.REM

IDENTIFICATION

PRODUCT CODE: AC-F962C-MC

PRODUCT NAME: CXPCSCO PCS-11 I/O CNTRL MOD

PRODUCT DATE: NOVEMBER 1983

MAINTAINER: DEC/X11 SUPPORT GROUP

1. ABSTRACT

PCS IS AN IOMOD THAT EXERCISES PCS CONTROLLER AND FILE BOX. IT WILL EXERCISE ALL BITS OF CSR ADDRESS, CHECK FOR MAINTENANCE INTERRUPT CAPABILITIES AND CHECK ALL THE ADDRESSES FROM 171000 TO 171375 IN MAINTENANCE MODE.

2. REQUIREMENTS

HARDWARE: IOCM CONTROL MODULE WITH FILE BOX
STORAGE:: PCS REQUIRES:
1. DECIMAL WORDS: 748
2. OCTAL WORDS: 1354
3. OCTAL BYTES: 2730

3. TEST DESCRIPTION

ONE PASS OF THE MODULE CONSISTS OF CSR CHECKS, INTERRUPT TEST AND IAR TEST IN MAINTENANCE MODE. DURING THE TEST DBIT IS SET SO THE TEST WILL NOT EFFECT I/O MODULES

4. EXECUTION TIME

ONE PASS OF THE TEST TAKES LESS THEN 1 SEC

5 CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS

DEVADR: 171376
VECTOR: 234
DEVCNT: 1

6. MODULE OPERATION

TEST SEQUENCE

A. SET UP THE DEVICE ADDRESSES
B. SET G BIT, READ IT BACK AND CLEAR IT
C. SET D BIT, READ IT BACK AND CLEAR IT
D. SET T BIT, READ IT BACK AND CLEAR IT
E. SET RIE BIT, READ IT BACK AND CLEAR IT
F. SET E BIT, READ IT BACK AND CLEAR IT
G. SET M BIT, READ IT BACK AND CLEAR IT
H. SET MBIT AND READ ALL ADDRESSES FROM
I. SET MAINTENCE INTERRUPT AND READ ALL ONES FROM IAR 171000 TO 171375
J. RESET CSR.

7. OPERATOR OPTIONS:

NONE

8. PRINTOUTS:

ALL PRINTOUTS ARE STANDARD

DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

```
                                        ;**
                                        ;   EDIT        BY              DATE            REASON
                                        ;
                                        ;   001         R. SOLER        8-NOV-83        ELIMINATE UNNECCESARY CODE
                                        ;                                               CAUSING DATA LATE ERROS.
                                        ;                                               INCREASE ICONT TO INCREASE
                                        ;                                               RUNTIME. PRESENTLY TO SHORT.
                                        ;--

134
135 000000                                      IOMOD   <PCSC  >,171376,234,0,0,0,1000,147
    000000                                      MODULE  140000,PCSC  ,171376,234,0,0,0,1000,147,,,,,
                                                .TITLE  PCSC DEC/X11 SYSTEM EXERCISER MODULE
                                        ;       DDXCOM  VERSION  6.4    28-JAN-82
                                                .LIST   BIN
                                        ;*****************************************************************************
    000000                              BEGIN:
    000000      120     103     123     MODNAM: .ASCII  /PCSC / ;MODULE NAME.
    000003      103     040
    000005      000                     XFLAG:  .BYTE   OPEN            ;USED TO KEEP TRACK OF WBUFF USAGE
    000006  171376                      ADDR:   171376+0                ;1ST DEVICE ADDR.
    000010  000234                      VECTOR: 234+0                   ;1ST DEVICE VECTOR.
    000012      000                     BR1:    .BYTE   PRTY0+0         ;1ST BR LEVEL.
    000013      000                     BR2:    .BYTE   PRTY0+0         ;2ND BR LEVEL.
    000014  000001                      DVID1:  0+1                     ;DEVICE INDICATOR 1.
    000016  000000                      SR1:    OPEN                    ;SWITCH REGISTER 1
    000020  000000                      SR2:    OPEN                    ;SWITCH REGISTER 2
    000022  000000                      SR3:    OPEN                    ;SWITCH REGISTER 3
    000024  000000                      SR4:    OPEN                    ;SWITCH REGISTER 4
                                        ;*****************************************************************************
    000026  140000                      STAT:   140000                  ;STATUS WORD.
    000030  000250'                     INIT:   START                   ;MODULE START ADDR.
    000032  000224'                     SPOINT: MODSP                   ;MODULE STACK POINTER.
    000034  000000                      PASCNT: 0                       ;PASS COUNTER.
    000036  001000                      ICONT:  1000                    ;# OF ITERATIONS PER PASS*1000
    000040  000000                      ICOUNT: 0                       ;LOC TO COUNT ITERATIONS
    000042  000000                      SOFCNT: 0                       ;LOC TO SAVE TOTAL SOFT ERRORS
    000044  000000                      HRDCNT: 0                       ;LOC TO SAVE TOTAL HARD ERRORS
    000046  000000                      SOFPAS: 0                       ;LOC TO SAVE SOFT ERRORS PER PASS
    000050  000000                      HRDPAS: 0                       ;LOC TO SAVE HARD ERRORS PER PASS
    000052  000000                      SYSCNT: 0                       ;# OF SYS ERRORS ACCUMULATED
    000054  000000                      RANNUM: 0                       ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
    000056                              CONFIG:                         ;RESERVED FOR MONITOR USE
    000056  000000                      RES1:   0                       ;RESERVED FOR MONITOR USE
    000060  000000                      RES2:   0                       ;RESERVED FOR MONITOR USE
    000062  000000                      SVR0:   OPEN                    ;LOC TO SAVE R0.
    000064  000000                      SVR1:   OPEN                    ;LOC TO SAVE R1.
    000066  000000                      SVR2:   OPEN                    ;LOC TO SAVE R2.
    000070  000000                      SVR3:   OPEN                    ;LOC TO SAVE R3.
    000072  000000                      SVR4:   OPEN                    ;LOC TO SAVE R4.
    000074  000000                      SVR5:   OPEN                    ;LOC TO SAVE R5.
    000076  000000                      SVR6:   OPEN                    ;LOC TO SAVE R6.
    000100  000000                      CSRA:   OPEN                    ;ADDR OF CURRENT CSR.
    000102                              SBADR:                          ;ADDR OF GOOD DATA, OR
    000102  000000                      ACSR:   OPEN                    ;CONTENTS OF CSR.
    000104                              WASADR:                         ;ADDR OF BAD DATA, OR
    000104  000000                      ASTAT:  OPEN                    ;STATUS REG CONTENTS.
```

DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

```
000106                          ERRTYP:                         ;TYPE OF ERROR
000106  000000                  ASB:    OPEN                    ;EXPECTED DATA.
000110  000000                  AWAS:   OPEN                    ;ACTUAL DATA.
000112  000276'                 RSTRT:  RESTRT                  ;RESTART ADDRESS AFTER END OF PASS
000114  000000                  WDTO:   OPEN                    ;WORDS TO MEMORY PER ITERATION
000116  000000                  WDFR:   OPEN                    ;WORDS FROM MEMORY PER ITERATION
000120  000000                  INTR:   OPEN                    ;# OF INTERRUPTS PER ITERATION
000122  000147                  IDNUM:  147                     ;MODULE IDENTIFICATION NUMBER=147
        000040                          .REPT   SPSIZ           ;MODULE STACK STARTS HERE.
                                        .NLIST
                                        .WORD   0
                                        .LIST
                                        .ENDR
000224                          MODSP:
                                ;*******************************************************************************

                                ;+
                                ; THE NEXT LOCATION  CONTAINS A NUMBER  THAT CAN BE EXAMINED IN CORE TO  BE
                                ; SURE THAT THE LISTING AND ACTUAL CODE ARE THE SAME.  THIS  LOCATION IS TO
                                ; BE INCREMENTED  EACH TIME THE SOURCE CODE IS UPDATED.  LOCATION  'MODREV'
                                ; IS NOT USED BY THE PROGRAM.
                                ;-

000224  000003                  MODREV: 1+1+1+0

                                ;*******************************************************************************

000226  000000                  TEMP1:  .WORD   0                ;TEMPORARY STORAGE
000230  000000                  TEMP2:  .WORD   0                ;TEMPORARY STORAGE
000232  000000                  TEMP3:  .WORD   0                ;TEMPORARY STORAGE
000234  000000                  CSR:    .WORD   0                ;ADDRESS OF CSR = 171377
000236  000000                  IAR:    .WORD   0                ;ADDRESS OF IAR = 17136
000240  000000                  INTFLG: .WORD   0                ;INTERRUPT OCCURED FLAG
000242  000000                  CNT:    .WORD   0                ;PASS COUNT
000244  000000                  BASE:   .WORD   0                ;ADDRESS 171000
000246  000000                  VECT2:  .WORD   0                ;SECEND ADDR OF VECTOR
```

