KT11-D

KT11-D ACCESS KEYS TEST

MD-11-DBKTB-A

EP-DBXTB-A-DL-A

OCT 1976

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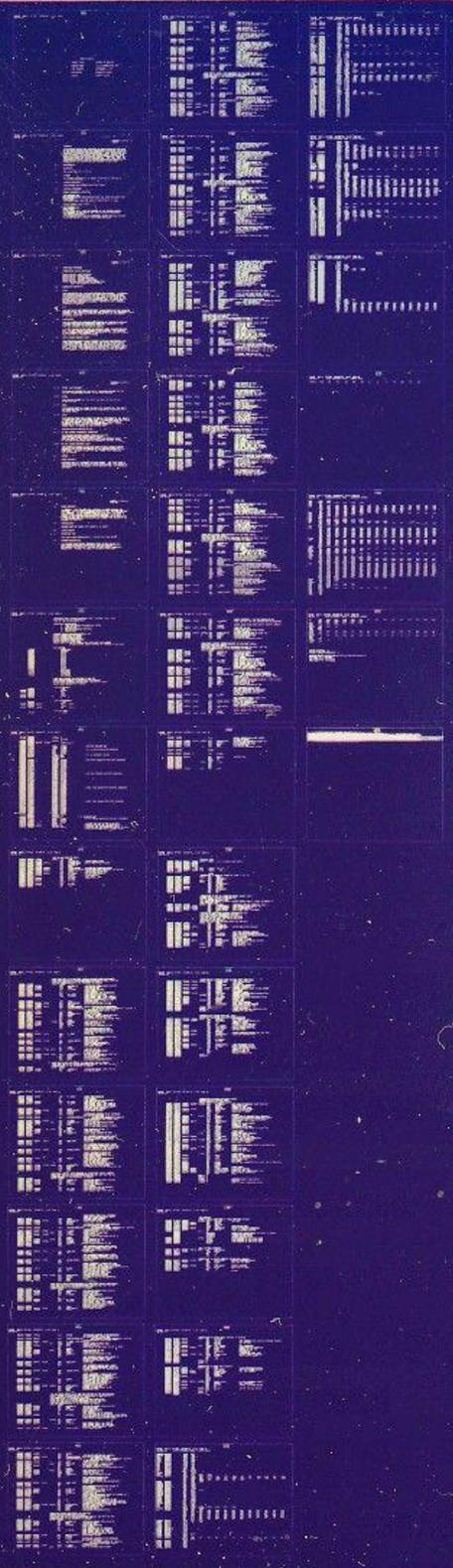
Made In U.S.A.

FICHE 1 OF 1



KEYVB MACY11 27(732) 09-SEP-76 14:29 PAGE 1
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IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DBKTB-A
PRODUCT NAME:	KT11-D ACCESS KEYS TEST
DATE CREATED:	SEPTEMBER 1, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	ROBERT WHITTON

1.0 ABSTRACT

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

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP 11/40 WITH KT11-D OPTION

2.2 STORAGE

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

3.0 LOADING PROCEDURE

LOAD PROGRAM INTO MEMORY USING ABS LOADER.

4.0 STARTING PROCEDURE

4.1 NORMAL DIAGNOSTIC OPERATION

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

4.2 SINGLE SUBTEST LOOP (TESTX)

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

5.0 OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

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SW15=1 OR UP-- HALT ON ERROR
SW14=1 OR UP-- SCOPE LOOP
SW13=1 OR UP-- INHIBIT PRINTOUT
SW11=1 OR UP-- INHIBIT ITERATIONS
SW10=1 OR UP-- HALT AT END OF CURRENT TEST
               NEXT TEST NUMBER IN DATA LIGHTS
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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 [illegible] ITERATIONS ON THAT SUBTEST BEFORE THE NEXT SUBTEST IS ENTERED. SWITCH 11 ON A 1 INHIBITS ITERATION OF SUBTESTS.

5.2.2 HLT

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

5.2.3 TRAPCATCHER

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

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

5.2.4 TESTX (SINGLE SUBTEST LOOP)

THIS ROUTINE ALLOWS A SINGLE SUBTEST TO BE RUN CONTINUOUSLY FOR SCOPE LOOP PURPOSES. WHILE A SCOPE LOOP SWITCH OPTION EXISTS, IT REQUIRES THAT YOU ARE WITHIN THE TEST IN WHICH YOU WISH TO LOOP. IN SOME CASES (SUCH AS WITH INTERMITTENT FAILURES) THAT'S NOT EASY TO DO. THIS SUBROUTINE ALLOWS YOU TO LOAD THE ADDRESS OF ANY SUBTEST AT THE HALT AND THEN GO DIRECTLY TO THAT TEST.

5.2.5 EMTSRV (EMT DECODER)

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

5.2.6 CLRALL

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

5.2.7 RWALL

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

5.2.8 SETUP

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

5.3 PROGRAM AND/OR OPERATOR ACTION

5.3.1 SA 200 (NORMAL DIAGNOSTIC OPERATION)

THE PROGRAM EXECUTES SEVERAL TESTS OF EACH KEY.
TESTS 5 THRU 10 ARE CYCLED THRU 3 TIMES,
ONCE FOR EACH OF THE KEYS WHICH GIVES A NON-RESIDENT ABORT.
AT THE END OF EACH PASS THRU THE DIAGNOSTIC THE BELL IS RUNG.

5.3.2 SA 210 (SINGLE SUBTEST LOOP)

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

6.0 ERRORS

6.1 ERROR PRINTOUT

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

6.2 ERROR RECOVERY

IN GENERAL, TEST FAILURES WILL PRINTOUT AN ERROR [illegible] AND CONTI[illegible] IF THE [illegible] ICH IS [illegible] CONTINUE WILL [illegible] IF T[illegible] UP IN A LOOP, THE [illegible] OR IS LI[illegible]Y TO [illegible] A [illegible] IF A H[illegible]T OCC[illegible] IN [illegible] T [illegible] AND V[illegible] THE [illegible] MUST [illegible] STARTED. IF T[illegible] IN THE MAIN FLOW, CONSULT THE LISTING IF NO MESSAGE IS TYPED OUT.

7.0 RESTRICTIONS

PROGRAM MUST BE LOADED INTO LOWER 5K OF MEMORY.

8.0 MISCELLANEOUS

8.1 EXECUTION TIME

EACH PASS TAKES APPROXIMATELY 1 MINUTE WITH CORE MEMORY.

9.0 PROGRAM DESCRIPTION

THE PROGRAM RUNS SEVERAL SEPARATE TESTS OF EACH ACCESS KEY. DATI, [illegible] (NO DATIP), DATIP-DATO, AND DATIP-[illegible] ARE CHECKED FOR EACH KEY, WITH AND WITHOUT MEMORY MANAGEMENT ENABLE SET. THE BELL IS RUNG AT THE END OF EACH PASS.

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

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

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

                                ;DEFINITIONS
                                        SCOPE=TRAP
                                        NOP=240
                                        R0=%0
                                        R1=%1
                                        R2=%2
                                        R3=%3
                                        R4=%4
                                        R5=%5
                                        R6=%6
                                        R7=%7
                                        SP=%6
                                        PC=%7
                                        SR=177570
                                        PS=177776
                                        STATUS=PS
                                        HLT=104006

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

                                ;LOAD VECTOR AREA
                        000030          .=30
000030  000326                          EMTSRV
000032  000340                          340
                        000034          .=34
000034  000632                          SCOPEC
000036  000000                          0

                                ;LOAD STARTING AREA
                        000200          .=200
000200  000167  001744                  JMP     START
                        000210          .=210
000210  000167  005320                  JMP     TESTX

                                ;LOAD DATA AREA
                        001000          .=1000
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        001000  000000                          KSTACK: 0
                002000                                  .=.+776
        002000  000000                          USTACK: 0
        002002  000000  000000  000000                  .WORD 0,0,0,0
        002010  000000
        002012  177564                          TCSR:   177564          ;TELETYPE PRINTER CSR
        002014  177566                          TDBR:   177566
        002016  177572                          SR0:    177572          ;KT11-D STATUS REGISTER ADDRESSES
        002020  177574                          SR1:    177574
        002022  177576                          SR2:    177576
        002024  000250                          KTVEC:  250             ;KT11-D INTERRUPT VECTOR
        002026  000252                          KTSTA:  252
        002030                                  ADRTAB:
        002030  177600                          UPDR0:  177600          ;USER PAGE DESCRIPTOR REGISTER ADDRESSES
        002032  177602                          UPDR1:  177602
        002034  177604                          UPDR2:  177604
        002036  177606                          UPDR3:  177606
        002040  177610                          UPDR4:  177610
        002042  177612                          UPDR5:  177612
        002044  177614                          UPDR6:  177614
        002046  177616                          UPDR7:  177616
        002050  177640                          UPAR0:  177640          ;USER PAGE ADDRESS REGISTER ADDRESSES
        002052  177642                          UPAR1:  177642
        002054  177644                          UPAR2:  177644
        002056  177646                          UPAR3:  177646
        002060  177650                          UPAR4:  177650
        002062  177652                          UPAR5:  177652
        002064  177654                          UPAR6:  177654
        002066  177656                          UPAR7:  177656
        002070  172300                          KPDR0:  172300          ;KERNEL PAGE DESCRIPTOR REGISTER ADDRESSES
        002072  172302                          KPDR1:  172302
        002074  172304                          KPDR2:  172304
        002076  172306                          KPDR3:  172306
        002100  172310                          KPDR4:  172310
        002102  172312                          KPDR5:  172312
        002104  172314                          KPDR6:  172314
        002106  172316                          KPDR7:  172316
        002110  172340                          KPAR0:  172340          ;KERNEL PAGE ADDRESS REGISTER ADDRESSES
        002112  172342                          KPAR1:  172342
        002114  172344                          KPAR2:  172344
        002116  172346                          KPAR3:  172346
        002120  172350                          KPAR4:  172350
        002122  172352                          KPAR5:  172352
        002124  172354                          KPAR6:  172354
        002126  172356                          KPAR7:  172356
                002126                          ADRTND= .-2
        002130  000000                          FTITLE: 0       ;TITLE PRINTED FLAG
        002132  177573                          SR0H:   177573          ;KT11-D STATUS REGISTER HIGH BYTE ADDRESSES
        002134  177575                          SR1H:   177575
        002136  177577                          SR2H:   177577

