

# PC11

DEVICE ROUTINE (MPG)  
MD-11-DTPCA-B

EP-DTPCA-B-DL-A  
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FICHE 1 OF 1

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**digital**  
MADE IN U.S.A.

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PC11/PR11 DEVICE ROUTINE FOR MPG

.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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.SRTT STANDARD DEVICE ROUTINE TABLE  
.TITLE MAINDEC-11-DTPCA-B PC11/PR11 DEVICE ROUTINE FOR MPG  
;REVISION B  
;FILENAME OF "TPCAB0.MPG" ON MPG/XXDP MEDIA  
;MACY11: DTPCA? DTPCA?/CRF:SYN/DOC=DTPCA?.P11  
;LNKX11: 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  
000002' 000000

LOCZ: .WORD DVREND-  
FLAGWD: .WORD 0

;DEVICE ROUT SIZE IN BYTES  
;DEVICE ROUT FLAGWORD

100000  
040000  
020000  
000004  
000002  
000001

DRWAIT= 100000  
WFSSY= 40000  
RUBSY= 20000  
CLWVCT= 4  
CLRVCCT= 2  
LDRFLG= 1

; DEVICE ROUTINE WAIT FLAG  
; WRITE PUSY FLAG  
; READ BUSY FLAG  
; CLEAR WRITE VECTOR FLAG  
; CLEAR READ VECTOR FLAG  
; LEAVE FLAG

000004' 000000  
000006' 000000  
000010' 000000  
000012' 000000  
000014' 000000  
000016' 000000  
000020' 000000  
000022' 000000  
000024' 177550  
000026' 000070  
000030' 000200  
000032' 000200  
000034' 002164  
000036' 002216  
000040' 000504  
000042' 000356  
000044' 000362  
000046' 000000  
000050' 000000  
000052' 000000  
000054' 000000  
000056' 000000  
000060' 000000  
000062' 000000  
000064' 000000  
000066' 000000

.WORD 0  
.WORD 0  
.WORD 0  
.WORD 0  
.WORD 0  
.WORD 0  
.WORD 0  
SIZE: .WORD 0  
ERR: .WORD 0  
DREGADR: .WORD 177550  
IVCTADR: .WORD 70  
RBUSRQ: .WORD 200  
MBUSRQ: .WORD 200  
.WORD HSKEEP-  
.WORD REPORT-  
.WORD KILL-  
.WORD DATAER-  
.WORD TOUTER-  
CIBSY: .WORD 0  
CUPGER: .WORD 0  
ULIST: .WORD 0  
CLIST: .WORD 0  
BINASC: .WORD 0  
BTASLZ: .WORD 0  
DECASC: .WORD 0  
CSYSFW: .WORD 0  
SETVEC: .WORD 0

; INTER ACE WORD # 1 (NOT USED)  
; INTE ACE WORD # 2 (NOT USED)  
; INTE ACE WORD # 3 (NOT USED)  
; INTE ACE WORD # 4 (NOT USED)  
; INTE ACE WORD # 5 (NOT USED)  
; INTE ACE WORD # 6 (NOT USED)  
; # OF BYTES TRANSFERRED / UNIMAP FLG  
; ERROR ON LAST I/O INDICATOR  
; FIRST DEVICE REGISTER ADR  
; INTERRUPT VECTOR ADR  
; INT PROC STATUS WORD (BR 4)  
; INT PROC STATUS WORD (BR 4)  
; HOUSEKEEPING ROUT REL ADR  
; REPORT ROUT REL ADR  
; KILL ROUT REL ADR  
; DATA ERROR COUNTER REL ADR  
; TIME OUT ERROR ROUT REL ADR  
; I/O BUSY PUNCH ADR  
; DEVICE ERROR BRANCH ADR  
; USER MODE PRINT ROUTINE BRANCH ADR  
; CMD MODE PRINT ROUTINE BRANCH ADR  
; CONVERT BINARY TO ASCII ROUT BR ADR  
; CONVERT BINARY TO DECIMAL ASCII BR ADR  
; CONVERT PACKED DECIMAL TO ASCII BR ADR  
; MPG SYSTEM FLAGWORD ADR  
; SET INT VECT ROUT BR ADR

113	000070'	000000			CLRVEC:	.WORD	0		:CLEAR INT VECTOR ROUT BR ADR
114	000072'	000000			TSTVEC:	.WORD	0		:TEST INT VECTOR ROUT BR ADR
115	000074'	000000			RININT:	.WORD	0		:RETURN FROM INT ROUT BR ADR
116	000076'	000000			GETBYT:	.WORD	0		:GET DATA BYTE ROUT BR ADR
117	000100'	000000			PUTBYT:	.WORD	0		:PUT DATA BYTE ROUT BR ADR
118	000102'	000014				.WORD	DVREGS-		:ADR OF DEVICE REGISTER NAMES
119	000104'	000042				.WORD	DVCHDS-		:ADR OF DEVICE FUNCTIONS
120	000106'	000076				.WORD	DVPKTE-		:ADR OF PACK TBL EXTENSION
121	000110'	000144				.WORD	DVMVTE-		:ADR OF MODEL VECTOR TBL EXTEN.
122	000112'	000166				.WORD	DVCPTI-		:ADR OF COMPILER TBL EXTEN.
123	000114'	000230				.WORD	DVINST-		:ADR OF DEV INTERFACE MQ SYM TBL
124	000116'	051120	020123		DVREGS:	.ASCII	/PRS /		:VALID DEVICE REGISTER NAMES &
125	000122'	000000				.WORD	0		:THEIR POSITIONS RELATIVE TO
126	000124'	051120	020102			.ASCII	/PRB /		:THE DEVICE REGISTERS BASE ADDRESS.
127	000130'	000002				.WORD	2		
128	000136'	050120	020123			.ASCII	/PPS /		
129	000138'	000004				.WORD	4		
130	000146'	050120	020102			.ASCII	/PPB /		
131	000144'	000006				.WORD	6		
132		000146'			DVREGE=	.			
133	000146'	120	001		DVCHDS:	.BYTE	120,1		:VALID DEVICE FUNCTIONS
134	000150'	000504				.WORD	READ-		:FLAG BYTE:
135	000152'	130	001			.BYTE	130,1		:BIT 7 = NPR DEV
136	000154'	000676				.WORD	WRITE-		:BIT 3 = MASSBUS DEV
137	000156'	376	000			.BYTE	376,0		:BIT 0 = 2 WORDS FOR ADR
138	000160'	000702				.WORD	LEADER-		: (18 BIT ADRS)
139	000162'	375	000			.BYTE	375,0		
140	000164'	001342				.WORD	NOWAIT-		
141	000166'	374	000			.BYTE	374,0		
142	000170'	001156				.WORD	WAIT-		
143	000172'	373	000			.BYTE	373,0		
144	000174'	002060				.WORD	REPORT-		
145	000176'	372	000			.BYTE	372,0		
146	000200'	002054				.WORD	REPORT-		
147	000202'	177777				.WORD	177777		:TABLE TERMINATOR
148	000204'	042514	042101	051105	DVPKTE:	.ASCII	/LEADER/		:PACK TABLE EXTENSION
149	000212'	376	000			.BYTE	376,0		
150	000214'	047516	040527	052111		.ASCII	/NOWAIT/		
151	000216'	375	000			.BYTE	375,0		
152	000218'	020040	040527	052111		.ASCII	/WAIT/		
153	000220'	374	000			.BYTE	374,0		
154	000222'	052123	052101	051525		.ASCII	/STATUS/		
155	000224'	373	000			.BYTE	373,0		
156	000226'	047503	047125	051524		.ASCII	/COUNTS/		
157	000228'	372	000			.BYTE	372,0		
158	000254'	000376	000347		DVMVTE:	.WORD	376,LLDR-LOCZ		:MODEL VECTOR TABLE EXTEN.
159	000260'	000375	000346			.WORD	375,LNOWAIT-LOCZ		
160	000264'	000374	000346			.WORD	374,LWAIT-LOCZ		
161	000270'	000373	000346			.WORD	373,LCOUNT-LOCZ		
162	000274'	000372	000346			.WORD	372,LCOUNT-LOCZ		