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160
161                                         ; * * * * *  START OF MODULE CODE  *  *  *  *  *
162
163 000250  012767  000001  177640  START:  MOV     #1,INTR                 ; ONE INTERRUPT/ITERATION
164 000256  012767  000010  177630          MOV     #8.,WDTO                ;8. WORDS TO MEM/ITERATION
165 000264  012767  000010  177624          MOV     #8.,WDFR                ;8. WORDS FROM MEM/ITERATION
166 000272  005067  177744                  CLR     CNT                     ;CLEAR PASS COUNT
167 000276  016700  177504          RESTRT: MOV     ADDR,R0
168 000302  010067  177730                  MOV     R0,IAR                  ;SET ADDRESS OF IAR = 171376
169 000306  005200                          INC     R0
170 000310  010067  177720                  MOV     R0,CSR                  ;SET ADDRESS OF CSR = 171377
171 000314  042700  000377                  BIC     #377,R0
172 000320  010067  177720                  MOV     R0,BASE                 ;SET ADDRESS OF THE LOWEST ID = 171000
173
174 000324  012703  000033          1$:     MOV     #9. * 3.,R3             ;SET UP WAIT LOOP
175 000330  152777  000002  177676          BISB    #2,@CSR                 ;SET CBIT TO CLEAR CSR
176 000336  000240                  32$:    NOP                             ;WAIT FOR CLEAR
177 000340  005303                          DEC     R3
178 000342  001375                          BNE     32$
179 000344  012703  000044          33$:    MOV     #12.*3.,R3              ;ANOTHER WAIT LOOP
180 000350  152777  000002  177656          BISB    #2,@CSR
181 000356  000240                  34$:    NOP
182 000360  005303                          DEC     R3
183 000362  001375                          BNE     34$
184 000364  105777  177644                  TSTB    @CSR                    ;IS CSR CLEAR?
185 000370  001407                          BEQ     2$
186 000372  117767  177636  177510          MOVB    @CSR,AWAS               ;NO, SET BAD DATA FOR ERROR CALL
187 000400  005067  177502                  CLR     ASB                     ;SET GOOD DATA.
188
189                                         ;*****************************************************************
    000404  104404  000000'                DATERR.BEGIN            ;DATA ERROR!!!
                                            ;*****************************************************************
190
191                                 ;TEST   GBIT
192 000410  152777  000001  177615  2$:     BISB    #1,@CSR                 ;SET RIF BIT
193 000416  132777  000001  177610          BITB    #1,@CSR                 ;IS IT SET
194 000424  001017                          BNE     3$                      ;YES, GO TO 3$
195 000426  117767  177602  177446          MOVB    @CSR,ACSR               ;LOAD CONTENTS OF CSR FOR ERROR
196 000434  016767  177574  177436          MOV     CSR,CSRA                ;LOAD ADDRESS OF CSR FOR ERROR
197 000442  104403  000000' 002052'        MSGN$,BEGIN,RIFNOT      ;ASCII MESSAGE CALL WITH COMMON HEADER
198
199 000450  012767  000025  177430          MOV     #25,ERRTYP              ;BIT STUCK
200
    000456  104405  000000' 000000        HRDERR.BEGIN,NULL       ; RIF BIT IS NOT SETTING
                                            ;*****************************************************************
201
202 000464  132777  000001  177542  3$:     BITB    #1,@CSR                 ;NOW RIF BIT SHOULD BE CLEAR
203 000472  001417                          BEQ     4$                      ;YES GO TO 4$
204 000474  117767  177534  177400          MOVB    @CSR,ACSR
205 000502  016767  177526  177370          MOV     CSR,CSRA
206 000510  104403  000000' 002056'        MSGN$,BEGIN,RIFCLR      ;ASCII MESSAGE CALL WITH COMMON HEADER
207 000516  012767  000025  177364          MOV     #25,ERRTYP              ;BIT STUCK
208
    000524  104405  000000' 000000        HRDER$,BEGIN,NULL       ; RIF BIT IS NOT CLEARING
                                            ;*****************************************************************
209
210 000532  152777  000004  177474  4$:     BISB    #4,@CSR                 ;SET GBIT AT CSR
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211 000540  132777  000004  177466          BITB    #4,@CSR                 ;TEST IF SET
212 000546  001017                           BNE     5$                      ;YES,GO TO 5$
213 000550  117767  177460  177324          MOVB    @CSR,ACSR
214 000556  016767  177452  177314          MOV     CSR,CSRA
215 000564  104403  000000' 002062'         MSGN$,BEGIN,GBITS       ;ASCII MESSAGE CALL WITH COMMON HEADER
216 000572  012767  000025  177306          MOV     #25,ERRTYP              ;BIT STUCK
217                                          ;*******************************************************************
    000600  104405  000000' 000000          HRDER$,BEGIN,NULL       ; GENERIC BIT IS NOT SETTING
                                             ;*******************************************************************
218
219 000606  142777  000004  177420  5$:     BICB    #4,@CSR                 ;CLEAR GBIT AT CSR
220 000614  132777  000004  177412          BITB    #4,@CSR                 ;TEST IF CLEAR
221 000622  001417                           BEQ     6$                      ;YES, GO TO 6$
222 000624  117767  177404  177250          MOVB    @CSR,ACSR
223 000632  016767  177376  177240          MOV     CSR,CSRA
224 000640  104403  000000' 002066'         MSGN$,BEGIN,GBITC       ;ASCII MESSAGE CALL WITH COMMON HEADER
225 000646  012767  000025  177232          MOV     #25,ERRTYP              ;BIT STUCK
226                                          ;*******************************************************************
    000654  104405  000000' 000000          HRDER$,BEGIN,NULL       ;GENERIC BIT IS NOT CLEARING
                                             ;*******************************************************************
227
228 000662  152777  000020  177544  6$:     BISB    #20,@CSR                ;SET DBIT AT CSR
229 000670  132777  000020  177336          BITB    #20,@CSR                ;TEST IF SET
230 000676  001017                           BNE     7$                      ;YES,GO TO 7$
231 000700  117767  177330  177174          MOVB    @CSR,ACSR
232 000706  016767  177322  177164          MOV     CSR,CSRA
233 000714  104403  000000' 002072'         MSGN$,BEGIN,DBITS       ;ASCII MESSAGE CALL WITH COMMON HEADER
234 000722  012767  000025  177156          MOV     #25,ERRTYP              ;BIT STUCK
235                                          ;*******************************************************************
    000730  104405  000000' 000000          HRDER$,BEGIN,NULL       ;DBIT IS NOT SETTING
                                             ;*******************************************************************
236
237 000736  152777  000010  177270  7$:     BISB    #10,@CSR                ;SET TBIT @CSR
238 000744  132777  000010  177262          BITB    #10,@CSR                ;IS IT SET
239 000752  001017                           BNE     8$                      ;YES, CONT.
240 000754  117767  177254  177120          MOVB    @CSR,ACSR
241 000762  016767  177246  177110          MOV     CSR,CSRA
242 000770  104403  000000' 002076'         MSGN$,BEGIN,TBITS       ;ASCII MESSAGE CALL WITH COMMON HEADER
243 000776  012767  000025  177102          MOV     #25,ERRTYP              ;BIT STUCK
244                                          ;*******************************************************************
    001004  104405  000000' 000000          HRDER$,BEGIN,NULL       ;TBIT NOT SETTING
                                             ;*******************************************************************
245
246 001012  142777  000010  177214  8$:     BICB    #10,@CSR                ;CLEAR TBIT
247 001020  132777  000010  177206          BITB    #10,@CSR                ;IS IT CLEAR
248 001026  001417                           BEQ     9$                      ;YES, CONT
249 001030  117767  177200  177044          MOVB    @CSR,ACSR
250 001036  016767  177172  177034          MOV     CSR,CSRA
251 001044  104403  000000' 002102'         MSGN$,BEGIN,TBITC       ;ASCII MESSAGE CALL WITH COMMON HEADER
252 001052  012767  000025  177026          MOV     #25,ERRTYP              ;BIT STUCK
253                                          ;*******************************************************************
    001060  104405  000000' 000000          HRDER$,BEGIN,NULL       ;TBIT NOT CLEARING
                                             ;*******************************************************************
254
255 001066  012703  000000'          9$:     MOV     #7,#5,,R3               ;SET UP WAIT LOOP
256 001072  142777  000020  177134          BICB    #20,@CSR                ;CLEAR DBIT
257 001100  000240                   50$:    NOP                             ;WAIT FOR CSR
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                001102  005303                          DEC     R3
                001104  001375                          BNE     50$
                001106  132777  000020  177120          BITB    #20,@CSR
                001114  001420                          BEQ     10$
                001116  001417                          BEQ     10$
                001120  117767  177110  176754          MOVB    @CSR,ACSR
                001126  016767  177102  176744          MOV     CSR,CSRA
                001134  104403  000000' 002106'          MSGN$,BEGIN,DBITC       ;ASCII MESSAGE CALL WITH COMMON HEADER
                001142  012767  000025  176736          MOV     #25,ERRTYP              ;BIT STUCK
                                                        ;*******************************************************************
                001150  104405  000000' 000000          HRDER$,BEGIN,NULL       ;DBIT NOT CLEARING
                                                        ;*******************************************************************