        002140  000000                          NRCNT:  0               ;COUNTER FOR TEST OF THE 3 NR KEYS
        002142  000000  000004                  NRKEYS: 0,4             ;VALUES OF THE 3 NON RESIDENT KEYS
        002146  125252                          DESTAD: 125252          ;LOCATION USED FOR READS AND WRITES TO CHECK
                                                                        ;EXECUTION OR ABORTING AT CORRECT POINT
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                                        ;SET UP FOR START OF TESTS
002150  005037  177776          START:  CLR     @#PS
002154  012706  001000                  MOV     #STACK,SP       ;SETUP KERNEL STACK
002160  012737  140340  177776          MOV     #340,@#PS       ;SETUP USER STACK POINTER
002166  012706  001000                  MOV     #STACK,SP
002172  005  37  177776                 CLR     @#MMR3
002176  01 767  002000  003520          MOV     #2000,ICOUNT    ;INITIALIZE ITERATION COUNT
002204  012767  00 160  003516          MOV     #TEST1+2,RETURN ;SETUP SCOPE FOR ITERATION LOOP RETURN
002212  00 167  177722                  CLR     NMCNT           ;INITIALIZE FOR NEXT TEST
002216  01 167  000001  004366          MOV     #1,TESTCT       ;SETUP TEST SEQUENCE
002224  00 767  177700                  TST     FTITLE          ;TITLE PRINTED
002230  001013                          BNE     TEST1+2         ;YES, SKIP
002232  004767  004156                  JSR     PC,CRLF         ;PRINT TITLE
002236  004767  004204                  JSR     PC,TITLE
002242  005376                          MTIT
002244  004767  004144                  JSR     PC,CRLF
002250  005267  177654                  INC     FTITLE
002254  000401                          BR      .+4
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                                        ;SHOW THAT DATI TO A RRO PAGE (ACF=2) NEITHER TRAPS NOR ABORTS
                                        ;SHOW THAT THE KT11-D STATUS REGISTERS CONTINUE TO TRACK, AND THAT
                                        ;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
002256  104400                  TEST1:  SCOPE
002260  012706  001000                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
002264  005077  177556                  CLR     @SR0            ;INITIALIZE SR0
002270  004767  004232                  JSR     PC,ORDER        ;CHECK TEST SEQUENCE
002274  000001                          .WORD   1               ;TEST NUMBER
002276  104006                          HLT                     ;TEST EXECUTED OUT OF SEQUENCE
002300  012746  000002                  MOV     #2,-(SP)        ;PUSH RRO KEY ON STACK
002304  004767  003174                  JSR     X7,SETUP        ;MAKE KERNEL PAGE 1 RRO, BANK 0
                                                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                                                ;MAKE ALL OTHER PAGES RW, BANK 0
002310  005726                          TST     (SP)+           ;RESTORE STACK
002312  012777  002426  177504          MOV     #RET1,@KTVEC    ;SETUP ABORT RETURN IN CASE
002320  005077  177502                  CLR     @KTSTA
002324  012767  125252  177614          MOV     #125252,DESTAD  ;SETUP LOCATION TO BE REFERENCED
002332  012701  022146                  MOV     #DESTAD+20000,R1        ;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION TO
                                                                ;BE REFERENCED THRU KERNEL PAGE 1
002336  005277  177454                  INC     @SR0            ;TURN ON KT11-D
002342  022721  125252                  CMP     #125252,(R1)+   ;DATI TO RRO PAGE
002346  001404                          BEQ     CMPOK1          ;BRANCH IF CORRECT VALUE WAS READ
002350  005377  177442                  DEC     @SR0            ;ON ERROR, TURN OFF KT11-D
002354  104006                          HLT                     ;RELOCATION FAILED THRU KERNEL PAGE 1
002356  000427                          BR      DONE1
002360  017702  177432          CMPOK1: MOV     @SR0,R2         ;SAVE CONTENTS OF SR0
002364  105377  177426                  DECB    @SR0            ;TURN OFF KT11-D
002370  022702  000017                  CMP     #17,R2          ;CHECK SAVED CONTENTS OF SR0
002374  001401                          BEQ     .+4
002376  104006                          HLT                     ;SR0 INCORRECT-SHOULD HAVE
                                                                ;TRACKED TO PAGE 0,
                                                                ;LATCH OUT THE ADDRESS OF SR0
002400  022777  002400  177414          CMP     #.,@SR2         ;CHECK SR2
002406  001401                          BEQ     .+4
002410  104006                          HLT                     ;SR2 INCORRECT-SHOULD TRACK EVEN
                                                                ;WHEN KT11-D IS OFF
002412  022777  077402  177452          CMP     #77402,@KPDR1   ;CHECK PDR FOR
002420  001401                          BEQ     .+4             ;THE REFERENCED
002422  104006                          HLT                     ;KT11-D SHOULD NOT
                                                                ;HAVE BEEN CHANGED
002424  000404                          BR      DONE1
002426  042777  000001  177362  RET1:  BIC     #1,@SR0         ;TURN OFF KT11-D
002434  104006                          HLT                     ;DATI TO RRO PAGE CAUSED
                                                                ;A TRAP OR
002436  016777  177364  177360  DONE1: MOV     KTSTA,@KTVEC    ;RESTORE TRAP RETURN TO CAUSE HALT
002444  005077  177356                  CLR     @KTSTA          ;ON AN UNEXPECTED TRAP
002450  005077  177342                  CLR     @SR0            ;INITIALIZE SR0
002454  005037  177776                  CLR     @#PS            ;INITIALIZE PROCESSOR STATUS

                                        ;SHOW THAT A DATO (NO DATIP) TO A RRO PAGE (ACF=2) ABORTS
                                        ;SHOW THAT THE KT11-D STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                        ;CORRESPONDING TO THE REFERENCE IS CORRECT
002460  104400                  TEST2:  SCOPE
002462  012706  001000                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
002466  005077  177324                  CLR     @SR0            ;INITIALIZE SR0
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002472  004767  004030                  JSR     PC,ORDER        ;CHECK TEST SEQUENCE
002476  000002                          2                       ;TEST NUMBER
002500  104006                          HLT                     ;TEST EXECUTED OUT OF SEQUENCE
00[illegible]2  012746  000002                  MOV     #2,-(SP)        ;PUSH [illegible] KO KEY ON STACK
00[illegible]6  004767  002772                  JSR     %7,SETUP        ;M[illegible]E KE[illegible]EL PAGE 1 RRO, BANK 0
                                                                        ;M[illegible] KE[illegible]EL PAGE 7 RW, EXTERNAL
                                                                        ;M[illegible]E ALL OTHER PAGES RW, BANK 0

002512  005726                          TST     (SP)+           ;R STORE STACK POINTER
002514  012777  002560  177302                  MOV     #[illegible]ET4,@KTVEC  ;SETUP ABORT RETURN
00[illegible]2  0[illegible]077  177300                  CLR     @[illegible]TSTA
002526  005067  177414                  CLR     DESTAD          ;INITIALIZE LOCATION TO BE ADDRESSED
                                                                ;BY DATO TO RRO PAGE
002532  012702  022146                  MOV     #DESTAD+20000,R2        ;R2 CONTAINS ADDRESS OF LOCATION
                                                                ;TO BE REFERENCED THRU KERNEL PAGE 1
002536  012777  000001  177252          MOV     #1,@[illegible]0        ;TURN ON KT11-D
002544  012722  1[illegible]252  AD4:    MOV     #1[illegible]2,(R2)+    ;DATO TO RRO PAGE-SHOULD ABORT
00[illegible]50  005377  177242          DEC     @[illegible]0           ;TURN OFF KT11-D
0[illegible]54  104016                  HLT                     ;DATO TO RRO PAGE FAILED TO ABORT
0[illegible]56  0[illegible]6                   BR      DO[illegible]E4
0[illegible]60  017701  177232  RET4:   MOV     @[illegible]0,R1        ;SAVE CONTENTS OF SR0
0[illegible]64  005377  177226          DEC     @[illegible]0           ;TURN OFF KT11-D
0[illegible]70  0[illegible]2701  020003          CMP     #[illegible]0003,R1     ;CHECK SAVED CONTENTS OF SR0
0[illegible]74  001401                  BEQ     .+4
002576  104006                          HLT                     ;SR0 INCORRECT-SHOULD HAVE LOCKED
                                                                ;ON DATO TO KERNEL PAGE 1(RRO)
                                                                ;AND ACCESS FAULT SHOULD BE SET
002600  022777  002544  177214          CMP     #AD4,@SR2       ;CHECK SR2
0[illegible]606  001401                  BEQ     .+4
002610  104006                          HLT                     ;SR2 INCO[illegible]CT-SHOULD HAVE LOCKED
                                                                ;ON TH[illegible] [illegible]D R[illegible]FERENCE, WITH THE
                                                                ;VIRTUAL A[illegible]S OF THE INSTRUCTION
002612  022777  077402  177252          CMP     #77402,@KPDR1   ;CHECK INS[illegible]UCTION SPACE PDR
0[illegible]620  001401                  BEQ     .+4
002622  104006                          HLT                     ;KPDR1 INCO[illegible]FECT-SHOULD NOT
                                                                ;H[illegible]E B[illegible]N CH[illegible]ED SINCE THE
                                                                ;DATO D[illegible]'T [illegible]ITE
002624  005767  177316                  TST     DESTAD          ;M[illegible] CE[illegible]TAIN THAT DESTINATION
0[illegible]630  001401                  BEQ     .+4             ;LOCATION [illegible]AS NOT WRITTEN
0[illegible]632  104006                  HLT                     ;DATO TO R[illegible]O PA[illegible] WROTE
                                                                ;INTO THE DESTI[illegible]ATION LOCATION
002634  016777  177166  177162  DONE4:  MOV     KTSTA,@KTVEC    ;CHANGE KT11-D TRAP RETURN
0[illegible]642  0[illegible]077  177160          CLR     @[illegible]TSTA        ;TO CAUSE A HALT ON AN UNEXPECTED TRAP
0[illegible]646  0[illegible]377  177144          CLR     @[illegible]0
002652  0[illegible]037  177776          CLR     @[illegible]S

                                ;SH[illegible] THAT A DATIP, DATO [illegible]E TO A RRO PAGE (ACF=2) ABORTS
                                ;S[illegible] THAT THE KT11-D STA[illegible] R[illegible]ISTERS LOCK UP, AND THAT THE PDR
                                ;C[illegible]ESP[illegible]DING TO THE R[illegible]FERENCE IS C[illegible]RECT
002656  104400                  TEST3:  S[illegible]E
0[illegible]660  012[illegible]6  001000          MOV     #[illegible]STACK,SP    ;INITIALIZE K[illegible]RNEL STACK POINTER
0[illegible]664  0[illegible]377  177126          CLR     @[illegible]0            ;INITIALIZE [illegible]0
0[illegible]670  0[illegible]767  003632          JSR     PC,ORDER        ;CHECK TEST SEQUENCE
0[illegible]674  000003                  3                       ;TEST N[illegible]ER
0[illegible]676  104006                  HLT                     ;TEST E[illegible]CUTED OUT OF SEQUENCE
002700  012746  000002                  MOV     #2,-(SP)        ;PUSH [illegible]O KEY ON STACK
002704  004767  00[illegible]574          JSR     %7,SETUP        ;MAKE KERNEL PAGE 1 RROT,BANK 0
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                                                        ;MAP KERNEL PAGE 7 RW, EXTERNAL
                                                        ;MAP ALL OTHER PAGES RW, BANK 0
                                                        ;INITIALIZE STACK POINTER
                                                        ;SETUP ABORT RETURN

002710  005726                         TST     (SP)+
002712  012777  002756  177104         MOV     #ETS,@KTVEC
002720  005077  177102                 CLR     @KTSTA
002724  005067  177216                 CLR     DESTAD

002730  012703  022150                 MOV     #DESTAD+20002,R3        ;INITIALIZE LOCATION TO BE ADDRESSED
                                                                        ;BY DATIP, DATO TO BE DONE
                                                                        ;R3 CONTAINS VIRTUAL ADDRESS+2 OF LOCATION
                                                                        ;TO BE REFERENCED THRU KERNEL PAGE 1
002734  052777  000001  177054         BIS     #1,@SR0                 ;TURN ON KT11-D
002742  005043          ADS:    INC     -(R3)                           ;DATIP, DATO TO RRO PAGE
002744  042777  000001  177044         BIC     #1,@SR0                 ;TURN OFF KT11-D
002752  000000                         HLT                             ;DATIP, DATO TO RROT PAGE FAILED TO
002754  000767                         BR      DONE5                   ;ABORT
002756  017701  177034         RETS:   MOV     @SR0,R1                 ;SAVE CONTENTS OF SR0
002762  042777  000001  177026         BIC     #1,@SR0                 ;TURN OFF KT11-D
002770  012701  020003                 CMP     #20003,R1               ;CHECK SAVED CONTENTS OF SR0
002774  001401                         BEQ     .+4
002776  104006                         HLT

                                                                        ;SR0 INCORRECT-SHOULD HAVE LOCKED
                                                                        ;ON DATO TO KERNEL PAGE 1(RR0) AND
                                                                        ;ACCESS FAULT SHOULD BE SET
003000  022777  002742  177014         CMP     #ADS,@SR2               ;CHECK SR2
003006  001401                         BEQ     .+4
003010  104006                         HLT

                                                                        ;SR2 INCORRECT-SHOULD HAVE LOCKED
                                                                        ;ON THE ABORTED REFERENCE, WITH THE
                                                                        ;VIRTUAL ADDRESS OF THE INSTRUCTION
003012  022777  077402  177052         CMP     #77402,@KPDR1           ;CHECK PDR
003020  001401                         BEQ     .+4
003022  104006                         HLT

                                                                        ;KPDR1 INCORRECT - SHOULD NOT HAVE
                                                                        ;BEEN CHANGED, SINCE DATIP IS ABORTED
                                                                        ;SINCE IT WILL BE FOLLOWED BY A DATO OR DATOB
003024  005767  177116                 TST     DESTAD                  ;MAKE CERTAIN THAT DESTINATION
003030  001401                         BEQ     .+4                     ;LOCATION WAS NOT WRITTEN
003032  104006                         HLT                             ;DATO TO RR0 PAGE WROTE INTO
                                                                        ;THE DESTINATION LOCATION
003034  016777  176766  176762 DONE5:  MOV     KTSTA,@KTVEC            ;CHANGE PAGE FAULT RETURN
003042  005077  176760                 CLR     @KTSTA                  ;TO CAUSE A HALT ON AN UNEXPECTED
003046  005077  176744                 CLR     @SR0                    ;TRAP
003052  005037  177776                 CLR     @#PS

