PC11

DEVICE ROUTINE (MPG)

MD-11-DTPCA-B

EP-DTPCA-B-DL-A

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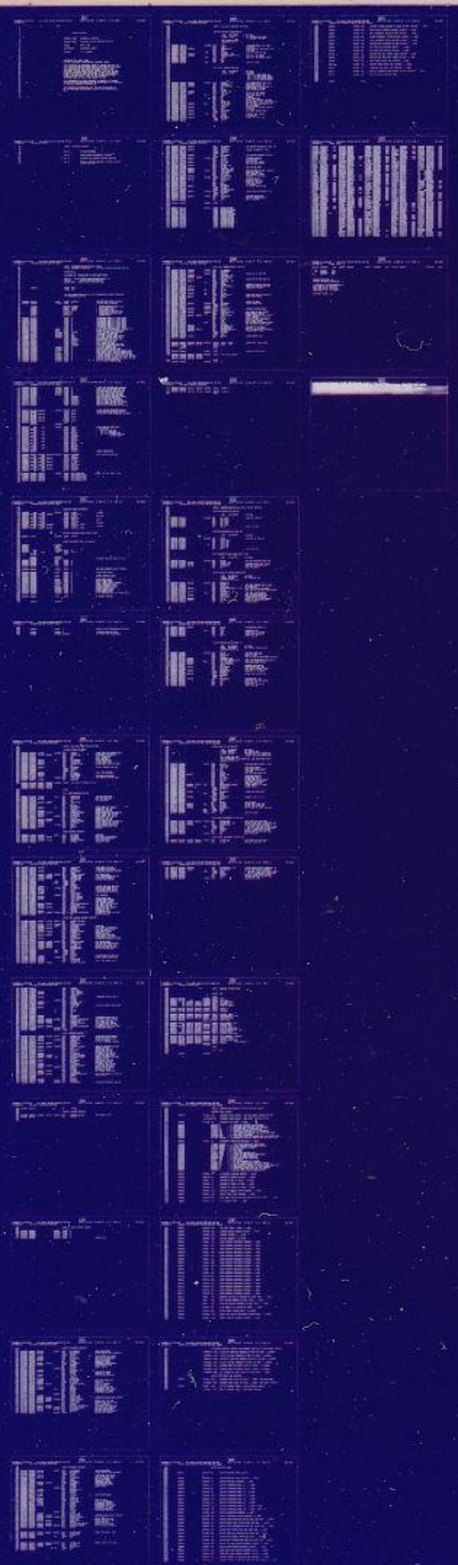

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                                IDENTIFICATION

                        PRODUCT CODE:   MAINDEC-11-DTPCA-B
                        PRODUCT NAME:   PC11/PR11 DEVICE ROUTINE FOR MPG
                        DATE:           APRIL 1976
                        MAINTAINER:     DIAGNOSTIC GROUP
                        AUTHOR:         W. R. GREENE
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                                        .SBTTL  REVISION HISTORY

                                ;       APR 76          DTPCA-B RELEASE
                                ;       JAN 76          ADDED MEMORY MANAGEMENT SUPPORT
                                ;       OCT 75          CREATED FULL SUPPORT DEVICE ROUTINE
                                ;       AUG 75          DTPCA-A INITIAL RELEASE (MINIMUM SUPPORT
                                ;                       DEVICE ROUTINE)
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                                        .SBTTL  STANDARD DEVICE ROUTINE TABLE
                                        .TITLE  MAINDEC-11-DTPCA-B      PC11/PR11 DEVICE ROUTINE FOR MPG

                                        ;REVISION B

                                        ;FILENAME OF "TPCABO.MPG" ON MPG/XXDP MEDIA

                                        ;MACY11:  DTPCA',DTPCA'/CRF:SYM/DOC=DTPCA'.P11
                                        ;LINK11:        DTPCA',MPG/B:0-DTPCA'/E
                                        ;PAPER TAPE:  PUNCH DTPCA'.MPG/FILE:ELEV

        000000'                         .CSECT  PC11
                                        .DSABL  GBL

                                        ;THE FOLLOWING TABLE IS IN THE STANDARDIZED FORMAT REQUIRED
                                        ;TO INTERFACE WITH MPG.

000000' 004104                  LOCZ:   .WORD   DVREND-.                ;DEVICE ROUT SIZE IN BYTES
000002' 000000                  FLAGWD: .WORD   0                       ;DEVICE ROUT FLAGWORD

        100000                          DRWAIT= 100000                  ;  DEVICE ROUTINE WAIT FLAG
        040000                          WRBSY=  40000                   ;  WRITE BUSY FLAG
        020000                          RDBSY=  20000                   ;  READ BUSY FLAG
        000004                          CLWVCT= 4                       ;  CLEAR WRITE VECTOR FLAG
        000002                          CLRVCT= 2                       ;  CLEAR READ VECTOR FLAG
        000001                          LDRFLG= 1                       ;  LEADER FLAG

000004' 000000                          .WORD   0                       ;INTERFACE WORD # 1 (NOT USED)
000006' 000000                          .WORD   0                       ;INTERFACE WORD # 2 (NOT USED)
000010' 000000                          .WORD   0                       ;INTERFACE WORD # 3 (NOT USED)
000012' 000000                          .WORD   0                       ;INTERFACE WORD # 4 (NOT USED)
000014' 000000                          .WORD   0                       ;INTERFACE WORD # 5 (NOT USED)
000016' 000000                          .WORD   0                       ;INTERFACE WORD # 6 (NOT USED)
000020' 000000                  SIZE:   .WORD   0                       ;# OF BYTES TRANSFERRED / UNIMAP FLG
000022' 000000                  ERR:    .WORD   0                       ;ERROR ON LAST I/O INDICATOR
000024' 177550                  DREGAD: .WORD   177550                  ;FIRST DEVICE REGISTER ADR
000026' 000070                  IVCTAD: .WORD   70                      ;INTERRUPT VECTOR ADR
000030' 000200                  RBUSRQ: .WORD   200                     ;INT PROC STATUS WORD (BR 4)
000032' 000200                  WBUSRQ: .WORD   200                     ;INT PROC STATUS WORD (BR 4)
000034' 002164                          .WORD   HSKEEP-.                ;HOUSEKEEPING ROUT REL ADR
000036' 002216                          .WORD   REPORT-.                ;REPORT ROUT REL ADR
000040' 000504                          .WORD   KILL-.                  ;KILL ROUT REL ADR
000042' 000356                          .WORD   DATAER-.                ;DATA ERROR COUNTER REL ADR
000044' 000362                          .WORD   TOUTER-.                ;TIME OUT ERROR ROUT REL ADR
000046' 000000                  CIOBSY: .WORD   0                       ;I/O BUSY BRANCH ADR
000050' 000000                  CUPGER: .WORD   0                       ;DEVICE ERROR BRANCH ADR
000052' 000000                  ULIST:  .WORD   0                       ;USER MODE PRINT ROUTINE BRANCH ADR
000054' 000000                  CLIST:  .WORD   0                       ;CMND MODE PRINT ROUTINE BRANCH ADR
000056' 000000                  BINASC: .WORD   0                       ;CONVERT BINARY TO ASCII ROUT BR ADR
000060' 000000                  BTASLZ: .WORD   0                       ;CONVERT BINARY TO DECIMAL ASCII BR ADR
000062' 000000                  DECASC: .WORD   0                       ;CONVERT PACKED DECIMAL TO ASCII BR ADR
000064' 000000                  CSYSFW: .WORD   0                       ;MPG SYSTEM FLAGWORD ADR
000066' 000000                  SETVEC: .WORD   0                       ;SET INT VECT ROUT BR ADR
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000070' 000000                  CLRVEC: .WORD   0                       ;CLEAR INT VECTOR ROUT BR ADR
000072' 000000                  TSTVEC: .WORD   0                       ;TEST INT VECTOR ROUT BR ADR
000074' 000000                  RTNINT: .WORD   0                       ;RETURN FROM INT ROUT BR ADR
000076' 000000                  GETBYT: .WORD   0                       ;GET DATA BYTE ROUT BR ADR
000100' 000000                  PUTBYT: .WORD   0                       ;PUT DATA BYTE ROUT BR ADR
000102' 000014                          .WORD   DVREGS-.                ;ADR OF DEVICE REGISTER NAMES
000104' 000042                          .WORD   DVCMDS-.                ;ADR OF DEVICE FUNCTIONS
000106' 000076                          .WORD   DVPKTE-.                ;ADR OF PACK TBL EXTENSION
000110' 000144                          .WORD   DVMVTE-.                ;ADR OF MODEL VECTOR TBL EXTEN.
000112' 000166                          .WORD   DVCPTE-.                ;ADR OF COMPILER TBL EXTEN.
000114' 000230                          .WORD   DVIWST-.                ;ADR OF DEV INTERFACE WD SYM TBL

000116' 051120  020123          DVREGS: .ASCII  /PRS /                  ;VALID DEVICE REGISTER NAMES &
000122' 000000                          .WORD   0                       ;THEIR POSITIONS RELATIVE TO
000124' 051120  020102                  .ASCII  /PRB /                  ;THE DEVICE REGISTERS BASE ADDRESS.
000130' 000002                          .WORD   2
000132' 050120  020123                  .ASCII  /PPS /
000136' 000004                          .WORD   4
000140' 050120  020102                  .ASCII  /PPB /
000144' 000006                          .WORD   6
        000146'                 DVREGE= .

