PDP11/45

CONSOLE TEST

MD-11-DCKBQ-B

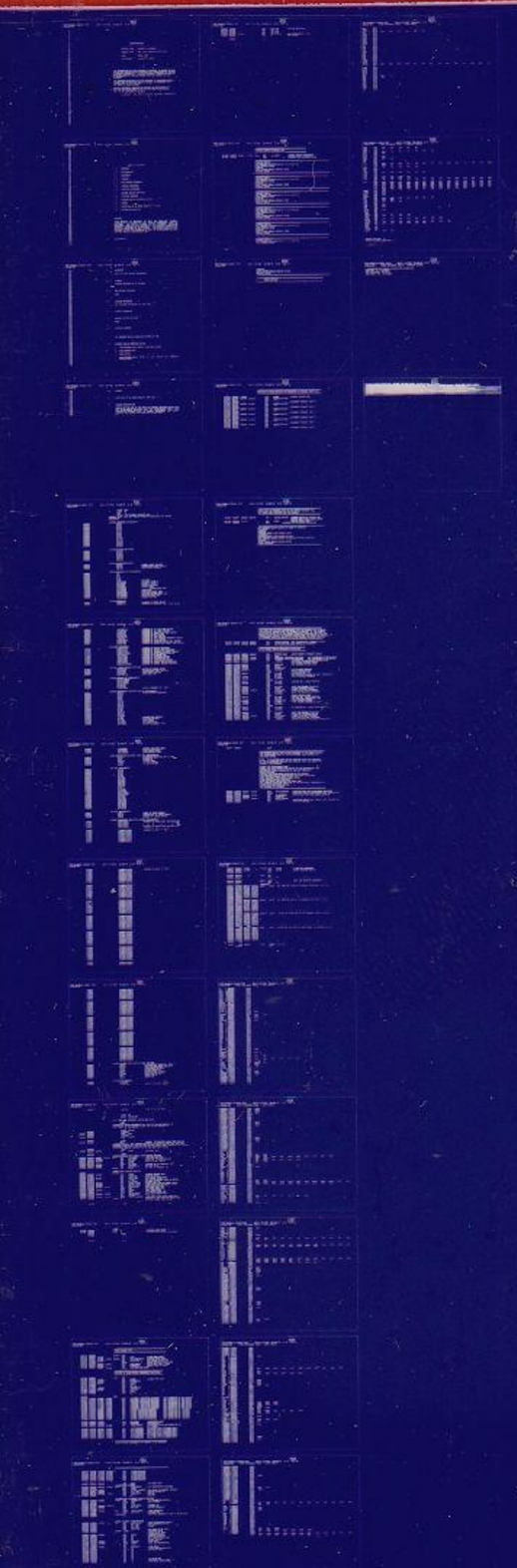
EP-DCKBQ-B-DL-A

FICHE 1 OF 1

OCT 1976

digital

MADE IN U.S.A.



```
                        .REM !
```

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DCKBQ-B

PRODUCT NAME: PDP 11/45 CONSOLE SWITCH TEST

DATE: APRIL,1976

MAINTAINER: DIAGNOSTIC GROUP

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1.0 ABSTRACT

THIS PROGRAM IS DESIGNED TO TEST THE PDP11/45 CONSOLE SWITCHES. IN ORDER TO RUN, MEMORY MANAGEMENT MUST BE AVAILABLE. DUE TO THE NATURE OF THE PROGRAM, EXTENSIVE OPERATOR INTERVENTION IS REQUIRED. THE OPERATOR INSTRCUTIONS ARE FULLY DESCRIBED IN THE LISTINGS. THE SECOND PHASE OF THIS PROGRAM ALLOWS THE OPERATOR TO TEST THE MICRO-BREAK REGISTER AND THE PDP11/45 MAINTENANCE CARD.

2.0 REQUIREMENTS

2.1 EQUIPMENT

PDP11/45 WITH MEMORY MANAGEMENT.

2.2 STORAGE

PROGRAM REQUIRES 4K OF STORAGE.

2.3 PRELIMINARY PROGRAMS

NONE.

3.0 LOADING PROCEDURE

USE STANDARD PROCEDURE FOR ABS TAPE.

4.0 STARTIN PROCEDURE

4.1 CONTROL SWITCH SETTINGS

NONE.

4.2 STARTING ADDRESS

THE PROGRAM SHOULD ALWAYS BE STARTED AT 200.

4.3 PROGRAM AND/OR OPERATOR ACTION

1. LOAD PROGRAM INTO MEMORY USING ABS LOADER.
2. LOAD ADDRESS 200.
3. PRESS START.
4. WHEN PROGRAM HALTS REFER TO THE LISTING FOR OPERATOR INSTRUCTIONS.

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                                5.0     ERRORS


                                5.1     DETECTION OF AN ERROR RESULTS IN A HALT


                                6.0     PROGRAM DESCRIPTION

                                        CHECKS OUT THE USE OF THE PDP11/45 CONSOLE SWITCHES ALONG WITH
                                        THE  MICRO-BREAK  REGISTER  AND  THE  MAINTENANCE  CARD.  ONCE
                                        STARTED THE PROGRAM  SETS  UP  MEMORY  MANAGEMENT  AND  HALTS.
                                        REFER TO THE LISTING FOR OPERATOR INSTRUCTIONS.
                                !
```

```
                                .NLIST  SEQ
                                .LIST   ME
                                .ABS
                                .TITLE  TEST DCKBQ-B CONSOLE TEST
                        ;CONCOLE TEST- THIS TEST CHECKS CONSOLE OPERATIONS WITH MEMORY
                        ;MANAGEMENT

                        ;GENERAL REGISTER ASSIGNMENTS
000000                          R0=%0
000001                          R1=%1
000002                          R2=%2
000003                          R3=%3
000004                          R4=%4
000005                          R5=%5
000006                          SP=%6
000007                          PC=%7
000000                          R10=%0
000001                          R11=%1
000002                          R12=%2
000003                          R13=%3
000004                          R14=%4
000005                          R15=%5

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

                        ;STACK POINTER REGISTERS
000006                          KSP=%6                  ;KERNEL STACK POINTER
000006                          SSP=%6                  ;SUPERVISOR STACK POINTER
000006                          USP=%6                  ;USER STACK POINTER

