000002	284																	
BIT10	002000	293	2767																
BIT11	004000	294	2631																
BIT12	010000	295	2549																
BIT13	020000	296	716	2656															
BIT14	040000	297	710	715	2629														
BIT15	100000	298	704	709															
BIT2	000004	299																	
BIT3	000010	285																	
BIT4	000020	286																	
BIT5	000040	287																	
BIT6	000100	288																	
BIT7	000200	289																	
BIT8	000400	290																	
BIT9	001000	291																	
BLK20	003470	860	863	875															
BLOCKS	001176	397	856	874															
CK	015676	2658	2671																
CK4BIT	013446	2258	2265																
CLRALL	015272	464	495	523	563	590	731	758	784	803	833	898	961	1078					
		1118	1155	1288	1573	1641	1709	2230	2587										
CLRLP	015374	2590	2592																
CNT22B	004220	979	987																
CNT22C	004300	998	1006																
CNT22D	004374	1018	1026																

[illegible]

		1708	1718	1723	1730	1735	1738	1741	1750	1755	1758	1762	1773	1777
		1781	1789	1808	1814	1829	1840	1845	1850	1855	1867	1877	1897	1916
		1925	1931	1937	1943	1953	1963	1980	1990	2000	2013	2023	2030	2033
		2043	2053	2056	2068	2069	2083	2101	2106	2125	2145	2150	2157	2161
		2178	2200	2216	2228	2234	2243	2267	2273	2284	2293	2296	2303	2309
		2317	2328	2330	2337	2343	2353	2376	2383	2417	2426	2434	2443	2452
		2460	2471	2482	2487	2491	2510	2523	2533					
ICOUNT	015570	403*	426*	463*	554*	562*	617*	688*	736*	757*	841*	897*	1077*	1117*
		1203*	1782*	1847*	2179*	2229*	2353*	2418*	2444*	2472*	2633	2649*		
INT25	005256	1158	1166											
INT35	006732	1445	1448											
INT36	007520	1577	1584											
INT36A	007574	1588	1596											
INT36B	007674	1607	1616											
INT37	010054	1645	1652											
INT37A	010130	1656	1664											
INT37B	010230	1675	1684											
INT40	010410	1713	1720											
INT40A	010464	1724	1732											
INT40B	010564	1743	1752											
IOT35	006530	1396	1399											
KERN7	016402	790	901	964	1081	1121	1157	1205	1267	1298	1346	1574	1642	1710
		1793	1830	1857	1879	1918	1984	2016	2045	2070	2127	2181	2245	2286
		2319	2355	2420	2446	2474	2512	2780*						
KPAR0	001114	367*	759*	785*	899*	1079*	1119*	2327*	2338	2513*	2543*			
KPAR1	001116	368*	968*	987*	1006*	1026*	1049*	2521	2527*					
KPAR2	001120	369*	2514*	2544*										
KPAR3	001122	370*												
KPAR4	001124	371*												
KPAR5	001126	372*												
KPAR6	001130	373*												
KPAR7	001132	374*	2780*											
KPAR8	001074	358*	382	734*	760*	787*	900*	962*	1080*	1120*	1156*	1180	1293*	1575*
		1643*	1711*	1791*	1982*	2232	2290	2293*	2294	2301	2304	2307	2324	2328
		2335	2341											
KPOR1	001076	359*	963*	1184	1266*	1576*	1644*	1712*	1794*	1919*	2078*	2135*	2188*	2421*
		2424	2430*	2432	2447*	2450	2458							
KPOR2	001100	360*	2015*	2031										
KPOR3	001102	361*												
KPOR4	001104	362*												
KPOR5	001106	363*												
KPOR6	001110	364*												
KPOR7	001112	365*	2051	2781*										
KRET34	006114	1295	1304*	1312										
KSTACK	001000	324*	402	415	431	459	491	519	558	586	613	649	684	696
		727	753	780	829	893	957	1073	1113	1151	1199	1261	1284	1330
		1339	1352	1569	1637	1705	1770	1786	1823	1852	1874	1913	1950	1977
		2010	2040	2065	2122	2175	2225	2240	2281	2314	2349	2414	2440	2468
		2507	2614											
KTSTA	001166	393*	887	888*	1159*	1191*	1192	1269*	1278	1578*	1629*	1630	1646*	1697*
		1698	1714*	1765*	1766	1796*	1816	1832*	1848	1881*	1906	1907*	1945	1986*
		2005	2018*	2034	2047*	2058	2076*	2113	2114*	2133*	2168	2169*	2183*	2220
		2476*	2496											
KTVEC	001164	392*	887*	1158*	1192*	1268*	1278*	1577*	1588*	1607*	1630*	1645*	1656*	1675*
		1698*	1713*	1724*	1743*	1775*	1795*	1816*	1831*	1848*	1880*	1906*	1921*	1932*
		1945*	1985*	2005*	2017*	2037*	2046*	2058*	2075*	2082*	2113*	2132*	2139*	2168*