                001156  152777  000040  177050  10$:    BISB    #40,@CSR                ;SET MBIT
                001164  132777  000040  177042          BITB    #40,@CSR                ;IS IT SET
                001172  001017                          BNE     11$
                001174  117767  177034  176700          MOVB    @CSR,ACSR               ;NO
                001202  016767  177026  176670          MOV     CSR,CSRA
                001210  104403  000000' 002110'          MSGN$,BEGIN,MBITS       ;ASCII MESSAGE CALL WITH COMMON HEADER
                001216  012767  000025  176662          MOV     #25,ERRTYP              ;BIT STUCK
                                                        ;*******************************************************************
                001224  104405  000000' 000000          HRDER$,BEGIN,NULL       ;MAINTENANCE BIT IS NOT SETTING
                                                        ;*******************************************************************

                001232  142777  000040  176774  11$:    BICB    #40,@CSR                ;CLEAR MBIT
                001240  132777  000040  176766          BITB    #40,@CSR                ;IS IT CLEAR
                001246  001417                          BEQ     12$
                001250  117767  176750  176624          MOVB    @CSR,ACSR               ;NO
                001256  016767  176752  176614          MOV     CSR,CSRA
                001264  104403  000000' 002114'          MSGN$,BEGIN,MBITC       ;ASCII MESSAGE CALL WITH COMMON HEADER
                001272  012767  000025  176606          MOV     #25,ERRTYP              ;BIT STUCK
                                                        ;*******************************************************************
                001300  104405  000000' 000000          HRDER$,BEGIN,NULL       ;MAINTENANCE BIT IS NOT CLEARING
                                                        ;*******************************************************************

                001306  152777  000100  176720  12$:    BISB    #100,@CSR               ;SET EBIT
                001314  132777  000100  176712          BITB    #100,@CSR
                001322  001017                          BNE     13$
                001324  117767  176704  176550          MOVB    @CSR,ACSR
                001332  016767  176676  176540          MOV     CSR,CSRA
                001340  104403  000000' 002120'          MSGN$,BEGIN,EBITS       ;ASCII MESSAGE CALL WITH COMMON HEADER
                001346  012767  000025  176532          MOV     #25,ERRTYP              ;BIT STUCK
                                                        ;*******************************************************************
                001354  104405  000000' 000000          HRDER$,BEGIN,NULL       ;INTERRUPT ENABLE BIT IS NOT SETTING
                                                        ;*******************************************************************

                001362  142777  000100  176644  13$:    BICB    #100,@CSR               ;CLEAR EBIT
                001370  132777  000100  176636          BITB    #100,@CSR
                001376  001417                          BEQ     14$
                001400  117767  176630  176474          MOVB    @CSR,ACSR
                001406  016767  176622  176464          MOV     CSR,CSRA
                001414  104403  000000' 002124'          MSGN$,BEGIN,EBITC       ;ASCII MESSAGE CALL WITH COMMON HEADER
                001422  012767  000025  176456          MOV     #25,ERRTYP              ;BIT STUCK
                                                        ;*******************************************************************
                001430  104405  000000' 000000          HRDER$,BEGIN,NULL       ;INTERRUPT ENABLE BIT IS NOT CLEARING
                                                        ;*******************************************************************
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                                                ;THIS TEST WILL CHECK ALL ADDRESSES WITH MBIT SET
                                                