000146'     120     001         DVCMDS: .BYTE   120,1                   ;VALID DEVICE FUNCTIONS
000150' 000504                          .WORD   READ-.                  ;  FLAG BYTE:
000152'     130     001                 .BYTE   130,1                   ;    BIT 7 = NPR DEV
000154' 000676                          .WORD   WRITE-.                 ;    BIT 3 = MASSBUS DEV
000156'     376     000                 .BYTE   376,0                   ;    BIT 0 = 2 WORDS FOR ADR
000160' 000702                          .WORD   LEADER-.                ;            (18 BIT ADRS)
000162'     375     000                 .BYTE   375,0
000164' 001342                          .WORD   NOWAIT-.
000166'     374     000                 .BYTE   374,0
000170' 001156                          .WORD   WAIT-.
000172'     373     000                 .BYTE   373,0
000174' 002060                          .WORD   REPORT-.
000176'     372     000                 .BYTE   372,0
000200' 002054                          .WORD   REPORT-.
000202' 177777                          .WORD   177777                  ;TABLE TERMINATOR

000204' 042514  042101  051105  DVPKTE: .ASCII  /LEADER/                ;PACK TABLE EXTENSION
000212'     376     000                 .BYTE   376,0
000214' 047516  040527  052111          .ASCII  /NOWAIT/
000222'     375     000                 .BYTE   375,0
000224' 020040  040527  052111          .ASCII  / WAIT/
000232'     374     000                 .BYTE   374,0
000234' 052123  052101  051525          .ASCII  /STATUS/
000242'     373     000                 .BYTE   373,0
000244' 047503  047125  051524          .ASCII  /COUNTS/
000252'     372     000                 .BYTE   372,0

000254' 000376  000347          DVMVTE: .WORD   376,LLDR-LOCZ           ;MODEL VECTOR TABLE EXTEN.
000260' 000375  000346                  .WORD   375,LNWAIT-LOCZ
000264' 000374  000346                  .WORD   374,LWAIT-LOCZ
000270' 000373  000346                  .WORD   373,LCOUNT-LOCZ
000274' 000372  000346                  .WORD   372,LCOUNT-LOCZ
```

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                                        ;
                                        ;       COMPILER TABLE EXTENSION
                                        ;
000300'     004     376                 DVCPTE: .BYTE   4,376                   ;LEADER
000302' 004537  000012  000000                  .WORD   4537,10.,0
000310'     003     375                         .BYTE   3,375                   ;NO WAIT
000312' 004537  000012                          .WORD   4537,10.
000316'     003     374                         .BYTE   3,374                   ;WAIT
000320' 004537  000012                          .WORD   4537,10.
000324'     004     373                         .BYTE   4,373                   ;STATUS
000326' 004537  000012  001002                  .WORD   4537,10.,1002
000334'     004     372                         .BYTE   4,372                   ;COUNTS
000336' 004537  000012  001001                  .WORD   4537,10.,1001

                                        ;
                                        ;       DEVICE INTERFACE WORD SYMBOL TABLE
                                        ;
000344' 177777                          DVIWST: .WORD   177777

                                        ;
                                        ;       MODEL STATEMENT TABLE EXTENSION
                                        ;
000346'                                 LNWAIT:
000346'                                 LWAIT:
000346'                                 LSTATS:
000346'     000                         LCOUNT: .BYTE   0
000347'     377     000                 LLDR:   .BYTE   377,0
        000352'                                 .EVEN

        000352'                         HSKPST= .
        000352'                         ISTAT=  .                               ;STORAGE FOR DEV REG'S AT INT
000352' 000000                          PRS:    .WORD   0
000354' 000000                          PRB:    .WORD   0
000356' 000000                          PPS:    .WORD   0
000360' 000000                          PPB:    .WORD   0

000362' 000004                          CSTAT:  .BLKW   4.                      ;DEV REG CURRENT VALUE STORAGE

000372' 000000                          BYRD:   .WORD   0                       ;BYTES READ COUNT
000374' 000000                                  .WORD   0
000376' 000000                          BYWR:   .WORD   0                       ;BYTES WRITTEN COUNT
000400' 000000                                  .WORD   0
000402' 000000                          RDCNT:  .WORD   0                       ;READ CMND COUNT
000404' 000000                          WRCNT:  .WORD   0                       ;WRITE CMND COUNT
000406' 000000                          MISCNT: .WORD   0                       ;MISC. CMND COUNT (LEADER)
000410' 000000                          RICNT:  .WORD   0                       ;READ INTERRUPT COUNT
000412' 000000                          WICNT:  .WORD   0                       ;WRITE INTERRUPT COUNT
000414' 000000                          RDERR:  .WORD   0                       ;READER ERROR COUNT
000416' 000000                          PUNERR: .WORD   0                       ;PUNCH ERROR COUNT
000420' 000000                          DATAER: .WORD   0                       ;DATA ERROR COUNT
000422' 000000                          TOECNT: .WORD   0                       ;# OF ENTRIES INTO T/O ERROR ROUT

000424' 000000                          FLAG:   .WORD   0                       ;FLAGWORD STORAGE


        000426'                         HSKPEN= .
```

```
225
226     000000          XXXX=   0               ;VALUE TO BE TAILORED BY DEV ROUT
227
228     000001          MMVER=  1               ;SYSTEM FLGWD BIT DEF.
229     120000          PSCONS= 120000          ;INT SRVC VIRT PAGE BASE
```

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                                                .SBTTL  PC11/PR11 FUNCTION ROUTINES

                                                ;TIMEOUT ERROR HANDLER

000426' 005267  177770          TOUTER: INC     TOECNT                  ;INCR TIME OUT ERROR COUNT
000432' 026727  177764  000010          CMP     TOECNT,#8.              ;EXCEEDED 8 TIMEOUTS?
000440' 001401                          BEQ     2$                      ;YES - CONTINUE
000442' 000205                          RTS     R5                      ;NO - RETURN
000444' 004767  002416          2$:     JSR     R0,SAVREG               ;SAVE REGISTERS
000450' 004767  002444                  JSR     PC,SUPTAD               ;P TBL ADR TO R3
000454' 042713  000010                  BIC     #M41OT,(R3)             ;RESET WAIT FOR I/O TERM
000460' 005004                          CLR     R4
000462' 004567  002624                  JSR     R5,PRINT                ;PRINT TIMEOUT ERR MSG
000466' 000036                          .WORD   TOEMSG-.
000470' 000030                          .WORD   24.
000472' 004567  000046                  JSR     R5,KILL                 ;KILL THE PROGRAM
000476' 004767  002144                  JSR     PC,ERDIRG
000502' 004067  002374                  JSR     R0,RESREG               ;RESTORE REGISTERS
000506' 012605                  TOUTEX: MOV     (SP)+,R5                ;GO DISPLAY DEVICE REGS
000510' 000177  177334                  JMP     @CUPGER

000514' 041520  030461  050057  TOEMSG: .ASCII  'PC11/PR11 TIMEOUT ON I/O'
000522' 030522  020061  044524
000530' 042515  052517  020124
000536' 047117  044440  047457
                                        .EVEN

                                        ;KILL USER PROGRAM ROUTINE

000544' 016702  177254          KILL:   MOV     DREGAD,R2               ;GET DEV REG ADR
000550' 032712  000100                  BIT     #100,(R2)               ;ANY INT EBLS SET ?
000554' 001005                          BNE     1$                      ;YES-CONTINUE
000556' 032762  000100  000004          BIT     #100,4(R2)
000564' 001001                          BNE     1$
000566' 000425                          BR      KILLEX
000570' 004567  002632          1$:     JSR     R5,TRVECT               ;TEST READ INT VECTOR
000574' 000407                          BR      CWRINT                  ;BRANCH IF NOT ME
000576' 042712  000100                  BIC     #100,(R2)               ;RESET RD INT EBL
000602' 042767  020000  177172          BIC     #RDBSY,FLAGWD           ;RESET READ BSY IN FLAG WD
000610' 004767  001342                  JSR     PC,RRINTV               ;RESET READ INT VECTOR
000614' 004567  002636          CWRINT: JSR     R5,TWVECT               ;TEST WRITE INT VECTOR
000620' 000410                          BR      KILLEX                  ;BRANCH IF NOT ME
000622' 042762  000100  000004          BIC     #100,4(R2)              ;RESET WR INT EBL
000630' 042767  040000  177144          BIC     #WRBSY,FLAGWD           ;RESET WRITE BSY IN FLAG WD
000636' 004767  001332                  JSR     PC,RWINTV               ;RESET WRITE INT VECTOR
000642' 005067  177154          KILLEX: CLR     ERR                     ;CLEAR ERROR INDICATOR
000646' 005067  000674                  CLR     ERFLG                   ;CLEAR INTERN ERR FLAG
000652' 000205                          RTS     R5                      ;RETURN

                                        ;READ COMMAND HANDLER

000654' 010567  002074          READ:   MOV     R5,STMNT                ;SAVE R5
000660' 162767  000004  002066          SUB     #4,STMNT                ;FOR STMNT # REFERENCE
000666' 016704  177132                  MOV     DREGAD,R4               ;DEV REG ADDR TO R4
000672' 032767  020000  177102          BIT     #RDBSY,FLAGWD           ;TEST READ BUSY
000700' 001026                          BNE     GTPTBS                  ;BRANCH IF SET
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000702' 032714  000100                  BIT     #100,(R4)               ;TEST RECV INT EBL
000706' 001403                          BEQ     SRDBSY                  ;CONTINUE IF NOT SET
000710' 004577  177132                  JSR     R5,@CIOBSY              ;OTHERWISE RELEASE CONTROL
000714' 000757                          BR      READ
000716' 052767  020000  177056  SRDBSY: BIS     #RDBSY,FLAGWD           ;SET READ BUSY
000724' 016767  177076  000012          MOV     IVCTAD,10$              ;INT VECTOR ADDR TO CALL
000732' 016767  177072  000006          MOV     RBUSRQ,20$              ;ALSO BUS PRIORITY
000740' 004577  177122                  JSR     R5,@SETVEC              ;GO SET THE VECTOR
000744' 000000                  10$:    .WORD   XXXX
000746' 000000                  20$:    .WORD   XXXX
000750' 001012                          .WORD   RDINT-.
000752' 005067  177444                  CLR     TOECNT                  ;CLEAR TIME OUT ERR CNT
000756' 004767  002136          GTPTBS: JSR     PC,SUPTAD               ;GET P TBL BASE IN R3
000762' 005267  177414                  INC     RDCNT                   ;INCREMENT READ CMD CT
000766' 005067  177030                  CLR     ERR                     ;CLEAR ERROR INDICATOR
000772' 005063  000030                  CLR     PTOCNT(R3)
000776' 012700                  RDMNST: MOV     (R5)+,R0                ;GET ADDRESS
001000' 010567  000532                  MOV     (R5)+,RADDR
001004' 010567  000530                  MOV     (R5)+,RBYTES            ;BYTE COUNT AND
001010' 012500                          MOV     (R5)+,R0                ;ABSORB NEXT PARAM
001012' 000014                          INC     (R4)                    ;SET READER ENABLE
001014' 000763  000010  000000          BIS     #WT4IOT,PFLGWD(R3)      ;SET WAIT FOR I/O TERM
001022' 000714  000100                  BIS     #100,(R4)               ;SET RECV INT EBL
001026' 032767  100000  176746          BIT     #DRWAIT,FLAGWD          ;TEST DEV ROUT NOWAIT
001034' 001002                          BNE     RDNOWT                  ;BRANCH IF SET
001036' 000167  000316                  JMP     TSTIEB                  ;OTHERWISE WAIT
001042' 042763  000010  000000  RDNOWT: BIC     #WT4IOT,PFLGWD(R3)      ;CLEAR WAIT FOR I/O TERM
001050' 000205                          RTS     R5                      ;RETURN INLINE