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 57
 DBKTAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

		2182#	2220#	2475#	2496#
K123	001012	327#	839		
K134	001014	328#	840		
LOGIC	015156	313	2555#		
LOGICT	015146	2555	2555#		
LOOP10	002210	622#	626		
LOOP11	002340	657#	661		
LOOP2	001356	440#	450		
LOOP23	012464	2077#	2111		
LOOP24	012706	2134#	2166		
LOOP3	001456	467#	482		
LOOP3A	001464	469#	481		
LOOP3B	001470	470#	478		
LOOP3C	014106	2361#	2370		
LOOP4	001546	497#	515		
LOOP4A	001554	500#	513		
LOOP4B	001560	501#	510		
LOOP5	011406	1886#	1905		
LOOP6	001766	566#	582		
LOOP6A	001774	568#	581		
LOOP7	002072	593#	609		
LOOP7A	002100	595#	608		
LOP10A	002216	624#	625		
LOP10B	002236	630#	638		
LOP10C	002244	632#	637		
LOP11A	002346	659#	660		
LOP11B	002366	665#	673		
LOP11C	002374	667#	672		
LOP27	013400	2250#	2263		
LOP27A	013412	2255#	2260		
LOP31A	005460	1211#	1220		
LOP31B	005464	1212#	1216		
LOP31C	005516	1222#	1255		
LOP31D	005530	1225#	1253		
LOP31E	005560	1232#	1274		
LOP31F	005564	1233#	1274		
LOP32C	014124	2365#	2367		
LOP32D	014152	2372#	2385		
LOP32E	014156	2374#	2381		
LOP32F	014226	2391#	2403		
LOP32G	014232	2393#	2398		
LOP5A	011464	1899	1901#		
LOP5B	001644	526#	551		
LOP5B	001662	532#	544		
L25A	013132	2187#	2206		
L25B	013142	2189#	2204		
L40	014510	2456#	2457		
MPC	015243	2577#	2665		
MPS	015252	2579#	2668		
MTIT	015172	409	2570#		
NC35B	006506	1353	1392#		
NC35C	006716	1403	1442#		
NC35D	007140	1452	1497#		
NC35E	007360	1510	1550#		
NOP	= 000240	268#			
000AD	007164	1496	1501	1505#	