                                ;SHOW THAT A DATIP,DATOB SEQUENCE TO A RR0 PAGE (ACF=2) WORD ABORTS
                                ;SHOW THAT THE KT11-D STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                ;CORRESPONDING TO THE REFERENCE IS CORRECT
003056  104400          TEST4:  SCOPE
003060  012706  001000                 MOV     #KSTACK,SP              ;INITIALIZE KERNEL STACK POINTER
003064  005077  176726                 CLR     @SR0                    ;INITIALIZE SR0
003070  004767  003432                 JSR     PC,ORDER                ;CHECK TEST SEQUENCE
003074  000004                         4                               ;TEST NUMBER
003076  104006                         HLT                             ;TEST EXECUTED OUT OF SEQUENCE
003100  012746  000002                 MOV     #2,-(SP)                ;PUSH ) KEY ON STACK
003104  004767  002374                 JSR     %7,SETUP                ;MAP KERNEL PAGE 1 RO, BANK 0
                                                                        ;MAP KERNEL PAGE 7 RW, EXTERNAL
                                                                        ;MAP ALL OTHER PAGES RW, BANK 0
003110  005726                         TST     (SP)+                   ;INITIALIZE STACK POINTER
003112  012777  003154  176704         MOV     #RET6,@KTVEC            ;SETUP ABORT RETURN
003120  005077  176702                 CLR     @KTSTA
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003124  005067  177016                  CLR     DESTAD          ;INITIALIZE LOCATION TO BE ADDRESSED
                                                                ;BY DATIP,DATOB TO R/O PAGE
003130  012704  022146                  MOV     #DESTAD+20000  4        ;R4 CONTAINS VIRTUAL ADDRESS OF LOCATION
                                                                ;TO BE REFERENCED THRU KERNEL PAGE 1
003134  052777  000001  176654          BIS     #1,@SR0 ;TURN ON KT11-D
003142  1( 224                  AD6:    INCB    (R4)+           ;DATIP, DATOB TO RROT PAGE
003144  0( 377  176646                  DEC     @SR0            ;TURN OFF KT11-D
003150  104006                          HLT                     ;DATIP,DATO TO RROT PAGE FAILED TO ABORT
0031 2  000426                          BR      DONE6
003154  017701  176636          RET6:   MOV     @ J,R1          ;SAVE CONTENTS OF SR0
003160  005377  176632                  DEC     @ 0             ;TURN OFF KT11-D
003164  0 2701  020003                  CMP     #20003,R1       ;CHECK SAVED CONTENTS OF SR0
003170  001401                          BEQ     .+4
003172  104006                          HLT                     ;SR0 INCORRECT-SHOULD HAVE LOCKED ON
                                                                ;DATOB TO K NEL PAGE 1 ( 0)
                                                                ;ACCESS FAULT SHOULD BE SET
003174  022777  003142  176620          CMP     #AD6,@SR2       ;CHECK SR2
003202  001401                          BEQ     .+4
003204  104006                          HLT                     ;SR2 INCORRECT-SHOULD HAVE LOCKED
                                                                ;ON THE A ITED REFERENCE, WITH THE
                                                                ;VIRTUAL ADDRESS OF THE INSTRUCTION
003206  022777  077402  176656          CMP     #77402,@KPDR1   ;CHECK PDR
0 3214  001401                          BEQ     .+4
003216  104006                          HLT                     ;KPDR1 INCORRECT - SHOULD NOT HAVE
                                                                ;BEEN CHA D-DATIP IS ABORTED
                                                                ;SINCE IT MUST BE FOLLOWED BY A DATO
003220  005767  176722                  TST     DESTAD          ;MAKE CERTAIN THAT DESTINATION
0 0 24  001401                          BEQ     .+4             ;LOCATION WAS NOT WRITTEN
003226  104006                          HLT                     ;DATOB TO R/O PAGE WROTE INTO
                                                                ;THE DESTINATION LOCATION
003230  016777  176572  176566  DONE6:  MOV     KTSTA,@KTVEC    ;CHANGE KT11-D FAULT
0 0 36  0 0 077  176564                  CLR     @KTSTA          ;RETU N TO CAUSE A HALT ON AN
003242  0 0 077  176550                  CLR     @ 30            ;UNEXPECTED TRAP
003246  0 5037  177776                  CLR     @#PS

                                ;THE FOLLOWING TESTS (5-10) ARE RUN FOR BOTH OF THE NON-RESIDENT
                                ;KEYS - A PASS IS MADE FOR KEY 0, THEN A PASS IS MADE FOR KEY 4,
                                ;THE CU ENT KEY IS STORED ON T  STACK
                                ;SHOW THAT DATI TO A NR PAGE AB TS WITHOUT COMPLETING
                                ;SHOW THAT THE KT11-D STATUS R ISTE S LOCK UP, AND THAT
                                ;THE PDR CO ESPONDING TO THE REFE NCE IS CORRECT
003252  104400                  TEST5:  SCOPE
003254  012706  001000                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
003260  005077  176532                  CLR     @SR0            ;INITIALIZE S  )
003264  004767  003236                  JSR     PC,ORDER        ;CH CK T T SEQUENCE
003270  0 0 005                       5                       ;TEST N R
003272  10 0 6                       HLT                     ;TEST E UTED OUT OF SEQUENCE
003274  005037  001000                  CLR     @#KSTACK        ;PUT 0 O STACK AS FIRST NR KEY TO BE TESTED
                                                                ;THIS IN TRUCTION IS SKIPPED WHEN TESTING THE
                                                                ;OTHER WHICH IS SETUP AFTER TEST30
003300  012706  001000          RERUN4: MOV     #KSTACK,SP
003304  0 0 077  176506                  CLR     @SR0
003310  004767  002170                  JSR     %7,SETUP        ;MAKE KERNEL PAGE 1 NR, B K 0
                                                                ;M KE KERNEL PAGE 7 RW, E TERNAL
                                                                ;M KE ALL OTHER PAGES RW, BANK 0
003314  012777  003360  176502          MOV     #RET21,@KTVEC   ;SETUP ABORT RETURN
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NO1


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003322  005077  176500                  CLR     @KTSTA
003326  005003                          CLR     R3              ;INITIALIZE DESTINATION LOCATION
003330  012767  125252  176610          MOV     #125252,DESTAD  ;INITIALIZE SOURCE LOCATION
003336  012701  022146                  MOV     #DESTAD+20000,R1        ;R1 CONTAINS VIRTUAL ADDRESS OF LOCATION
                                                                ;TO BE REFERENCED THRU KERNEL PAGE 1
003342  005277  176450                  INC     @SR0            ;TURN ON KT11-D
003346  012103                  AD21:   MOV     (R1)+,R3        ;DATI TO NR PAGE - SHOULD ABORT
003350  005377  176442                  DEC     @SR0            ;ON ERROR, TURN OFF KT11-D
003354  104006                          HLT                     ;NO ABORT ON DATI TO A NON-RESIDENT PAGE
003356  000430                          BR      DONE21
003360  017702  176432          RET21:  MOV     @#0,R2          ;SAVE CONTENTS OF SR0
003364  105377  176426                  DECB    @SR0            ;TURN OFF KT11-D
003370  022702  100003                  CMP     #100003,R2      ;CHECK SAVED CONTENTS OF SR0
003374  001401                          BEQ     .+4
003376  104006                          HLT                     ;SR0 INCORRECT-SHOULD HAVE
                                                                ;LOCKED ON REFERENCE TO
                                                                ;KERNEL PAGE 1 WHICH WAS NON-RESIDENT
003400  022777  003346  176414          CMP     #AD21,@SR2      ;CHECK SR2
003406  001401                          BEQ     .+4
003410  104006                          HLT                     ;SR2 INCORRECT-SHOULD HAVE LOCKED ON
                                                                ;NR REFERENCE
003412  017705  176454                  MOV     @KPDR1,R5       ;MOVE CONTENTS OF KPDR1 TO R5
003416  042705  000007                  BIC     #7,R5           ;TO MASK OFF ACCESS KEY
003422  020527  077400                  CMP     #77400,R5       ;CHECK PDR FOR
003426  001401                          BEQ     .+4             ;THE NR PAGE REFERENCED (BITS 0-2 MASKED OUT)
003430  104006                          HLT                     ;KPDR1 INCORRECT-SHOULD NOT
                                                                ;HAVE BEEN CHANGED
003432  005703                          TST     R3              ;CHECK DESTINATION LOCATION TO SEE
003434  001401                          BEQ     .+4             ;IF INSTRUCTION ALTERED IT BEFORE ABORTING
003436  104006                          HLT                     ;INSTRUCTION COMPLETED BEFORE ABORT OCCURRED
003440  016777  176362  176356  DONE21: MOV     KTSTA,@KTVEC    ;RESTORE TRAP VECTOR TO CAUSE HALT
003446  005077  176354                  CLR     @KTSTA          ;ON AN UNEXPECTED TRAP
003452  005077  176340                  CLR     @SR0            ;INITIALIZE SR0
003456  005037  177776                  CLR     @#PS            ;INITIALIZE PROCESSOR STATUS

                                ;SHOW THAT A DATO (NO DATIP) TO A NR PAGE
                                ;ABORTS WITHOUT COMPLETING THE DATO
                                ;SHOW THAT THE KT11-D STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                ;CORRESPONDING TO THE REFERENCE IS CORRECT
003462  104400                  TEST6:  SCOPE
003464  012706  001000                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
003470  005077  176322                  CLR     @SR0            ;INITIALIZE SR0
003474  004767  003026                  JSR     PC,ORDER        ;CHECK TEST SEQUENCE
003500  000006                          6                       ;TEST NUMBER
003502  104006                          HLT                     ;TEST EXECUTED OUT OF SEQUENCE
003504  004767  001774                  JSR     %7,SETUP        ;MAP KERNEL PAGE 1 NR, LOCK 0
                                                                ;MAP KERNEL PAGE 7 RW, EXTERNAL
                                                                ;MAP ALL OTHER PAGES RW, BANK 0
003510  012777  003556  176306          MOV     #RET23,@KTVEC   ;SETUP ABORT RETURN
003516  005077  176304                  CLR     @KTSTA
003522  005067  176420                  CLR     DESTAD          ;INITIALIZE LOCATION TO BE ADDRESSED
                                                                ;BY DATO TO NR PAGE
003526  012701  022146                  MOV     #DESTAD+20000,R1        ;R1 CONTAINS ADDRESS OF LOCATION
                                                                ;TO BE REFERENCED THRU KERNEL PAGE 1
003532  112777  000001  176256          MOVB    #1,@#0          ;TURN ON KT11-D
003540  012721  125252          AD23:   MOV     #125252,(R1)+   ;DATO TO NR PAGE-SHOULD ABORT
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[illegible]  042777  000301  176244          BIC     #1,@#SR0        ;TURN OFF KT11-D
[illegible]                                  HLT                     ;DATO TO NR PAGE FAILED TO ABORT
[illegible]                                  BR      DONE23
[illegible]  017[illegible]  176234  RET23:  MOV     @#[illegible],R2        ;SAVE CONTENTS OF SR0
[illegible]  005[illegible]  176230          DEC     @#SR0           ;TURN OFF KT11-D
[illegible]  [illegible]702  100003          CMP     #100003,R2      ;CHECK SAVED CONTENTS OF SR0
[illegible]  001401                          BEQ     .+4
003574  104006                               HLT

                                             ;SR0 INCORRECT-SHOULD HAVE LOCKED
                                             ;ON DATO TO KER[illegible]L PAGE 1(NR)
                                             ;NR FAULT SHOULD BE SET
003576  022777  0[illegible]5540  176216     CMP     @#A023,@#SR2    ;CHECK SR2
00[illegible]04  001401                      BEQ     .+4
003606  104006                               HLT