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000300' 004 376  
000302' 004537 000012 000000  
000310' 003 375  
000312' 004537 000012  
000316' 003 374  
000320' 004537 000012  
000324' 004 373  
000326' 004537 000012 001002  
000334' 004 372  
000336' 004537 000012 001001  
  
000344' 177777  
  
000346'  
000346'  
000346'  
000346' 000  
000347' 377 000  
000352'  
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000354' 000000  
000356' 000000  
000358' 000000  
000360' 000000  
  
000362' 000004  
  
000372' 000000  
000374' 000000  
000376' 000000  
000400' 000000  
000402' 000000  
000404' 000000  
000406' 000000  
000410' 000000  
000412' 000000  
000414' 000000  
000416' 000000  
000420' 000000  
000422' 000000  
  
000424' 000000  
  
000426'

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COMPILER TABLE EXTENSION  
DVCPT: .BYTE 4,376 ;LEADER  
.WORD 4537,10.,0  
.BYTE 3,375 ;NO WAIT  
.WORD 4537,10.  
.BYTE 3,374 ;WAIT  
.WORD 4537,10.  
.BYTE 4,373 ;STATUS  
.WORD 4537,10.,1002  
.BYTE 4,372 ;COUNTS  
.WORD 4537,10.,1001  
  
...  
DEVICE INTERFACE WORD SYMBOL TABLE  
DVIWST: .WORD 177777  
  
...  
MODEL STATEMENT TABLE EXTENSION  
LWAIT: .  
LWAIT: .  
LSTATS: .  
LCOUNT: .BYTE 0  
LLDR: .BYTE 377,0  
.EVEN  
  
MSKPSZ: .  
ISTAT: . ;STORAGE FOR DEV REG'S AT INT  
PRS: .WORD 0  
PRB: .WORD 0  
PPS: .WORD 0  
PPB: .WORD 0  
  
CSTAT: .BLKH 4. ;DEV REG CURRENT VALUE STORAGE  
  
BYRD: .WORD 0 ;BYTES READ COUNT  
BYWR: .WORD 0 ;BYTES WRITTEN COUNT  
  
RD CNT: .WORD 0 ;READ CHND COUNT  
WR CNT: .WORD 0 ;WRITE CHND COUNT  
MISCNT: .WORD 0 ;MISC. CHND COUNT (LEADER)  
RICNT: .WORD 0 ;READ INTUPT COUNT  
WICNT: .WORD 0 ;WRITE INTUPT COUNT  
RDERR: .WORD 0 ;READER ERROR COUNT  
PUNERR: .WORD 0 ;PUNCH ERROR COUNT  
DATAER: .WORD 0 ;DATA ERROR COUNT  
TOECNT: .WORD 0 ;# OF ENTRIES INTO T/O ERROR ROUT  
  
FLAG: .WORD 0 ;FLAGWORD STORAGE  
  
MSKPEN: .

GO1

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SEQ 0006

MAINDEC-11-DTPCA-B PC11/PR11 DEVICE ROUTINE FOR MPG  
DTPCAB.P11 STANDARD DEVICE ROUTINE TABLE

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000000  
000001  
120000

XXXX= 0  
MMVER= 1  
PSCONS= 120000

;VALUE TO BE TAILORED BY DEV ROUT  
;SYSTEM FLGWD BIT DEF.  
;INT SRVC VIRT PAGE BASE

.SBTTL PC11/PR11 FUNCTION ROUTINES

;TIMEOUT ERROR HANDLER

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000430 005267 177770  
000431 026727 177764 000010  
000432 001401  
000433 000000  
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000514 041520 030461 050057  
000515 030522 020061 044524  
000516 042515 052517 020124  
000517 047117 044440 047457

TOUTER: INC TOECNT  
CMP TOECNT, #8.  
BEQ RTS  
RTS  
2S: JSR R0, SAVREG  
JSR PC, SUPTAD  
BIC #1410T, (R3)  
CLR R4  
JSR R5, PRINT  
JSR TOEMSG-  
JSR R5, KILL  
JSR PC, ERDTRG  
JSR R0, RESREG  
TOUTEX: MOV (SP)+, R5  
JMP @CUPGER

; INCR TIME OUT ERROR COUNT  
; EXCEEDED @ TIMEOUTS?  
; YES - CONTINUE  
; NO - RETURN  
; SAVE REGISTERS  
; P TBL ADR TO R3  
; RESET WAIT FOR I/O TERM  
; PRINT TIMEOUT ERR MSG  
; KILL THE PROGRAM  
; RESTORE REGISTERS  
; GO DISPLAY DEVICE REGS

TOEMSG: .ASCII 'PC11/PR11 TIMEOUT ON I/O'

.EVEN

;KILL USER PROGRAM ROUTINE

000544 016702 177254  
000545 032712 000100  
000546 001005  
000547 032762 000100 000004  
000548 001001  
000549 000425  
000550 004567 002632  
000551 000407  
000552 042712 000100  
000553 042767 020000 177172  
000554 004767 001342  
000555 004567 002636  
000556 000410  
000557 042762 000100 000004  
000558 042767 040000 177144  
000559 004767 001332  
000560 005067 177154  
000561 005067 000674  
000562 000205

KILL: MOV DREGAD, R2  
BIT #100, (R2)  
BNE IS  
BIT #100, 4(R2)  
BNE IS  
BR KILLEX  
1S: JSR R5, TRVECT  
BR CHRINT  
BIC #100, (R2)  
BIC #ROBSY, FLAGWD  
JSR PC, KRINTV  
CHRINT: JSR R5, TRVECT  
BR KILLEX  
BIC #100, 4(R2)  
BIC #SY, FLAGWD  
JSR PC, RWINTV  
KILLEX: CLR ERA  
CLR ERF, LG  
RTS R5

; GET DEV REG ADR  
; ANY INT EBLs SET ?  
; YES-CONTINUE  
; TEST READ INT VECTOR  
; BRANCH IF NOT ME  
; GET RD INT EBL  
; GET F RD BSY IN FLAG WD  
; GET F RD INT VECTOR  
; TEST WRITE INT VECTOR  
; BRANCH IF NOT ME  
; RESET WR INT EBL  
; RESET WRITE BSY IN FLAG WD  
; RESET WRITE INT VECTOR  
; CLEAR ERROR INDICATOR  
; CLEAR INTERN ERR FLAG  
; RETURN

;READ COMMAND HANDLER

000654 010567 002074  
000655 162767 000004 002066  
000656 016704 177132  
000657 032767 020000 177102  
000658 001026