                        ;STATUS REGISTER BIT ASSIGNMENTS
000001                          C=1
000002                          V=2
000004                          Z=4
000010                          N=10
000020                          T=20                    ;'T' BIT
000340                          PRTY7=340               ;PRIORITY LEVEL 7
000200                          PRTY4=200               ;PRIORITY LEVEL 4
004000                          REG=4000                ;SELECTS R10-R15
000000                          KM=000000               ;KERNEL MODE
040000                          SM=040000                       ;SUPERVISORY MODE
140000                          UM=140000               ;USER MODE
000000                          PKM=000000              ;PREVIOUS KERNEL MODE
010000                          PSM=010000              ;PREVIOUS SUPERVISORY MODE
030000                          PUM=030000              ;PREVIOUS USER MODE
004000                          REG=004000              ;SELECT R10-R15

                        ;VECTOR ADDRESSES
000004                          ERRVEC=4                ;ADDRESS OF ERROR VECTOR
000010                          RESVEC=10               ;ADDRESS OF RESERVED INST. TRAP VECTOR
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000014                  TBITVEC=14              ;ADDRESS OF 'T' BIT TRAP VECTOR
000020                  IOTVEC=20               ;ADDRESS OF IOT TRAP VECTOR
000024                  PFVEC=24                ;ADDRESS OF POWER FAIL TRAP VECTOR
000030                  EMTVEC=30               ;ADDRESS OF EMT VECTOR
000034                  TRAPVEC=34              ;ADDRESS OF TRAP VECTOR
000064                  TPVEC=64                ;ADDRESS OF TTY PRINTER INTERRUPT VECTOR
000240                  PIRVEC=240              ;ADDRESS OF PIRQ VECTOR
000244                  FPVEC=244               ;ADDRESS OF FLOATING POINT INT. VECTOR
000250                  MMVEC=250               ;ADDRESS OF MEMORY MGMT ERROR TRAP VECTOR

                ;REGISTER ADDRESSES
177776                  PSW=177776              ;ADDRESS OF STATUS REGISTER
177774                  SLR=177774              ;ADDRESS OF STACK LIMIT REGISTER
177772                  PIRQ=177772             ;ADDRESS OF PROGRAM INTERRUPT REQUEST
177770                  UBREAK=177770           ;ADDRESS OF MICRO BREAK REGISTER
177560                  TKS=177560              ;ADDRESS OF KEYBOARD CSR
177562                  TKB=177562              ;ADDRESS OF KEYBOARD BUFFER
177564                  TPS=177564              ;ADDRESS OF TELEPRINTER CSR
177566                  TPB=177566              ;ADDRESS OF TELEPRINTER BUFFER
177570                  SWR=177570              ;ADDRESS OF CONSOL SWITCH REGISTER
177570                  DISPLAY=177570          ;ADDRESS OF CONSOL DISPLAY REGISTER

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

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

                ;MEMORY MANAGEMENT REGISTER SR0 BIT ASSIGNMENTS
000001                  ENMM=1                  ;ENABLE MEMORY MANAGEMENT
000000                  VS0=0
000002                  VS1=2
000004                  VS2=4
000006                  VS3=6
000010                  VS4=10
000012                  VS5=12
000014                  VS6=14
000016                  VS7=16
000020                  DS=20
000000                  IS=00
000140                  UPG=140
000040                  SPG=40
000000                  KPG=000
000200                  IC=200                  ;INSTRUCTION COMPLETE
000400                  DM=400                  ;DESTINATION MODE
001000                  TE=1000                 ;TRAP ENABLE
004000                  OST=4000                ;OST ABORT FLAG
010000                  MMT=10000               ;MEMORY MANAGEMENT TRAP
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020000                          AVA=20000               ;ACCESS VIOLATION ABORT
040000                          PLA=40000               ;PAGE LENGTH ABORT
100000                          NRA=100000              ;NON-RESIDENT ABORT

                        ;PAGE DESCRIPTOR REGISTER (PDR) BIT ASSSIGNMENTS
000010                          ED=10                   ;EXPANSION DIRECTION BIT IN PDR
000000                          UP=0                    ;EXPAND UP
000010                          DWN=10                  ;EXPAND DOWN
000200                          A=200                   ;'A' BIT IN PDR
000100                          W=100                   ;'W' BIT IN PDR

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

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

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

177600                          UIPDR0=177600           ;ADDRESS OF USER 'I' PDR'S
177602                          UIPDR1=177602
177604                          UIPDR2=177604
177606                          UIPDR3=177606
177610                          UIPDR4=177610
177612                          UIPDR5=177612
177614                          UIPDR6=177614
177616                          UIPDR7=177616
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I01

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177620  UDPDR0=177620           ;ADDRESS OD USER 'D' PDR'S
177622  UDPDR1=177622
177624  UDPDR2=177624
177626  UDPDR3=177626
177630  UDPDR4=177630
177632  UDPDR5=177632
177634  UDPDR6=177634
177636  UDPDR7=177636

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

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

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

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

172240  SIPAR0=172240
172242  SIPAR1=172242
172244  SIPAR2=172244
172246  SIPAR3=172246
172250  SIPAR4=172250
172252  SIPAR5=172252
172254  SIPAR6=172254
172256  SIPAR7=172256

172260  SDPAR0=172260
172262  SDPAR1=172262
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172264                  SDPAR2=172264
172266                  SDPAR3=172266
172270                  SDPAR4=172270
172272                  SDPAR5=172272
172274                  SDPAR6=172274
172276                  SDPAR7=172276

172300                  KIPDR0=172300
172302                  KIPDR1=172302
172304                  KIPDR2=172304
172306                  KIPDR3=172306
172310                  KIPDR4=172310
172312                  KIPDR5=172312
172314                  KIPDR6=172314
172316                  KIPDR7=172316

172320                  KDPDR0=172320
172322                  KDPDR1=172322
172324                  KDPDR2=172324
172326                  KDPDR3=172326
172330                  KDPDR4=172330
172332                  KDPDR5=172332
172334                  KDPDR6=172334
172336                  KDPDR7=172336

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

172360                  KDPAR0=172360
172362                  KDPAR1=172362
172364                  KDPAR2=172364
172366                  KDPAR3=172366
172370                  KDPAR4=172370
172372                  KDPAR5=172372
172374                  KDPAR6=172374
172376                  KDPAR7=172376

                ;ACCESS CONTROL FIELD DEFINITIONS (IN PDR)
000000                  NRO=0                   ;NON-RESIDENT ABORT ALL REFS.
000001                  RDOT=1                  ;TRAP ON READ,ABORT ON WRITE
000002                  RDO=2                   ;READ,ABORT ON WRITE
000003                  NR3=3                   ;UNUSED ABORT ALL
000004                  RWT=4                   ;TRAP ON READ & WRITE
000005                  RWTW=5                  ;READ,TRAP ON WRITE
000006                  RW=6                    ;READ & WRITE
000007                  NR7=7                   ;ABORT ALL