                                        ;WRITE AND LEADER COMMAND HANDLER

001052' 042767  000001  176722  WRITE:  BIC     #LDRFLG,FLAGWD
001060' 000403                          BR      XMIT
001062' 052767  000001  176712  LEADER: BIS     #LDRFLG,FLAGWD
001070' 010567  001660          XMIT:   MOV     R5,STMNT                ;SAVE R5
001074' 162767  000004  001652          SUB     #4,STMNT                ;FOR STMNT # REFERENCE
001102' 016704  176716                  MOV     DREGAD,R4               ;DEV REG ADDR TO R4
001106' 032767  040000  176666          BIT     #WRBSY,FLAGWD           ;TEST WRITE BUSY
001114' 001032                          BNE     CLRERR                  ;BRANCH IF SET
001116' 032764  000100  000004          BIT     #100,4(R4)              ;TEST PUNCH INT EBL
001124' 001403                          BEQ     SETBSY                  ;CONTINUE IF NOT SET
001126' 004577  176714                  JSR     R5,@CIOBSY              ;OTHERWISE RELEASE CONTROL
001132' 000756                          BR      XMIT
001134' 052767  040000  176640  SETBSY: BIS     #WRBSY,FLAGWD           ;SET WRITE BUSY
001142' 016767  176660  000020          MOV     IVCTAD,10$              ;INT VECTOR ADDR TO CALL
001150' 062767  000004  000012          ADD     #4,10$                  ;ADJUST FOR WRITE INT
001156' 016767  176650  000006          MOV     WBUSRQ,20$              ;ALSO PASS BUS PRIORITY
001164' 004577  176676                  JSR     R5,@SETVEC              ;GO SET THE VECTOR
001170' 000000                  10$:    .WORD   XXXX
001172' 000000                  20$:    .WORD   XXXX
001174' 000354                          .WORD   WRINT-.
001176' 005067  177220                  CLR     TOECNT                  ;CLEAR TIME OUT ERR CNT
001202' 005067  176614          CLRERR: CLR     ERR                     ;CLEAR ERROR INDICATOR
001206' 005063  000030                  CLR     PTOCNT(R3)
001212' 004767  001702                  JSR     PC,SUPTAD               ;GET P TBL BASE IN R3
001216' 032767  000001  176556          BIT     #LDRFLG,FLAGWD
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001224' 001011                                  BNE     LDRYES
001226' 012500                                  MOV     (R5)+,R0
001230' 012567  000306                          MOV     (R5)+,WADDR
001234' 012567  000304                          MOV     (R5)+,WBYTES
001240' 012500                                  MOV     (R5)+,R0
001242' 005267  177136                          INC     WRCNT                   ;INCREMENT WRITE CMD CT
001246' 000420                                  BR      PUNEBL
001250' 010700                          LDRYES: MOV     PC,R0
001252' 062700  000072                          ADD     #BLANK-.,R0
001256' 010067  000260                          MOV     R0,WADDR
001262' 012500                                  MOV     (R5)+,R0                ;PICK UP LENGTH FROM CALL
001264' 012701  000012                          MOV     #10.,R1
001270' 005002                                  CLR     R2
001272' 060102                          1$:     ADD     R0,R2
001274' 005301                                  DEC     R1
001276' 001375                                  BNE     1$
001300' 010267  000240                          MOV     R2,WBYTES
001304' 005267  177076                          INC     MISCNT                  ;INCREMENT MISC CMD CT
001310' 052763  000010  000000  PUNEBL: BIS     #WT4IOT,PFLGWD(R3)              ;SET WAIT FOR I/O TERM
001316' 052764  000100  000004          BIS     #100,4(R4)                      ;SET PUNCH INT EBL
001324' 042767  100000  176450          BIT     #DRWAIT,FLAGWD                  ;TEST DEV ROUT NOWAIT
001332' 001412                          BEQ     TSTIEB                          ;IF RESET TEST INT EBL
001334' 042763  000010  000000          BIC     #WT4IOT,PFLGWD(R3)              ;CLEAR WAIT FOR I/O TERM
001342' 000205                  RETURN: RTS     R5                              ;OTHERWISE RETURN
001344' 000000                  BLANK:  .WORD   0

                                        ;WAIT COMMAND HANDLER

001346' 042767  100000  176426  WAIT:   BIC     #DRWAIT,FLAGWD                  ;CLEAR DEV ROUT NOWAIT
001354' 016704  176444                  MOV     DREGAD,R4                       ;POINT R4 AT REG ADDR
001360' 032714  000100          TSTIEB: BIT     #100,(R4)                       ;TEST INT EBLS
001364' 001055                          BNE     RELEAS                          ;IF SET, RELEASE CONTROL
001366' 032764  000100  000004          BIT     #100,4(R4)
001374' 001051                          BNE     RELEAS
001376' 032767  000002  176376  TRMTST: BIT     #CLRVCT,FLAGWD                  ;TEST IF VECTOR CLR REQD
001404' 001410                          BEQ     10$                             ;BRANCH IF NOT
001406' 004567  002014                  JSR     R5,TRVECT                       ;TEST READ VECTOR
001412' 000405                          BR      10$                             ;BRANCH IF NOT ME
001414' 004767  000536                  JSR     PC,RRINTV                       ;GO RESET THE VECTOR
001420' 042767  000002  176354          BIC     #CLRVCT,FLAGWD                  ;CLEAR THE REQ FLAG
001426' 032767  000004  176346  10$:    BIT     #CLWVCT,FLAGWD                  ;TEST IF VECTOR CLR REQD
001434' 001410                          BEQ     ERRTST                          ;BRANCH IF NOT
001436' 004567  002014                  JSR     R5,TWVECT                       ;TEST WRITE VECTOR
001442' 000405                          BR      ERRTST                          ;BRANCH IF NOT ME
001444' 004767  000524                  JSR     PC,RWINTV                       ;GO RESET THE VECTOR
001450' 042767  000004  176324          BIC     #CLWVCT,FLAGWD                  ;CLEAR THE REQ FLAG
001456' 005767  000064          ERRTST: TST     ERRFLG                          ;TEST FOR ANY ERROR
001462' 001727                          BEQ     RETURN                          ;RETURN IF NONE
001464' 012767  000001  176330          MOV     #1,ERR                          ;SET ERROR INDICATOR
001472' 004767  001422                  JSR     PC,SUPTAD
001476' 032763  020000  000002          BIT     #PRONER,POPSW(R3)               ;TEST DONT PRINT ON ERR BIT
001504' 001003                          BNE     ERREXT                          ;EXIT IF SET
001506' 005004                          CLR     R4
001510' 000167  001030                  JMP     ERRRPT
001514' 000177  176330          ERREXT: JMP     @CUPGER
001520' 004577  176322          RELEAS: JSR     R5,@CIOBSY                      ;OTHERWISE RELEASE CONTROL
```

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001524' 000715                          BR      TSTIEB

                                        ;NOWAIT COMMAND HANDLER

001526' 052767  100000  176246  NOWAIT: BIS     #DRWAIT,FLAGWD          ;SET NOWAIT FLAG
001534' 000702                          BR      RETURN
```

```
                                        ;WRITE & READ CONTROL TABLES

001536' 000000                  RADDR:  .WORD   0
001540' 000000                  RBYTES: .WORD   0
001542' 000000                  WADDR:  .WORD   0
001544' 000000                  WBYTES: .WORD   0
001546' 000000                  ERRFLG: .WORD   0                       ;ERROR FLAG
```

```
                                                ;WRITE INTERRUPT HANDLER

001550' 004067  001312          WRINT:  JSR     R0,SAVREG               ;SAVE REGISTERS
001554' 004567  001360                  JSR     R5,STSTAT               ;STORE DEVICE REG CONTENTS
001560' 176572                          .WORD   ISTAT-.
001562' 005267  176624                  INC     WICNT                   ;INCR WRITE INT COUNT
001566' 004767  001326                  JSR     PC,SUPTAD               ;SET UP INT POINTERS
001572' 005764  000004                  TST     4(R4)                   ;TEST FOR ERROR
001576' 100006                          BPL     PUNRDY                  ;BRANCH IF NONE
001600' 152767  000001  177740          BISB    #1,ERFLG                ;RECORDER PUNCH ERROR
001606' 005267  176604                  INC     PUNERR                  ;INCR PUNCH ERROR
001612' 000437                          BR      STPPUN                  ;ABORT WRITE
001614' 010701                  PUNRDY: MOV     PC,R1
001616' 062701  176562                  ADD     #BYWR+2-.,R1
001622' 005767  177716                  TST     WBYTES                  ;TEST BYTE COUNT
001626' 001423                          BEQ     WTERM                   ;BRANCH IF ZERO
001630' 062711  000001                  ADD     #1,(R1)                 ;INCR BYTES WRITTEN
001634' 005541                          ADC     -(R1)
001636' 016700  177700                  MOV     WADDR,R0
001642' 004777  176230                  JSR     PC,@GETBYT              ;GET BYTE FROM MEM
001646' 110164  000006                  MOVB    R1,6(R4)                ;PUNCH IT
001652' 032767  000001  176122          BIT     #LDRFLG,FLAGWD          ;TEST IF LEADER
001660' 001002                          BNE     10$                     ;SKIP IF YES
001662' 005267  177654                  INC     WADDR                   ;ELSE BUMP ADR PTR
001666' 005367  177652          10$:    DEC     WBYTES                  ;DECREMENT BYTE COUNT
001672' 001401                          BEQ     WTERM                   ;TERMINATE IF ZERO
001674' 000425                          BR      INTEXT                  ;ELSE RETN FROM INT
001676' 010701                  WTERM:  MOV     PC,R1
001700' 062701  176476                  ADD     #BYWR-.,R1
001704' 016167  000002  176106          MOV     2(R1),SIZE              ;UPDATE ACTUAL BYTES XFERRED
001712' 042767  040000  176062  STPPUN: BIC     #WRBSY,FLAGWD
001720' 042764  000100  000004          BIC     #100,4(R4)              ;RESET XMIT INT EBL
001726' 032714  000100                  BIT     #100,(R4)               ;RECEIVE INT STILL UP?
001732' 001003                          BNE     GVECAD                  ;YES - CONTINUE
001734' 042763  000010  000000          BIC     #WT4IOT,PFLGWD(R3)      ;NO-RESET WAIT FOR IOT
001742' 052767  000004  176032  GVECAD: BIS     #CLWVCT,FLAGWD          ;SET CLR VECT REQUEST
001750' 004067  001126          INTEXT: JSR     R0,RESREG               ;RESTORE REGISTERS
001754' 000177  176114                  JMP     @RTINT                  ;RETURN FROM INTERRUPT
001760' 000000                  WRBCNT: .WORD   0                       ;WRITE BYTE COUNT
```