READ: MOV R5, STINT  
SUB #4, STINT  
MOV DREGAD, R4  
BIT #ROBSY, FLAGWD  
BNE GTPTBS

; SAVE R5  
; FOR STINT @ REFERENCE  
; DEV REG ADDR TO R4  
; TEST READ BUSY  
; BRANCH IF SET



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000702 032714 000100 BIT      #100,(R4)      ;TEST RECV INT EBL
000706 001403      BEQ      SROBSY    ;CONTINUE IF NOT SET
000710 004577 177132      JSR      RS,ACIOBSY ;OTHERWISE RELEASE CONTROL
000714 000757      BR      READ
000716 052767 020000 177056 SROBSY: BIS      #SROBSY,FLAGWD ;SET READ BUSY
000720 016767 177076 000012      MOV      IVCTAD,108 ;INT VECTOR ADDR TO CALL
000724 016767 177072 000006      MOV      #USR0,208 ;ALSO BUS PRIORITY
000728 004577 177122      JSR      RS,ASETVEC ;GO SET THE VECTOR
000732 000000      .WORD   XXXX
000736 000000      .WORD   XXXX
000740 001012      .WORD   RDINT-
000744 000000      CLR      TOECNT    ;CLEAR TIME OUT ERR CNT
000748 000000      JSR      PC,SUPTAD ;GET P TBL BASE IN R3
000752 000000      INC      RDICNT    ;INCREMENT READ CMD CT
000756 000000      CLR      ERR      ;CLEAR ERROR INDICATOR
000760 000000      CLR      PTOCNT(R3)
000764 000000      MOV      (R5)+,RD  ;GET ADDRESS
000768 000000      MOV      (R5)+,RADDR
000772 000000      MOV      (R5)+,RBYTES
000776 000000      MOV      (R5)+,RD
000780 000000      INC      (R4)
000784 000000      BIS      #M4IOT,PFLAGWD(R3) ;BYTE COUNT AND
000788 000000      BIS      #100,(R4)      ;ABSORB NEXT PAPAN
000792 000000      BIT      #M4IOT,FLAGWD  ;SET READER ENABLE
000796 000000      BNE      RDONMT    ;SET WAIT FOR I/O TERM
000800 000000      JMP      TSTIEB   ;TEST DEV ROUT NOWAIT
000804 000000      BIC      #M4IOT,PFLAGWD(R3) ;BRANCH IF SET
000808 000000      RTS      RS      ;OTHERWISE WAIT
000812 000000      ;WRITE AND LEADER COMMAND HANDLER
000816 000001 176722 WRITE: BIC      #LDRFLG,FLAGWD ;CLEAR WAIT FOR I/O TERM
000820 000403      BR      XMIT
000824 052767 000001 176712 LEADER: BIS      #LDRFLG,FLAGWD ;RETURN INLINE
000828 010567 001660      MOV      RS,STMT
000832 162767 000004 001652 XMIT:  SUB      #4,STMT  ;SAVE RS
000836 016704 176716      MOV      DR,ADR,R4 ;FOR STMT # REFERENCE
000840 032767 040000 176666      BIT      #BY,FLAGWD ;DEV REG ADDR TO R4
000844 001032      BNE      CLRERR   ;TEST WRITE BUSY
000848 032764 000100 000004      BIT      #100,4(R4) ;BRANCH IF SET
000852 001403      BEQ      XMIT     ;TEST PUNCH INT EBL
000856 004577 176714      JSR      RS,ACIOBSY ;CONTINUE IF NOT SET
000860 000756      BR      XMIT     ;OTHERWISE RELEASE CONTROL
000864 052767 040000 176640 SETBSY: BIS      #SROBSY,FLAGWD ;SET WRITE BUSY
000868 016767 176660 000020      MOV      IVCTAD,108 ;INT VECTOR ADDR TO CALL
000872 062767 000004 000012      ADD      #4,108   ;ADJUST FOR WRITE INT
000876 016767 176650 000006      MOV      #USR0,208 ;ALSO PASS BUS PRIORITY
000880 004577 176676      JSR      RS,ASETVEC ;GO SET THE VECTOR
000884 000000      .WORD   XXXX
000888 000000      .WORD   XXXX
000892 000354      .WORD   WRINT-
000896 005067 177220      CLR      TOECNT    ;CLEAR TIME OUT ERR CNT
000900 005067 176614      CLR      ERR      ;CLEAR ERROR INDICATOR
000904 005063 000030      CLR      PTOCNT(R3)
000908 004767 001702      JSR      PC,SUPTAD ;GET P TBL BASE IN R3
000912 032767 000001 176556      BIT      #LDRFLG,FLAGWD

```

```

001011 BNE LDRYES
012500 MOV (RS)+,RO
012567 000306 MOV (RS)+,WADDR
012567 000304 MOV (RS)+,WBYTES
012500 MOV (RS)+,RO
005267 177136 INC WRCNT ;INCREMENT WRITE CMD CT
000420 BR PUNEBL
010700 LDRYES: MOV PC,RO
062700 000072 ADD #BLANK-,RO
010067 000260 MOV RO,WADDR
012500 MOV (RS)+,RO ;PICK UP LENGTH FROM CALL
012701 000012 MOV #10.,R1
01102 CLR R2
01272 01102 1$ ADD RO,R2
01274 011301 DEC R1
01276 001375 BNE 1$
012767 000240 MOV R2,WBYTES
012757 177076 INC MISCNT ;INCREMENT MISC CMD CT
01310 000010 000000 PUNEBL: BIS #MT4IOT,PFLAGD(R3) ;SET WAIT FOR I/O TERM
01316 000100 000004 BIS #100,4(R4) ;SET PUNCH INT EBL
01324 000000 176450 BIT #OF WAIT,FLAGD ;TEST DEV ROUT NOWAIT
0132 001412 BEQ TSTIEB ;IF RESET TEST INT EBL
0134 042763 000010 000000 RETURN: BIC #MT4IOT,PFLAGD(R3) ;CLEAR WAIT FOR I/O TERM
01342 000205 BLANK: .WORD 0 ;OTHERWISE RETURN
01344 000000 ;WAIT COMMAND HANDLER
01346 042767 100000 176426 WAIT: BIC #OF WAIT,FLAGD ;CLEAR DEV ROUT NOWAIT
01354 016704 176444 MOV DREGAD,R4 ;POINT R4 AT REG ADDR
01360 032714 000100 TSTIEB: BIT #100,(R4) ;TEST INT EBL
01364 001055 BNE RELEAS ;IF SET, RELEASE CONTROL
01366 032764 000100 000004 BIT #100,4(R4)
01374 001051 BNE RELEAS
01376 032767 000002 176376 TRMTST: BIT #CLR VCT,FLAGD ;TEST IF VECTOR CLR REQD
01404 001410 BEQ 10$ ;BRANCH IF NOT
01406 004567 002014 JSR RS,TRVECT ;TEST READ VECTOR
01412 000405 BR 10$ ;BRANCH IF NOT ME
01414 004767 000536 JSR PC,RRINTV ;GO RESET THE VECTOR
01420 042767 000002 176354 10$: BIC #CLR VCT,FLAGD ;CLEAR THE REQ FLAG
01426 032767 000004 176346 BIT #CLR VCT,FLAGD ;TEST IF VECTOR CLR REQD
01434 001410 BEQ ERTTST ;BRANCH IF NOT
01436 004567 002014 JSR RS,TRVECT ;TEST WRITE VECTOR
01442 000405 BR ERTTST ;BRANCH IF NOT ME
01444 004767 000524 JSR PC,RRINTV ;GO RESET THE VECTOR
01450 042767 000004 176324 ERTTST: BIC #CLR VCT,FLAGD ;CLEAR THE REQ FLAG
01456 005767 000064 TST ERRFLG ;TEST FOR ANY ERROR
01462 001727 BEQ RETURN ;RETURN IF NONE
01464 012767 000001 176330 MOV #1,ERR ;SET ERROR INDICATOR
01472 004767 001422 JSR PC,SUPTAD
01476 032763 020000 000002 BIT #PRNER,POPSW(R3) ;TEST DONT PRINT ON ERR BIT
01504 001003 BNE ERREXT ;EXIT IF SET
01506 005004 CLR R4
01510 000167 001030 JMP ERPRPT
01514 000177 176330 ERREXT: JMP @CUPGER
01520 004577 176322 RELEAS: JSR RS,@CIOBSY ;OTHERWISE RELEASE CONTROL

```

K01

MAINDEC-11-DTPCA-B PC11/PR11 DEVICE ROUTINE FOR MPG  
DTPCAR.P11 PC11/PR11 FUNCTION ROUTINES

MACY11 27(732) 24-SEP-76 14:10 PAGE 4-3

SEG 0010

400  
401  
402  
403

001524' 000715

BR TSTIEB

;NOWAIT COMMAND HANDLER

001526' 052767 100000 176246

NOWAIT:

BIS

#DRWAIT,FLAGMD

;SET NOWAIT FLAG

001534' 000702

BR

RETURN