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

```
                    000004                          TYPE=IOT                ;TYPE IS AN IOT TRAP


                                                    .LIST   ME
                                                    .NLIST  MC,MD,SEQ

                                                ;FILL TRAP AND INTERRUPT VECTOR AREA WITH
                                                    ;.+2
                                                    ;HALT
                                                ;UNEXPECTED TRAPS/INTERRUPTS WILL HALT AT VECTOR ADDRESS +2
                                                ;AND DISPAY IN THE ADDRESS LIGHTS THE VECTOR ADDRESS +4

                                                    .NLIST  MC,SEQ
                    000004                          .=ERRVEC
000004  000400                                     .WORD   SHLT
                    000030                          .=EMTVEC
000030  000434                                     .WORD   SCOPEA

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

                    000400                          .=400
                                                ;SUPERVISOR/USER HLT (HALT) TRAP SERVICE ROUTINE
000400  042737  000001  177572                SHLT:   BIC     #1,@#SR0        ;TURN MEM MGMT OFF
000406  162716  000002                              SUB     #2,(KSP)        ;POINT PC TO TRAPPING INST.
000412  005776  000000                              TST     @(KSP)          ;WAS IT A HLT (HALT)
000416  001404                                      BEQ     SHLTA
000420  062716  000002                              ADD     #2,(KSP)        ;RESTORE PC TO TRAPPING INST.
000424  000137  000006                              JMP     @#ERRVEC+2      ;GO HALT AT 6
000430  000137  000176                SHLTA:  JMP     @#176           ;GO HALT AT ADDRESS 176

                                                ;SCOPE (EMT) SERVICE ROUTINE
000434                                          SCOPEA:
000434  005037  177572                              CLR     @#SR0           ;DISABLE MEMORY MGMT
000440  011601                                      MOV     (KSP),R1        ;SAVE PC IN R1
000442  012706  001060                              MOV     #KPTR,KSP       ;SET KERNEL STACK PTR
000446  005046                                      CLR     -(KSP)          ;SET UP FOR KERNEL MODE ON RETURN
000450  010146                                      MOV     R1,-(KSP)       ;RETURN IN LINE
000452  012746  000700                              MOV     #SPTR,-(KSP)    ;SUPER STACK PTR ON KERNEL STACK
000456  012746  000600                              MOV     #UPTR,-(KSP)    ;USER STACK PTR ON KERNEL STACK
000462  012737  030000  177776                      MOV     #PUM,@#PSW      ;PREVIOUS USER MODE
000470  106606                                      MTPD    USP             ;SET USER STACK PTR
000472  006237  177776                              ASR     @#PSW           ;PREV SUPER MODE
000476  106606                                      MTPD    SSP             ;SET SUPER STACK PTR
000500  032737  000400  177570                      BIT     #BIT8,@#SWR     ;LOAD MICRO BREAK REG?
000506  001403                                      BEQ     SCOPEX
000510  113737  177570  177770                      MOVB    @#SWR,@#UBREAK  ;LOAD SR0-7 INTO MICRO BREAK REG.
000516  000006                                SCOPEX: RTT                     ;RETURN TO NEXT TEST IN KERNEL MODE
                                                                            ;WITH ALL STACK PTRS SET UP

                    001000                          .=1000
```

```
                                .TAGS
001000  000000                  ICNT:   0                       ;CONTAINS PASS COUNT
001002  000000                  SRDT:   0                       ;CONTAINS SRD CONTENTS ON ERROR
        001004                          TEMP=.
        001012                          .=.+6

        001110                  .=1110
```

```
                        ;*****************************************************
                        ;START COSOLE TEST
                        ;*****************************************************

001110  000240                  START:  NOP
001112  005067  177662                  CLR     ICNT                    ;CLEAR PASS COUNT
001116  016737  177656  177570  BEGIN:  MOV     ICNT,@#DISPLAY          ;DISPLAY PASS COUNT
001124  012706  001060                  MOV     #KPTR,KSP               ;SET KERNEL STACK PTR
001130  104000                          SCOPE                           ;SCOPE SETS ALL STACK PTRS
001132  012737  000400  177774          MOV     #400,@#SLR              ;SET STACK LIMIT = 1000
001140  005037  000252                  CLR     @#MMVEC+2               ;KERNEL MODE ON ABORT
001144  012737  000007  172516          MOV     #KDE+SDE+UDE,@#SR3

                        ;*****************************************************
                        ;ROUTINE TO CLEAR MEMORY MANAGEMENT REGISTERS.
                        ;*****************************************************

001152  000240                  MM0:    NOP
001154  005037  177572                  CLR     @#SR0                   ;DISABLE MEM MGMT
001160  012702  177600                  MOV     #UIPDR0,R2
001164  012703  000040                  MOV     #40,R3
001170  005022                          CLR     (R2)+
001172  077302                          SOB     R3,.-2
001174  012702  172200                  MOV     #SIPDR0,R2
001200  012703  000100                  MOV     #100,R3
001204  005022                          CLR     (R2)+
001206  077302                          SOB     R3,.-2

001210                          MMK:
001210  012737  073006  172300          MOV     #167*256.-400+UP+RW,@#KIPDR0    ;SET KIPDR0=RW UP 167 BLOCKS
001216  012737  077406  172320          MOV     #200*256.-400+UP+RW,@#KDPDR0    ;SET KDPDR0=RW UP 200 BLOCKS
001224  012737  177406  172200          MOV     #400*256.-400+UP+RW,@#SIPDR0    ;SET SIPDR0=RW UP 400 BLOCKS
001232  012737  177406  172220          MOV     #400*256.-400+UP+RW,@#SDPDR0    ;SET SDPDR0=RW UP 400 BLOCKS
001240  012737  177406  177600          MOV     #400*256.-400+UP+RW,@#UIPDR0    ;SET UIPDR0=RW UP 400 BLOCKS
001246  012737  177406  177620          MOV     #400*256.-400+UP+RW,@#UDPDR0    ;SET UDPDR0=RW UP 400 BLOCKS
001254  012737  177406  172336          MOV     #400*256.-400+UP+RW,@#KDPDR7    ;SET KDPDR7=RW UP 400 BLOCKS
001262  012737  000006  172322          MOV     #1*256.-400+UP+RW,@#KDPDR1      ;SET KDPDR1=RW UP 1 BLOCKS
001270  012737  000006  172302          MOV     #1*256.-400+UP+RW,@#KIPDR1      ;SET KIPDR1=RW UP 1 BLOCKS
001276  012737  000006  172202          MOV     #1*256.-400+UP+RW,@#SIPDR1      ;SET SIPDR1=RW UP 1 BLOCKS
001304  012737  000006  172222          MOV     #1*256.-400+UP+RW,@#SDPDR1      ;SET SDPDR1=RW UP 1 BLOCKS
001312  012737  000006  177602          MOV     #1*256.-400+UP+RW,@#UIPDR1      ;SET UIPDR1=RW UP 1 BLOCKS
001320  012737  000006  177622          MOV     #1*256.-400+UP+RW,@#UDPDR1      ;SET UDPDR1=RW UP 1 BLOCKS

001326  005037  172340                  CLR     @#KIPAR0        ;VA=PA=0000-16677
001332  005037  172360                  CLR     @#KDPAR0        ;VA=PA=0-1077
001336  012767  007600  171032          MOV     #7600,KDPAR7    ;VA=160000-177776,PA=760000-777776
                                                                ;(I/O PAGE)
001344  012737  000167  172362          MOV     #167,@#KDPAR1   ;PA=16700-16777,VA=20000-20077
001352  012737  000170  172342          MOV     #170,@#KIPAR1   ;PA=17000-17077,VA=20000-20077
001360  012737  000171  172262          MOV     #171,@#SDPAR1   ;PA=17100-17177,VA=20000-20077
001366  012737  000172  172242          MOV     #172,@#SIPAR1   ;PA=17200-17277,VA=20000-20077
001374  012737  000173  177662          MOV     #173,@#UDPAR1   ;PA=17300-17377,VA=20000-20077
001402  012737  000174  177642          MOV     #174,@#UIPAR1   ;PA=17400-17477,VA=20000-20077

                        ;*****************************************************
                        ;LOAD PHYSICAL ADDRESSES INTO MEMORY TO BE EXAMINED
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                                ;*****************************************************

001410  012737  016700  016700            MOV     #16700,@#16700