OK3SB	006524	1354	1397#														
OK3SC	006726	1404	1446#														
OK3SD	007154	1453	1502#														
OK3SE	007370	1512	1555#														
ORDER	016316	416	432	460	492	520	559	587	614	650	685	697	728	754			
		781	830	894	958	1074	1114	1152	1200	1262	1285	1340	1570	1638			
		1706	1771	1787	1824	1853	1875	1914	1951	1978	2011	2041	2066	2123			
		2176	2226	2241	2282	2315	2350	2415	2441	2469	2508	2764#					
		2773	2776#														
ORDERA	016372	2768	2772#														
ORDERB	016354	389#	851#	858	877#												
PAGES	001156	856#	880														
PAG20	003432	379#	465	564	620	628											
PARTAB	001140	2755#	2758														
PATCH1=	104000	2756#	2759														
PATCH2=	104002	2757#	2760														
PATCH3=	104004	278#	408#	416#	432#	460#	492#	520#	559#	587#	614#	650#	685#	697#			
PC	=2000007	728#	754#	781#	790#	830#	894#	901#	958#	964#	1074#	1081#	1114#	1121#			
		1152#	1157#	1200#	1205#	1262#	1267#	1285#	1298#	1340#	1346#	1570#	1574#	1638#			
		1642#	1706#	1710#	1771#	1787#	1793#	1824#	1830#	1853#	1857#	1875#	1879#	1914#			
		1918#	1951#	1978#	1984#	2011#	2016#	2041#	2045#	2066#	2070#	2123#	2127#	2176#			
		2181#	2226#	2241#	2245#	2282#	2286#	2315#	2319#	2350#	2355#	2415#	2420#	2441#			
		2446#	2469#	2474#	2508#	2512#	2562#	2664#	2666#	2667#	2670#	2687#	2753#	2775#			
		2777#	2782#														
PDREND	001136	378#	514														
PDAM2	001170	394#	502														
PORTAB	001134	377#	496	591	655	663											
PRFLG	016236	2707#	2714#	2728	2730#	2735#	2741#										
PRINT	015576	2655#	2761														
PROCT	016026	2670	2700	2705#													
PRSFLG	016234	2698#	2705#	2715	2722#	2740#											
PRSHRT	015774	2666	2698#														
PS	= 177776	280#	281	401#	810#	842#	844#	849#	883#	969#	976	983#	1207#	1209#			
		1224#	1290#	1292#	1307#	1349#	1351#	1357#	1407#	1456#	1509#	1514#	1557	1833#			
		1887#	1933#														