```

405                                     ;WRITE & READ CONTROL TABLES
406
407 001536' 000000          RADOR: .WORD 0
408 001540' 000000          RBYTES: .WORD 0
409 001542' 000000          MADOR: .WORD 0
410 001544' 000000          MBYTES: .WORD 0
411 001546' 000000          ERRFLG: .WORD 0 ;ERROR FLAG

```



;READ INTERRUPT HANDLER

```

450 001762' 004067 001100          R0INT: JSR   R0, SAVREG          ;SAVE REGISTERS
451 001766' 004567 001146          JSR   R5, SSTAT          ;STORE DEVICE REG CONTENTS
452 001772' 176360          .WORD  ISTAT-
453 001774' 004567 176410          INC   R1CNT              ;INCR READ INT COUNT
454 001778' 004567 001114          JSR   PC, SUPTAD         ;SET UP INTERN PTRS
455 001782' 004567 001114          TST   (R4)              ;TEST FOR ERROR
456 001786' 100006          BPL   RDRRDY            ;BRANCH IF NONE
457 001790' 152767 000002 177530  BISB  B2, ERRFLG         ;REMEMBER RDR ERR
458 001794' 005267 176372          INC   RDRERR            ;INCR READER ERROR
459 001798' 000434          BR    STPRDR            ;ABORT READ
460 001802' 010701          RDRRDY: MOV   PC, R1
461 001806' 062701 176346          ADD   #BYRD+2-., R1
462 001810' 005767 177502          TST   R1, TES
463 001814' 001420          BEQ   RTERM
464 001818' 002711 000001          ADD   #1, (R1)          ;INCR BYTES READ
465 001822' 003541          AOC   -(R1)
466 001826' 016700 177464          MOV   RADDR, R0
467 001830' 116401 000002          MOVB  2(R4), R1          ;READ A BYTE
468 001834' 004777 176016          JSR   PC, 2*UTBYT       ;PUT IT IN MEMORY
469 001838' 005267 177450          INC   RADDR            ;INCREMENT ADDRESS
470 001842' 005367 177446          DEC   RBYTES           ;DECREMENT BYTE COUNT
471 001846' 001402          BEQ   RTERM            ;TERMINATE IF ZERO
472 001850' 005214          INC   (R4)             ;ELSE SET RDR EBL
473 001854' 000724          BR    INTXT
474 001858' 010701          RTERM: MOV   PC, R1
475 001862' 062701 176270          ADD   #BYRD-., R1
476 001866' 016167 000002 175704  MOV   2(R1), SIZE
477 001870' 042757 000000 175660  STPRDR: BIC  #RDRSY, FLAGWD
478 001874' 042714 000100          BIC   #100, (R4)
479 001878' 032764 000100 000004  BIT   #100, 4(R4)
480 001882' 001003          BNE   RERVEC
481 001886' 042763 000010 000000  BIC  #WT4IOT, PFLAGWD(R3) ;RESET WAIT FOR IOT
482 001890' 052767 000002 175630  RERVEC: BIS  #CLR VCT, FLAGWD
483 001894' 000167 177572          JMP   INTXT            ;SET CLR VECT REQUEST
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491 002156' 016767 175644 000004  RINTV: MOV   IVCTAD, IOS ;RESET READ VECT SUBR
492 002160' 004577 175700          JSR   R5, @CLRVEC
493 002164' 000000          IOS:  .WORD  XXXX
494 002168' 000207          RTS   PC
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501 002174' 016767 175626 000012  RWINTV: MOV  IVCTAD, IOS ;RESET WRITE VECT SUBR
502 002202' 062767 000004 000004  ADD   #4, IOS
503 002210' 004577 175654          JSR   R5, @CLRVEC
504 002214' 000000          IOS:  .WORD  XXXX
505 002216' 000207          RTS   PC

```

.SBTTL PC11/PR11 SUPPORT ROUTINES

;DEVICE ROUTINE HOUSEKEEPING

```

:JSR  RS,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
002222 001003
002224 032702 000004
002226 001010
002228 010700
002230 062700 176116
002232 012701 000026
002234 005020
002236 005301
002238 001374
002240 000205

```

```

HSKEEP: TST (R5)+
          BNE 105
          BIT #HSKPEP,R2
          BNE 305
105:     MOV PC,R0
          ADD #SKPST-,R0
          MOV #SKPEN-HSKPST/2,R1
205:     CLR (R0)+
          DEC R1
          BNE 205
305:     RTS R5

```

```

:UNCONDITIONALLY DO HSKP?
:N Y-105
:OPSW SPECIFY EACH PASS HSKP?
:Y N-305
:SET UP FIRST MD ADR
:SET UP # OF WORDS
:HSKP ALL NECESSARY AREAS
:EXIT IN-LINE

```

;PC11/PR11 REPORT ROUTINE

```

:JSR  RS,REPORT     S/R CALL
:WORD FLAGWORD     FLAGWORD
:                     BIT 15 = CMD MODE CALL
:                     BIT 9 = PROG STMT CALL
:                     BIT 1 = DO STATUS REPORT
:                     BIT 0 = DO COUNTS REPORT

```

```

002254 005067 000232
002256 004067 000602
002258 032715 177776
002260 001012
002272 010700
002274 062700 176076
002276 012701 000014
002304 005720
002306 001003
002310 005301
002312 001374
002314 000472
002316 004767 000576
002322 012504
002324 032704 000002
002326 001403
002330 004567 000602
002332 176024
002340 032704 000002
002342 001416
002344 004567 000740
002352 001147
002354 000014

```

```

REPORT: CLR ABBREV
          JSR R0,SAVEG
          BIT #177776,(R5)
          BNE 85
          MOV PC,R0
          ADD #BYRD-,R0
          MOV #12,R1
25:     TST (R0)+
          BNE 85
          DEC R1
          BNE 25
          BR DVREX
85:     JSR PC,SUPTAD
          MOV (R5)+,R4
          BIT #2,R4
          BEQ 105
          JSR R5,STSTAT
          .WORD CSTAT-
105:    BIT #2,R4
          BEQ DISCNT
          JSR R5,PRINT
          .WORD ATMSG-
          .WORD 12.

```