001416  012737  017002  017002            MOV     #17002,@#17002
001424  012737  017104  017104            MOV     #17104,@#17104
001432  012737  017210  017210            MOV     #17210,@#17210
001440  012737  017320  017320            MOV     #17320,@#17320
001446  012737  017440  017440            MOV     #17440,@#17440

001454  000167  000172                    JMP     CHK1            ;GO START TEST
                                ;TELEPRINTER MANAGER
001460  032737  000100  177564  PRINT:    BIT     #100,@#TPS      ;IS TELEPRINTER AVAILABLE
001466  001374                            BNE     PRINT
001470  013667  000046                    MOV     @(SP)+,CHARPTR  ;GET START OF MESSAGE ADDRESS
001474  062746  000002                    ADD     #2,-(SP)        ;ADJUST RETURN PC
001500  052737  000100  177564            BIS     #100,@#TPS      ;SET IE
001506  000207                            RTS     PC              ;RETURN

                                ;TELEPRINTER INTERRUPT SERVICE ROUTINE
001510  016700  000026          TPISR:    MOV     CHARPTR,R0      ;GET CHARACTER ADDRESS
001514  105710                            TSTB    (R0)            ;VALID CHAR?
001516  001006                            BNE     TPA
001520  042737  000100  177564            BIC     #100,@#TPS      ;DISABLE IE
001526  062716  000002                    ADD     #2,(SP)         ;ADJUST RETURN PC
001532  000002                            RTI
001534  112037  177566          TPA:      MOVB    (R0)+,@#TPB     ;LOAD CHARACTER
001540  010027                            MOV     R0,(PC)+        ;RESTORE PTR
001542  000000                CHARPTR:0                           ;CONTAINS ADDRESS OF CHAR TO BE PRINTED
001544  000002                            RTI


                                ;OCTAL TO ASCII TYPE ROUTINE
001546  013746  177564          O2A:      MOV     @#TPS,-(SP)     ;SAVE TELEPRINTER STATUS
001552  010246                            MOV     R2,-(SP)        ;AND REGISTERS ON THE
001554  010146                            MOV     R1,-(SP)        ;STACK
001556  010046                            MOV     R0,-(SP)
001560  012700                            MOV     (PC)+,R0        ;GET DATA TO BE TYPED
001562  000000                D2BTYP:   .WORD   0               ;CONTAINS OCTAL
                                                                ;VALUE TO BE TYPED
001564  012701  000006                    MOV     #6,R1           ;CHARACTER COUNT
001570  005002                            CLR     R2              ;WORKING REGISTER
001572  006100                            ROL     R0              ;GET FIRST OCTAL DIGIT
001574  006102                            ROL     R2              ;& PUT INTO R2
001576  062702  000260          1$:       ADD     #260,R2         ;FORM ASCII
001602  105737  177564                    TSTB    @#TPS           ;WAIT FOR TELEPRINTER
001606  100375                            BPL     .-4
001610  010237  177566                    MOV     R2,@#TPB        ;TYPE DIGIT
001614  005002                            CLR     R2              ;CLEAR WORKING REGISTER
001616  006100                            ROL     R0              ;GET NEXT DIGIT
001620  006102                            ROL     R2
001622  006100                            ROL     R0
001624  006102                            ROL     R2
001626  006100                            ROL     R0
001630  006102                            ROL     R2              ;IS IN R2 NOW
001632  005301                            DEC     R1              ;DECREMENT DIGIT COUNT
001634  001360                            BNE     1$              ;TYPE DIGIT IF NOT DONE
```

```
001636  012600                  MOV     (SP)+,R0        ;RESTORE REGISTERS
001640  012601                  MOV     (SP)+,R1
001642  012602                  MOV     (SP)+,R2
001644  012637  177564          MOV     (SP)+,@#TPS     ;AND TELEPRINTER STATUS
001650  000207                  RTS     PC              ;AND RETURN

        000000                  Y=0
```

```
                        ;#################################################
                        ;CONSOLE DEPOSIT/EXAMINE TEST
                        ;#################################################

001652  012737  000001  177572  CHK1:   MOV     #1,@#SR0        ;ENABLE MEMORY MANAGEMENT
001660  000000                          HALT                    ;PERFORM THE FOLLOWING TESTS

                        ;#################################################################################
                        ;CONSOLE TEST 0
                        ;SET ADDRESS SELECTOR SWITCH TO KD POSITION
                        ;LOAD ADDRESS 20000
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 16700
                        ;DEPOSIT 20002
                        ;#################################################################################

                        ;#################################################################################
                        ;CONSOLE TEST 1
                        ;SET ADDRESS SELECTOR SWITCH TO KI POSITION
                        ;LOAD ADDRESS 20002
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 17002
                        ;DEPOSIT 20004
                        ;#################################################################################

                        ;#################################################################################
                        ;CONSOLE TEST 2
                        ;SET ADDRESS SELECTOR SWITCH TO SD POSITION
                        ;LOAD ADDRESS 20004
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 17104
                        ;DEPOSIT 20010
                        ;#################################################################################

                        ;#################################################################################
                        ;CONSOLE TEST 3
                        ;SET ADDRESS SELECTOR SWITCH TO SI POSITION
                        ;LOAD ADDRESS 20010
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 17210
                        ;DEPOSIT 20020
                        ;#################################################################################

                        ;#################################################################################
                        ;CONSOLE TEST 4
                        ;SET ADDRESS SELECTOR SWITCH TO UD POSITION
                        ;LOAD ADDRESS 20020
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 17320
                        ;DEPOSIT 20040
                        ;#################################################################################

                        ;#################################################################################
                        ;CONSOLE TEST 5
                        ;SET ADDRESS SELECTOR SWITCH TO UI POSITION
                        ;LOAD ADDRESS 20040
```

```
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 17440
                        ;DEPOSIT 20100
                        ;*************************************************************************

                        ;*************************************************************************
                        ;       PRESS CONTIUE
                        ;*************************************************************************
```

```
                        ;*****************************************************************
                        ;ROUTINE TO CHECK DEPOSITS AS REQUESTED IN CONSOLE TESTS 1-5
                        ;*****************************************************************

001662  005037  177572          CLR     @#SR0           ;DISABLE MEMORY MGMT
001666  022737  020002  016700  CMP     #20002,@#16700
001674  001401                  BEQ     .+4
001676  000000                  HLT                     ;INCORRECT DEPOSIT TEST 0
001700  022737  020004  017002  CMP     #20004,@#17002
001706  001401                  BEQ     .+4
001710  000000                  HLT                     ;INCORRECT DEPOSIT TEST 1
001712  022737  020010  017104  CMP     #20010,@#17104
001720  001401                  BEQ     .+4
001722  000000                  HLT                     ;INCORRECT DEPOSIT TEST 2
001724  022737  020020  017210  CMP     #20020,@#17210
001732  001401                  BEQ     .+4