RET42	014634	2475	24848													
RET5	011434	1880	18938													
RET7A	011604	1921	19278													
RET7C	011660	1932	19398													
RWALL	015316	834	1204	1265	1344	1790	1827	1856	1878	1917	1954	1981	2014	2044		
		2069	2126	2180	2244	2285	2318	2354	2419	2445	2473	2511	2548			
RML1	015326	25988	2604													
RML2	015332	25998	2601													
RO	=X000000	2698	439#	440	449#	466#	482#	500#	501	503	509#	565#	582#	592#		
		609#	621#	626#	629#	638#	656#	661#	664#	673#	646#	647#	652#	657#		
		861#	871#	876#	879	1221#	1222	1224	1254	2249#	2250	2254	2262	2359#		
		2361	2362	2369	2515#	2538	2540#	2551#	2553#	2554	2588#	2590#	2591	2598#		
		2601#	2769#													
R1	=X000001	2708	440#	441	442#	444	467#	470#	471	479#	480	497#	503#	504		
		511#	512	524#	530#	532	547	550#	566#	568#	569#	570	574#	575#		
		576	580	593#	595#	596#	597	601#	602#	603	607	622#	624#	630#		
		632	636	657#	659#	665#	667	671	700#	701	761#	763	767#	770		
		789#	794	806#	813	854#	864	872#	902#	925#	1166#	1168	1222#	1228		
		1233	1245#	1246	1251	1297#	1304#	1311#	1348#	1393#	1398#	1443#	1447#	1493#		
		1498#	1503#	1551#	1556#	1882#	1886#	1898	1900#	1902	1927#	1929	1939#	1941		
		2026#	2028	2073#	2080	2083	2086	2107#	2130#	2137	2140	2142	2162#	2184#		
		2188	2189	2205#	2250#	2265	2269#	2271	2274	2304#	2305#	2306#	2338#	2339#		
		2340#	2371#	2374	2380	2382#	2384	2390#	2393	2397	2399#	2401	2454#	2456		
		2516#	2519#	2541#	2554#	2556	2559#	2562	2589#	2592#	2597#	2599#	2600#	2602#		
		2603														
R2	=X000002	2718	441#	443#	445	468#	481#	498#	513#	526#	532	534	542#	543		
		567#	581#	594#	608#	623#	625#	631#	637#	658#	660#	666#	672#	768#		
		770	791#	793#	809#	812#	855#	867	873#	1223#	1226#	1252#	1590#	1592#		
		1610#	1612#	1658#	1660#	1678#	1680#	1726#	1728#	1746#	1748#	1883#	1889	1904#		
		2071#	2078	2109#	2128#	2135	2164#	2189#	2193#	2194#	2198	2209#	2210#	2214		
		2252#	2256#	2259#	2363#	2365#	2366#	2372#	2381#	2391#	2398#	2455#	2457#	2517#		
		2529#	2542#													
R3	=X000003	2728	465#	467	496#	497	514	529#	544#	564#	566	591#	593	620#		
		622	628#	630	655#	657	663#	665	839#	864	1231#	1233	1235	1240		
		1242#	1243	1884#	1895	1903#	2097#	2099	2153#	2155	2187#	2190	2192	2202#		
		2203														
R4	=X000004	2738	469#	470	471	476#	477	619#	624	632	642#	654#	659	667		
		677#	840#	867	1160#	1162	1210#	1212	1217#	1218	1232#	1241#	1885#	1905#		
		2190#	2191#	2195#	2196#	2197#	2198	2211#	2212#	2213#	2214					
R5	=X000005	2748	501#	502#	504	853#	862#	870#	1211#	1216#	1893#	1895				
R6	=X000006	2758	1187	1190	1208#	1589	1603	1606	1627	1657	1671	1674	1695	1725		
		1739	1742	1763	1834#	1901	2248#	2358#								
R7	=X000007	2768														
SAVEA	001160	3908	835#	885												
SAVEB	001162	3918	836#	886												
SAVPC	015710	2659#	2663	2675#												
SAVPSR	015712	2660#	2669	2676#												
SAVRO	015772	2679#	2686	2693#												
SCOPE	= 104400	2678	414	430	458	490	518	557	585	612	648	683	695	726		
		752	779	828	892	956	1072	1112	1150	1198	1260	1283	1338	1568		
		1636	1704	1769	1785	1822	1851	1873	1912	1949	1976	2009	2039	2064		
		2121	2174	2224	2239	2280	2313	2348	2413	2439	2467	2506	2548			
SCOPEB	015520	2630	2637#													
SCOPEC	015456	310	2629#													
SCOPEF	015572	2622#	2625#	2633	2635#	2641#	2650#									
SCOPEG	015536	2632	2634	2641#												

277#	402#	415#	431#	459#	491#	519#	558#	586#	613#	649#	684#	696#
727#	753#	780#	829#	843#	893#	903#	904#	905#	938#	939#	940#	957#
1050#	1067#	1073#	1113#	1151#	1199#	1261#	1284#	1289#	1291#	1330#	1339#	1350#
1352#	1392	1397	1442	1446	1497	1502	1550	1555	1569#	1624	1637#	1692
1705#	1760	1770#	1786#	1797#	1798#	1823#	1852#	1874#	1913#	1950#	1977#	1987#
1988#	2010#	2025	2040#	2065#	2092	2096	2123#	2149	2152	2175#	2208	2225#
2240#	2281#	2314#	2349#	2414#	2440#	2468#	2507#	2614#	2616#	2748	2765	2774#