```

:CLR AB'OLVIATED RPT FLAG
:SAVE REG'S R0 - R5
:DISPLAYING CNTS AT END OF
:PROG PASS? (Y,N-85)
:SET UP ADR OF CNTS
:GET # OF CNT WORDS
:THIS CNT WORD = 0?
:Y,N-85
:DECR WORD CNT
:CK'ED ALL WORDS? (Y,N-25)
:GO TO EXIT -- ALL CNTS ARE 0'S
:SET UP PROG TBL ADR IN R3
:GET FLAGWORD
:GOING TO DO STATUS DISPLAY?
:Y,N-105
:GO STORE STATUS REG'S
:DISPLAY DEV STATUS?
:Y,N-DISCNT
:ISSUE 'AT INT' MSG

```

002220 005725  
002222 001003  
002224 032702 000004  
002226 001010  
002228 010700  
002230 062700 176116  
002232 012701 000026  
002234 005020  
002236 005301  
002238 001374  
002240 000205  
002254 005067 000232  
002256 004067 000602  
002258 032715 177776  
002260 001012  
002272 010700  
002274 062700 176076  
002276 012701 000014  
002304 005720  
002306 001003  
002310 005301  
002312 001374  
002314 000472  
002316 004767 000576  
002322 012504  
002324 032704 000002  
002326 001403  
002330 004567 000602  
002332 176024  
002340 032704 000002  
002342 001416  
002344 004567 000740  
002352 001147  
002354 000014

```

002356' 004567 000640 JSR RS DISPST ;GO DISPLAY STATUS AT LAST INT
002357' 175770 JSR RS STAT ;ISSUE 'CURRENTLY' MSG
002358' 004567 000722 JSR RS PRINT
002370' 001145 .WORD CURMSG-
002372' 000012 .WORD IO.
002374' 004567 000622 JSR RS DISPST ;GO DISPLAY CURRENT STATUS
002375' 175770 JSR RS STAT
002376' 032704 000001 DISCNT: BIT CSSTAT- ;DISPLAY COUNTS?
002377' 001431 .WORD @1,R4 ;Y,N-RPTEND
002378' 012700 000014 RPTEND ;SET UP # OF WORDS
002379' 010701 .WORD @12,R0 ;SET UP ADR OF CNTS
002380' 010701 175754 PC,R1
002381' 010701 .WORD @BYRD-.,R1
002382' 010701 .WORD PC,R2 ;SET UP TBL ADR
002383' 012704 000070 RPTLP: MOV @REPTBL-,R2 ;MOV MSG ADR TO S/R LINKAGE
002384' 004067 000012 JSR RO SAVREG ;SAVE ALL REG'S
002385' 011100 00426 MOV (R1),R0 ;GET CURRENT COUNT
002386' 004067 175410 JSR RS @BINASC ;CONVERT IT TO ASCII
002387' 004067 00426 RPTBAS: .WORD XXXX ;RESTORE REG'S
002388' 005721 JSR RO RESREG ;POINT AT NXT CNT
002389' 001363 .WORD (R1)+ ;DONE ALL WORDS?
002390' 005300 DEC RO ;Y,N-RPTLP
002391' 001363 .WORD RPTLP ;GO ISSUE COUNTS MSG
002392' 004567 000624 JSR RS PRINT
002393' 001112 .WORD CNTSMG-
002394' 000304 .WORD CNTSEN-CNTSMG
002395' 004567 000614 RPTEND: JSR RS PRINT ;ISSUE "END OF REPORT" MSG
002396' 001051 .WORD RENDMG-
002397' 177763 .WORD -13
002398' 004067 000374 DVREX: JSR RO RESREG ;RESTORE REGISTERS
002399' 005725 TST (RS)+ ;SET UP RETURN POINT
002400' 000205 RTS RS ;EXIT IN-LINE
002512' 000000 ABBREV: .WORD 0
002514' 001146 REPTBL: .WORD BCHAR-RPTBAS
002515' 001154 .WORD BCHAR+6-RPTBAS
002516' 001170 .WORD BCHAR-RPTBAS
002517' 001176 .WORD BCHAR+6-RPTBAS
002518' 001223 .WORD CNDCRD-RPTBAS
002519' 001236 .WORD CNDCLR-RPTBAS
002520' 001253 .WORD CNDCHS-RPTBAS
002521' 001306 .WORD RDTNMS-RPTBAS
002522' 001320 .WORD MAINMS-RPTBAS
002523' 001352 .WORD ERRADR-RPTBAS
002524' 001370 .WORD ERRPLN-RPTBAS
002525' 001430 .WORD ERCDTA-RPTBAS

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;PC11/PR11 ERROR REPORT ROUTINE

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004767	000004			ERRRPT:	JSR	PC, ERDIS	
000177	175274			JMP	2CUPGER		
010701				ERRDIS:	MOV	PC, R1	;POINT R1 AT ERR MSG
062701	000222			ROO	8MSGBF-. , R1		
012767	000022	000054		MOV	818. ERMBCT		
010700				MOV	PC, RO		;POINT RO AT ERR MSG TBL
062700	000144			ROO	8CACDTB-. , RO		
105710				18:	TSTB	(RO)	
001416				BEQ	ERTBEN		;BRANCH IF RO AT TBL END
132067	176740			BITB	(RO)+, ERRFLG		;TEST FOR PARTICULAR ERR
001003				BNE	28		;BRANCH IF FOUND
062700	000005			28:	ROO	85, RO	
000770				BR	18		
012702	000005			38:	MOV	85, R2	
112021				48:	MOV	(RO)+ (R1)+	;MOVE MSG CODE TO ERR MSG
007357	000014			INC	ERMBCT		;BUMP BYTE COUNT
005302				DEC	85, R2		
001373				BNE	18		;CHECK IF MORE
000760				BR	18		;PRINT ERROR MSG
004567	000450			ERTBEN:	JSR	RS, PRINT	
000114				WORD	EMSGHD-		
004321				ERRMBCT:	WORD	17.	
004367	000350			ERDIRG:	JSR	RS, DISPST	;DISPLAY DEVICE REGS
175500				WORD	1STAT-		
016300	000022			ERRSNM:	MOV	8SRCST(R3), RO	;GET ADDR OF SRC STMTS
111001				108:	MOV	(RO, R1	;SAVE STMT LENGTH
026067	000004	000064		CHP	4(RO), STMT		;ERROR OCCUR ON THIS STMT?
001402				BEQ	208		;YES - BRANCH
060100				ROO	R1, RO		;POINT AT NEXT STATEMENT
000771				BR	108		;GO CK NEXT STMT
005720				208:	TST	(RO)+	;SET UP ADDR OF STMT & DATA
010701				MOV	PC, R1		;SET UP DATA OUTPUT ADDR
062701	000156			ROO	8STNUM-. , R1		
004577	175150			JSR	RS, 2DECASC		;CONVERT IT TO ASCII
012767	020040	000144		MOV	820040, STNUM+4		;SET 2 LOW DIGITS TO SPACES
004567	000366			JSR	RS, PRINT		;ISSUE STMT & MSG
000124				WORD	STNUM-		
177762				WORD	-14.		
005067	176612			CLR	ERRFLG		;CLEAR ERROR FLAG
000207				RTS	PC		
020001	050040	047125		ERCDTB:	.ASCII	<001>/ PUN/	;ERROR MSG CODE TABLE
020002	051040	051104		.ASCII	<002>/ ROR/		
000				.BYTE	0		
002754				.EVEN			
000000				STMT:	.WORD	0	;SAVED RS FOR STMT &
041520	030461	050057		EMSGHD:	.ASCII	'PC11/PR11 ERROR: '	
030522	020061	051105					
047522	035122	020040					
				.EVEN			
000050				EMSGBF:	.BLKB	40.	