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                                                ;READ INTERRUPT HANDLER

001762' 004067  001100                  RDINT:  JSR     R0,SAVREG               ;SAVE REGISTERS
001766' 004567  001146                          JSR     R5,STSTAT               ;STORE DEVICE REG CONTENTS
001772' 176360                                  .WORD   ISTAT-.
001774' 005267  176410                          INC     RICNT                   ;INCR READ INT COUNT
001000' 004567  001114                          JSR     PC,SUPTAD               ;SET UP INTERN PTRS
001004' 005714                                  TST     (R4)                    ;TEST FOR ERROR
001006' 100006                                  BPL     RDRRDY                  ;BRANCH IF NONE
001010' 152767  000002  177530                  BISB    #2,ERRFLG               ;REMEMBER RDR ERR
001016' 005267  176372                          INC     RDRERR                  ;INCR READER ERROR
001022' 000434                                  BR      STPRDR                  ;ABORT READ
001024' 010701                          RDRRDY: MOV     PC,R1
001026' 062701  176346                          ADD     #BYRD+2-.,R1
001032' 005767  177502                          TST     RBYTES
001036' 001420                                  BEQ     RTERM
001040' 005211  000001                          ADD     #1,(R1)                 ;INCR BYTES READ
001044' 005541                                  ADC     -(R1)
001046' 016700  177464                          MOV     RADDR,R0
001052' 116401  000002                          MOVB    2(R4),R1                ;READ A BYTE
001056' 004777  176016                          JSR     PC,@PUTBYT              ;PUT IT IN MEMORY
001062' 005267  177450                          INC     RADDR                   ;INCREMENT ADDRESS
001066' 005367  177446                          DEC     RBYTES                  ;DECREMENT BYTE COUNT
001072' 001402                                  BEQ     RTERM                   ;TERMINATE IF ZERO
001074' 005214                                  INC     (R4)                    ;ELSE SET RDR EBL
001076' 000724                                  BR      INTEXT                  ;THEN RETN FROM INT
002100' 010701                          RTERM:  MOV     PC,R1
002102' 062701  176270                          ADD     #BYRD-.,R1
002106' 016167  000002  175704                  MOV     2(R1),SIZE              ;UPDATE ACTUAL BYTES XFERRED
002114' 042767  020000  175660          STPRDR: BIC     #RDBSY,FLAGWD
002122' 042714  000100                          BIC     #100,(R4)               ;RESET READ INT EBL
002126' 032764  000100  000004                  BIT     #100,4(R4)              ;WRITE INT STILL UP?
002134' 001003                                  BNE     RERVEC                  ;YES-CONTINUE
002136' 042763  000010  000000                  BIC     #WT4IOT,PFLGWD(R3)      ;RESET WAIT FOR IOT
002144' 052767  000002  175630          RERVEC: BIS     #CLRVCT,FLAGWD          ;SET CLR VECT REQUEST
002152' 000167  177572                          JMP     INTEXT


002156' 016767  175644  000004          RRINTV: MOV     IVCTAD,10$              ;RESET READ VECT SUBR
002164' 004577  175700                          JSR     R5,@CLRVEC
002170' 000000                          10$:    .WORD   XXXX
002172' 000207                                  RTS     PC


002174' 016767  175626  000012          RWINTV: MOV     IVCTAD,10$              ;RESET WRITE VECT SUBR
002202' 062767  000004  000004                  ADD     #4,10$
002210' 004577  175654                          JSR     R5,@CLRVEC
002214' 000000                          10$:    .WORD   XXXX
002216' 000207                                  RTS     PC
```

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                                                .SBTTL  PC11/PR11 SUPPORT ROUTINES


                                                ;DEVICE ROUTINE HOUSEKEEPING

                                                        ;JSR    R5,HSKEEP       S/R CALL
                                                        ;.WORD  0 OR 1          0 = DO HSKP PER OPSW
                                                        ;                       1 = UNCOND. DO HSKP
                                                        ;R2 = PROG'S OPSW
                                                        ;DESTROYS R0,R1

002220' 005725                  HSKEEP: TST     (R5)+                   ;UNCONDITIONALLY DO HSKP?
002222' 001003                          BNE     10$                     ;N,Y-10$
0[illegible]24' 032702  000004          BIT     #HSKPEP,R2              ;OPSW SPECIFY EACH PASS HSKP?
0[illegible]230' 001010                 BNE     30$                     ;Y,N-30$
0[illegible]232' 010700                 10$:    MOV     PC,R0           ;SET UP FIRST WD ADR
0[illegible]234' 062700 176116                  ADD     #HSKPST-.,R0
0[illegible]240' 012701 000026                  MOV     #HSKPEN-HSKPST/2,R1     ;SET UP # OF WORDS
0[illegible]244' 005020                 20$:    CLR     (R0)+           ;HSKP ALL NECESSARY AREAS
0[illegible]246' 005301                         DEC     R1
0[illegible]250' 001375                         BNE     20$
002252' 000205                  30$:    RTS     R5                      ;EXIT IN-LINE


                                                ;PC11/PR11 REPORT ROUTINE

                                                        ;JSR    R5,REPORT       S/R CALL
                                                        ;.WORD  FLGWD           FLAGWORD
                                                        ;                         BIT 15 = CMND MODE CALL
                                                        ;                         BIT  9 = PROG STMNT CALL
                                                        ;                         BIT  1 = DO STATUS REPORT
                                                        ;                         BIT  0 = DO COUNTS REPORT

002254' 005067  000232          REPORT: CLR     ABBREV                  ;CLR ABBREVIATED RPT FLAG
0[illegible]60' 004067  000602          JSR     R0,SAVREG               ;SAVE REG'S R0 - R5
0[illegible]54' 032715  177776          BIT     #177776,(R5)            ;DISPLAYING CNTS AT END OF
0[illegible]270' 001012                 BNE     8$                      ;PROG PASS? (Y,N-8$)
002272' 010700                          MOV     PC,R0                   ;SET UP ADR OF CNTS
0[illegible]274' 062700 176076                  ADD     #BYRD-.,R0
0[illegible]300' 012701 000014                  MOV     #12.,R1         ;GET # OF CNT WORDS
002304' 005720                  2$:     TST     (R0)+                   ;THIS CNT WORD = 0?
002306' 001003                          BNE     8$                      ;Y,N-8$
002310' 005301                          DEC     R1                      ;DECR WORD CNT
002312' 001374                          BNE     2$                      ;CK'ED ALL WORDS? (Y,N-2$)
002314' 000472                          BR      OVREX                   ;GO TO EXIT -- ALL CNTS ARE 0'S
002316' 004767  000576          8$:     JSR     PC,SUPTAD               ;SET UP PROG TBL ADR IN R3
002322' 012504                          MOV     (R5)+,R4                ;GET FLAGWORD
002[illegible]4' 032704  000002         BIT     #2,R4                   ;GOING TO DO STATUS DISPLAY?
0[illegible]30' 001403                  BEQ     10$                     ;Y,N-10$
002332' 004567  000602                  JSR     R5,STSTAT               ;GO STORE STATUS REG'S
002336' 176024                          .WORD   CSTAT-.
002340' 032704  000002          10$:    BIT     #2,R4                   ;DISPLAY DEV STATUS?
002344' 001416                          BEQ     DISCNT                  ;Y,N-DISCNT
002346' 004567  000740                  JSR     R5,PRINT                ;ISSUE 'AT INT' MSG
002352' 001147                          .WORD   ATIMSG-.
002354' 000014                          .WORD   12.
```

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002356' 004567 000640                JSR     R5,DISPST           ;GO DISPLAY STATUS AT LAST INT
002362' 175770                       .WORD   ISTAT-.
002364' 004567 000722                JSR     R5,PRINT            ;ISSUE 'CURRENTLY' MSG
002370' 001145                       .WORD   CURMSG-.
002372' 000012                       .WORD   10.
002374' 004567 000622                JSR     R5,DISPST           ;GO DISPLAY CURRENT STATUS
002400' 175762                       .WORD   CSTAT-.
002402' 032704 000001        DISCNT: BIT     #1,R4               ;DISPLAY COUNTS?
002406' 001431                       BEQ     RPTEND              ;Y,N-RPTEND
002410' 012700 000014                MOV     #12.,R0             ;SET UP # OF WORDS
002414' 010701                       MOV     PC,R1               ;SET UP ADR OF CNTS
002416' 062701 175754                ADD     #BYRD-.,R1
002422' 010702                       MOV     PC,R2               ;SET UP TBL ADR
002424' 062702 000070                ADD     #REPTBL-.,R2
002430' 012267 000012        RPTLP:  MOV     (R2)+,RPTBAS        ;MOV MSG ADR TO S/R LINKAGE
002434' 004067 000426                JSR     R0,SAVREG           ;SAVE ALL REG'S
002440' 011100                       MOV     (R1),R0             ;GET CURRENT COUNT
002442' 004577 175410                JSR     R5,@BINASC          ;CONVERT IT TO ASCII
002446' 000000               RPTBAS: .WORD   XXXX
002450' 004067 000426                JSR     R0,RESREG           ;RESTORE REG'S
002454' 005721                       TST     (R1)+               ;POINT AT NXT CNT
002456' 005300                       DEC     R0                  ;DONE ALL WORDS?
002460' 001363                       BNE     RPTLP               ;Y,N-RPTLP
002462' 004567 000624                JSR     R5,PRINT            ;GO ISSUE COUNTS MSG
002466' 001112                       .WORD   CNTSMG-.
002470' 000304                       .WORD   CNTSEN-CNTSMG
002472' 004567 000614        RPTEND: JSR     R5,PRINT            ;ISSUE "END OF REPORT" MSG
002476' 001051                       .WORD   RENDMG-.
002500' 177763                       .WORD   -13.
0[illegible]2' 004067 000374        DVREX:  JSR     R0,RESREG           ;RESTORE REGISTERS
002506' 005725                       TST     (R5)+               ;SET UP RETURN POINT
002510' 000205                       RTS     R5                  ;EXIT IN-LINE