279#	2549	2619	2629	2631	2656	2671	2767					
333#	420	435	444#	445	451#	704#	709#	710#	715#	716#	737#	742
748#	762#	769#	791	792#	797	809	811#	853	863#	884#	902	909#
970#	975#	980#	990#	994#	999#	1009#	1014#	1019#	1029#	1035#	1041#	1053#
1058#	1064#	1083#	1090	1095#	1122#	1128	1135#	1161#	1164#	1166	1167#	1225#
1227#	1256	1270#	1273	1277#	1297	1301#	1308#	1343#	1348	1358#	1408#	1457#
1515#	1579#	1581#	1584#	1585	1591#	1593#	1596#	1597	1608#	1611#	1613#	1616#
1617	1628#	1647#	1649#	1652#	1653	1659#	1661#	1664#	1665	1676#	1679#	1681#
1684#	1685	1696#	1715#	1717#	1720#	1721	1727#	1729#	1732#	1733	1744#	1747#
1749#	1752#	1753	1764#	1799#	1806	1812	1815#	1835#	1838	1843	1846#	1858#
1859#	1860	1863#	1865	1868#	1888#	1893	1894#	1922#	1924#	1927	1928#	1934#
1936#	1939	1940#	1957#	1958#	1960	1968#	1990#	1996#	1997	2004#	2019#	2020#
2022#	2026	2027#	2036#	2048#	2049	2050#	2055#	2057#	2077#	2088#	2091#	2094#
2097	2098#	2103	2112#	2134#	2144#	2147#	2153	2154#	2159	2167#	2186#	2221#
2255#	2257#	2287#	2289#	2298#	2300#	2321#	2323#	2332#	2334#	2364#	2368#	2387#
2403#	2422#	2435#	2448#	2462#	2477#	2481#	2484#	2485	2495#	2518#	2520#	2528#

2530#	2587*	2596#	2639*	2647*								
334#	1774*	1775	1779	1864*								
335#	423	689*	690									
336#	700	706	712	718	1172	1176*	1177	1600	1620	1668	1688	1736

[illegible]

319	2613	
404	407	414
612		
648		
683		
695		
726		
752		
779		
828		
430		
892		

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 61
 DBKTAC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

TEST21	004070	956#							
TEST22	004564	1072#							
TEST23	004772	1112#							
TEST24	005166	1150#							
TEST25	005374	1198#							
TEST26	005662	1260#							
TEST27	005766	1283#							
TEST3	001416	458#							
TEST30	006252	1338#							
TEST31	007422	1568#							
TEST32	007756	1636#							
TEST33	010312	1704#							
TEST34	010646	1769#							
TEST35	010726	1785#							
TEST36	011070	1822#							
TEST37	011226	1851#							
TEST4	001520	490#							
TEST40	011330	1873#							
TEST41	011514	1912#							
TEST42	011706	1949#							
TEST43	012000	1976#							
TEST44	012136	2009#							
TEST45	012302	2039#							
TEST46	012414	2064#							
TEST47	012636	2121#							
TEST5	001616	518#							
TEST50	013052	2174#							
TEST51	013260	2224#							
TEST52	013326	2239#							
TEST53	013502	2280#							
TEST54	013654	2313#							
TEST55	014026	2348#							
TEST56	014266	2413#							
TEST57	014410	2439#							
TEST6	001726	557#							
TEST60	014532	2467#							
TEST61	014700	2506#							
TEST7	002040	585#							
TST10	002200	620#	643						
TST10F	002300	618#	639	641#	644#				
TST11	002330	655#	678						
TST11F	002430	653#	674	676#	679#				
TYP8	015730	2683#	2691						
TYP8	015752	2685	2688#						
TYPDAT	015770	2683#	2684	2688	2692#				
TYPE	015714	408	2664	2667	2679#				
UPAR0	001054	349#	804#	1345#					
UPAR1	001056	350#	2531	2537#					
UPAR2	001060	351#							
UPAR3	001062	352#							
UPAR4	001064	353#							
UPAR5	001066	354#							
UPAR6	001070	355#							
UPAR7	001072	356#	807#	1206#	1300#	1347#	1955#	2246#	2356#
UPDR0	001034	340#	384	805#	1294#	1882	1898		
UPDR1	001036	341#	1920#						

K05

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 64
DBKTAC.P11 CROSS REFERENCE TABLE -- MACRO NAMES

[illegible]