E02

MAINDEC-11-DTPCA-8 PC11/PR11 DEVICE ROUTINE FOR MPG  
DTPCAB.P11 PC11/PR11 SUPPORT ROUTINES

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SEQ 0017

662 003050' 052123 047115 020124 STMMNG: .ASCII /STMT # /  
003056' 026043  
663 003060' 054130 054130 054130 STMMUM: .ASCII /XXXXXX/  
664 .EVEN

```

666 .SBTTL SUBROUTINES FOR PC11/PR11 DEVICE ROUTINE
667
668 ;SAVE REGISTERS R0 THRU R5
669
670 ;JSR R0, SAVREG S/R CALL
671
672 SAVREG: MOV R1, -(SP) ;SAVE R0 THRU R5
673 MOV R2, -(SP)
674 MOV R3, -(SP)
675 MOV R4, -(SP)
676 MOV R5, -(SP)
677 MOV R0, PC ;EXIT IN-LINE
678
679 ;RESTORE REGISTERS R0 THRU R5
680
681 ;JSR R0, RESREG S/R CALL
682
683 RESREG: TST (SP)+ ;RESTORE R4 THRU R0
684 MOV (SP)+, R5
685 MOV (SP)+, R4
686 MOV (SP)+, R3
687 MOV (SP)+, R2
688 MOV (SP)+, R1
689 RTS R0 ;EXIT IN-LINE
690
691 ;SET PROGRAM'S PROG TABLE ADR IN R3
692
693 ;JSR PC, SUPTAD S/R CALL
694
695 SUPTAD: MOV PC, R3 ;SET UP LOCATION ZERO ADR
696 ADD #0C2-, R3
697 SUB -2(R3), R3 ;SUBTRACT PROG TBL LENGTH
698 MOV DREGAD, R4 ;PUT DEV REG ADR IN R4
699 RTS PC ;EXIT IN-LINE
700
701 ;STORE DEVICE'S STATUS REGISTERS
702
703 ;JSR R5, STSTAT S/R CALL
704 ;WORD STADR- REL STORAGE ADR
705 ;DESTROYS R0, R1, R2
706
707 STSTAT: MOV DREGAD, R1
708 MOV R5, R0 ;GET REL STORAGE ADR & MAKE
709 ADD (R5)+, R0 ;IT ABSOLUTE
710 MOV #DVREGS-DVREGS/6, -(SP) ;GET # OF REG'S TO STORE
711 MOV PC, R2 ;GET ADR OF 1ST REG DISPLACEMENT
712 ADD #DVREGS+4-, R2
713 MOV (R2) R1 ;GET REG DISPLACEMENT
714 ADD DREGAD, R1 ;ADD IN REG'S BASE ADR
715 MOV (R1) (R0)+ ;STORE REGISTER VALUE
716 ADD #6, R2 ;POINT AT NXT DISPLACEMENT
717 CMP #4, (SP) ;ABOUT TO STORE 2ND REG?
718 BNE 20$ ;NO-CONTINUE
719
720
721
    
```

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722 003204' 0F 2702 000006      ADD      #6, R2      ;YES-BETTER BYPASS IT
723 003210' 00 316          DEC      (SP)
724 003212' 00 316          DEC      (SP)      ;DECR REG CNT
725 003214' 001362        BNE     10S        ;DONE ALL? (Y,N-10S)
726 003216' 005726        TST     (SP)+     ;CLEAN UP THE STACK
727 003220' 000205        RTS      R5       ;EXIT IN-LINE
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737 003222' 010502      DISPST: MOV     R5, R2      ;GET REL DATA ADR
738 003224' 062502      ADD     (R5)+, R2   ;MAKE IT ABS
739 003226' 010701      MOV     PC, R1      ;SET UP ADR OF REG NAMES IN ASCII
740 003230' 062701      ADD     #0VREGS-, R1
741 003234' 012700      MOV     #0VREGS-0VREGS/6, R0 ;GET # OF REGISTERS TO DISPLAY
742 003240' 012167      10S:  MOV     (R1)+, 0VREGM ;MOVE REG NAME TO MSG
743 003244' 012167      MOV     (R1)+, 0VREGM+2
744 003250' 00 721      TST     (R1)+
745 003252' 004067      177610 JSR     R0, SAVREG ;BYPASS DISP VALUE
746 003256' 011200      MOV     (R2), R0   ;SAVE REG'S R0 - R5
747 003260' 004577      174572 JSR     R5, 2BINASC ;GET REG'S STORED VALUE
748 003264' 000306      .WORD  0VREGM-   ;CONVERT IT TO ASCII
749 003266' 004567      000020 JSR     R5, PRINT  ;PRINT THE STATUS MSG
750 003272' 000272      .WORD  0VREGM-
751 003274' 000014      .WORD  12
752 003276' 004067      177600 JSR     R0, RESREG ;RESTORE R0 - R4
753 003302' 005722      TST     (R2)+
754 003304' 005300      DEC     R0
755 003306' 001354      BNE     10S
756 003310' 000205        RTS      R5       ;POINT AT NXT REG VALUE
;DECR REG CNT
;DONE ALL? (Y,N-10S)
;EXIT IN-LINE
;TAILOR STATUS MSG & PRINT IT
;JSR     R5, DISPST  S/R CALL
;WORD    STATAOR-   REL ADR OF STATUS DATA
;DESTROYS R0, R1, R2
;TAILOR STATUS MSG & PRINT IT
;JSR     R5, DISPST  S/R CALL
;WORD    STATAOR-   REL ADR OF STATUS DATA
;DESTROYS R0, R1, R2
;GET REL DATA ADR
;MAKE IT ABS
;SET UP ADR OF REG NAMES IN ASCII
;GET # OF REGISTERS TO DISPLAY
;MOVE REG NAME TO MSG
;BYPASS DISP VALUE
;SAVE REG'S R0 - R5
;GET REG'S STORED VALUE
;CONVERT IT TO ASCII
;PRINT THE STATUS MSG
;RESTORE R0 - R4
;POINT AT NXT REG VALUE
;DECR REG CNT
;DONE ALL? (Y,N-10S)
;EXIT IN-LINE

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;ISSUE MSG TO LIST DEVICE

;JSR RS,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 CHND 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 CHND MODE PRINT?
003322' 100030 BPL 40S ;Y,N-40S
003324' 010702 MOV PC,R2 ;SET UP LINK INFO ADR
003326' 062702 ADD #20S-,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 10S ;CNT NEG? (Y,N-10S)
003342' 005412 NEG (R2) ;MAKE IT POSITIVE
003344' 016367 MOV PASCIN(R3),PROGMM ;STORE PROG'S # IN MSG
003352' 004577 JSR RS,@CLIST ;ISSUE PROG #
003356' 000136 .WORD PNMMSG-
003360' 000005 .WORD 5
003362' 004577 JSR RS,@CLIST ;ISSUE MSG SPECIFIED
003366' 000000 20S: .WORD XXXX
003370' 011000 .WORD XXXX
003372' 004577 JSR RS,@CLIST ;ISSUE A <CR> & <LF>
003376' 000254 .WORD CRLF-
003400' 000002 .WORD 2
003402' 000410 BR PRTEX ;GO TO EXIT
003404' 010067 MOV R0,50S ;STORE MSG'S ABS ADR
003410' 010167 MOV R1,60S ;STORE ITS BYTE CNT
003414' 004577 JSR RS,@CLIST ;GO TO MPG TO ISSUE THE MSG
003420' 000000 50S: .WORD XXXX
003422' 000000 60S: .WORD XXXX
003424' 000205 PRTEX: RTS R5 ;EXIT IN-LINE
```

;TEST READ INTERRUPT VECTOR S/R

```
003426' 016767 TRVECT: MOV IVCTAD,20S ;GET CURR INT VECT ADR
003434' 016346 MOV PFWADR(R3),-(SP) ;STORE FLAG ADR TO IDENTIFY ME
003440' 004577 JSR RS,@STVECT ;DO I HAVE VECTOR CONTROL?
003444' 000000 20S: .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 TWVECT: MOV IVCTAD,20S ;GET CURR INT VECT ADR
003464' 062767 ADD #4,20S ;ADJUST FOR WRITE INT
```

MAINDEC-11-DTPCA-B PC11/PR11 DEVICE ROUTINE FOR MPG  
DTPCAB.P11 SUBROUTINES FOR PC11/PR11 DEVICE ROUTINE