002512' 000000               ABBREV: .WORD   0


002514' 001146               REPTBL: .WORD   BCMRD-RPTBAS
002516' 001154                       .WORD   BCMRD+6-RPTBAS
0[illegible]0' 001170                .WORD   BCMWR-RPTBAS
0[illegible]2' 001176                .WORD   BCMWR+6-RPTBAS
002524' 001223                       .WORD   CMDCRD-RPTBAS
0[illegible]' 001236                .WORD   CMDCWR-RPTBAS
0[illegible] 001253                .WORD   CMDCMS-RPTBAS
002532' 001305                       .WORD   RDINMS-RPTBAS
002534' 001320                       .WORD   WRINMS-RPTBAS
002536' 001352                       .WORD   ERRRDR-RPTBAS
002540' 001370                       .WORD   ERRPUN-RPTBAS
002542' 001430                       .WORD   ERCDTA-RPTBAS
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                                                ;PC11/PR11 ERROR REPORT ROUTINE

00[illegible]44' 004767  000004          ERRRPT: JSR     PC,ERRDIS
0[illegible]0' 000177  175274                    JMP     @CUPGER
0[illegible]4' 010701                    ERRDIS: MOV     PC,R1                   ;POINT R1 AT ERR MSG
0[illegible]6' 062701  000222                    ADD     #EMSGBF-.,R1
0[illegible]2' 012767  000022  000054            MOV     #18.,ERMBCT
0[illegible]0' 010700                            MOV     PC,R0                   ;POINT R0 AT ERR MSG TBL
0[illegible]72' 062700  000144                    ADD     #ERCDTB-.,R0
0[illegible]576' 105710                    1$:     TSTB    (R0)
00[illegible]600' 001416                            BEQ     ERTBEN                  ;BRANCH IF R0 AT TBL END
0[illegible]2' 132067  176740                    BITB    (R0)+,ERRFLG            ;TEST FOR PARTICULAR ERR
0[illegible]6' 001003                            BNE     3$                      ;BRANCH IF FOUND
0[illegible]610' 062700  000005          2$:     ADD     #5,R0
0[illegible]614' 000770                            BR      1$
0[illegible]616' 012702  000005          3$:     MOV     #5,R2
0[illegible]22' 112021                    4$:     MOVB    (R0)+,(R1)+             ;MOVE MSG CODE TO ERR MSG
0[illegible]24' 005267  000014                    INC     ERMBCT                  ;BUMP BYTE COUNT
0[illegible]630' 005302                            DEC     R2
0[illegible]632' 001373                            BNE     4$
0[illegible]634' 000760                            BR      1$                      ;CHECK IF MORE
0[illegible]6' 004567  000450          ERTBEN: JSR     R5,PRINT                ;PRINT ERROR MSG
0[illegible]42' 000114                            .WORD   EMSGHD-.
0[illegible]644' 00[illegible]21                ERMBCT: .WORD   17.
0[illegible]46' 004567  000350          ERDIRG: JSR     R5,DISPST               ;DISPLAY DEVICE REGS
0[illegible]2' 175500                            .WORD   ISTAT-.
0[illegible]54' 016300  000022          ERRSNM: MOV     PSRCST(R3),R0           ;GET ADDR OF SRC STMNTS
0[illegible]60' 111001                    10$:    MOVB    (R0),R1                 ;SAVE STMNT LENGTH
0[illegible]62' 026067  000004  000064            CMP     4(R0),STMNT             ;ERROR OCCUR ON THIS STMNT?
002670' 001402                                    BEQ     20$                     ;YES - BRANCH
002672' 060100                                    ADD     R1,R0                   ;POINT AT NEXT STATEMENT
002674' 000771                                    BR      10$                     ;GO CK NEXT STMNT
002676' 005720                            20$:    TST     (R0)+                   ;SET UP ADR OF STMNT # DATA
002700' 010701                                    MOV     PC,R1                   ;SET UP DATA OUTPUT ADDR
002702' 062701  000156                            ADD     #STMNUM-.,R1
002706' 004577  175150                            JSR     R5,@DECASC              ;CONVERT IT TO ASCII
002712' 012767  020040  000144                    MOV     #20040,STMNUM+4         ;SET 2 LOW DIGITS TO SPACES
002720' 004567  000366                            JSR     R5,PRINT                ;ISSUE STMNT # MSG
002724' 000124                                    .WORD   STMNMG-.
002726' 177762                                    .WORD   -14.
002730' 005067  176612                            CLR     ERRFLG                  ;CLEAR ERROR FLAG
002734' 000207                                    RTS     PC


002736' 020001  050040  047125          ERCDTB: .ASCII  <001>/  PUN/            ;ERROR MSG  CODE TABLE
002744' 020002  051040  051104                    .ASCII  <002>/  RDR/
002752'    000                                    .BYTE   0
        002754'                                   .EVEN