ADC	2714	2735													
ADD	847	848	850	872	873	1217	1242	1252	1903	1904	2107	2109	2202	2205	2259
ASL	2366	2382	2399	2540	2541	2542	2602	2620	2681	2752	2774	2776			
BCC	449	476	509	5195	5196	2211	2212								
BEG	450	510	1253	2260	2367										
	421	424	436	446	472	505	533	537	549	571	577	598	604	633	668
	691	702	707	713	719	743	771	795	798	814	865	868	878	912	918
	927	931	935	977	996	1016	1038	1060	1092	1101	1129	1169	1173	1178	1181
	1185	1188	1213	1234	1236	1247	1274	1313	1316	1319	1322	1558	1586	1598	1601
	1604	1618	1621	1625	1654	1666	1669	1672	1686	1689	1693	1722	1734	1737	1740
	1754	1757	1761	1776	1780	1807	1813	1839	1844	1866	1896	1930	1942	1961	1998
	2001	2029	2032	2052	2100	2104	2141	2156	2160	2233	2272	2295	2308	2329	2342
	2425	2433	2451	2459	2486	2490	2522	2532	2539	2555	2560	2657	2716	2718	2729
	2768	2773													
BGT	1219	2215													
BHIS	2085														
BIC	442	443	502	709	715	862	1135	1584	1596	1616	1652	1664	1684	1720	1732
	1752	1958	1996	2055	2091	2191	2194	2210	2481	2484	2737				
BIS	704	710	716	1591	1659	1727	2518	2528	2738						
BIT	742	797	1090	1128	1228	1235	1246	1557	1860	2265	2271	2290	2294	2301	2307
	2324	2328	2335	2341	2374	2393	2549	2629	2631	2656	2767				
BLE	515	882	2199	2204											
BLT	1244	1255	2263	2370	2385	2402	2604								
BNE	407	478	640	675	764	860	875	973	992	1012	1033	1056	1229	1861	1899
	2266	2291	2302	2325	2336	2375	2394	2550	2630	2632	2685	2700	2725		
BPL	2206	2558	2634	2672	2690	2703	2710	2721							
BR	411	438	551	643	678	775	815	880	941	979	998	1018	1040	1063	1096
	1107	1132	1140	1165	1220	1396	1445	1496	1501	1554	1583	1595	1615	1651	1663
	1683	1719	1731	1751	1805	1837	1890	1892	1926	1938	1995	2024	2054	2090	2095
	2111	2146	2151	2166	2207	2217	2264	2483	2545	2552	2658	2691	2739		
CLC	2727														
CLR	401	451	479	511	542	550	618	653	748	793	812	844	854	870	876
	883	884	888	906	923	925	975	980	983	987	993	994	999	1014	1019
	1035	1041	1058	1064	1095	1159	1164	1176	1191	1209	1227	1256	1269	1277	1292
	1296	1304	1311	1327	1329	1343	1351	1355	1356	1393	1398	1402	1405	1406	1443
	1447	1449	1451	1454	1455	1493	1494	1498	1499	1503	1504	1506	1508	1509	1513
	1551	1556	1578	1581	1593	1608	1613	1628	1629	1646	1649	1661	1676	1681	1696
	1697	1714	1717	1729	1744	1749	1764	1765	1796	1815	1832	1846	1868	1881	1883
	1894	1907	1924	1928	1936	1940	1959	1968	1986	2004	2018	2022	2027	2036	2047
	2050	2057	2076	2088	2094	2098	2112	2114	2133	2144	2147	2154	2167	2169	2183
	2221	2257	2269	2289	2300	2323	2334	2368	2386	2403	2435	2462	2476	2480	2495
	2515	2520	2527	2530	2537	2587	2588	2590	2596	2599	2613	2617	2622	2625	2638
	2639	2641	2646	2647	2705	2706	2707	2722	2730	2764					
CLRB	569	575	596	602	924	974	1057	1859	1864	2751					
CMP	445	471	477	504	514	532	547	570	576	597	603	632	667	701	706
	712	718	763	770	794	813	858	864	867	881	910	926	934	991	1010
	1015	1030	1036	1059	1098	1168	1172	1177	1180	1187	1190	1212	1218	1233	1243
	1254	1273	1312	1315	1318	1321	1392	1397	1442	1446	1497	1502	1550	1555	1585
	1589	1597	1600	1603	1606	1617	1620	1624	1627	1653	1657	1665	1668	1671	1674
	1685	1688	1692	1695	1721	1725	1733	1736	1739	1742	1753	1756	1760	1763	1806
	1838	1865	1895	1898	1901	1929	1941	1960	1997	2000	2025	2028	2031	2051	2083
	2092	2096	2099	2103	2140	2149	2152	2155	2159	2198	2203	2208	2214	2262	2369
	2384	2401	2424	2432	2450	2458	2485	2489	2521	2531	2538	2603	2633	2637	2645
	2661	2717	2724	2772											
CMPB	916	971	1054	1775	1779	2684									
DEC	871	874	877	1167											