001734  000000                  HLT                     ;INCORRECT DEPOSIT TEST 3
001736  022737  020040  017320  CMP     #20040,@#17320
001744  001401                  BEQ     .+4
001746  000000                  HLT                     ;INCORRECT DEPOSIT TEST 4
001750  022737  020100  017440  CMP     #20100,@#17440
001756  001401                  BEQ     .+4
001760  000000                  HLT                     ;INCORRECT DEPOSIT TEST 5
```

```
                        ;#################################################################
                        ;CHECK THAT AN ADDRESS WHICH IS NOT MAPPED RESIDENT WILL
                        ;NOT ABORT WHEN EXAMINED VIA THE CONSOLE
                        ;#################################################################

001762  012737  020100  020100          MOV     #20100,@#20100  ;ADDRESS 20100 IS OUTSIDE THE
                                                                ;MAPPED AREA (PAGE LENGTH ERROR)
001770  005237  177572                  INC     @#SR0           ;ENABLE MEMORY MGMT
001774  000000                          HALT                    ;PERFORM THE FOLLOWING OPERATIONS

                        ;#################################################################
                        ;SET ADDRESS SELECT SWITCH TO "USER I" POSITION
                        ;LA=20100
                        ;EXAMINE
                        ;ADDRESS ERROR LIGHT SHOULD LIGHT
                        ;LA=20100
                        ;ADDRESS ERROR LIGHT SHOULD GO OUT
                        ;SET ADDRESS SELECT SWITCH TO CONSOLE PHYSICAL POSITION
                        ;EXAMINE
                        ;DATA LIGHTS SHOULD DISPLAY 20100
                        ;PRESS CONTINUE
                        ;#################################################################
```

```
                        ;#################################################################
                        ;THIS NEXT SET OF TESTS DEMONSTRATES THAT THE CONSOLE WILL DISPLAY
                        ;THE PHYSICAL ADDRESS WHEN THE PROGRAM IS RUNNING, IF THE ADDRESS
                        ;SELECTION SWITCH IS IN THE CONSOLE PHYSICAL POSITION; AND THAT THE
                        ;CONSOLE WILL DISPLAY THE PROGRAM ADDRESS WHEN THE PROGAM IS RUNNING, IF
                        ;THE ADDRESS SELECTION SWITCH IS IN THE PROGRAM PHYSICAL POSITION.
                        ;#################################################################

001776  012737  001510  000064          MOV     #TPISR,@#TPVEC  ;SET TELEPRINTER INTERRUPT VECTOR
002004  012737  000200  000066          MOV     #PRTY4,@#TPVEC+2;AND STATUS ON INTERRUPT

                        ;#################################################
                        ;SETUP KERNEL MEMORY MANAGEMENT REGISTERS
                        ;#################################################

002012  012737  002272  000060          MOV     #TTYINT,@#60    ;SETUP READER INTERRUPT VECTOR
002020  005037  000062                  CLR     @#62
002024  012737  077406  172304          MOV     #200*256.-400+UP+RW,@#KIPDR2    ;SET KIPDR2=RW UP 200 BLOCKS
002032  012737  077406  172324          MOV     #200*256.-400+UP+RW,@#KDPDR2    ;SET KDPDR2=RW UP 200 BLOCKS
002040  000167  040000                  JMP     .+40004         ;EXECUTES THE FOLLOWING INSTRUCTIONS
                                                                ;AT VIRTUAL ADDRESS 40000+
002044  012702  002310                  MOV     #WAIT,R2        ;GET ADDRESS OF WAIT LOOP
002050  062702  000002                  ADD     #2,R2
002054  012703  001562                  MOV     #D2BTYP,R3
002060  004767  177374                  JSR     PC,PRINT        ;GO TO PRINT MANAGER
002064  002370                          INST2                   ;PRINT INSTRUCTIONS
002066  004767  000212                  JSR     PC,LOOP         ;GO EXECUTE BR
002072  010213                          MOV     R2,(R3)         ;GET PHYSICAL ADDRESS OF WAIT INSTRUCTION
002074  004767  177446                  JSR     PC,O2A          ;PRINT PHYSICAL ADDRESS
002100  004767  177354                  JSR     PC,PRINT
002104  002444                          LIGHTS
002106  004767  000172                  JSR     PC,LOOP         ;EXECUTE BR . WHILE PRINTING
002112  004767  177342                  JSR     PC,PRINT
002116  002521                          MES1
002120  004767  000160                  JSR     PC,LOOP         ;WAIT FOR MESSAGE TO GO OUT
002124  005037  177562                  CLR     @#TKB           ;CLEAR KEYBOARD BUFFER
002130  012737  000100  177560          MOV     #100,@#TKS      ;ENABLE TELETYPE INTERRUPT
002136  004767  000146                  JSR     PC,WAIT         ;WAIT FOR TELETYPE INTERRUPT
002142  004767  177312                  JSR     PC,PRINT
002146  002314                          INST1                   ;PRINT INSTRUCTIONS
002150  004767  000130                  JSR     PC,LOOP         ;EXECUTE BR . WHILE PRINTING
002154  010213                          MOV     R2,(R3)         ;GET PHYSICAL ADDRESS OF LOOP
002156  062713  040000                  ADD     #40000,(R3)     ;FORM PROGRAM ADDRESS
002162  004767  177360                  JSR     PC,O2A          ;TYPE PROGRAM ADDRESS OF LOOP
002166  004767  177266                  JSR     PC,PRINT
002172  002444                          LIGHTS
002174  004767  000104                  JSR     PC,LOOP         ;GO EXECUTE BR . WHILE PRINTING
002200  004767  177254                  JSR     PC,PRINT
002204  002521                          MES1
002206  004767  000072                  JSR     PC,LOOP         ;WAIT FOR MESSAGE TO GO OUT
002212  005037  177562                  CLR     @#TKB           ;CLEAR THE KEYBOARD BUFFER
002216  012737  000100  177560          MOV     #100,@#TKS      ;ENABLE TELETYPE INTERRUPT
002224  004767  000060                  JSR     PC,WAIT         ;WAIT FOR TELETYPE INTERRUPT
002230  162707  040000                  SUB     #40000,PC       ;RETURN EXECUTES FOLLOWING INSTRUCTION
```

```
002234  000000                          HALT

                        ;#################################################################
                        ;THE CONSOLE SWITCH TEST IS NOW FINISHED. IF YOU WISH TO CHECK
                        ;THE MICRO-BREAK LOGIC ON THE MAINTENANCE CARD PERFORM THE
                        ;FOLLOWING STEPS.
                        ;
                        ;NOTE:  IF FLOATING POINT OPTION DOES NOT EXIST THE CONTENTS
                        ;OF THE MICRO-BREAK REGISTER WILL DISPLAY ONLY THE LOWER BYTE.
                        ;EXAMPLE- 37374=000374
                        ;
                        ;INSERT THE MAINTENANCE CARD.
                        ;ENABLE THE MICRO-BREAK STOP SWITCH ON THE MAINTENANCE CARD.
                        ;SWITCHES 2,3,AND 4 SHOULD BE TO THE LEFT POSITION.
                        ;PRESS CONTINUE.
                        ;DISPLAY THE MICRO-BREAK REGISTER ON THE CONSOLE.
                        ;THE PROCESSOR SHOULD HAVE HALTED WITH 37374 DISPLAYED.
                        ;STEP THE MAINT STEP SWITCH THREE TIMES.
                        ;37003 SHOULD NOW BE DISPLAYED.
                        ;STEP THE MAINT STEP SWITCH ONE MORE TIME.
                        ;THE ADDRESS DISPLAYED SHOULD BE OF THE NEXT HALT INSTRUCTION +2.
                        ;CLEAR THE MICRO-BREAK SWITCH.
                        ;THE PROGRAM IS FINISHED.
                        ;#################################################################

002236  012737  000374  177770          MOV     #374,@#UBREAK   ;LOAD 374 INTO THE MICRO-BREAK REGISTER
002244  000005                          RESET                   ;PROCESSOR SHOULD STOP DURING THIS INSTRUCTION
002246  012737  000003  177770          MOV     #3,@#UBREAK     ;LOAD 3 INTO THE MICRO-BREAK REGISTER
002254  012701  004000                  MOV     #4000,R1
002260  012737  004004  004000          MOV     #4004,@#4000
002266  010031                          MOV     R0,@(R1)+       ;PROCESSOR SHOULD HALT DURING THIS INSTRUCTION
002270  000000                          HALT                    ;TEST IS COMPLETE
```

```
TEST DCKBQ-B CONSOLE TEST       MACY11 27(732)  05-MAR-76  13:37  PAGE 22
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002272  005037  177560          TTYINT: CLR     @#TKS           ;CLEAR THE INTERRUPT
002276  005037  177562                  CLR     @#TKB           ;CLEAR KEYBOARD BUFFER