                                             ;SR2 INCO[illegible]CT-SHOU[illegible]D HAVE LOCKED
                                             ;ON THE [illegible]ED [illegible]NCE, CONTAINING THE
                                             ;VIRTUAL [illegible]SS OF THE INSTRUCTION
003610  017703  176256                       MOV     @KPDR1,R3       ;MOVE CON[illegible] OF KPDR1 TO R3
00[illegible]14  042703  000[illegible]7      BIC     #7,R3           ;TO [illegible] OF THE ACCESS KEY
00[illegible]20  0[illegible]703  077400     CMP     #77400,R3       ;CH[illegible]K PDR
00[illegible]24  0[illegible]1401            BEQ     .+4             ;([illegible]TS 0-2 [illegible]ED OUT)
003626  104006                               HLT                     ;K[illegible]RI INC[illegible]CT-SHOULD NOT HAVE
                                                                     ;[illegible]N CH[illegible]D
                                                                     ;[illegible]E CLEAR[illegible]N THAT DESTINATION
003630  005767  176312                       TST     DESTAD          ;LOCATION [illegible]S NOT WRITTEN
003634  001401                               BEQ     .+4             ;DATO TO NR PAGE [illegible]OTE
003636  104006                               HLT                     ;INTO THE DESTINATION LOCATION
003640  016777  176162  176156  DONE23: MOV     KTSTA,@#KTVEC   ;CHANGE KT11-D FAULT RETURN
003646  005077  176154                       CLR     @#KTSTA         ;TO CAUSE A HALT ON AN UNEXPECTED TRAP
003652  005077  176140                       CLR     @#[illegible]
003656  005037  177776                       CLR     @#[illegible]S

                                             ;SHOW THAT A DATIP, DATO SEQUENCE TO A NR PAGE WORD ABORTS
                                             ;SHOW THAT THE KT11-D STAT[illegible]GISTERS LOCK UP, AND THAT THE PDR
                                             ;COR[illegible]ESPONDING TO THE REFE[illegible]NCE IS CO[illegible]CT
003662  104400                       TEST7:  SCOPE
003664  012706  001000                       MOV     #^STACK,SP      ;INITIALIZE KERNEL STACK POINTER
003670  005077  176122                       CLR     @#[illegible]   ;INITIAL[illegible]E [illegible]
003674  004767  002526                       JSR     PC,ORDER        ;C[illegible]CK T[illegible]SEQUENCE
003700  000007                               7                       ;T[illegible]T M[illegible]R
003702  104006                               HLT                     ;T[illegible]T E[illegible]ED OUT OF SE[illegible]NCE
003704  004767  001574                       JSR     x7,SETUP        ;P[illegible]E[illegible]1 NR,[illegible]0
                                                                     ;P[illegible]E[illegible]7 R[illegible], EX[illegible]AL
                                                                     ;[illegible]E ALL O[illegible]ES NO, B[illegible]K 0
003710  012777  003754  176106               MOV     #RET2S,@#KTVEC  ;SETUP A[illegible]RT [illegible]
003716  005077  176104                       CLR     @#KTSTA
003722  005067  176220                       CLR     DESTAD          ;INITIALIZE LOCATION TO [illegible]E ADDR[illegible]SSED
                                                                     ;BY DATIP [illegible]ATO TO [illegible]R F
003726  012703  022150                       MOV     #DESTAD+20002,R3        ;R3 C[illegible]TAI[illegible]S A[illegible]S+2 OF LOCATION
                                                                     ;TO BE R[illegible]D THRU K[illegible]EL PAGE 1
003732  052777  000001  176056               BIS     #1,@#SR0        ;T[illegible]N ON KT11-D
003740  005243                       A025:   INC     -(R3)           ;DATIP, DATO TO NR PAGE-SHOULD ABORT
003742  042777  000001  176046               B[illegible]C   #1,@#SR0        ;T[illegible]N OFF KT11-D
003750  104006                               H[illegible]T           ;DATIP, DATO TO NR PAGE FAILED TO
003752  000432                               B[illegible]    DONE2S          ;[illegible]RT
003754  017701  176036               RET2S:  MOV     @#[illegible],R1        ;S[illegible]E CONTENTS OF SR0
003760  042777  000001  176030               BIC     #1,@#[illegible]        ;TU[illegible]N OFF KT11-D
003766  022701  100003                       CMP     #100003,R1      ;CHECK SAVED CONTENTS OF SR0
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003772  001401                          BEQ     .+4
003774  104006                          HLT
                                                        ;SR0 INCORRECT-SHOULD HAVE LOCKED
                                                        ;ON DATO TO KERNEL PAGE 1(NR)
                                                        ;NR FAULT SHOULD BE SET
003776  022777  003740  176016          CMP     #A025,@SR2      ;CHECK SR2
004004  001401                          BEQ     .+4
004006  104006                          HLT
                                                        ;SR2 INCORRECT-SHOULD HAVE LOCKED
                                                        ;ON THE ALLOCATED REFERENCE, CONTAINING THE
                                                        ;VIRTUAL ADDRESS OF THE INSTRUCTION
004010  017704  176056                  MOV     @KPDR1,R4       ;MOVE CONTENTS OF PDR TO R4
004014  042704  000007                  BIC     #7,R4           ;TO MASK OFF THE ACCESS KEY
004020  022704  077400                  CMP     #77400,R4       ;CHECK PDR
004024  001401                          BEQ     .+4             ;WITH BITS 0-2 MASKED OFF
004026  104006                          HLT                     ;KPDR1 INCORRECT-SHOULD NOT HAVE
                                                                ;BEEN CHANGED
004030  005767  176112                  TST     DESTAD          ;MAKE CERTAIN THAT DESTINATION
004034  001401                          BEQ     .+4             ;LOCATION WAS NOT WRITTEN
004036  104006                          HLT                     ;DATO TO NR PAGE WROTE INTO
                                                                ;THE DESTINATION LOCATION
004040  016777  175762  175756  DONE25: MOV     @KTSTA,@KTVEC   ;CHANGE PAGE FAULT RETURN
004046  005077  175754                  CLR     @KTSTA          ;TO CAUSE A HALT ON AN UNEXPECTED
004052  005077  175740                  CLR     @SR0            ;TRAP
004056  005037  177776                  CLR     @MMR0
                                ;SHOW THAT A DATIP,DATOB SEQUENCE TO A NR PAGE WORD ABORTS
                                ;SHOW THAT THE KT11-D STATUS REGISTERS LOCK UP, AND THAT THE PDR
                                ;CORRESPONDING TO THE REFERENCE IS CORRECT
004062  104400                  TEST10: SCOPE
004064  012706  001000                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
004070  005077  175722                  CLR     @SR0            ;INITIALIZE SR0
004074  004767  002426                  JSR     PC,ORDER        ;CHECK TEST SEQUENCE
004100  000010                          10                      ;TEST NUMBER
004102  104006                          HLT                     ;TEST EXECUTED OUT OF SEQUENCE
004104  004767  001374                  JSR     x7,SETUP        ;MAKE KERNEL PAGE 1 NR, LINK 0
                                                                ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                                                ;MAKE ALL OTHER PAGES RW, LINK 0
004110  012777  004152  175706          MOV     #RET27,@KTVEC   ;SETUP ABORT RETURN
004116  005077  175704                  CLR     @KTSTA
004122  005067  176020                  CLR     DESTAD          ;INITIALIZE LOCATION TO BE ADDRESSED
004126  012704  022146                  MOV     #DESTAD+20000,R4 ;BY DATIP,DATOB TO NR PAGE
                                                                ;R4 CONTAINS ADDRESS OF LOCATION
                                                                ;TO BE REFERENCED THRU KERNEL PAGE 1
004132  052777  000001  175656          BIS     #1,@SR0         ;TURN ON KT11-D
004140  112424          A027:   INCB    (R4)+           ;DATIP, DATOB TO NR PAGE-SHOULD ABORT
004142  005377  175650                  DEC     @SR0            ;TURN OFF KT11-D
004146  104006                          HLT                     ;DATIP,DATO TO NR PAGE FAILED
004150  000431                          BR      DONE27          ;TO ACCEPT
004152  017701  175640          RET27:  MOV     @SR0,R1         ;SAVE CONTENTS OF SR0
004156  005377  175634                  DEC     @SR0            ;TURN OFF KT11-D
004162  022701  100003                  CMP     #100003,R1      ;CHECK SAVED CONTENTS OF SR0
004166  001401                          BEQ     .+4
004170  104006                          HLT
                                                        ;SR0 INCORRECT-SHOULD HAVE LOCKED ON
                                                        ;DATIP, DATOB TO KERNEL DATA PAGE 1 (NR)
                                                        ;NR FAULT SHOULD BE SET
004172  022777  004140  175622          CMP     #A027,@SR2      ;CHECK SR2
004200  001401                          BEQ     .+4
004202  104006                          HLT
                                                        ;SR2 INCORRECT SHOULD HAVE LOCKED
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                                                          ;ON THE ABORTED REFERENCE, CONTAINING THE
                                                          ;VIRTUAL ADDRESS OF THE INSTRUCTION
004204  017702  175662              MOV     @KPDR1,R2     ;MOVE CONTENTS OF PDR 1 TO R2
004210  0[illegible]  0[illegible]7  BIC    #7,R2         ;TO MASK OFF THE ACCESS KEY
[illegible]14  0[illegible]2  077400  CMP   #77400,R2     ;CHECK INSTRUCTION SPACE PDR
[illegible]0  001401                BEQ     .+4           ;WITH BITS 0-2 MASKED OFF
00[illegible]2  104006              HLT                   ;KPDR1 INCORRECT-SHOULD NOT HAVE
                                                          ;BEEN CHANGED
004224  005767  175716              TST     DESTAD        ;MAKE CERTAIN THAT DESTINATION
0[illegible]30  001[illegible]01    BEQ     .+4           ;LOCATION WAS NOT WRITTEN
004232  104006                      HLT                   ;DATOB TO NR PAGE WROTE INTO
                                                          ;THE DESTINATION LOCATION
00[illegible]4  016777  17[illegible]6  175562  DONE27: MOV  KTSTA,@KTVEC  ;CHANGE KT11-D FAULT
[illegible]2  [illegible]77  17[illegible]      CLR     @KTSTA        ;RETURN TO CAUSE A HALT ON AN
[illegible]6  [illegible]77  17[illegible]4     CLR     @SR0          ;UNEXPECTED TRAP
0[illegible]2  [illegible]37  177776            CLR     @PS
[illegible]  [illegible]0                       SCOPE
[illegible]0  [illegible]7  175[illegible]54   INC     NRCNT         ;COUNT HOW MANY NR KEYS HAVE BEEN TESTED
0[illegible]4  [illegible]67  000002  175646   CMP     #2,NRCNT
0[illegible]2  [illegible]1416                  BEQ     NXTST         ;IF ALL 2 HAVE BEEN TESTED, BRANCH
0[illegible]74  016701  175640                 MOV     NRCNT,R1      ;OTHERWISE, CALCULATE OFFSET TO GET NEXT KEY
0[illegible]0  [illegible]301                   ASL     R1
0[illegible]2  016137  00[illegible]142  001000  MOV   NRKEYS(R1),@#KSTACK ;PUT NEXT NR KEY ON STACK
004310  012767  0[illegible]0  001412          MOV     #RERUNA,RETURN     ;PUT NEW SCOPE LOOP ADDRESS IN RETURN
004316  012767  0[illegible]5  002266          MOV     #5,TESTCT     ;REINIT TEST COUNTER SEQ
004[illegible]4  0[illegible]0167  176[illegible]0   JMP  RERUNA    ;JUMP TO EXECUTE TESTS WITH NEXT NR KEY
004330  [illegible]7  175[illegible]4   NXTST:  CLR     N[illegible]CNT
004334  012767  00[illegible]0  001364         MOV     #4000,SCOPEF
004342  005367  002244                         DEC     TESTCT
004346                          NXTST1:

                                ;SHOW THAT DATI TO A RW PAGE (ACF=6)
                                ;NEITHER TRAPS NOR AB[illegible]TS
                                ;SHOW THAT THE KT11-D STATUS REGISTERS CONTIN[illegible]E TO TRACK, AND THAT
                                ;THE PDR CO[illegible]ESPONDING TO THE R[illegible]FERENCE IS CO[illegible]ECT
004346  104400                  TEST11: SCOPE
0043[illegible]0  012706  001000        MOV     #KSTACK,SP    ;INITIALIZE KERNEL STACK POINTER
004[illegible]4  0[illegible]77  175436  CLR    @SR0          ;INITIAL[illegible] [illegible]0
004[illegible]0  0[illegible]767  002142  JSR   PC,ORDER      ;CHECK [illegible]T S[illegible]QUENCE
0043[illegible]4  000011                11                    ;TEST N[illegible]R
0043[illegible]6  104006                HLT                   ;TEST E[illegible]UTED OUT OF SEQUENCE
0043[illegible]0  012746  000006        MOV     #6,-(SP)      ;PU[illegible]H [illegible] KEY ON STACK
004374  004767  001104                  JSR     %7,SETUP      ;MAKE K[illegible]L P[illegible] 1 RW, BANK 0
                                                              ;MAKE K[illegible]L P[illegible] 7 RW, EXTERNAL
                                                              ;M[illegible] [illegible]L OTHER PAGES RW, BANK 0
004400  005726                          TST     (SP)+         ;[illegible]TO[illegible] STACK POINTER
004402  012777  004516  175414          MOV     #RET31,@KTVEC ;SETUP ABORT RETURN IN CASE
004410  005077  175412                  CLR     @KTSTA
004414  012767  125252  175524          MOV     #125252,DESTAD  ;INITIALIZE LOCATION TO BE READ
004422  012701  022146                  MOV     #DESTAD+20000,R1     ;R1 CONTAINS VIRTUAL ADDRESS OF
                                                              ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
004426  005277  175344                  INC     @SR0          ;TU[illegible]N ON KT11-D
004432  022721  125252                  CMP     #125252,(R1)+ ;DATI TO RW PAGE-SHOULDN'T TRAP OR ABORT
004436  001404                          BEQ     OK31
004440  005377  175352                  DEC     @SR0          ;ON ERROR, TURN OFF KT11-D
004444  104006                          HLT                   ;RELOCATION FAILED THRU KERNEL PAGE 1
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004446  000427                          BR      DONE31
004450  017702  175342          OK31:   MOV     @SR0,R2         ;SAVE CONTENTS OF SR0
004454  105377  175336                  DECB    @SR0            ;TURN OFF KT11-D
004460  022702  000017                  CMP     #17,R2          ;CHECK SAVED CONTENTS OF SR0
004464  001401                          BEQ     .+4
004466  104006                          HLT

                                        ;SR0 INCORRECT-SHOULD HAVE
                                        ;TRACKED PAST PAGE 0
                                        ;PAGE 0, WHICH GOT THE ADDRESS
                                        ;OF SR0 TO TURN OFF KT11-D
004470  022777  004470  175324          CMP     #.,@SR2         ;CHECK SR2
004476  001401                          BEQ     .+4
004500  104006                          HLT

                                        ;SR2 INCORRECT-SHOULD TRACK EVEN
                                        ;WHEN KT11-D IS OFF
004502  022777  077406  175362          CMP     #77406,@KPDR1   ;CHECK FOR
004510  001401                          BEQ     .+4             ;THAT REFERENCED
004512  104006                          HLT                     ;K 91 INCORRECT-SHOULD NOT
                                        ;HAVE BEEN CHANGED

004514  000404                          BR      DONE31
004516  042777  000001  175272  RET31:  BIC     #1,@SR0         ;TURN OFF KT11-D
004524  104006                          HLT                     ;DHII TO PAGE CAUSED
                                        ;A TRAP OR ABORT

004526  016777  175274  175270  DONE31: MOV     KTSTA,@KTVEC    ;SET UP RETURN TO CAUSE HALT
004534  005077  175266                  CLR     @KTSTA          ;CLEAR CAUSED TRAP
004540  005077  175262                  CLR     @KTDR           ;INITIALIZE KTDR
004544  005037  177776                  CLR     @#PS            ;INITIALIZE PROCESSOR STATUS

                        ;SHOW THAT A DATO (NOT DATIP) TO A RW PAGE (ACF=6)
                        ;NEITHER IT NOR ABORTS
                        ;SHOW THAT THE KT11-D STATUS REGISTERS CONTINUE TO TRACK, AND THAT
                        ;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
                        TEST12: SCOPE
004550  104400                  MOV     #KSTACK,SP      ;INITIALIZE KERNEL STACK POINTER
004552  012706  001000          CLR     @#KDR           ;INITIALIZE KDR
004556  005077  175234          JSR     PC,ORDER        ;CHECK TEST SEQUENCE
004562  004767  001740          12                      ;TEST NUMBER
004566  000012                  HLT                     ;TEST EXECUTED OUT OF SEQUENCE
004570  104006                  MOV     SP,-(SP)        ;PUSH KDR KEY ON THE STACK
004572  012746  000006          JSR     R7,SETUP        ;MAKE KT PAGES 1 RW, BANK 0
004576  004767  000702                                  ;MAKE KT PAGE 0 RW, EXTERNAL
                                                        ;MAKE ALL OTHER PAGES RW, BANK 0
                                                        ;RESTORE STACK POINTER
004602  005726                  TST     (SP)+           ;SETUP ABORT RETURN IN CASE
004604  012777  004716  175212  MOV     #RET32,@KTVEC
004612  005077  175210          CLR     @KTSTA
004616  005067  175324          CLR     DESTAD
004622  012701  022146          MOV     #DESTAD+20000,R1

                                        ;INITIALIZE LOCATION TO BE REFERENCED
                                        ;R1 CONTAINS VIRTUAL ADDRESS OF
                                        ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
004626  005277  175164          INC     @SR0            ;TURN ON KT11-D
004632  012721  125252          MOV     #125252,(R1)+   ;DATO TO RW PAGE-SHOULDN'T TRAP OR ABORT
004636  017702  175154          MOV     @SR0,R2         ;SAVE CONTENTS OF SR0
004642  105377  175150          DECB    @SR0            ;TURN OFF KT11-D
004646  022702  000017          CMP     #17,R2          ;CHECK SAVED CONTENTS OF SR0
004652  001401                  BEQ     .+4
004654  104006                  HLT

                                        ;SR0 INCORRECT-SHOULD HAVE
                                        ;TRACKED PAST PAGE,
                                        ;PAGE 0, WHICH GOT THE ADDRESS
                                        ;OF SR0 TO TURN OFF KT11-D
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        004656  022777  004656  175136            CMP     #.,@SR2                 ;CHECK SR2
        004664  001401                            BEQ     .+4
        004666  104006                            HLT                             ;SR2 INCORRECT-SHOULD TRACK EVEN
                                                                                  ;WHEN KT11-D IS OFF
        004670  022777  077506  175174            CMP     #77506,@KPDR1           ;CHECK PDR FOR
        004676  001401                            BEQ     .+4                     ;THE RW PAGE REFERENCED
        004700  104006                            HLT                             ;W BIT SHOULD
                                                                                  ;PAGE IS WRITTEN
        004702  022767  125252  175236            CMP     #125252,DESTAD          ;MAKE SURE THAT THE WRITE ACTUALLY OCCURRED
        004710  001401                            BEQ     .+4
        004712  104006                            HLT                             ;DATO TO RW PAGE FAILED TO WRITE CORRECT LOCATION
        004714  000404                            BR      DONE33
        004716  042777  000001  175072  RET33:    BIC     #1,@SR0                 ;TURN OFF KT11-D
        004724  104006                            HLT                             ;DATO TO RW PAGE CAUSED
                                                                                  ;A TRAP
        004726  016777  175074  175070  DONE33:   MOV     KTSTA,@KTVEC            ;RESTORE RETURN TO CAUSE HALT
        004734  005077  175076                    CLR     @KTSTA                  ;ON AN UNEXPECTED TRAP
        004740  005077  175072                    CLR     @SR0                    ;INITIALIZE SR0
        004744  005037  177776                    CLR     @#PS                    ;INITIALIZE PROCESSOR STATUS

                                          ;SHOW THAT A DATIP, DATO SEQUENCE TO A RW PAGE (ACF=6)
                                          ;NEITHER TRAPS NOR ABORTS
                                          ;SHOW THAT THE KT11-D STATUS REGISTERS CONTINUE TO TRACK, AND THAT
                                          ;THE PDR CORRESPONDING TO THE REFERENCE IS CORRECT
        004750  104400                  TEST13:   SCOPE
        004752  012706  001000                    MOV     #KSTACK,SP              ;INITIALIZE KERNEL STACK POINTER
        004756  005077  175034                    CLR     @SR0                    ;INITIALIZE SR0
        004762  004767  001540                    JSR     PC,ORDER                ;CHECK TEST SEQUENCE
        004766  000013                            13                              ;TEST NUMBER
        004770  104006                            HLT                             ;TEST EXECUTED OUT OF SEQUENCE
        004772  012746  000006                    MOV     #6,-(SP)                ;PUSH RW KEY ON THE STACK
        004776  004767  000502                    JSR     R7,SETUP                ;MAKE KERNEL PAGE 1 RW, BANK 0
                                                                                  ;MAKE KERNEL PAGE 7 RW, EXTERNAL
                                                                                  ;MAKE ALL OTHER PAGES RW, BANK 0
        005002  005726                            TST     (SP)+                   ;RESTORE STACK POINTER
        005004  012777  005114  175012            MOV     #RET35,@KTVEC           ;SETUP ABORT RETURN IN CASE
        005012  005077  175010                    CLR     @KTSTA
        005016  005067  175124                    CLR     DESTAD                  ;INITIALIZE LOCATION TO BE REFERENCED
        005022  012704  022150                    MOV     #DESTAD+20002,R4        ;R4 CONTAINS VIRTUAL ADDRESS+2 OF
                                                                                  ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
        005026  005277  174764                    INC     @SR0                    ;TURN ON KT11-D
        005032  005244                            INC     -(R4)                   ;DATIP, DATO TO RW PAGE-SHOULDN'T TRAP OR ABORT
        005034  017702  174756                    MOV     @SR0,R2                 ;SAVE CONTENTS OF SR0
        005040  105077  174752                    CLRB    @SR0                    ;TURN OFF KT11-D
        005044  022702  000017                    CMP     #17,R2                  ;CHECK SAVED CONTENTS OF SR0
        005050  001401                            BEQ     .+4
        005052  104006                            HLT                             ;SR0 INCORRECT-SHOULD HAVE
                                                                                  ;TRACKED REFERENCE TO DATA SPACE,
                                                                                  ;PAGE 0, WHICH GOT THE ADDRESS
                                                                                  ;OF SR0 TO TURN OFF KT11-D
        005054  022777  005054  174740            CMP     #.,@SR2                 ;CHECK SR2
        005062  001401                            BEQ     .+4
        005064  104006                            HLT                             ;SR2 INCORRECT-SHOULD TRACK EVEN
                                                                                  ;WHEN KT11-D IS OFF
        005066  022777  077506  174776            CMP     #77506,@KPDR1           ;CHECK PDR CORRESPONDING
        005074  001401                            BEQ     .+4                     ;TO THE RW REFERENCE
```

G02


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005076  104006                          HLT                     ;KPDR1 INCORRECT - "W" BIT SHOULD BE SET
005100  0 2767  000001  175040          CMP     #1,DESTAD       ;MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
005106  001401                          BEQ     .+4
005110  104006                          HLT                     ;DATIP, DATO TO RW PAGE DIDN'T EXECUTE CORRECTLY
005112  000404                          BR      DONE35
005114  042777  000001  174674  RET35:  BIC     #1,@SR0         ;TURN OFF KT11-D
005122  104006                          HLT                     ;DATIP, DATO TO RW PAGE CAUSED
                                                                ;A TRAP OR ABORT
005124  016777  174676  174672  DONE35: MOV     KTSTA,@KTVEC    ;RESTORE TRAP RETURN TO CAUSE HALT
005132  0  777  174670                  CLR     KTSTA           ;ON AN UN  ECTED TRAP
005136  0  777  174 54                  CLR                     ;INITIALIZE  
005142  005037  177776                  CLR     @#PS            ;INITIALIZE PROCESSOR STATUS

                                ;SHOW THAT A DATIP, DATOB SEQUENCE TO A RW PAGE (ACF=6)
                                ; ITHER T    R A   TS
                                ;SHOW THAT   KT11-D STATUS REGISTERS CONTIN E TO TRACK, AND THAT
                                ;THE PDR C   SPONDING TO THE REFERENCE IS CORRECT
005146  104400                  TEST14: S  
0   1   012706  001000                  MOV     #STACK,SP       ;INITIALIZE KERNEL STACK POINTER
0  154  0  777  174 36                  CLR                     ;INITIALIZE  
0  160  0  767  001342                  JSR     PC,ORDER        ;CH CK T  T SEQUENCE
0   64  0   14                          14                      ;T   T    R
0    5  1   6                           HLT                     ;T  T    TED OUT OF SEQUENCE
0  170  012  6  000006                  MOV     #6,-(SP)        ;P       EY ON THE STACK
005174  004767  000304                  JSR     X7,SETUP        ;M         L P  E 1     , BANK 0
                                                                ;             F   7      EXTERNAL
                                                                ;          L          RW, BANK 0
0    0  005726                          TST     (SP)+           ;           K PO   ER
0    2  0  777  005312  174614          MOV     #   T37,@KTVEC  ;SETUP A  RT RETURN IN CASE
0   10  0   77  17   2                  CLR       TSTA
0   14  0    7  174 26                  CLR     D  TAD          ;INITIALIZE LOCATION TO BE REFERENCED
0    0  012703  022147                  MOV     #DESTAD+20001,R3 ;R3 C  TA  S VIRTUAL ADDRESS+1 OF
                                                                ;LOCATION TO BE REFERENCED THRU KERNEL PAGE 1
00  24  00 277  174566                  INC     @   0           ;TU   ON KT11-D
0    3  1   43                          DECB    -(R3)           ;DATIP, D     TO RW PAGE-SHOULDN'T TRAP OR ABORT
0    2  01      174 60                  MOV     @  0,R2         ;S  E CONTENTS OF SR0
0    6  105377  174554                  DECB    @  0            ;TU N OFF KT11-D
0   42  022702  000017                  CMP     #17,R2          ;CHECK SAVED CONTENTS OF SR0
0    5  001401                          BEQ     .+4
00  50  104006                          HLT                     ;SR0 INCO    CT-SHOULD HAVE
                                                                ;T  CKED R    ENCE TO DATA SPACE,
                                                                ;PA E 0, WHICH GOT THE ADDRESS
                                                                ;OF S   TO TURN OFF KT11-D
005252  022777  005252  174542          CMP     #.,@SR2         ;CHECK SR2
00  60  001401                          BEQ     .+4
005262  104006                          HLT                     ;SR2 INCORRECT-SHOULD TRACK EVEN
                                                                ;W  N KT11-D IS O 
00  64  022777  077506  174600          CMP     #77506,@KPDR1   ;CH CK PDR C    NDING
00 272  001401                          BEQ     .+4             ;TO THE RW R    ENCE
00 274  104006                          HLT                     ;KPDR1 INCO  ECT - "W" BIT SHOULD BE SET
00 276  022767  000377  174642          CMP     #377,DESTAD     ;MAKE CERTAIN THAT THE INSTRUCTION WAS EXECUTED
00  04  001401                          BEQ     .+4
00 306  104006                          HLT                     ;DATIP, DATOB TO RW PAGE DIDN'T EXECUTE CORRECTLY
005310  000404                          BR      DONE37
005312  042777  000001  174476  RET37:  BIC     #1,@SR0         ;TURN OFF KT11-D
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H02


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005320  104006                          HLT                     ;DATIP, DATOB TO RW PAGE CALLED
                                                                ;A TRAP OR START
005322  016777  174500  174474 DONE37: MOV     KTSTA,@KTVEC    ;RESTORE TRAP RETURN TO CAUSE HALT
005330  005077  174472                  CLR     @KTSTA          ;ON AN UNEXPECTED TRAP
005334  005077  174466                  CLR     @#30            ;INITIALIZE
005340  005037  177776                  CLR     @#PS            ;INITIALIZE PROCESSOR STATUS

005344  104400                          SCOPE

005346  004767  001024                  JSR     X7,BELL

005352  013701  000042                  MOV     @#42,R1         ;MONITOR HOOK
005356  001405                          BEQ     END
005360  000005                          RESET
005362  004711                  LOGIC:  JSR     X7,@R1
005364  000240                          NOP
005366  000240                          NOP
005370  000240                          NOP
005372  000167  174552          END:    JMP     START
```