```

814 003472' 016346 000004      MOV    PFWADR(R3),-(SP)      ;STORE FLGND ADR TO IDENTIFY ME
815 003476' 004577 174370      JSR    RS,@STVEC          ;DO I HAVE VECTOR CONTROL?
816 003502' 000000      20S:  .WORD  XXXX          ;MPG WILL TELL ME SINCE I CAN'T
817 003504' 176044      .WORD  WRINT-            ;GET AT LOWER MEM IF MEM MIGHT
818 003506' 000401      BR     TWVEXT            ;BR IF I DONT HAVE CONTROL
819 003510' 005725      TST   (RS)+             ;BYPASS BR INST IN S/R CALL
820 003512' 000205      TWVEXT: RTS            ;RETURN IN-LINE

```



```

      .SBTTL FORMATS FOR PROGRAM & DEVICE ROUTINE TABLES
;      PROGRAM TABLE FORMAT
862          0002:2      PTLGTH= 162.      ;PROGRAM TABLE LENGTH - NON MEM MGMT VERSION OF MPG
863
864          ;(PTLGTH= 212. ;PROGRAM TABLE LENGTH - MEM MGMT VERSION OF MPG)
865
866          000000      PFLGWD= +0.      ;PROGRAM FLAG WORD - 1 WORD
867
868          000002      URSTOP= 2          ; 1 = USER HAS STOPPED THIS PROGRAM
869          000004      ERSTOP= 4          ; 1 = AN ERROR HAS STOPPED THIS PROGRAM
870          000010      WTYIOT= 10         ; 1 = WAITING FOR I/O TERMINATION
871          000020      CTPRIO= 20         ; 1 = CONSOLE OR PRINTER I/O IN PROGRESS
872          000040      SETDED= 40         ; 1 = THIS PROG SET THE PRT DEV DEDICATED FLAG
873          000100      OCPPTS= 100        ; 1 = OBJ CODE IS PRESENT
874          000200      USELW= 200        ; 1 = THIS PROG USES THE UNIBUS MAP (MEM MGMT ONLY)
875          100000      ACTIVE= 100000    ; 1 = PROGRAM IS ACTIVE (SPECIFIED FOR EXECUTION)
876
877          000002      PPSW= +2.          ;PROGRAM'S OPERATION SWITCHES - 1 WORD
878
879          100000      STONER= 100000     ; 1 = STOP PROG EXECUTION UPON ERROR
880          040000      CYCPRG= 4070       ; 1 = CYCLE PROGRAM (ON CURRENT DEVICE)
881          020000      PRONER= 2070       ; 1 = DO NOT PRINT ON ERROR
882          010000      BIT12= 1070        ; 0 = NOT USED
883          004700      BIT11= 4000         ; 0 = NOT USED
884          002000      CYCDVL= 2000       ; 1 = CYCLE THE DEVICE LIST
885          001000      GTNXTD= 1000       ; 1 = CYCLE ON SAME DEVICE UPON ERROR
886          000400      DOERCK= 400        ; 1 = DON'T DO ERROR CHECKING
887          000200      SPOPER= 200        ; 1 = DEVICE SPECIAL OPERATION
888          000100      BIT6= 100         ; 0 = NOT USED
889          000040      DOIOT= 40          ; 1 = DO NOT PERFORM I/O TIMEOUT
890          000020      AUTORP= 20         ; 1 = DO NOT AUTOMATICALLY DISPLAY COUNTS
891          000010      AURPEP= 10        ; 1 = AUTO DISPLAY COUNTS AT END OF FINAL PASS ONLY
892          000004      HSKPEP= 4          ; 1 = HOUSEKEEP COUNTS ONLY AT RUN COMMAND
893          000002      PFB0V= 2          ; 1 = PRINT FIRST BAD BYTE ONLY ON VERIFY
894          000001      NOCOMP= 1         ; 1 = DO NOT PRINT PROG COMPLETED MSG
895
896          000004      PFWADR= +4.        ;*;PROGRAM FLAGWORD ADDRESS - 1 WORD
897
898          000006      PASCIN= +6.        ;PROGRAM'S NUMBER IN ASCII - 1 WORD
899
900          000010      PNAME= +8.        ;PROGRAM'S NAME IN ASCII - 6 BYTES
901
902          000016      PRDIOA= +14.       ;ADDRESS OF READ I/O AREA - 1 WORD
903
904          000020      PWRIOA= +16.       ;ADDRESS OF WRITE I/O AREA - 1 WORD
905
906          000022      PSRCST= +18.      ;SOURCE STATEMENTS START ADDRESS - 1 WORD
907
908          000024      POBJST= +20.      ;OBJECT CODE START ADDRESS - 1 WORD
909
910          000026      PLNGTH= +22.      ;PROG AREA LENGTH (OBJ END MINUS PROG TSL START) - 1 WORD
911
912          000030      PTOCNT= +24.      ;I/O TIMEOUT COUNT - 1 WORD
913
914
915
916
917

```



918	000032	PMDLCD= +26.	;DEV ROUT MODEL # CODE - 1 WORD
919	000034	PDPNTR= +28.	;CURRENT DEVICE NUMBER POINTER - 1 BYTE
920	000035	PCURDV= +29.	;CURRENT DEVICE # - 1 BYTE
921	000036	PONUMS= +30.	;DEVICE NUMBERS - 16 BYTES
922	000056	PTEM0= +46.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
923	000060	PTEM1= +48.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
924	000062	PTEM2= +50.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
925	000064	PTEM3= +52.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
926	000066	PTEM4= +54.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
927	000070	PTEM5= +56.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
928	000072	PTEM6= +58.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
929	000074	PTEM7= +60.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
930	000076	PTEM8= +62.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
931	000100	PTEM9= +64.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
932	000102	PTEM10= +66.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
933	000104	PTEM11= +68.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
934	000106	PTEM12= +70.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
935	000110	PTEM13= +72.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
936	000112	PTEM14= +74.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
937	000114	PTEM15= +76.	;USER PROGRAM TEMPORARY STORAGE - 1 WORD
938	000116	PNBR= +78.	;NUMBER OF BYTES TO TRANSFER ON MOVE (NBR) - 1 WORD
939	000120	PSRC= +80.	;DATA SOURCE ADDRESS ON MOVE (SRC) - 1 WORD
940	000122	PDST= +82.	;DATA DESTINATION ADDRESS ON MOVE (DST) - 1 WORD
941	000124	PSTKCT= +84.	;# OF WORDS (X 2) SAVED OFF STACK - 1 WORD
942	000126	PSTKSV= +86.	;STACK WORDS STORAGE AREA - 30 WORDS
943	000222	PSVREG= +146.	;USER'S R0 THRU R5 REGISTERS STORAGE AREA - 6 WORDS
944	000236	PUSRPC= +158.	;USER'S CURRENT PROGRAM COUNTER - 1 WORD
971			