ENT HALT	1391	2755	2756	2757	796	866	869	1084	1085	1086	1087	1088	1089	1102	1106
INC	304	744	765	772	1163	1272	1804	1994	2618	2621	2673	2771	1579	1611	1647
	1123	1124	1125	1138	1225	1270	1301	1308	1358	1408	1457	1515	1579	1611	1647
	410	641	676	1161	1225	1270	1301	1308	1358	1408	1457	1515	1579	1611	1647
	1679	1715	1747	1799	1835	1888	1922	1934	1957	2019	2048	2077	2134	2255	2287
	2298	2305	2321	2332	2339	2364	2387	2635	2642	2711	2723				
IOT JMP JSR	1302	1309	1441												
	317	319	2566	2624	2626	2640	2648								
	408	416	432	460	464	492	495	520	523	559	563	587	590	614	650
	685	697	728	731	754	758	781	784	790	803	830	833	834	894	898
	901	958	961	964	1074	1078	1081	1114	1118	1121	1152	1155	1157	1200	1204
	1205	1262	1265	1267	1285	1288	1298	1340	1344	1346	1570	1573	1574	1638	1641
	1642	1706	1709	1710	1771	1787	1790	1793	1824	1827	1830	1853	1856	1857	1875
	1878	1879	1914	1917	1918	1951	1954	1978	1981	1984	2011	2014	2016	2041	2044
	2045	2066	2069	2070	2123	2126	2127	2176	2180	2181	2226	2230	2241	2244	2245
	2258	2282	2285	2286	2315	2318	2319	2350	2354	2355	2415	2419	2420	2441	2445
	2446	2469	2473	2474	2508	2511	2512	2562	2664	2666	2667	2670			
MOV	402	403	404	405	415	426	431	439	440	441	444	459	463	465	466
	467	468	469	470	491	496	497	498	500	501	503	519	524	526	529
	530	554	558	562	564	565	566	567	568	574	586	591	592	593	594
	595	601	613	617	619	620	621	622	623	624	628	629	630	631	642
	649	654	655	656	657	658	659	663	664	665	666	677	684	688	689
	696	700	727	734	736	737	753	757	759	760	761	762	767	768	769
	780	785	787	789	791	792	804	805	806	807	808	809	810	811	829
	835	836	837	838	839	840	841	842	843	845	846	849	851	852	853
	855	856	857	861	863	885	886	887	893	897	899	900	902	903	904
	905	907	908	909	922	938	939	940	957	962	963	968	969	970	988
	990	1006	1007	1009	1013	1021	1026	1027	1029	1034	1044	1049	1050	1052	1053
	1067	1073	1077	1079	1080	1082	1083	1113	1117	1119	1120	1122	1151	1156	1158
	1160	1166	1192	1199	1203	1206	1207	1208	1210	1211	1221	1222	1223	1224	1226
	1231	1232	1245	1261	1266	1268	1278	1284	1289	1290	1291	1293	1294	1295	1297
	1299	1300	1305	1306	1307	1326	1328	1330	1339	1345	1347	1348	1349	1350	1352
	1353	1354	1357	1394	1399	1400	1401	1403	1404	1407	1448	1450	1452	1453	1456
	1490	1505	1507	1510	1511	1512	1514	1560	1561	1569	1575	1576	1577	1580	1588
	1590	1592	1607	1610	1612	1630	1637	1643	1644	1645	1648	1656	1658	1660	1675
	1678	1680	1698	1705	1711	1712	1713	1716	1724	1726	1728	1743	1746	1748	1766
	1770	1782	1786	1791	1794	1795	1797	1798	1816	1817	1823	1829	1831	1833	1834
	1847	1848	1852	1858	1863	1874	1880	1882	1884	1885	1886	1887	1893	1900	1906
	1913	1919	1920	1921	1927	1932	1933	1939	1945	1950	1955	1956	1977	1982	1985
	1987	1988	1990	2005	2010	2015	2017	2020	2021	2026	2034	2040	2046	2058	2065
	2071	2073	2075	2078	2082	2097	2113	2122	2128	2130	2132	2135	2139	2153	2168
	2175	2179	2182	2184	2186	2187	2188	2189	2190	2220	2225	2229	2231	2240	2246
	2247	2248	2249	2250	2252	2254	2256	2281	2288	2299	2304	2314	2322	2333	2338
	2349	2353	2356	2357	2358	2359	2362	2363	2365	2371	2372	2390	2391	2414	2418
	2421	2422	2423	2429	2430	2440	2444	2447	2448	2449	2454	2455	2468	2472	2475
	2477	2478	2496	2507	2513	2514	2516	2517	2519	2529	2551	2553	2556	2559	2589
	2597	2598	2600	2614	2615	2616	2619	2623	2636	2644	2655	2659	2660	2662	2663
	2669	2679	2680	2682	2686	2698	2701	2708	2719	2736	2748	2750	2753	2765	2766
	2769	2780	2781												
MOVB	1774	2293	2306	2327	2340	2554	2683	2688							
NOP	680	705	711	717	946	1108	1126	1127	1141	1303	1310	1491	1492	2479	2563
RESET	2564	2565													
	419	627	662	738	766	774	800	1105	1139	1778	1811	1842	1891	2388	2389
ROL	2561	2770													
RTI	2712	2713	2732	2733	2734										
	1800	2674													