001436  112777  000040  176570  14$:  MOVB    #40,@CSR                ;SET MBIT
001444  016702  176574                MOV     BASE,R2
001450  005000                        CLR     R0
001452  005001                        CLR     R1
                                                                        ; ** -1 **                      ;RS001
001454  112201                15$:    MOVB    (R2)+,R1                ;READ ADDRESS 171000+R0 AND
001456  042701  177400                BIC     #177400,R1
                                                                        ;LOAD CONTENTS INTO R1
                                                
001462  020001                        CMP     R0,R1                   ;R1 SHOULD BE EQUAL R2
001464  001416                        BEQ     16$                     ;YES
001466  010067  176414                MOV     R0,ASB                  ;NO, SAVE GOOD DATA
001472  010167  176412                MOV     R1,AWAS                 ;    SAVE BAD DATA
001476  016767  176542  176376        MOV     BASE,ACSR               ;    SAVE ADDRESS
001504  150067  176372                BISB    R0,ACSR
001510  016767  176520  176362        MOV     CSR,CSRA
                                                ;*************************************************************
001516  104404  000000'               DATER$,BEGIN            ;DATA ERROR!!!
                                                ;*************************************************************
001522  005200                16$:    INC     R0                      ;GO TO NEXT ADDRESS
001524  122700  000376                CMPB    #376,R0                 ;IS IT LAST ONE
001530  001351                        BNE     15$                     ;NO, DO IT AGAIN

                                                ;THIS TEST CHECKS MAINTENANCE INTERRUPT
                                                ;IF MBIT & EBIT ARE SET 10CM GENERATES
                                                ;INTERRUPT AT ADDRESS 234 AND IAR HAS
                                                ;UPPER BYTE OF CSR ADDRESS (377)

001532  012777  001666'  176250  17$:  MOV     #20$,@VECTOR            ;SET INTERRUPT VECTOR
001540  016767  176244  176500        MOV     VECTOR,VECT2            ;SET VECTOR + 2
001546  062767  000002  176472        ADD     #2,VECT2
001554  116777  176232  176464        MOVB    BR1,@VECT2              ;SET PRIORITY LEVEL ON INTERRUPT
001562  005067  176452                CLR     INTFLG                  ;CLEAR INTERRUPT FLAG
001566  012767  000005  176432        MOV     #5,TEMP1                ;SET COUNT FOR TIMEOUT
001574  152777  000140  176432        BISB    #140,@CSR               ;ENABLE INTERRUPT

001602                        18$:
001602  104407  000000'               BREAK$,BEGIN            ;TEMPORARY RETURN TO MONITOR....
001606  104407  000000'               BREAK$,BEGIN            ;THEN CONTINUE AT NEXT INSTRUCTION.

001612  005767  176422                TST     INTFLG                  ;INTERRUPT OCCURR?
001616  001031                        BNE     21$                     ;YES, 21$
001620  005367  176402                DEC     TEMP1                   ;NO, IS IT TIMEOUT
001624  001366                        BNE     18$                     ;NO, LOOP TO BREAK

001626  117767  176402  176246        MOVB    @CSR,ACSR
001634  016767  176374  176236        MOV     CSR,CSRA
001642  104403  000000'  002130'       MSGN$,BEGIN,NOINT       ;ASCII MESSAGE CALL WITH COMMON HEADER
001650  012767  000023  176230        MOV     #23,ERRTYP              ;NO INTERRUPT
                                                ;*************************************************************
001656  104405  000000'  000000       HRDER$,BEGIN,NULL       ;NO INTERRUPT
                                                ;*************************************************************