002302  000002                          RTI

002304  000777                  LOOP:   BR
002306  000207                          RTS     PC

002310  000001                  WAIT:   WAIT                    ;WAIT FOR TELETYPE INTERRUPT
002312  000207                          RTS     PC
                                ;MESSAGES
002314  042523  020124  042101  INST1:  .ASCIZ  'SET ADRS SEL SWITCH TO CONSOLE PHYS POSIT'<15><12>
002322  051522  051440  046105
002330  051440  044527  041524
002336  020110  047524  041440
002344  047117  047523  042514
002352  050040  054510  020123
002360  047520  044523  006524
002366  000012
002370  042523  020124  042101  INST2:  .ASCIZ  'SET ADRS SEL SWITCH TO PROGRAM PHYS POSIT'<15><12>
002376  051522  051440  046105
002404  051440  044527  041524
002412  020110  047524  050040
002420  047522  051107  046501
002426  050040  054510  020123
002434  047520  044523  006524
002442  000012
002444  051440  047510  046125  LIGHTS: .ASCIZ  ' SHOULD BE DISPLAYED IN THE ADDRESS LIGHTS'<15><12>
002452  020104  042502  042040
002460  051511  046120  054501
002466  042105  044440  020116
002474  044124  020105  042101
002502  051104  051505  020123
002510  044514  044107  051524
002516  005015      000
002521      123 051124  045511  MES1:   .ASCIZ  /STRIKE ANY TELETYPE KEY WHEN READY TO PROCEDE/<15><12>
002526  020105  047101  020131
002534  042524  042514  054524
002542  042520  045440  054505
002550  053440  042510  020116
002556  042522  042101  020131
002564  047524  050040  047522
002572  042503  042504  005015
002600      000

002601      015 000012          CRLF:   .ASCIZ  <15><12>
        000001                          .END
```

```
A       = 000200            304#
AC0     =000000             208#
AC1     =000001             209#
AC2     =000002             210#
AC3     =000003             211#
AC4     =000004             212#
AC5     =000005             213#
AVA     = 020000            296#
BEGIN     001116            534#
BIT13   = 020000            271#
BIT14   = 040000            270#
BIT15   = 100000            269#
BIT6    = 000100            273#
BIT8    = 000400            272#    513
C       = 000001            221#
CHARPT    001542            597*    603     611#
CHK1      001652            593     651#
CRLF      002501            892#
DISPLA= 177570              260#    534*
DM      = 000400            282#
DM1     = 174000            321#
DM2     = 170000            322#
DR0     = 000000            323#
DR1     = 000400            324#
DR2     = 001000            325#
DR3     = 001400            326#
DR4     = 002000            327#
DR5     = 002400            328#
DR6     = 003000            329#
DR7     = 003400            330#
DS      = 000020            286#
DMN     = 000010            303#
D0      = 000000            318#
D1      = 004000            319#
D2      = 010000            320#
D2BTYP    001562            621#    782
ED      = 000010            301#
EMTVEC= 000030              243#    479
ENMM    = 000001            277#
ERRVEC= 000004              238#    477     497
FPVEC   = 000244            247#
HLT     = 000000            462#    719     722     725     728     731     734
IC      = 000200            291#
ICNT      001000            521#    533*    534
INST1     002314            798     858#
INST2     002370            784     866#
IOTVEC= 000020              241#
IS      = 000000            287#
KDE     = 000004            335#    539
KDPAR0= 172360              442#    572*
KDPAR1= 172362              443#    575*
KDPAR2= 172364              444#
KDPAR3= 172366              445#
KDPAR4= 172370              446#
KDPAR5= 172372              447#
KDPAR6= 172374              448#
```

```
KDPAR7= 172376            449#    573*
KDPDR0= 172320            424#    558*
KDPDR1= 172322            425#    564*
KDPDR2= 172324            426#    777*
KDPDR3= 172326            427#
KDPDR4= 172330            428#
KDPDR5= 172332            429#
KDPDR6= 172334            430#
KDPDR7= 172336            431#    563*
KIPAR0= 172340            433#    571*
KIPAR1= 172342            434#    576*
KIPAR2= 172344            435#
KIPAR3= 172346            436#
KIPAR4= 172350            437#
KIPAR5= 172352            438#
KIPAR6= 172354            439#
KIPAR7= 172356            440#
KIPDR0= 172300            415#    557*
KIPDR1= 172302            416#    565*
KIPDR2= 172304            417#    776*
KIPDR3= 172306            418#
KIPDR4= 172310            419#
KIPDR5= 172312            420#
KIPDR6= 172314            421#
KIPDR7= 172316            422#
KM    = 000000            229#
KPG   = 000000            290#
KPTR  = 001060            263#    504     535
KSP   =%000006            216#    493*    494     496*    503     504*    505*    506*    507*    508*    535*
LIGHTS  002444            789     804     874#
LOOP    002304            785     790     793     799     805     808     852#
MES1    002521            792     807     882#
MMK     001210            556#
MMT   = 010000            295#
MMVEC = 000250            248#    538*
MMD     001152            545#
N     = 000010            224#
NRA   = 100000            298#
NR0   = 000000            452#
NR3   = 000003            455#
NR7   = 000007            459#
OST   = 004000            294#
O2A     001546            616#    787     802
PC    =%000007            199#    600*    610*    620     644*    783*    785*    787*    788*    790*    791*    793*    796*
                          797*    799*    802*    803*    805*    806*    808*    811*    812*    853*    856*
PFVEC = 000024            242#
PIRQ  = 177772            253#
PIRVEC= 000240            246#
PIR4  = 010000            274#
PKM   = 000000            232#
PLA   = 040000            297#
PRINT   001460            595#    596     783     788     791     797     803     806
PRTY4 = 000200            227#    768
PRTY7 = 000340            226#
PSM   = 010000            233#
PSW   = 177776            251#    509*    511*
```

```
PUM     = 030000            234#    509
RDO     = 000002            454#
RDOT    = 000001            453#
REDPTR= 000740              266#
REG     = 004000            228#    235#
RESVEC= 000010              239#
RW      = 000006            458#    557     558     559     560     561     562     563     564     565     566     567     568
                            569     776     777
RWT     = 000004            456#
RWTW    = 000005            457#
R0      =%000000            192#    603*    604     609     610     619     620*    625*    632*    634*    636*    640*    843
R1      =%000001            193#    503*    506     618     623*    638*    641*    841*    843*
R10     =%000008            200#
R11     =%000009            201#
R12     =%000010            202#
R13     =%000011            203#
R14     =%000012            204#
R15     =%000013            205#
R2      =%000002            194#    547*    549*    551*    553*    617     624*    626*    627*    630     631*    633*    635*
                            637*    642*    780*    781*    786     800
R3      =%000003            195#    548*    550*    552*    554*    782*    786*    800*    801*
R4      =%000004            196#
R5      =%000005            197#
SCOPE   = 104000            463#    536
SCOPEA    000434            480     501#
SCOPEX    000516            514     516#
SDE     = 000002            334#    539
SDPAR0= 172260              406#
SDPAR1= 172262              407#    577*
SDPAR2= 172264              408#
SDPAR3= 172266              409#
SDPAR4= 172270              410#
SDPAR5= 172272              411#
SDPAR6= 172274              412#
SDPAR7= 172276              413#
SDPDR0= 172220              388#    560*
SDPDR1= 172222              389#    567*
SDPDR2= 172224              390#
SDPDR3= 172226              391#
SDPDR4= 172230              392#
SDPDR5= 172232              393#
SDPDR6= 172234              394#
SDPDR7= 172236              395#
SHLT      000400            478     492#
SHLTA     000430            495     498#
SIPAR0= 172240              397#
SIPAR1= 172242              398#    578*
SIPAR2= 172244              399#
SIPAR3= 172246              400#
SIPAR4= 172250              401#
SIPAR5= 172252              402#
SIPAR6= 172254              403#
SIPAR7= 172256              404#
SIPDR0= 172200              379#    551     559*
SIPDR1= 172202              380#    566*
SIPDR2= 172204              381#
```