N05

DBKTA.C MACY11 27(732) 08-SEP-76 09:35 PAGE 68
 DBKTAC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

RTS	2275	2593	2605	2687	2704	2726	2775	2777	2782						
RTT	1989														
SEC	2731														
S08	481	482	513	544	581	582	608	609	625	626	637	638	660	661	672
	673	1216	1241	1905	2381	2398	2457	2592	2601						
SUB	2162	2164	2543	2544	2749										
SWAB	2193	2197	2209	2213											
TRAP	267														
TST	406	420	423	435	480	512	534	543	580	607	636	639	671	674	690
	879	930	995	1162	1184	1240	1251	1271	1548	1812	1836	1843	1889	1902	1923
	1935	2049	2079	2080	2086	2136	2137	2142	2192	2232	2274	2361	2380	2397	2456
	2591	2671	2699	2709	2715	2728									
TSTB	976	2557	2689	2702	2720										
.ABS	1														
.ASCII	2570	2577	2579												
.ASCII2	2581	2582													
.END	2786														
.EVEN	2583														
.LIST	1	304	399	414	430	458	490	518	557	585	612	648	683	695	726
	752	779	828	892	956	1072	1112	1150	1198	1260	1283	1338	1568	1636	1704
	1769	1785	1822	1851	1873	1912	1949	1976	2009	2039	2064	2121	2174	2224	2239
	2280	2313	2348	2413	2439	2467	2506								
.NLIST	399	1563													
	1	304	399	414	430	458	490	518	557	585	612	648	683	695	726
	752	779	828	892	956	1072	1112	1150	1198	1260	1283	1338	1568	1636	1704
	1769	1785	1822	1851	1873	1912	1949	1976	2009	2039	2064	2121	2174	2224	2239
	2280	2313	2348	2413	2439	2467	2506								
.REM	1														
.REPT	304	1359	1409	1458	1516										
.TITLE	1														
.WORD	325														

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

*DBKTAC,DBKTAC.SEG/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DBKTAC.P11
 RUN-TIME: 10 19 4 SECONDS
 RUN-TIME RATIO: 124/35=3.5
 CORE USED: 10K (20 PAGES)

[illegible]