001664  000444                        BR      22$
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```
356 001666  142777  000100  176340  20$:    BICB    #100,@CSR               ;CLEAR INTERRUPT ENABLE
357 001674  00526   176340                  INC     INTFLG                  ;GET INTERRUPT FLAG
358 001700  000002                          RTI
359
360 001702  152777  000001  176324  21$:    BISB    #1,@CSR                 ;SET RIF BIT
361 001710  117700  176322                  MOVB    @IAR,R0                 ;CHECK IF IAR = 377
362 001714  122700  000377                  CMPB    #377,R0
363 001720  001426                          BEQ     22$                     ;YES, GO TO END
364 001722  110067  176162                  MOVB    R0,AWAS                 ;NO, SAVE BAD DATA
365 001726  012767  000377  176152          MOV     #377,ASB                ;    SAVE GOOD DATA
366 001734  117767  176276  176140          MOVB    @IAR,ACSR               ;    SAVE ADDRESS
367 001742  016767  176270  176130          MOV     IAR,CSRA
368 001750  104403  000000' 002134'         MSGN$,BEGIN,IARERR      ;ASCII MESSAGE CALL WITH COMMON HEADER
369 001756  012767  000001  176122          MOV     #1,ERRTYP               ;DATA ERROR
370                                          ;*************************************************************
    001764  104405  000000' 000000          HRDER$,BEGIN,NULL       ;WRONG DATA IN IAR AFTER INTERRUPT
                                             ;*************************************************************
371                                          ;*************************************************************
    001772  104404  000000'                 DATER$,BEGIN            ;DATA ERROR!!!
                                             ;*************************************************************
372
373 001776  012703  000041          22$:    MOV     #11.*3.,R3              ;SET UP WAIT LOOP
374 002002  152777  000002  176224          BISB    #2,@CSR                 ;CLEAR CSR
375 002010  000240                  60$:    NOP                             ;WAIT
376 002012  005303                          DEC     R3
377 002014  001375                          BNE     60$                     ;WAIT SOME MORE
378 002016  012703  000036                  MOV     #10.*3.,R3              ;SET UP ANOTHER LOOP
379 002022  152777  000002  176200          BISB    #2,@CSR                 ;CLEAR AGAIN
380 002030  000240                  65$:    NOP
381 002032  005303                          DEC     R3
382 002034  001375                          BNE     65$
383 002036                          23$:
    002036  104413  000000'                 ENDIT$,BEGIN            ;SIGNAL END OF ITERATION.
                                             ;MONITOR SHALL TEST END OF PASS
384 002042  000167  176230                  JMP     RESTRT
385 002046                          FINI:
    002046  104410  000000'                 END$,BEGIN              ;
386
387                                 .EVEN
388
389 002052  002140'                 RIFNOT: MES1
390 002054  177777                          177777
391
392
393 002056  002167'                 RIFCLR: MES2
394 002060  177777                          177777
395
396 002062  002217'                 GBITS:  MES3
397 002064  177777                          177777
398
399 002066  002257'                 GBITC:  MES4
400 002070  177777                          177777
401
402 002072  002320'                 OBITS:  MES5
403 002074  177777                          177777
404
405 002076  002344'                 TBITS:  MES6
```

DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

```
    406 002100  177777                          177777
    407
    408 002102  002370'                 TBITC:  MES7
    409 002104  177777                          177777
    410
    411 002106  002415'                 DBITC:  MES8
    412
    413 002110  002442'                 MBITS:  MES9
    414 002112  177777                          177777
    415
    416 002114  002466'                 MBITC:  MES10
    417 002116  177777                          177777
    418
    419 002120  002513'                 EBITS:  MES11
    420 002122  177777                          177777
    421
    422 002124  002557'                 EBITC:  MES12
    423 002126  177777                          177777
    424
    425 002130  002624'                 NOINT:  MES13
    426 002132  177777                          177777
    427
    428 002134  002662'                 IARERR: MES14
    429 002136  177777                          177777
    430
    431 002140      122     111     106 MES1:   .ASCIZ  "RIF BIT IS NOT SETTING"
        002143      040     102     111
        002146      124     040     111
        002151      123     040     116
        002154      117     124     040
        002157      123     105     124
        002162      124     111     116
        002165      107     000
    432 002167      122     111     106 MES2:   .ASCIZ  "RIF BIT IS NOT CLEARING"
        002172      040     102     111
        002175      124     040     111
        002200      123     040     116
        002203      117     124     040
        002206      103     114     105
        002211      101     122     111
        002214      116     107     000
    433 002217      107     105     116 MES3:   .ASCIZ  "GENERIC CODE BIT IS NOT SETTING"
        002222      105             111
        002225      103             103
        002230      117     104     105
        002233      040     102     111
        002236      124     040     111
        002241      123     040     116
        002244      117     124     040
        002247      123     105     124
        002252      124     111     116
        002255      107     000
    434 002257      107     105     116 MES4:   .ASCIZ  "GENERIC CODE BIT IS NOT CLEARING"
        002262      105     122     111
        002265      103     040     103
        002270      117     104     105
        002273      040     102     111
```

DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

```
        002276      124     040     111
        002301      123     040     116
        002304      117     124     040
        002307      103     114     105
        002312      101     122     111
        002315      116     107     000
435     002320      104     102     111  MES5:    .ASCIZ  "DBIT IS NOT SETTING"
        002323      124     040     111
        002326      123     040     116
        002331      117     124     040
        002334      123     105     124
        002337      124     111     116
        002342      107     000
436     002344      124     102     111  MES6:    .ASCIZ  "TBIT IS NOT SETTING"
        002347      124     040     111
        002352      123     040     116
        002355      117     124     040
        002360      123     105     124
        002363      124     111     116
        002366      107     000
437     002370      124     102     111  MES7:    .ASCIZ  "TBIT IS NOT CLEARING"
        002373      124     040     111
        002376      123     040     116
        002401      117     124     040
        002404      103     114     105
        002407      101     122     111
        002412      116     107     000
438     002415      104     102     111  MES8:    .ASCIZ  "DBIT IS NOT CLEARING"
        002420      124     040     111
        002423      123     040     116
        002426      117     124     040
        002431      103     114     105
        002434      101     122     111
        002437      116     107     000
439     002442      115     102     111  MES9:    .ASCIZ  "MBIT IS NOT SETTING"
        002445      124     040     111
        002450      123     040     116
        002453      117     124     040
        002456      123     105     124
        002461      124     111     116
        002464      107     000
440     002466      115     102     111  MES10:   .ASCIZ  "MBIT IS NOT CLEARING"
        002471      124     040     111
        002474      123     040     116
        002477      117     124     040
        002502      103     114     105
        002505      111     122     111
        002510      116     107     000
441     002513      111     116     124  MES11:   .ASCIZ  "INTERRUPT ENABLE BIT IS NOT SETTING"
        002516      105     122     122
        002521      125     120     124
        002524      040     105     116
        002527      101     102     114
        002532      105     040     102
        002535      111     124     040
        002540      111     123     040
        002543      116     117     124
```