DCKB0A.SRC CROSS REFERENCE TABLE -- USER SYMBOLS

```
SIPDR3= 172206          382#
SIPDR4= 172210          383#
SIPDR5= 172212          384#
SIPDR6= 172214          385#
SIPDR7= 172216          386#
SLR   = 177774          252#    537*
SM    = 040000          230#
SM1   = 000370          313#
SM2   = 000360          314#
SM4   = 000340          315#
SM6   = 000320          316#
SM8   = 000300          317#
SP    =%000006          198#    597     598*    607*    616*    617*    618*    619*    640     641     642     643
SPG   = 000040          289#
SPTR  = 000700          264#    507
SR0   = 177572          338#    492*    502*    546*    651*    716*    743*
SROT    001002          522#
SR1   = 177574          339#
SR2   = 177576          340#
SR3   = 172516          341#    539*
SSP   =%000006          217#    512*
START   001110          488     532#
SWR   = 177570          259#    513     515
S1    = 000010          308#
S2    = 000020          309#
S4    = 000040          310#
S6    = 000060          311#
S8    = 000100          312#
T     = 000020          225#
TBITVE= 000014          240#
TE    = 001000          293#
TEMP  = 001004          523#
TKB   = 177562          256#    794*    809*    849*
TKS   = 177560          255#    795*    810*    848*
TPA     001534          605     609#
TPB   = 177566          258#    609*    630*
TPISR   001510          603#    767
TPS   = 177564          257#    595     599*    606*    616     628     643*
TPVEC = 000064          245#    767*    768*
TRAPVE= 000034          244#
TTYINT  002272          774     848#
TYPE  = 000004          464#
UBREAK= 177770          254#    515*    838*    840*
UDE   = 000001          333#    539
UDPAR0= 177660          370#
UDPAR1= 177662          371#    579*
UDPAR2= 177664          372#
UDPAR3= 177666          373#
UDPAR4= 177670          374#
UDPAR5= 177672          375#
UDPAR6= 177674          376#
UDPAR7= 177676          377#
UDPDR0= 177620          352#    562*
UDPDR1= 177622          353#    569*
UDPDR2= 177624          354#
UDPDR3= 177626          355#
```

```
UDPDR4= 177630          356#
UDPDR5= 177632          357#
UDPDR6= 177634          358#
UDPDR7= 177636          359#
UIPAR0= 177640          361#
UIPAR1= 177642          362#  580*
UIPAR2= 177644          363#
UIPAR3= 177646          364#
UIPAR4= 177650          365#
UIPAR5= 177652          366#
UIPAR6= 177654          367#
UIPAR7= 177656          368#
UIPDR0= 177600          343#  547  561*
UIPDR1= 177602          344#  568*
UIPDR2= 177604          345#
UIPDR3= 177606          346#
UIPDR4= 177610          347#
UIPDR5= 177612          348#
UIPDR6= 177614          349#
UIPDR7= 177616          350#
UM    = 140000          231#
UP    = 000000          302#  557  558  559  560  561  562  563  564  565  566  567  568
                        569   776  777
UPG   = 000140          288#
UPTR  = 000600          265#  508
USP   =X000006          218#  510*
V     = 000002          222#
VS0   = 000000          278#
VS1   = 000002          279#
VS2   = 000004          280#
VS3   = 000006          281#
VS4   = 000010          282#
VS5   = 000012          283#
VS6   = 000014          284#
VS7   = 000016          285#
W     = 000100          305#
WAIT    002310          780   796  811  855#
Y     = 000006          646#  654  663#  672#  681#  690#  699#  708#
Z     = 000004          223#
.     = 002604          476#  477#  479#  482#  487#  490#  519#  523  524#  527#  550  554  629
                        718   721  724  727  730  733  778  852
```