002754' 000000                            STMNT:  .WORD   0                       ;SAVED R5 FOR STMNT #

002756' 041520  030461  050057          EMSGHD: .ASCII  'PC11/PR11 ERROR:  '
002764' 030522  020061  051105
002772' 047522  035122  020040
                                                  .EVEN
003000' 000050                            EMSGBF: .BLKB   40.
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662  003050' 052123  047115  020124  STMNMG: .ASCII  /STMNT # /
     003056' 020043
663  003060' 054130  054130  054130  STMNUM: .ASCII  /XXXXXX/
664                                          .EVEN
```

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                                        .SBTTL  SUBROUTINES FOR PC11/PR11 DEVICE ROUTINE

                                        ;SAVE REGISTERS R0 THRU R5

                                                ;JSR    R0,SAVREG       S/R CALL

003066' 010146                  SAVREG: MOV     R1,-(SP)                ;SAVE R0 THRU R5
003070' 010246                          MOV     R2,-(SP)
003072' 010346                          MOV     R3,-(SP)
003074' 010446                          MOV     R4,-(SP)
003076' 010546                          MOV     R5,-(SP)
003100' 010007                          MOV     R0,PC                   ;EXIT IN-LINE


                                        ;RESTORE REGISTERS R0 THRU R5

                                                ;JSR    R0,RESREG       S/R CALL

003102' 005726                  RESREG: TST     (SP)+                   ;RESTORE R4 THRU R0
003104' 012605                          MOV     (SP)+,R5
003106' 012604                          MOV     (SP)+,R4
003110' 012603                          MOV     (SP)+,R3
003112' 012602                          MOV     (SP)+,R2
003114' 012601                          MOV     (SP)+,R1
003116' 000200                          RTS     R0                      ;EXIT IN-LINE


                                        ;SET PROGRAM'S PROG TABLE ADR IN R3

                                                ;JSR    PC,SUPTAD       S/R CALL

003120' 010703                  SUPTAD: MOV     PC,R3                   ;SET UP LOCATION ZERO ADR
003122' 062703  174656                  ADD     #LOC2-.,R3
003126' 166303  177776                  SUB     -2(R3),R3               ;SUBTRACT PROG TBL LENGTH
003132' 016704  174666                  MOV     DREGAD,R4               ;PUT DEV REG ADR IN R4
003136' 000207                          RTS     PC                      ;EXIT IN-LINE


                                        ;STORE DEVICE'S STATUS REGISTERS

                                                ;JSR    R5,STSTAT       S/R CALL
                                                ;.WORD  STADR-.         REL STORAGE ADR
                                                ;DESTROYS R0,R1,R2

003140' 016701  174660          STSTAT: MOV     DREGAD,R1
003144' 010500                          MOV     R5,R0                   ;GET REL STORAGE ADR & MAKE
003146' 060500                          ADD     (R5)+,R0                ;IT ABSOLUTE
003150' 012746  000004                  MOV     #DVREGE-DVREGS/6,-(SP)  ;GET # OF REG'S TO STORE
003154' 010702                          MOV     PC,R2                   ;GET ADR OF 1ST REG DISPLACEMENT
003156' 062702  174744                  ADD     #DVREGS+4-.,R2
003162' 011201                  10$:    MOV     (R2),R1                 ;GET REG DISPLACEMENT
003164' 066701  174634                  ADD     DREGAD,R1               ;ADD IN REG'S BASE ADR
003170' 011120                          MOV     (R1),(R0)+              ;STORE REGISTER VALUE
003172' 062702  000006                  ADD     #6,R2                   ;POINT AT NXT DISPLACEMENT
003176' 022716  000004                  CMP     #4,(SP)                 ;ABOUT TO STORE 2ND REG?
003202' 001003                          BNE     20$                     ;NO-CONTINUE
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003204' 062702  000006                  ADD     #6,R2                   ;YES-BETTER BYPASS IT
003210' 010316                          DEC     (SP)
003212' 010316                  20$:    DEC     (SP)                    ;DECR REG CNT
003214' 001362                          BNE     10$                     ;DONE ALL? (Y,N-10$)
003216' 005726                          TST     (SP)+                   ;CLEAN UP THE STACK
003220' 000205                          RTS     R5                      ;EXIT IN-LINE


                                        ;TAILOR STATUS MSG & PRINT IT

                                                ;JSR    R5,DISPST       S/R CALL
                                                ;WORD   STATADR-.       REL ADR OF STATUS DATA
                                                ;DESTROYS R0,R1,R2

003222' 010502                  DISPST: MOV     R5,R2                   ;GET REL DATA ADR
003224' 062502                          ADD     (R5)+,R2                ;MAKE IT ABS
003226' 010701                          MOV     PC,R1                   ;SET UP ADR OF REG NAMES IN ASCII
003230' 062701  174666                  ADD     #DVREGS-.,R1
003234' 012700  000004                  MOV     #DVREGE-DVREGS/6,R0     ;GET # OF REGISTERS TO DISPLAY
003240' 012167  000320          10$:    MOV     (R1)+,DVRGMG            ;MOVE REG NAME TO MSG
003244' 012167  000316                  MOV     (R1)+,DVRGMG+2
003250' 005721                          TST     (R1)+                   ;BYPASS DISP VALUE
003252' 004067  177610                  JSR     R0,SAVREG               ;SAVE REG'S R0 - R5
003256' 011200                          MOV     (R2),R0                 ;GET REG'S STORED VALUE
003260' 004577  174572                  JSR     R5,2BINASC              ;CONVERT IT TO ASCII
003264' 000306                          .WORD   DVRGDT-.
003266' 004567  000020                  JSR     R5,PRINT                ;PRINT THE STATUS MSG
003272' 000272                          .WORD   DVRGMG-.
003274' 000014                          .WORD   12.
003276' 004067  177600                  JSR     R0,RESREG               ;RESTORE R0 - R4
003302' 005722                          TST     (R2)+                   ;POINT AT NXT REG VALUE
003304' 005300                          DEC     R0                      ;DECR REG CNT
003306' 001354                          BNE     10$                     ;DONE ALL? (Y,N-10$)
003310' 000205                          RTS     R5                      ;EXIT IN-LINE
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                                                ;ISSUE MSG TO LIST DEVICE

                                                        ;JSR    R5,PRINT        S/R CALL
                                                        ;.WORD  MSGADR-.        REL ADR OF MSG
                                                        ;.WORD  BYTCNT          MSG BYTE CNT (IF NEGATIVE,
                                                        ;                         RESET PRT DEV DEDICATED.)
                                                        ;R3 = PROG TBL ADR
                                                        ;R4 = FLAGWORD -- IF NEGATIVE, USE CMND MODE PRINT
                                                        ;DESTROYS R0,R1,R2

003312' 010500                          PRINT:  MOV     R5,R0                   ;GET MSG ADR & MAKE IT ABS
003314' 062500                                  ADD     (R5)+,R0
003316' 012501                                  MOV     (R5)+,R1                ;GET BYTE COUNT
003320' 005704                                  TST     R4                      ;USE CMND MODE PRINT?
003322' 100030                                  BPL     40$                     ;Y,N-40$
003324' 010702                                  MOV     PC,R2                   ;SET UP LINK INFO ADR
003326' 062702  000040                          ADD     #20$-.,R2
003332' 160200                                  SUB     R2,R0                   ;MAKE MSG ADR REL
003334' 010022                                  MOV     R0,(R2)+                ;STORE MSG ADR
003336' 010112                                  MOV     R1,(R2)                 ;STORE MSG'S BYTE COUNT
003340' 100001                                  BPL     10$                     ;CNT NEG? (Y,N-10$)
003342' 005412                                  NEG     (R2)                    ;MAKE IT POSITIVE
003344' 016367  000006  000144          10$:    MOV     PPSCIN(R3),PROGNM       ;STORE PROG'S # IN MSG
003352' 004577  174476                          JSR     R5,@CLIST               ;ISSUE PROG #
003356' 000136                                  .WORD   PNMMSG-.
003360' 000005                                  .WORD   5
003362' 004577  174466                          JSR     R5,@CLIST               ;ISSUE MSG SPECIFIED
003366' 000000                          20$:    .WORD   XXXX
003370' 000000                                  .WORD   XXXX
003372' 004577  174456                          JSR     R5,@CLIST               ;ISSUE A <CR> & <LF>
003376' 000294                                  .WORD   CRLF-.
003400' 000002                                  .WORD   2
003402' 000410                                  BR      PRTEX                   ;GO TO EXIT
003404' 010067  000010                  40$:    MOV     R0,50$                  ;STORE MSG'S ABS ADR
003410' 010167  000006                          MOV     R1,60$                  ;STORE ITS BYTE CNT
003414' 004577  174432                          JSR     R5,@ULIST               ;GO TO MPG TO ISSUE THE MSG
003420' 000000                          50$:    .WORD   XXXX
003422' 000000                          60$:    .WORD   XXXX
003424' 000205                          PRTEX:  RTS     R5                      ;EXIT IN-LINE


                                                ;TEST READ INTERRUPT VECTOR S/R

003426' 016767  174374  000010          TRVECT: MOV     IVCTAD,20$              ;GET CURR INT VECT ADR
003434' 016346  000004                          MOV     PFWADR(R3),-(SP)        ;STORE FLGWD ADR TO IDENTIFY ME
003440' 004577  174426                          JSR     R5,@TSTVEC              ;DO I HAVE VECTOR CONTROL?
003444' 000000                          20$:    .WORD   XXXX                    ;  MPG WILL TELL ME SINCE I CAN'T
003446' 176314                                  .WORD   RDINT-.                 ;  GET AT LOWER MEM IF MEM MGMT
003450' 000401                                  BR      TRVEXT                  ;BR IF I DONT HAVE CONTROL
003452' 005725                                  TST     (R5)+                   ;BYPASS BR INST IN S/R CALL
003454' 000205                          TRVEXT: RTS     R5                      ;EXIT IN-LINE

                                                ;TEST WRITE INTERRUPT VECTOR S/R

003456' 016767  174344  000016          TWVECT: MOV     IVCTAD,20$              ;GET CURR INT VECT ADR
003464' 062767  000004  000010                  ADD     #4,20$                  ;ADJUST FOR WRITE INT
```

```
003472' 016346  000004                  MOV     PFWADR(R3),-(SP)        ;STORE FLGWD ADR TO IDENTIFY ME
003476' 004577  174370                  JSR     R5,@TSTVEC              ;DO I HAVE VECTOR CONTROL?
003502' 000000                  20$:    .WORD   XXXX                    ;  MPG WILL TELL ME SINCE I CAN'T
003504' 176044                          .WORD   WRINT-.                 ;  GET AT LOWER MEM IF MEM MGMT
003506' 000401                          BR      TWVEXT                  ;BR IF I DONT HAVE CONTROL
003510' 005725                          TST     (R5)+                   ;BYPASS BR INST IN S/R CALL
003512' 000205                  TWVEXT: RTS     R5                      ;RETURN IN-LINE
```

```
                                                .SBTTL  MESSAGE STORAGE AREA
                                                .NLIST  BEX
                                                .EVEN
003514' 021520                          PNMMSG: .ASCII  /P#/
003516' 054130      011                 PROGNM: .ASCII  /XX/<011>
003521'     101 020124 040514           ATLSTG: .ASCII  /AT LAST INT:/
003535'     103 051125 042522           CURRNG: .ASCII  /CURRENTLY:/
003547'     105 042116 047440           RENDMG: .ASCII  /END OF REPORT/
                                                .EVEN