```
        002546      040     123     105
        002551      124     124     111
        002554      116     107     000
    442 002557      111     116     124  MES12:  .ASCIZ  "INTERRUPT ENABLE BIT IS NOT CLEARING"
        002562      105     122     122
        002565      125     120     124
        002570      040     105     116
        002573      101     102     114
        002576      105     040     102
        002601      111     124     040
        002604      111     123     040
        002607      116     117     124
        002612      040     103     114
        002615      105     101     122
        002620      111     116     107
        002623      000
    443 002624      116     117     040  MES13:  .ASCIZ  "NO MAINTENANCE MODE INTERRUPT"
        002627      115     101     111
        002632      116     124     105
        002635      116     101     116
        002640      103     105     040
        002643      115     117     104
        002646      105     040     111
        002651      116     124     105
        002654      122     122     125
        002657      120     124     000
    444 002662      127     122     117  MES14:  .ASCIZ  "WRONG DATA IN IAR AFTER INTERRUPT"
        002665      116     107     040
        002670      104     101     124
        002673      101     040     111
        002676      116     040     111
        002701      101     122     040
        002704      101     106     124
        002707      105     122     040
        002712      111     116     124
        002715      105     122     122
        002720      125     120     124
        002723      000
    445
    446                                      .EVEN
    447
    448         000001                       .END
```

SYMBOL TABLE

```
ACSR    000102R     CLKSP$= 104422      KTPRES= 000400      PDPLSI= 020000      SBADR   000102R
ADDR    000006R     CNT     000242R     KTXTND= 040000      PDP44 = 100000      SOFCNT  000042R
ADDR22= 001000      CONFIG  000056R     MAP22$= 104416      PDP60 = 004000      SOFER$= 104406
APTPRE= 000200      CSR     000234R     MBITC   002114R     PDP70 = 010000      SOFPAS  000046R
ASB     000106R     CSRA    000100R     MBITS   002110R     PIRQ$ = 000004      SPOINT  000032R
ASTAT   000104R     DATCK$= 104411      MES1    002140R     POPSP = 005726      SPSIZ = 000040
AUTO  = 000010      DATER$= 104404      MES10   002466R     POPSP2= 022626      SR1     000016R
AWAS    000110R     DBITC   002106R     MES11   002513R     PRHMS$= 000002      SR2     000020R
BASE    000244R     DBITS   002072R     MES12   002557R     PRTY  = 000000      SR3     000022R
BEGIN   000000R     DVID1   000014R     MES13   002624R     PRTY0 = 000000      SR4     000024R
BIT0  = 000001      EBITC   002124R     MES14   002662R     PRTY1 = 000040      START   000250R
BIT1  = 000002      EBITS   002120R     MES2    002167R     PRTY2 = 000100      STAT    000026R
BIT10 = 002000      ECCMEM= 000100      MES3    002217R     PRTY3 = 000140      SVR0    000062R
BIT11 = 004000      ENDIT$= 104413      MES4    002257R     PRTY4 = 000200      SVR1    000064R
BIT12 = 010000      END$  = 104410      MES5    002320R     PRTY5 = 000240      SVR2    000066R
BIT13 = 020000      ERRTYP  000106R     MES6    002344R     PRTY6 = 000300      SVR3    000070R
BIT14 = 040000      EXIT$ = 104400      MES7    002370R     PRTY7 = 000340      SVR4    000072R
BIT15 = 100000      FINI    002046R     MES8    002415R     PS    = 177776      SVR5    000074R
BIT2  = 000004      GBITC   002066R     MES9    002442R     PSW   = 177776      SVR6    000076R
BIT3  = 000010      GBITS   002062R     MODNAM  000000R     PUSH  = 005746      SYSCNT  000052R
BIT4  = 000020      GETPA$= 104415      MODREV  000224R     PUSH2 = 024646      TBITC   002102R
BIT5  = 000040      GWBUF$= 104414      MODSP   000224R     PWRFLG= 000002      TBITS   002076R
BIT6  = 000100      HRDCNT  000044R     MSGN$ = 104403      QMON22= 000010      TEMP1   000226R
BIT7  = 000200      HRDER$= 104405      MSGS$ = 104402      RAND$ = 104417      TEMP2   000230R
BIT8  = 000400      HRDPAS  000050R     MSG$  = 104407      RANNUM  000054R     TEMP3   000232R
BIT9  = 001000      IAR     000236R     NCPUOP= 000020      RESTRT  000276R     TRPDFD= 000023
BREAK$= 104407      IARERR  002134R     NOAPTY= 000002      RES1    000056R     USTACK= 000001
BR1     000012R     ICONT   000036R     NOINT   002130R     RES2    000060R     VECTOR  000010R
BR2     000013R     ICOUNT  000040R     NULL  = 000000      RH70  = 001000      VECT2   000246R
BTOD$ = 104421      IDNUM   000122R     OPEN  = 000000      RIFCLR  002056R     WASADR  000104R
CAPRES= 000004      INDPAR= 000040      OTOA$ = 104420      RIFNOT  002052R     WDFR    000116R
CDATA$= 104412      INIT    000030R     PARPRE= 002000      RSTRT   000112R     WDTO    000114R
CKHNG$= 000001      INTFLG  000240R     PASCNT  000054R     R6    =%000006      XFLAG   000005R
CLKPRE= 000001      INTR    000120R     PDPF11= 000002      R7    =%000007