DCKBQA.SRC CROSS REFERENCE TABLE -- MACRO NAMES

```
CAC     4678
CFPS    4678
CONI    4678  654   663   672   681   690   699
CPC     4678
CPDR    4678
CPTR    4678
CSRO    4678
CSR1    4678
CSR2    4678
CSTAT   4678
KKM     4678
KKP     4678
KKR     4678
KSM     4678
KSMP    4678
KSR     4678
KUM     4678
KUP     4678
KUR     4678
LDKM1   4678
LDKO    4678
LDPDR   4678  556   558   559   560   561   562   563   564   565   566   567   568   569   776
        777
LDSO    4678
LDUO    4678
SETK    4678
SETS    4678
SETU    4678
SGF     4678  501   716
SGN     4678  743
SSM     4678
SSR     4678
SUM     4678
SUR     4678
SVEC    4678
UUM     4678
UUR     4678
```

```
ADD      496  598  607  627  781  801
ASR      511
BEQ      495  514  718  721  724  727  730  733
BIC      492  606
BIS      599
BIT      513  595
BNE      596  605  639
BPL      629
BR       652
CLR      502  505  533  538  546  549  553  571  572  624  631  716  775  794  809
         848  849
CMP      717  720  723  726  729  732
DEC      638
EMT      463
HALT     462  476  483  652  744  813  844
INC      743
IOT      464
JMP      488  497  498  593  778
JSR      783  785  787  788  790  791  793  796  797  799  802  803  805  806  808
         811
MOV      503  504  506  507  508  509  534  535  537  539  547  548  551  552  557
         558  559  560  561  562  563  564  565  566  567  568  569  573  575  576
         577  578  579  580  586  587  588  589  590  591  597  603  610  616  617
         618  619  620  623  630  640  641  642  643  651  741  767  768  774  776
         777  780  782  786  795  800  810  838  840  841  842  843
MOVB     515  609
MTPD     510  512
NOP      532  545
RESET    839
ROL      625  626  632  633  634  635  636  637
RTI      608  612  850
RTS      600  644  853  856
RTT      516
SOB      550  554
SUB      493  812
TST      494
TSTB     604  628
WAIT     855
.ABS     186
.ASCIZ   858  866  874  882  992
.END     893
.LIST    185  467  476  663  672  681  690  699  708
.MACR    467
.NLIST   184  467  468  476  663  672  681  690  699  708
.PAGE    528  647  712  736  759  813  848
.REM       1
.REPT    476
.TITLE   187
.WORD    478  480  621


ERRORS DETECTED:  0
DEFAULT GLOBALS GENERATED:  0
```

```
 #,DCKBQB/CRF/SOL/PAGNUM:1=DCKBQB.DOC,DCKBQA.SRC
 RUN-TIME:  3  4  1 SECONDS
 RUN-TIME RATIO: 75/9=7.7
 CORE USED:  8K  (15 PAGES)
```