003564' 054130 054130 020075            DVPRMG: .ASCII  /XXXX= /
003572' 054130 054130 054130            DVRNDT: .ASCII  /XXXXXX/

003600' 054502 042524 035123            CNTSMG: .ASCII  /BYTES:  RD= /
003614' 054130 054130 054130            BYTRD:  .ASCII  /XXXXXXXXXXXX  WR= /
003636' 054130 054130 054130            BYTWR:  .ASCII  /XXXXXXXXXXXX/
003652' 005015                          CRLF:   .ASCII  <015><012>

003654' 041411 047115 051504                    .ASCII  <011>/CMNDS:  RD= /
003671'     130 054130 054130           CMDCRD: .ASCII  /XXXXXX WR= /
003704' 054130 054130 054130            CMDCWR: .ASCII  /XXXXXX MISC= /
003721'     130 054130 054130           CMDCMS: .ASCII  /XXXXXX/<015><012>
003731'     011 047111 042524                   .ASCII  <011>/INTERRUPTS:  RD= /
003753'     130 054130 054130           RDINMS: .ASCII  /XXXXXX WR= /
003766' 054130 054130 054130            WRINMS: .ASCII  /XXXXXX/<015><012>

003776' 042411 051122 051117            ERRMSG: .ASCII  <011>/ERRORS:  READER= /
004020' 054130 054130 054130            ERRDR:  .ASCII  /XXXXXX PUNCH= /
004036' 054130 054130 054130            ERRPUN: .ASCII  /XXXXXX/<015><012>
004046' 020011 020040 020040                    .ASCII  <011>/          DATA ERRORS = /
004076' 054130 054130 054130            ERRDTA: .ASCII  /XXXXXX/
        004104'                         CNTSEN= .
                                                .EVEN

                                                .LIST   BEX

        004104'                         DVREND= .
```

```
                                        .SBTTL  FORMATS FOR PROGRAM & DEVICE ROUTINE TABLES

                                ;       PROGRAM TABLE FORMAT

000242                          PTLGTH= 162.    ;PROGRAM TABLE LENGTH - NON MEM MGMNT VERSION OF MPG

                                ;(PTLGTH= 212.  ;PROGRAM TABLE LENGTH - MEM MGMNT VERSION OF MPG)

000000                          PFLGWD= +0.     ;PROGRAM FLAG WORD - 1 WORD

000002                                  URSTOP= 2       ; 1 = USER HAS STOPPED THIS PROGRAM
000004                                  ERSTOP= 4       ; 1 = AN ERROR HAS STOPPED THIS PROGRAM
000010                                  WT4IOT= 10      ; 1 = WAITING FOR I/O TERMINATION
000020                                  CTPRIO= 20      ; 1 = CONSOLE OR PRINTER I/O IN PROGRESS
000040                                  SETDED= 40      ; 1 = THIS PROG SET THE PRT DEV DEDICATED FLAG
000100                                  OCPRES= 100     ; 1 = OPI CODE IS PRESENT
000200                                  USEUMP= 200     ; 1 = THIS PROG USES THE UNIBUS MAP (MEM MGMNT ONLY)
100000                                  ACTIVE= 100000  ; 1 = PROGRAM IS ACTIVE (SPECIFIED FOR EXECUTION)

000002                          POPSW=  +2.     ;PROGRAM'S OPERATION SWITCHES - 1 WORD

100000                                  STONER= 100000  ; 1 = STOP PROG EXECUTION UPON ERROR
040000                                  CYCPRG= 40000   ; 1 = CYCLE PROGRAM (ON CURRENT DEVICE)
020000                                  PRONER= 20000   ; 1 = DO NOT PRINT ON ERROR
010000                                  BIT12=  10000   ; 0 = NOT USED
004000                                  BIT11=  4000    ; 0 = NOT USED
002000                                  CYCDVL= 2000    ; 1 = CYCLE THE DEVICE LIST
001000                                  CTNXTD= 1000    ; 1 = CYCLE ON SAME DEVICE UPON ERROR
000400                                  DOERCK= 400     ; 1 = DON'T DO ERROR CHECKING
000200                                  SPOPER= 200     ; 1 = DEVICE SPECIAL OPERATION
000100                                  BIT6=   100     ; 0 = NOT USED
000040                                  DOIOT=  40      ; 1 = DO NOT PERFORM I/O TIMEOUT
000020                                  AUTORP= 20      ; 1 = DO NOT AUTOMATICALLY DISPLAY COUNTS
000010                                  AURPEP= 10      ; 1 = AUTO DISPLAY COUNTS AT END OF FINAL PASS ONLY
000004                                  HSKPEP= 4       ; 1 = HOUSEKEEP COUNTS ONLY AT RUN COMMAND
000002                                  PFBBOV= 2       ; 1 = PRINT FIRST BAD BYTE ONLY ON VERIFY
000001                                  NOCOMP= 1       ; 1 = DO NOT PRINT PROG COMPLETED MSG

000004                          PFWADR= +4.     ;*;PROGRAM FLAGWORD ADDRESS - 1 WORD

000006                          PASCIN= +6.     ;PROGRAM'S NUMBER IN ASCII - 1 WORD

000010                          PNAME=  +8.     ;PROGRAM'S NAME IN ASCII - 6 BYTES

000016                          PRDIOA= +14.    ;ADDRESS OF READ I/O AREA - 1 WORD

000020                          PWRIOA= +16.    ;ADDRESS OF WRITE I/O AREA - 1 WORD

000022                          PSRCST= +18.    ;SOURCE STATEMENTS START ADDRESS - 1 WORD

000024                          POBJST= +20.    ;OBJECT CODE START ADDRESS - 1 WORD

000026                          PLNGTH= +22.    ;PROG AREA LENGTH (OBJ END MINUS PROG TBL START) - 1 WORD

000030                          PTOCNT= +24.    ;I/O TIMEOUT COUNT - 1 WORD
```

```
000032          PMDLCD= +26.    ;DEV ROUT MODEL # CODE - 1 WORD

000034          PDPNTR= +28.    ;CURRENT DEVICE NUMBER POINTER - 1 BYTE

000035          PCURDV= +29.    ;CURRENT DEVICE # - 1 BYTE

000036          PDNUMS= +30.    ;DEVICE NUMBERS - 16 BYTES

000056          PTEM0=  +46.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000060          PTEM1=  +48.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000062          PTEM2=  +50.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000064          PTEM3=  +52.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000066          PTEM4=  +54.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000070          PTEM5=  +56.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000072          PTEM6=  +58.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000074          PTEM7=  +60.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000076          PTEM8=  +62.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000100          PTEM9=  +64.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000102          PTEM10= +66.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000104          PTEM11= +68.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000106          PTEM12= +70.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000110          PTEM13= +72.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000112          PTEM14= +74.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000114          PTEM15= +76.    ;USER PROGRAM TEMPORARY STORAGE - 1 WORD

000116          PNBR=   +78.    ;NUMBER OF BYTES TO TRANSFER ON MOVE (NBR) - 1 WORD

000120          PSRC=   +80.    ;DATA SOURCE ADDRESS ON MOVE (SRC) - 1 WORD

000122          PDST=   +82.    ;DATA DESTINATION ADDRESS ON MOVE (DST) - 1 WORD

000124          PSTKCT= +84.    ;# OF WORDS (X 2) SAVED OFF STACK - 1 WORD

000126          PSTKSV= +86.    ;STACK WORDS STORAGE AREA - 30 WORDS

000222          PSVREG= +146.   ;USER'S R0 THRU R5 REGISTERS STORAGE AREA - 6 WORDS

000236          PUSRPC= +158.   ;USER'S CURRENT PROGRAM COUNTER - 1 WORD
```

```
                                        ;FOLLOWING ENTRIES (PRDIOX THRU PUBMAP) ARE ONLY IN MEM MGMNT VERSION

                                ;(PRDIOX= +160. ;18/22 BIT ABSOLUTE ADDRESS OF READ I/O AREA - 2 WORDS)

                                ;(PRDIOV= +164. ;18 BIT VIRTUAL ADDRESS OF READ I/O AREA - 2 WORDS)

                                ;(PWRIOX= +168. ;18/22 BIT ABSOLUTE ADDRESS OF WRITE I/O AREA - 2 WORDS)

                                ;(PWRIOV= +172. ;18 BIT VIRTUAL ADDRESS OF WRITE I/O AREA - 2 WORDS)

                                ;(PUPARS= +176. ;STORAGE AREA FOR USER'S PAR'S 0 THRU 7 - 8 WORDS)

                                ;(PUPDRS= +192. ;STORAGE AREA FOR USER'S PDR'S 0 THRU 7 - 8 WORDS)

                                ;(PUBMAP= +208. ;1ST UNIBUS MAP REG # AND # OF REGS USED - 1 WORD)

                                        ;END OF MEM MGMNT ONLY ENTRIES

        000240                  PTSIZE= +160.   ;PROGRAM TABLE SIZE IN BYTES - 1 WORD - NON MEM MGMNT

                                ;(PTSIZE= +210. ;PROGRAM TABLE SIZE IN BYTES - 1 WORD - MEM MGMNT VERSION)

        000242                  PTEND=  +162.   ;END OF PROGRAM TABLE - NON MEM MGMNT VERSION

                                ;(PTEND=  +212. ;END OF PROGRAM TABLE - MEM MGMNT VERSION)
```

```
                                ;       DEVICE ROUTINE TABLE

000116                          DRTLTH= 78.     ;DEVICE ROUTINE TABLE LENGTH
                                ;
                                ;
000000                          DEVRSZ= +0.     ;DEVICE ROUTINE SIZE IN BYTES - 1 WORD

000002                          DEVFWD= +2.     ;DEVICE ROUTINE FLAGWORD - 1 WORD

000004                          DEVIW1= +4.     ;DEVICE INTERFACE WORD # 1 - 1 WORD

000006                          DEVIW2= +6.     ;DEVICE INTERFACE WORD # 2 - 1 WORD

000010                          DEVIW3= +8.     ;DEVICE INTERFACE WORD # 3 - 1 WORD

000012                          DEVIW4= +10.    ;DEVICE INTERFACE WORD # 4 - 1 WORD

000014                          DEVIW5= +12.    ;DEVICE INTERFACE WORD # 5 - 1 WORD

000016                          DEVIW6= +14.    ;DEVICE INTERFACE WORD # 6 - 1 WORD

000020                          DEVIW7= +16.    ;DEVICE INTERFACE WORD # 7 - 1 WORD  (SIZE)

000022                          DEVIW8= +18.    ;DEVICE INTERFACE WORD # 8 - 1 WORD  (ERR)

000024                          DEVDRA= +20.    ;DEVICE REGISTERS ADDRESS - 1 WORD

000026                          DEVIVA= +22.    ;DEVICE INTERRUPT VECTOR ADDRESS - 1 WORD

000030                          DEVRPS= +24.    ;DEVICE READ PROCESSOR STATUS WORD (BUS REQ) - 1 WORD

000032                          DEVWPS= +26.    ;DEVICE WRITE PROC STATUS WORD (BUS REQ) - 1 WORD

000034                          DHKPAD= +28.    ;DEVICE ROUT HOUSEKEEPING ROUT REL ENTRY ADR - 1 WORD

000036                          DERPAD= +30.    ;DEVICE ROUT REPORT ROUT REL ENTRY ADR - 1 WORD

000040                          DKILAD= +32.    ;DEVICE ROUT KILL ROUTINE REL ENTRY ADR - 1 WORD

000042                          DECTAD= +34.    ;DEVICE ROUT ERROR COUNTER REL ADR - 1 WORD

000044                          DTOEAD= +36.    ;DEVICE ROUT TIMEOUT ERR ROUT REL ENTRY ADR - 1 WORD

000046                          DEVIOB= +38.    ;DEVICE I/O BUSY BRANCH ADDRESS (CIOBSY) - 1 WORD

000050                          DEVDER= +40.    ;DEVICE ERROR BRANCH ADDRESS (CUPGER) - 1 WORD

000052                          DVUPRT= +42.    ;USER MODE PRINT BRANCH ADDRESS (ULIST) - 1 WORD

000054                          DVCPRT= +44.    ;CMND MODE PRINT BRANCH ADDRESS (CLIST) - 1 WORD

000056                          DEVBTA= +46.    ;CONVERT BINARY TO ASCII BR ADR (BINASC) - 1 WORD

000060                          DVBTDA= +48.    ;CONVERT BINARY TO DECIMAL ASCII BR ADR (BTASLZ) - 1 WORD
```

```
000062                  DVPDTA= +50.    ;CONVERT PACKED DECIMAL TO ASCII BR ADR (DECASC) - 1 WORD

000064                  DVSFWD= +52.    ;MPG SYSTEM FLAGWORD ADDRESS (CSYSFW) - 1 WORD

000066                  DVSVEC= +54.    ;SET INTERRUPT VECTOR BR ADR (SETVEC) - 1 WORD

000070                  DVCVEC= +56.    ;CLEAR INTERRUPT VECTOR BR ADR (CLRVEC) - 1 WORD

000072                  DVTVEC= +58.    ;TEST INTERRUPT VECTOR BR ADR (TSTVEC) - 1 WORD

000074                  DVRINT= +60.    ;RETURN FROM INTERRUPT BR ADR (RTNINT) - 1 WORD

000076                  DVGETB= +62.    ;GET DATA BYTE BR ADR (GETBYT) - 1 WORD

000100                  DVPUTB= +64.    ;PUT DATA BYTE BR ADR (PUTBYT) - 1 WORD

000102                  DEVSTP= +66.    ;DEVICE ROUT REL SYMBOL TABLE POINTER - 1 WORD

000104                  DEVETP= +68.    ;DEVICE ROUT REL ENTRY TABLE POINTER - 1 WORD

000106                  DVPTEP= +70.    ;PACK TABLE EXTEN. REL POINTER - 1 WORD

000110                  DVVTEP= +72.    ;VECTOR TABLE EXTEN. REL POINTER - 1 WORD

000112                  DVCTEP= +74.    ;COMPILER TBL EXTEN. REL POINTER - 1 WORD

000114                  DVIWSP= +76.    ;DEVICE INTERFACE WORD SYMBOL TBL REL POINTER - 1 WORD

000116                  DRTEND= +78.    ;END OF DEVICE ROUTINE TABLE


000001                          .END
```