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                                        ;
                                        ;MESSAGE AREA
005376  052113  030461  042055  ATIT:   .ASCII  'KT11-D ACCESS KEYS TESTa'
005404  040040  041503  051[illegible]5
005412  020123  042513  051531
005420  052040  051505  040124
00542[illegible] 041520  020075     100  MPC:    .ASCII  'PC= a'
00543[illegible]    040  060040  036523  MPS:    .ASCII  '   PS= a'
005440  040040
                                                .EVEN
                                        ;SUBROUTINE TO MA[illegible]E ALL PAGES RW, BANK 0, 4K, UP
[illegible]  005077  174350          RWALL:  CLR     a[illegible]O
[illegible]  012701  002030                  MOV     #[illegible]B,R1
[illegible]  012700  000010          RWL1:   MOV     #[illegible]
[illegible]  005071  000020          RWL2:   CLR     [illegible])
[illegible]  012731  077406                  MOV     #[illegible],a(R1)+
[illegible]  077006                          SOB     [illegible]2
005470  062701  000020                  ADD     #[illegible]1
005474  020127  002126                  CMP     R1,#[illegible]END
005500  003764                          BLE     RWL1
005502  000207                          RTS     X7

                                        ;SUBROUTINE TO SET ALL PA[illegible]S RW EXCEPT KERNEL PAGE 1
                                        ;KERNEL PAGE 1 IS SET TO [illegible]SIRED KEY
                                        ;KEY IS PASSED VIA THE ST[illegible]
                                        ;ALL PAGES ARE M[illegible]PED TO B[illegible]K 0 EXCEPT KERNEL PAGE 7, WHICH IS MAPPED TO
                                        ;THE EXTERNAL BANK
005504  004767  177732          SETUP:  JSR     X7,R[illegible]LL          ;INITIALLY MAP ALL PAGES RW, BANK 0
005510  012777  077400  174354          MOV     #774[illegible]0,[illegible]PDR1   ;[illegible]E KE[illegible]L PAGE ONE 4K, UP
00[illegible]516  056677  000002  174346          BIS     2(SP),[illegible]1           ;[illegible]T TO [illegible]D KEY
00[illegible]24  012777  007600  174374          MOV     #7600,[illegible]7          ;[illegible]P KE[illegible]L [illegible]E 7 EXTERNAL
005532  000207                          RTS     X7
                                        ;ROUTINE TO LOOP THRU A SINGLE INST[illegible]CTION TEST
                                        ;LOAD THE STARTING A[illegible]F THE T[illegible]ST
                                        ;YOU WISH TO RUN (TH[illegible] A[illegible] OF THE TE[illegible]TX
                                        ;TAG) AT THE 1ST HALT, S[illegible]T SWITCH REGISTER
                                        ;OPTIONS AT THE 2ND HA[illegible]T.
                                        ;NOTE THAT SW11 M[illegible]ST BE DOWN AFTER THE 2ND HALT
005534  005037  177776          TESTX:  CLR     a[illegible]S
005540  012706  001000                  MOV     #[illegible]STACK,SP
00[illegible]544  012737  140000  177776          MOV     #140[illegible],[illegible]PS   ;SETUP USER STACK POINTER
00[illegible]  012706  002000                  MOV     #USTACK,SP
00[illegible]  005037  177776                  CLR     a#PS
00[illegible]2  000000                          HALT                    ;WAIT FOR STARTING ADDRESS
00[illegible]  016767  172000  000036          MOV     SR,RETRNX       ;LOAD STARTING ADDRESS IN RETRNX
005572  062767  000002  000030          ADD     #2,RETRNX       ;ADD 2 TO POINT TO INSTRUCTION AFTER
00[illegible]600  0[illegible]0000                          HALT                    ;S[illegible]T SR OPTIONS
00[illegible]02  0[illegible]67  000120                  CLR     SCOPEF          ;KEEP CO[illegible]T AT ZERO
00[illegible]606  012767  005620  000114          MOV     #XLOOP,RETURN   ;LO[illegible]D SCOPE LOOP RETURN POINTER
00[illegible]614  0[illegible]0177  000010                  JMP     a[illegible]ETRNX         ;JUMP TO TEST
00[illegible]620  0[illegible]067  000102          XLOOP:  CLR     SCOPEF          ;KEEP COUNT AT ZERO
00[illegible]624  000177  000000                  JMP     aRETRNX         ;JUMP TO TEST
005630  000000                  RETRNX: 0
```

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                                        ;SCOPE AND/OR ITERATION LOOP FOR EACH TEST 4000 TIMES
005632  032737  040000  177570  SCOPEC: BIT     #40000,@#SR     ;TEST SR FOR SCOPE
005636  001015                  BNE     SCOPEB          ;YES,SCOPE
005640  032737  004000  177570          BIT     #4000,@#SR      ;NO-TEST FOR ITERATION
005644  001016                  BNE     SCOPEB          ;INHIBIT ITERATION
005646  023767  000060  000044          CMP     SCOPEF, ICOUNT  ;COMPARE CURRENT COUNT TO MAX NUMBER
005654  100012                  BPL     SCOPEB          ;EXIT-DONE
005656  005267  000040                  INC     SCOPEF          ;INCREMENT COUNT
005662  012737  000340  177776          MOV     #340,@#PS       ;PREVENT TRAPPING WHILE MOVING STACK
005670  016746  000000          SCOPEB: MOV     (6),-(6)        ;REPOSITION STACK
005674  012746  177776                  MOV     (6)+,-(6)       ;RESTORE PREVIOUS PROCESSOR STATUS
005700  000177  000000                  JMP     @RETURN         ;REPEAT TEST
005704  005067  000014          SCOPEB: CLR     SCOPEF          ;CLEAR COUNT
005710  005267  000024                  INC     ICOUNT          ;STEP TEST COUNTER
005714  011667  000006                  MOV     @#6,RETURN      ;SAVE SCOPE RETURN POINTER
005720  000002                  RTI                             ;RETURN INLINE-NEXT TEST
005722  004000          ICOUNT: 4000                            ;ITERATION COUNT
005724  000000          SCOPEF: 0                               ;COUNT LOCATION FOR ITERATION LOOP
005726  000000          RETURN: 0                               ;ADDRESS OF LAST TEST

                                        ;ENTERED WITH SYSTEM TRAP CALL (HLT)
                                        ;PRINT OUT THE ERROR PC+2 AND STATUS REGISTER
005730  012767  000340  172036  PRINT:  MOV     #340,PS         ;SET PRIORITY TO 7
005736  036727  171624  020000          BIT     SR,#20000       ;TEST FOR INHIBIT PRINT OUT
005744  001401                  BEQ     .+4             ;BRANCH TO PRINT
005746  000432                  BR      CK              ;INHIBIT, CHECK FOR HALT
005750  012667  000072                  MOV     (6)+,SAVPC      ;PC OF FAILING ROUTINE
005754  012667  000070                  MOV     (6)+,SAVPSR     ;PS OF ERROR CONDITION
005760  016646                  MOV     -(6),-(6)       ;RESTORE STACK
005762  012767  000200  172004          MOV     #200,PS
005770  004767  000416                  JSR     X7,CRLF         ;OUTPUT CARRIAGE RETURN AND LINE FEED
005774  016767  000046  000314          MOV     SAVPC,PTEMP1    ;LOAD WITH FAILING PC+2
006002  004767  000436                  JSR     PC,TYPE
006006  005426                  ADC     (6)+
006010  004767  000036                  JSR     PC,PPSHRT
006014  004767  000424                  JSR     PC,TYPE
006020  005426                  ADC     (6)+
006022  016767  000022  000266          MOV     SAVPSR,PTEMP1   ;LOAD PROCESSOR STATUS
006030  004767  000350                  JSR     X7,PNOCT        ;PRINT PROCESSOR STATUS
006034  005767  171526          CK:     TST     SR              ;CHECK SR FOR HALT SWITCH
006040  100001                  BPL     .+4             ;BRANCH IF NOT SET
006042  000000                  HALT                    ;HALT ON ERROR UP
006044  000002                  RTI                     ;RETURN TO MAIN LINE
006046  000000          SAVPC:  0
006050  000000          SAVPSR: 0
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                                        ;SUBROUTINE TO PRINT OUT OCTAL NUMBER
                                        ;PRSHRT DELETES LEADING ZEROS
                                        ;PROCT PRINTS OUT 6 OCTAL DIGITS
006054  012767  000001  000232  PRSHRT: MOV     #1,PRSFLG       ;SET FLAG TO INDICATE SHORT PRINTOUT
006062  005767  000232          PROCT:  TST     PTEMP1          ;CHECK FOR ZERO
006066  001011                          BNE     P.CONT+4        ;BRANCH IF NOT ZERO
006070  012777  000260  173716          MOV     #'0,@TDBR       ;OUTPUT A SINGLE ZERO
006076  105777  173710          P.WAIT: TSTB    @TCSR           ;WAIT FOR TTY READY
006102  100375                          BPL     .-4
006104  000207                          RTS     PC              ;RETURN
006106  005067  000202                  CLR     PRSFLG          ;CLEAR FLAG TO INDICATE FULL PRINTOUT
006112  005067  000206                  CLR     PTEMP3          ;CLEAR R4 FOR COUNTING CHARACTERS OUTPUT
006116  006367  177774                  ASL     PRFLG           ;INITIALIZE CARRY FLAG FOR ROTATES
006122  012767  000260  000172          MOV     #'0,PTEMP2      ;SETUP R3
006130  005767  000164                  TST     PTEMP1          ;CHECK BIT 15 OF NUMBER
006134  100002                          BPL     .+6             ;BRANCH IF ZERO
006136  005267  000160                  INC     PTEMP2          ;INCREMENT R3 IF ONE
006142  006167  000152                  ROL     PTEMP1          ;ROTATE LEFT MOST OCTAL TO RIGHT END
006146  006167  000146                  ROL     PTEMP1
006152  006367  000140                  ROL     PRFLG           ;STORE CARRY
006156  005767  000132          P.CK:   TST     PRSFLG          ;CHECK FOR SHORT PRINTOUT
006162  001404                          BEQ     P.NOT           ;BRANCH IF NOT SET
006164  026727  000132  000260          CMP     PTEMP2,#260     ;CHECK FOR ZERO IF SET
006172  001410                          BEQ     P.CONT          ;IF SET, GO TO NEXT CHARACTER
006174  016777  000122  173612  P.WAIT: MOV     PTEMP2,@TDBR    ;OUTPUT NEXT CHARACTER
006202  105777  173604                  TSTB    @TCSR           ;WAIT FOR TTY READY
006206  100375                          BPL     .-4
006210  005067  000100          P.NOT:  CLR     PRSFLG          ;PRINT REST OF NUMBER AFTER A NON-ZERO DIGIT
006214  005267  000104          P.CONT: INC     PTEMP3          ;COUNT
006220  026727  000100  000006          CMP     PTEMP3,#6       ;CHECK FOR DONE
006226  001001                          BEQ     P.CNT1          ;BRANCH IF NOT DONE
006230  000207                          RTS     PC
006232  000241          P.CNT1: CLC                             ;CLEAR CARRY
006234  005767  000056                  TST     PRFLG           ;CHECK FOR PREVIOUS CARRY
006240  001403                          BEQ     .+10            ;BRANCH IF PREVIOUSLY ZERO
006242  005067  000050                  CLR     PRFLG           ;INITIALIZE FLAG
006246  000261                          SEC                     ;SET CARRY
006250  006167  177744                  ROL     PTEMP1          ;ROTATE NEXT CHARACTER INTO RIGHT END OF REGISTER
006254  006167  177740                  ROL     PTEMP1
006260  006167  177734                  ROL     PTEMP1
006264  006367  177726                  ASL     PRFLG           ;STORE CARRY
006270  016767  177724  000024          MOV     PTEMP1,PTEMP2   ;LOAD DATA INTO R3
006276  042767  177770  000016          BIC     #177770,PTEMP2  ;CLEAR ALL BUT LOWEST OCTAL DIGIT
006304  052767  000260  000010          BIS     #260,PTEMP2     ;SET TO ASCII EQUIVALENT
006312  000721                          BR      P.CK            ;LOOP