```

973           ;FOLLOWING ENTRIES (PROIOX THRU PUBMAP) ARE ONLY IN MEM MGMT VERSION
974
975           ;(PROIOX= +160. ;18/22 BIT ABSOLUTE ADDRESS OF READ I/O AREA - 2 WORDS)
976
977           ;(PROIOV= +164. ;18 BIT VIRTUAL ADDRESS OF READ I/O AREA - 2 WORDS)
978
979           ;(PMRIOX= +168. ;18/22 BIT ABSOLUTE ADDRESS OF WRITE I/O AREA - 2 WORDS)
980
981           ;(PMRIOV= +172. ;18 BIT VIRTUAL ADDRESS OF WRITE I/O AREA - 2 WORDS)
982
983           ;(PUPARS= +176. ;STORAGE AREA FOR USER'S PAR'S 0 THRU 7 - 8 WORDS)
984
985           ;(PUPDRS= +192. ;STORAGE AREA FOR USER'S PDR'S 0 THRU 7 - 8 WORDS)
986
987           ;(PUBMAP= +208. ;1ST UNIBUS MAP REG # AND # OF REGS USED - 1 WORD)
988
989           ;END OF MEM MGMT ONLY ENTRIES
990
991           000240      PTSIZE= +160. ;PROGRAM TABLE SIZE IN BYTES - 1 WORD - NON MEM MGMT
992
993           ;(PTSIZE= +210. ;PROGRAM TABLE SIZE IN BYTES -1 WORD - MEM MGMT VERSION)
994
995           000242      PTEND= +162. ;END OF PROGRAM TABLE - NON MEM MGMT VERSION
996
997           ;(PTEND= +212. ;END OF PROGRAM TABLE - MEM MGMT VERSION)

```

Address	Value	Field Name	Description
999			; DEVICE ROUTINE TABLE
1000			
1001			
1002	000116	DRTLTH= 78.	;DEVICE ROUTINE TABLE LENGTH
1003		:	
1004		:	
1005	000000	DEVRSZ= +0.	;DEVICE ROUTINE SIZE IN BYTES - 1 WORD
1006		:	
1007	000002	DEVFLD= +2.	;DEVICE ROUTINE FLAGWORD - 1 WORD
1008		:	
1009	000004	DEVIW1= +4.	;DEVICE INTERFACE WORD # 1 - 1 WORD
1010		:	
1011	000006	DEVIW2= +6.	;DEVICE INTERFACE WORD # 2 - 1 WORD
1012		:	
1013	000010	DEVIW3= +8.	;DEVICE INTERFACE WORD # 3 - 1 WORD
1014		:	
1015	000012	DEVIW4= +10.	;DEVICE INTERFACE WORD # 4 - 1 WORD
1016		:	
1017	000014	DEVIW5= +12.	;DEVICE INTERFACE WORD # 5 - 1 WORD
1018		:	
1019	000016	DEVIW6= +14.	;DEVICE INTERFACE WORD # 6 - 1 WORD
1020		:	
1021	000020	DEVIW7= +16.	;DEVICE INTERFACE WORD # 7 - 1 WORD (SIZE)
1022		:	
1023	000022	DEVIW8= +18.	;DEVICE INTERFACE WORD # 8 - 1 WORD (ERR)
1024		:	
1025	000024	DEVDR= +20.	;DEVICE REGISTERS ADDRESS - 1 WORD
1026		:	
1027	000026	DEVIVA= +22.	;DEVICE INTERRUPT VECTOR ADDRESS - 1 WORD
1028		:	
1029	000030	DEVRRS= +24.	;DEVICE READ PROCESSOR STATUS WORD (BUS REQ) - 1 WORD
1030		:	
1031	000032	DEVWRS= +26.	;DEVICE WRITE PROC STATUS WORD (BUS REQ) - 1 WORD
1032		:	
1033	000034	DKHPAD= +28.	;DEVICE ROUT HOUSEKEEPING ROUT REL ENTRY ADR - 1 WORD
1034		:	
1035	000036	DERPAD= +30.	;DEVICE ROUT REPORT ROUT REL ENTRY ADR - 1 WORD
1036		:	
1037	000040	DKILAD= +32.	;DEVICE ROUT KILL ROUTINE REL ENTRY ADR - 1 WORD
1038		:	
1039	000042	DECTAD= +34.	;DEVICE ROUT ERROR COUNTER REL ADR - 1 WORD
1040		:	
1041	000044	DTOEAD= +36.	;DEVICE ROUT TIMEOUT ERR ROUT REL ENTRY ADR - 1 WORD
1042		:	
1043	000046	DEVI0B= +38.	;DEVICE I/O BUSY BRANCH ADDRESS (CIOBSY) - 1 WORD
1044		:	
1045	000050	DEVDER= +40.	;DEVICE ERROR BRANCH ADDRESS (CUPGER) - 1 WORD
1046		:	
1047	000052	DVUPRT= +42.	;USER MODE PRINT BRANCH ADDRESS (ULIST) - 1 WORD
1048		:	
1049	000054	DVCPRT= +44.	;CMD MODE PRINT BRANCH ADDRESS (CLIST) - 1 WORD
1050		:	
1051	000056	DEVSTA= +46.	;CONVERT BINARY TO ASCII BR ADR (BINASC) - 1 WORD
1052		:	
1053	000060	DVBTA= +48.	;CONVERT BINARY TO DECIMAL ASCII BR ADR (BTASLZ) - 1 WORD
1054		:	

MAINDEC-11-DTPCA-B  
DTPCAB.P11

PC11/PR11 DEVICE ROUTINE FOR MPG  
FORMATS FOR PROGRAM & DEVICE ROUTINE TABLES

1055	000062	DVPODA= +50.	; CONVERT PACKED DECIMAL TO ASCII BR ADR (DECASC) - 1 WORD
1056			
1057	000064	DVSFWD= +52.	; MPG SYSTEM FLAGWORD ADDRESS (CSYSFW) - 1 WORD
1058			
1059	000066	DVSVEC= +54.	; SET INTERRUPT VECTOR BR ADR (SETVEC) - 1 WORD
1060			
1061	000070	DVCVEC= +56.	; CLEAR INTERRUPT VECTOR BR ADR (CLAVEC) - 1 WORD
1062			
1063	000072	DVTVEC= +58.	; TEST INTERRUPT VECTOR BR ADR (TSTVEC) - 1 WORD
1064			
1065	000074	DVRINT= +60.	; RETURN FROM INTERRUPT BR ADR (RTNINT) - 1 WORD
1066			
1067	000076	DVGETB= +62.	; GET DATA BYTE BR ADR (GETBYT) - 1 WORD
1068			
1069	000100	DVPUTB= +64.	; PUT DATA BYTE BR ADR (PUTBYT) - 1 WORD
1070			
1071	000102	DEVSTP= +66.	; DEVICE ROUT REL SYMBOL TABLE POINTER - 1 WORD
1072			
1073	000104	DEVETP= +68.	; DEVICE ROUT REL ENTRY TABLE POINTER - 1 WORD
1074			
1075	000106	DVPTEP= +70.	; PACK TABLE EXTEN. REL POINTER - 1 WORD
1076			
1077	000110	DVVTEP= +72.	; VECTOR TABLE EXTEN. REL POINTER - 1 WORD
1078			
1079	000112	DVCTEP= +74.	; COMPILER TBL EXTEN. REL POINTER - 1 WORD
1080			
1081	000114	DVIHSP= +76.	; DEVICE INTERFACE WORD SYMBOL TBL REL POINTER - 1 WORD
1082			
1083	000116	DRTEND= +78.	; END OF DEVICE ROUTINE TABLE
1084			
1085			
1086	000001		
1087		.END	



D03

MAINDEC-11-DTPCA-B PC11/PR11 DEVICE ROUTINE FOR MPG  
DTPCAB.P11 SYMBOL TABLE

MACY11 27(732) 24-SEP-76 14:10 PAGE 9-1

SEQ 0029

MBYTES 001544R 002 WRBSY = 040000 WRINT 001550R 002 WT410T = 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