[illegible]V	002512R	002	DEVIVA=	000022		[illegible]N	004[illegible]6R	002	PPS	00[illegible]5R	002	PENDMG	003[illegible]7R	002
[illegible]E=	1[illegible]0		DEVRVS=	000030		[illegible]R	00[illegible]R	002	PR[illegible]	0[illegible]4R	002	PEPURT	0[illegible]54R	002
ATTMSG	0[illegible]521R	002	DEVRSZ=	000000		[illegible]PT	0[illegible]44R	002	PRDIOA=	0[illegible]016		PRPTBL	0[illegible]514R	002
RL[illegible]P=	0[illegible]10		DEVSTP=	000102		[illegible]M	0[illegible]4R	002	PRINT	00[illegible]312R	002	PRVEC	0[illegible]14R	002
AUTO[illegible]P=	0[illegible]0		DEVWPS=	00[illegible]32		[illegible]ST	00[illegible]6R	002	PROCNM	00[illegible]516R	002	RLSPEG	0[illegible]102R	002
BCMRD	0[illegible]614R	002	DHKPRO=	00[illegible]34		[illegible]STOP=	000004		PRONER=	020000		RETURN	0[illegible]1342R	002
BCMWR	0[illegible]6R	002	DISCNT	002402R	002	ERTBEN	0[illegible]636R	002	PRS	00[illegible]2R	002	RICNT	0[illegible]0410R	002
BIN[illegible]SC	00[illegible]R	002	DISPST	00[illegible]2R	002	FLAG	00[illegible]424R	002	PRTEX	00[illegible]424R	002	RPTBOS	0[illegible]446R	002
BIT11 =	00[illegible]00		DKILAD=	0[illegible]0		FLAGWD	00[illegible]002R	002	PSRC =	000120		RPTEND	0[illegible]2472R	002
BIT12 =	010000		DOCRCK=	00[illegible]00		GETBYT	000076R	002	PSRCST=	000022		RPTLP	002430R	002
BIT6 =	000100		DOIOT =	000040		GTNXTD=	001000		PSTKCT=	000124		RRINTV	0[illegible]2156R	002
BLANK	0013[illegible]4R	002	D[illegible]0	000024R	002	GTPTBS	000756R	002	PSTKSV=	000124		RTERM	0[illegible]100R	002
BTASLZ	0[illegible]R	002	D[illegible]=	000116		GVECRD	001742R	002	PSVREG=	00[illegible]22		RTNINT	0[illegible]0074R	002
BYRD	0[illegible]2R	002	DPTLTH=	000116		HSKEEP	00[illegible]20R	002	PTEMO =	000056		RWINTV	0[illegible]2174R	002
BYWR	0[illegible]376R	002	D[illegible]AIT=	1[illegible]000		HSKPEN=	0[illegible]426R	002	PTEM1 =	000060		R0	=x0[illegible]000	
CIOBSY	000046R	002	DTOCRD=	0[illegible]044		HSKPEP=	000004		PTEM10=	000102		R1	=x000001	
CLIST	000054R	002	DV[illegible]DA=	0[illegible]060		HSKPST=	00[illegible]52R	002	PTEM11=	000104		R2	=x0[illegible]0002	
CLRERR	001202R	002	DVC[illegible]S	0[illegible]146R	002	INTEXT	001750R	002	PTEM12=	000106		R3	=x000003	
CLRVCT=	000002		DVCPRT=	000054		ISTAT =	00[illegible]352R	002	PTEM13=	000110		R4	=x000004	
CLRVEC	000070R	002	DVCPTE	0[illegible]300R	002	IVCTRD	000026R	002	PTEM14=	000112		R5	=x000005	
CLRVCT=	000004		DVCTEP=	0[illegible]112		KILL	000544R	002	PTEM15=	000114		SAVREG	003066R	002
CMDCMS	00372[illegible]R	002	DVCVEC=	000070		KILLEX	00[illegible]42R	002	PTEM2 =	000062		SETBSY	001134R	002
CMDCRD	0[illegible]671R	002	DVGETB=	000076		LCOUNT	00[illegible]46R	002	PTEM3 =	000064		SETDED=	000040	
CMDCWR	0[illegible]70WR	002	DVIWSP=	000114		LDRFLG=	000001		PTEM4 =	000066		SETVEC	000066R	002
CNTSEN=	0[illegible]10WR	002	DVIWST	0003[illegible]4R	002	LDRYES	001250R	002	PTEM5 =	000070		SIZE	000020R	002
CNTSMG	003600R	002	DVMVTE	000254R	002	LEADER	001062R	002	PTEM6 =	000072		SP	=x000006	
CRLF	0036[illegible]2R	002	DVPDTA=	000062		LLDR	000[illegible]47R	002	PTEM7 =	000074		SPOPER=	000200	
CSTAT	0003[illegible]2R	002	DVPKTE	00020[illegible]R	002	LMWAIT	00[illegible]46R	002	PTEM8 =	000076		SRDBSY	000716R	002
CSYSFW	000064R	002	DVPTEP=	000106		LOCZ	000000R	002	PTEM9 =	100100		STMMG	003050R	002
CTPRIO=	000020		DVPUTB=	000100		LSTATS	00[illegible]46R	002	PTEND =	000242		STMNT	002754R	002
CUPCER	000050R	002	DVREGE=	000146R	002	LWAIT	00[illegible]46R	002	PTLGTH=	000242		STMNUM	003060R	002
CURMSG	0[illegible]53[illegible]R	002	DVREGS	000116R	002	MISCNT	00[illegible]06R	002	PTOCNT=	000030		STONER=	100000	
CURINT	0006[illegible]4R	002	DVREND=	0041[illegible]R	002	MNVER =	000001		PTSIZE=	000240		STPPUN	001712R	002
CYCDVL=	002000		DVREX	002502R	002	NOCOMP=	000001		PUNCHL	001310R	002	STPRDR	002114R	002
CYCPRC=	040000		DVRGDT	003572R	002	NOWAIT	001[illegible]26R	002	PUNERR	000416R	002	STSTAT	003140R	002
DATAER	000420R	002	DVRGMG	003564R	002	OCPRES=	000100		PUNRDY	001614R	002	SUPTRD	003120R	002
DECASC	000042R	002	DVRINT=	000074		PASCIN=	000000		PUSRPC=	000236		TOECNT	000422R	002
DECTRD=	000042		DVSFWD=	000064		PC	=x000007		PUTBYT	000100R	002	TOEMSG	000514R	002
DEMPRD=	000036		DVSVEC=	000066		PCURDV=	000036		PWRIOA=	000020		TOUTER	000426R	002
DEVBTR=	0[illegible]		DVTVEC=	000072		PDNUMS=	000036		RECONS=	120000		TOUTEX	000506R	002
DEVDER=	[illegible]0050		DVUPRT=	000052		PDPNTR=	000034		RADDR	001536R	002	TRNTST	001376R	002
DEVDRA=	000024		DVVTEP=	000110		PDST =	000122		RBUSRQ	000030R	002	TRVECT	003426R	002
DEVETF=	000104		EHSCBF	003000R	002	PFBOV=	000002		RBYTES	001540R	002	TRVEXT	003454R	002
DEVFWD=	000002		EHSCHD	002756R	002	PFLGWD=	000000		RDBSY =	020000		TSTIEB	001360R	002
DEVIOB=	000046		ERCOTA	004076R	002	PFWADR=	000004		RDCNT	010402R	002	TSTVEC	000072R	002
DEVIVA=	000026		ERCOTB	002736R	002	PLNGTH=	000026		RDINMS	003753R	002	TWVECT	003456R	002
DEVIW1=	000004		ERDIRG	002646R	002	PMDLCD=	000032		RDINT	001762R	002	TWVEXT	003512R	002
DEVIW2=	000006		ERMBCT	002444R	002	PNAME =	000010		RDMNST	000776R	002	ULIST	000052R	002
DEVIW3=	000010		ERR	000022R	002	PNBR =	000116		RDNOWT	001042R	002	URSTOP=	000002	
DEVIW4=	000012		ERRDIS	002554R	002	PNMMSG	003514R	002	RDRERR	000414R	002	USEUBM=	000200	
DEVIW5=	000014		ERREXT	001514R	002	POBJST=	000024		RDRRDY	002024R	002	WADDR	001542R	002
DEVIW6=	000016		ERRFLG	001546R	002	POPSW =	000002		READ	000654R	002	WAIT	001346R	002
DEVIW7=	000020		ERRMSG	003776R	002	PPB	000360R	002	RELEAS	001520R	002	WBUSRQ	000032R	002

```
WBYTES  001544R    002   WRBSY = 040000          WRINT   001550R    002   WT4IOT= 000010          .     = 004104R    002

. ABS.  000000     000
        000000     001
PC11    004104     002
```

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

```
*,DTPCAB/NL:TOC/DOC=DTPCAB.P11
RUN-TIME: 3 6 1 SECONDS
RUN-TIME RATIO: 35/11=3.1
CORE USED:  5K  (9 PAGES)
```

DOCUMENT PAGES: 29

E03

[illegible] 3 disk writes, [illegible] [illegible]

[illegible]