006314  000000  PRSFLG: 0
006316  000000  PRFLG:  0
006320  000000  PTEMP1: 0                                       ;CONTAINS VALUE TO BE OUTPUT
006322  000000  PTEMP2: 0                                       ;SCRATCH
006324  000000  PTEMP3: 0                                       ;USED TO COUNT CHARACTERS OUTPUT
```

```
                                        ;EMT HANDLER
                                        ;FIRST 3 CALLS LEFT OPEN IN TABLE FOR EASY PATCHES
006326  011667  000032                EMTSRV: MOV     @SP,EPC         ;GET CALL
006332  162767  000012  000024              SUB     #12,EPC
006340  017767  000020  000016              MOV     @EPC,EPC
006346  105067  000013                      CLRB    EPC+1           ;SAVE OFFSET ONLY
006352  062767  000366  000004              ADD     #EMTAB,EPC      ;POINT TO TABLE OF ADDRESSES
006360  017707  000000                      MOV     @EPC,PC         ;JUMP TO DESIRED ROUTINE
006364  000000                        EPC:  0
        000000                              PATCH1=0                ;SUBSTITUTE 104000 WHERE 1ST PATCH IS NEEDED
        000000                              PATCH2=0                ;IF 2 FOR 2ND PATCH
        000000                              PATCH3=0                ;IF 3 FOR 3RD PATCH
006366  000000                        EMTAB:  PATCH1                  ;LOW ADDRESS OF 1ST PATCH HERE
006370  000000                                PATCH2                  ;LOW ADDRESS OF 2ND PATCH HERE
006372  000000                                PATCH3                  ;LOW ADDRESS OF 3RD PATCH HERE
006374  005732                                PRINT

                                        ;BELL ON PASS COMPLETE
006376  012777  000207  173410        BELL:   MOV     #207,@TLBR
006404  105777  173402                        TSTB    @TCSR
006410  100375                              BPL     .-4
006412  000207                              RTS     %7

                                        ;SUBROUTINE TO OUTPUT CARRIAGE RETURN AND LINEFEED
006414  012777  000215  173372        CRLF:   MOV     #215,@TDBR      ;ROUTPUT CARRIAGE RETURN
006422  105777  173364                        TSTB    @TCSR           ;WAIT FOR TTY READY
006426  100375                              BPL     .-4
006430  012777  000212  173356              MOV     #212,@TDBR      ;OUTPUT LINEFEED
006436  105777  173350                      TSTB    @TCSR           ;WAIT FOR TTY READY
006442  100375                              BPL     .-4
006444  000207                              RTS     %7              ;RETURN
```

```
                                        ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE
 005446  010067  000052                 TYPE:   MOV     %0,SAVR0
 005452  011100                         MOV     (5),%0                  ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
 005454  062716  000002                 ADD     #2,(SP)                 ;SET UP EXIT
 005460  011000                         MOV     @%0,%0
 005462  112700  000034                 TYPA:   MOVB    (0)+,TYPDAT     ;GET CHARACTER
 005466  120027  000100  000026         CMPB    #100,TYPDAT             ;CHECK FOR "@" CHARACTER
 005474  001003                         BNE     TYPB                    ;BRANCH IF NOT "@"
 005476  012600  000022                 MOV     SAVR0,%0                ;RESTORE R0
 005502  000207                         RTS     PC                      ;TERMINATOR CHAR. EXIT
 005504  113777  000012  173302         TYPB:   MOVB    TYPDAT,@TDBR    ;OUTPUT CHAR TO PRINTER
 005512  105777  173274                 TSTB    @TCSR                   ;WAIT FOR TTY READY
 005516  100775                         BPL     .-4
 005520  000765                         BR      TYPA
 005522  000000                 TYPDAT: 0
 005524  000000                 SAVR0:  0
                                        ;
                                        ;SUBROUTINE TO CHECK TEST SEQUENCE
 005526  005037  177776                 ORDER:  CLR     @#PS                    ;CLEAR PROCESSOR STATUS
 005532  011667  000052                 MOV     (SP),TEMPN              ;GET TEST NUMBER ADDRESS
 005536  017767  000446  000044         MOV     @TEMPN,TEMPN            ;GET TEST NUMBER
 005544  032737  002000  177570         BIT     #2000,@#SR
 005552  001404                         BEQ     ORDERA                  ;BR
 005554  016700  000030                 MOV     TESTN,R0
 005560  000005                         RESET
 005562  000000                         HALT
 005564  020067  000022  000016  ORDERB: CMP     TESTCT,TEMPN            ;IS TEST SEQUENCE CORRECT
 005572  001403                         BEQ     ORDERA                  ;YES, CONTINUE
 005574  062716  000002                 ADD     #2,(SP)                 ;UPDATE FOR ERROR RETURN
 005600  000207                         RTS     PC
 005602  062716  000004                 ORDERA: ADD     #4,(SP)                 ;UPDATE FOR GOOD RETURN
 005606  000207                         RTS     PC
 005610  000000                 TEMPN:  0
 005612  000000                 TESTCT: 0
 000001                                 .END
```

N02


```
A[illegible]= 00[illegible]126   319#   1001
A[illegible]  0[illegible]0      2[illegible]#   9[illegible]5
A[illegible]1 0[illegible]6      5[illegible]#   589
AD23   0[illegible]40            627#   6[illegible]8
AD25   003740                    677#   6[illegible]3
AD27   004140                    726#   737
AD4    002544                    419#   430
AD5    002742                    470#   481
AD6    003142                    521#   532
BELL   006376                    973    1154#
CK     006036                    1063   1077#
CMPOK1 002360                    370    374#
CRLF   006414                    342    345    1068   1160#
DESTAD 002146                    326#   3[illegible]*  3[illegible]6  414*  416  440  465*  467  491  516*  518  542  574*
                                 575    6[illegible]*  6[illegible]4  649   672*  674  699  721*  723  748  788*  [illegible]39  839*
                                 840    8[illegible]0  [illegible]*  890   909  939*  940  959
DONE1  002436                    37[illegible]  3[illegible]9  393#
DONE21 003440                    58[illegible]  6[illegible]#
DONE23 003640                    630    6[illegible]3#
DONE25 004040                    6[illegible]0  703#
DONE27 004234                    729    752#
DONE31 004526                    796    813    817#
DONE33 004726                    863    867#
DONE35 005124                    912    916#
DONE37 005322                    962    966#
DONE4  002634                    422    444#
DONE5  003034                    473    495#
DONE6  003230                    524    546#
EMTAB  006366                    1141   1147#
EMTSRV 006326                    260    1137#
END    005372                    976    9[illegible]#
EPC    006364                    1137*  11[illegible]*  1139*  1140*  1141*  1142  1143#
FTITLE 002130                    320#   340    346*
HLT  = 104006                    251#   357    372    378  383  387  391  406  421  427  432  437  442
                                 457    472    478    483  488  493  508  523  529  534  539  544  562
                                 580    5[illegible]5  591  597  601  616  629  635  640  647  651  666  679
                                 6[illegible]5  690  697  701  715  728  734  739  746  750  780  795  801
                                 807    811    815    831  848  854  858  862  865  881  898  904  908
                                 911    914    931    948  954  958  961  964
ICOUNT 005724                    336*   1042   1053#
KPAR0  002110                    311#
KPAR1  002112                    312#
KP[illegible]2 002114            313#
KP[illegible]3 0[illegible]2116  314#
KP[illegible]4 0[illegible]120   315#
KP[illegible]5 0[illegible]2122  316#
KP[illegible]6 0[illegible]2124  317#
KP[illegible]7 00[illegible]126  318#   1013*
KPD[illegible]0 0[illegible]070  303#
KPDR1  [illegible]2072           304#   385    435    486  537  593  643  693  742  809  856  906  956
                                 1011*  1012*
KPDR2  00[illegible]074          305#
KPDR3  0[illegible]076           3[illegible]6#
KPDR4  0[illegible]100           307#
KPDR5  002102                    30[illegible]#
KPDR6  002104                    309#
```

```
KPOR7   002106     310#
KSTACK  001000     274#   332    353    402    453    504    558    563*   566    612    662    711    762*
                   776    8[illegible]7   877    9[illegible]7   10[illegible]2
KTSTA   002026     285#   364*   393    394*   413*   444    445*   464*   495    496*   515*   546    547*
                   572*   602    603*   621*   653    654*   671*   703    704*   720*   752    753*   787*
                   817    818*   8[illegible]*   867    [illegible]*   [illegible]*   916    917*   9[illegible]*   966    967*
KTVEC   002024     284#   363*   393*   412*   444*   463*   495*   514*   546*   571*   602*   620*   653*
                   670*   703*   719*   752*   786*   817*   837*   867*   887*   916*   937*   966*
LOGIC   005362     978#
MPC     005435     989#   1071
MPS     005433     990#   1074
MTIT    005376     344    985#
NOP   = 000240     237#
NRCNT   002140     324#   338*   757*   758    760    766*
NRKEYS  002142     325#   762
NXTST   004330     759    766#
NXTST1  004346     769#
OK31    004450     793    797#
ORDER   006526     355    404    455    506    560    614    664    713    778    829    879    929    1186#
ORDERA  006602     1195   1198#
ORDERB  006564     1190   1194#
PATCH1= 000000     1144#  1147
PATCH2= 000000     1145#  1148
PATCH3= 000000     1146#  1149
PC     =%000007    247#   342*   343*   345*   355*   404*   455*   506*   560*   614*   664*   713*   778*
                   829*   8[illegible]9*   929*   1070*  1072*  1073*  1142*  1177*  1197*  1199*
PRFLG   006316     1096*  1103*  1117   1119*  1124*  1130#
PRINT   005732     1060#  1150
PROCT   006106     1076   10[illegible]9   1094#
PRSFLG  006314     1087*  1094*  1104   1111*  1129#
PRSHRT  006054     1072   10[illegible]7#
PS    = 177776     249#   2[illegible]0   331*   333*   335*   3[illegible]6*   447*   498*   549*   605*   656*   706*   755*
                   820*   870*   919*   9[illegible]9*   1021*  1023*  1025*  1045*  1047*  1060*  1067*  1186*
PTEMP1  006320     1069*  1075*  1088   1098   1101*  1102*  1121*  1122*  1123*  1125   1131#
PTEMP2  006322     1097*  1100*  1106   1108   1125*  1126*  1127*  1132#
PTEMP3  006324     1095*  1112*  1113   1133#
P.CK    006156     1104#  1128
P.CNT1  006232     1114   1116#
P.CONT  006214     1107   1112#
P.WAIT  006174     1105   1108#
RERUNA  003300     566#   763    765
RETNNX  005630     1027*  1028*  1032   1034   1035#
RETURN  005730     337*   763*   1031*  1048   1051*  1055#
RET1    002426     363    390#
RET21   003360     571    582#
RET23   003556     620    631#
RET25   003754     670    681#
RET27   004152     719    730#
RET31   004516     786    814#
RET33   004716     837    864#
RET35   005114     887    913#
RET37   005312     937    963#
RET4    00[illegible]50     412    423#
RET5    002756     463    474#
RET6    003154     514    525#
RWALL   005442     994#   1010
```

C03

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KEYV8   MACY11 27(732)  09-S[illegible]P-76  14:29  PAGE 29
DUKTBA.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

RWL1      00[illegible]52        996#    1002
RWL2      0[illegible]6          997#    9[illegible]9
R0       =%[illegible]0          [illegible]#    9[illegible]#    999#    1191#
R1       =%000001        [illegible]#    [illegible]#    [illegible]9    4[illegible]#    475     474#    476     5[illegible]#    527     575#    578     624#    627#
                         [illegible]#    [illegible]    7[illegible]#    7[illegible]    7[illegible]#    761#    762     7[illegible]#    792     840#    843#    975#    978
                         9[illegible]#    9[illegible]7#    9[illegible]#    100[illegible]#   10[illegible]1
R2       =%000002        240#    374#    376     416#    419#    5[illegible]#    594     631#    633     742#    743#    744     797#
                         799     844#    8[illegible]5    8[illegible]#    [illegible]5    9[illegible]#    9[illegible]5
R3       =%000003        241#    467#    470#    573#    5[illegible]#    5[illegible]3    643#    644#    645     674#    677#    940#    943#
R4       =%000004        242#    518#    5[illegible]1#    693#    694#    695     723#    726#    890#    893#
R5       =%000005        243#    593#    594#    595
R6       =%000006        244#
R7       =%000007        245#
SAVPC     0[illegible]50         10[illegible]#   1069    1081#
SAVPSR    0[illegible]52         10[illegible]5#   1075    10[illegible]#
SAVR0     0[illegible]54         1169#   1175    11[illegible]8#
SCOPE  =  104400         [illegible]#    3[illegible]2    401     452     503     557     611     661     710     756     775     826     876
                         9[illegible]6    971
SCOPEB    005674         1039    10[illegible]8#
SCOPEC    0[illegible]632        263     10[illegible]#
SCOPEF    0[illegible]726        767#    10[illegible]#   1033#   1042    1044#   1049#   1054#
SCOPEG    0[illegible]706        1041    10[illegible]3    10[illegible]#
SETUP     0[illegible]504        339     [illegible]8    [illegible]9    510     5[illegible]9    617     667     716     782     833     883     933     1010#
SP       =%000006        246#    3[illegible]2#    3[illegible]#    3[illegible]#    3[illegible]#    3[illegible]2    402#    407#    411     453#    458#    462     504#
                         509#    513     [illegible]#    5[illegible]#    6[illegible]#    [illegible]#    711#    776#    781#    7[illegible]5    827#    832#    836
                         877#    [illegible]#    [illegible]    [illegible]7#    [illegible]#    [illegible]    1012    1022#   1024#   1137    1187    1196#   1198#
SR     =  177570         248#    10[illegible]7    10[illegible]    10[illegible]0    1061    10[illegible]7    1169
SR0       002016         281#    3[illegible]4#    3[illegible]8#    371#    374     375#    390#    395#    403#    418#    420#    423     424#
                         446#    454#    4[illegible]9#    471#    474     4[illegible]#    497#    505#    520#    522#    525     526#    540#
                         559#    567#    577#    579#    5[illegible]    5[illegible]#    604#    613#    6[illegible]#    6[illegible]#    631     632#    655#
                         663#    676#    678#    681     6[illegible]#    7[illegible]#    712#    725#    727#    730     731#    754#    777#
                         791#    794#    797     798#    814#    819#    [illegible]#    842#    844     845#    864#    869#    878#
                         892#    894     895#    913#    918#    928#    942#    944     945#    963#    968#    994#
SR0H      002132         321#
SR1       0[illegible]20         2[illegible]2#
SR1H      0[illegible]2134       322#
SR2       0[illegible]022        283#    381     430     481     532     589     638     688     737     805     852     902     952
S[illegible]H     [illegible]2136        323#
START     [illegible]150         268     331#    982
STATUS=  177776          250#
TC[illegible]     0[illegible]012        279#    1091    1109    1155    1161    1164    1179
T[illegible]      [illegible]014         280#    1090#   1108#   1154#   1160#   1163#   1178#
T[illegible]      [illegible]510         1187#   1188#   1191    1194    1200#
TESTCT    [illegible]512         339#    764#    768#    1050#   1194    1201#
TESTN  =  [illegible]15          329#    352#    401#    452#    503#    557#    611#    661#    710#    775#    826#    876#    926#
TESTX     [illegible]34          270     1021#
TEST1     [illegible]6           337     341     352#
TEST10    [illegible]2           710#
TEST11    0[illegible]6          775#
TEST12    0[illegible]0          826#
TEST13    [illegible]0           876#
TEST14    [illegible]146         926#
TEST2     [illegible]0           401#
TEST3     [illegible]6           452#
TEST4     0[illegible]           503#
TEST5     003[illegible]2        557#
```

D03

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KEYVA   MACY11 27(732)  09-SEP-76  14:29  PAGE 30
DJKTBA.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

TEST6    003462          611#
TEST7    00[illegible]2          661#
TYPA     [illegible]             1173#    1181
TY[illegible]      [illegible]             1175     1176#
TY[illegible]AT    [illegible]2            1173#    1174     1178     1182#
TY[illegible]      [illegible]6            343      1070     1073     1169#
[illegible]        [illegible]             295#
[illegible]        [illegible]             296#
[illegible]        [illegible]             297#
[illegible]        [illegible]             298#
[illegible]        [illegible]             299#
[illegible]        [illegible]             300#
[illegible]        [illegible]             301#
[illegible]        [illegible]             302#
[illegible]        [illegible]             287#
[illegible]        [illegible]             2[illegible]8#
[illegible]        [illegible]             289#
[illegible]        [illegible]             290#
[illegible]        [illegible]             291#
[illegible]        [illegible]             292#
[illegible]        [illegible]             293#
[illegible]        [illegible]             294#
[illegible]        [illegible]             276#     334      1024
X[illegible]       [illegible]0            1031     1033#
.           = 000614     257#     259#     262#     267#     269#     273#     275#     319      347      377      381      382      386
                         426      431      436      441      477      482      487      492      528      533      538      543      585
                         590      596      600      634      639      646      650      684      689      696      700      733      738
                         745      749      830      805      806      810      847      852      853      857      861      897      902
                         903      907      910      947      952      953      957      960      1062     1078     1092     1099     1110
                         1118     1156     1162     1165     1180
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E03

TESTNO 329# 352 401 452 503 557 611 661 710 775 826 876 926

ADC	1103	1124													
A[illegible]D	1000	[illegible]	1141	1171	1196	1198									
[illegible]	761														
BEQ	370	377	392	[illegible]	426	431	436	441	477	482	487	492	528	533	539
	543	535	590	[illegible]	[illegible]	634	639	646	650	[illegible]	689	696	700	733	[illegible]
	745	749	759	[illegible]	[illegible]	[illegible]	810	847	[illegible]	[illegible]	[illegible]	897	903	907	910
	947	953	977	[illegible]	[illegible]	[illegible]	1105	1107	1118	[illegible]	1195				
BIC	390	471	475	[illegible]	[illegible]	644	678	[illegible]	694	743	814	864	913	963	1126
BIS	469	520	676	725	1012	1127									
BIT	[illegible]	1040	1061	1189											
[illegible]	[illegible]														
[illegible]	341	1039	1041	[illegible]	1114	1175									
BPL	1043	1078	[illegible]	[illegible]	1110	1156	1162	1165	1180						
BR	347	373	[illegible]	422	473	524	581	630	680	729	796	813	863	912	962
	1063	1128	1181												
CLC	1116														
CLR	331	335	338	354	364	394	395	396	403	413	414	445	446	447	454
	464	465	496	497	498	505	515	516	547	548	549	559	563	567	572
	573	603	604	605	613	621	622	654	655	656	663	671	672	704	705
	[illegible]	712	720	721	753	754	[illegible]	766	777	787	818	819	[illegible]	828	838
	[illegible]	[illegible]	[illegible]	870	878	[illegible]	[illegible]	917	918	919	[illegible]	938	939	957	968
	969	994	997	1021	1025	1030	1033	1049	1094	1095	1096	1111	1119	1186	
CLRB	895	1140													
CMP	[illegible]	376	381	[illegible]	[illegible]	[illegible]	435	476	481	486	527	532	537	584	599
	[illegible]	633	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	732	737	744	[illegible]	792	799	[illegible]	[illegible]
	846	852	[illegible]	860	[illegible]	902	906	909	946	952	956	959	1001	1042	1046
	1066	1106	1113	1194											
CMPB	1174														
DEC	371	[illegible]	424	[illegible]	[illegible]	579	632	727	731	768	794				
DECB	375	[illegible]	[illegible]	[illegible]	[illegible]	945									
HALT	257	1026	1029	1079	1193										
INC	346	[illegible]	470	577	677	757	791	842	892	893	942	1044	1050	1100	1112
INCB	521	[illegible]													
JMP	[illegible]	270	765	[illegible]	1032	1034	1048								
JSR	342	343	345	[illegible]	[illegible]	404	[illegible]	455	459	506	510	560	568	614	617
	[illegible]	567	713	716	778	782	829	833	879	883	929	933	973	978	1010
	[illegible]	[illegible]	1072	[illegible]	1076										
MOV	332	333	334	336	337	339	353	[illegible]	363	365	366	374	393	402	407
	412	416	418	419	423	444	453	[illegible]	463	467	474	495	504	509	514
	518	525	546	[illegible]	[illegible]	571	574	575	578	582	593	602	612	620	624
	627	631	643	653	[illegible]	670	674	691	693	703	711	719	723	730	742
	752	760	762	763	764	767	776	[illegible]	786	788	789	797	817	827	832
	837	840	843	844	857	877	882	887	890	894	916	927	932	937	940
	944	966	975	995	996	998	1011	1013	1022	1023	1024	1027	1031	1045	1047
	1051	1060	1064	1065	1067	1069	1075	1087	[illegible]	1097	1108	1125	1137	1139	1142
	1154	1160	1163	1169	1170	1172	1176	1187	1188	1191					
MOVB	626	1173	1178												
NOP	979	980	981												
RESET	977	1192													
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RTS	1003	1014	1093	1115	1157	1166	1177	1197	1199						
SEC	1120														
SOB	999														
SUB	1138														
TRAP	236														

G03

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DBKTBA.P11      CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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