. ABS.  000000      000
        002724      001
ERRORS DETECTED:  0

VIRTUAL MEMORY USED:  13203 WORDS  ( 52 PAGES)
DYNAMIC MEMORY:  19748 WORDS  ( 75 PAGES)
ELAPSED TIME:  00:00:44
XPCSCO,XPCSCO/CR/-SP=DDXCOM,XPCSCO
```

C2

SEQ 0015

SYMBOL CROSS REFERENCE CREF V01

SYMBOL	VALUE	REFERENCES								
ACSR	000102 R	#3-135	#4-195	#4-204	#4-213	#4-222	#4-231	#4-240	#4-249	#4-263
		#4-272	#4-281	#4-290	#4-299	#4-320	#4-321	#4-348	#4-366	
ADDR	000006 R	#3-135	4-167							
ADDR22	= 001000	#3-135								
APTPRE	= 000200	#3-135								
ASB	000106 R	#3-135	#4-187	#4-318	#4-365					
ASTAT	000104 R	#3-135								
AUTO	= 000010	#3-135								
AWAS	000110 R	#3-135	#4-186	#4-319	#4-364					
BASE	000244 R	#3-156	#4-172	4-308	4-320					
BEGIN	000000 R	#3-135	4-189	4-197	4-200	4-206	4-208	4-215	4-217	4-224
		4-226	4-233	4-235	4-242	4-244	4-251	4-253	4-265	4-267
		4-274	4-276	4-283	4-285	4-292	4-294	4-301	4-303	4-323
		4-341	4-341	4-350	4-352	4-368	4-370	4-371	4-383	4-385
BIT0	= 000001	#3-135								
BIT1	= 000002	#3-135								
BIT10	= 002000	#3-135								
BIT11	= 004000	#3-135								
BIT12	= 010000	#3-135								
BIT13	= 020000	#3-135								
BIT14	= 040000	#3-135								
BIT15	= 100000	#3-135								
BIT2	= 000004	#3-135								
BIT3	= 000010	#3-135								
BIT4	= 000020	#3-135								
BIT5	= 000040	#3-135								
BIT6	= 000100	#3-135								
BIT7	= 000200	#3-135								
BIT8	= 000400	#3-135								
BIT9	= 001000	#3-135								
BREAK$	= 104407	#3-135	4-341	4-341						
BR1	000012 R	#3-135	4-336							
BR2	000013 R	#3-135								
BTOD$	= 104421	#3-135								
CAPRES	= 000004	#3-135								
CDATA$	= 104412	#3-135								
CKHNG$	= 000001	#3-135								
CLKPRE	= 000001	#3-135								
CLKSP$	= 104422	#3-135								
CNT	000242 R	#3-155	#4-166							
CONFIG	000056 R	#3-135								
CSR	000234 R	#3-152	#4-170	4-175	4-180	4-184	4-186	4-192	4-193	4-195
		4-196	4-202	4-204	4-205	4-210	4-211	4-213	4-214	4-219
		4-220	4-222	4-223	4-228	4-229	4-231	4-232	4-237	4-238
		4-240	4-241	4-246	4-247	4-249	4-250	4-256	4-260	4-263
		4-264	4-269	4-270	4-272	4-273	4-278	4-279	4-281	4-282
		4-287	4-288	4-290	4-291	4-296	4-297	4-299	4-300	4-301
		4-322	4-339	4-348	4-349	4-356	4-360	4-374	4-379	
CSRA	000100 R	#3-135	#4-196	#4-205	#4-214	#4-223	#4-232	#4-241	#4-250	#4-264
		#4-273	#4-282	#4-291	#4-300	#4-322	#4-349	#4-367		
DATCK$	= 104411	#3-135								
DATER$	= 104404	#3-135	4-189	4-323	4-371					

SYMBOL CROSS REFERENCE CREF V01

SYMBOL	VALUE	REFERENCES							
DBITC	002106 R	4-265	#4-411						
DBITS	002072 R	4-233	#4-402						
DVID1	000014 R	#3-135							
EBITC	002124 R	4-301	#4-422						
EBITS	002120 R	4-292	#4-419						
ECCMEM	= 000100	#3-135							
ENDIT$	= 104413	#3-135	4-383						
END$	= 104410	#3-135	4-385						
ERRTYP	000106 R	#3-135	*4-199	*4-207	*4-216	*4-225	*4-234	*4-243	*4-252	*4-266
		*4-275	*4-284	*4-293	*4-302	*4-351	*4-369			
EXIT$	= 104400	#3-135							
FINI	002046 R	#4-385							
GBITC	002066 R	4-224	#4-399						
GBITS	002062 R	4-215	#4-396						
GETPA$	= 104415	#3-135							
GWBUF$	= 104414	#3-135							
HRDCNT	000044 R	#3-135							
HRDER$	= 104405	#3-135	4-200	4-208	4-217	4-226	4-235	4-244	4-253	4-267
		4-276	4-285	4-294	4-303	4-352	4-370			
HRDFAS	000050 R	#3-135							
IAR	000236 R	#3-153	*4-168	4-361	4-366	4-367			
IARERR	002134 R	4-368	#4-428						
ICONT	000036 R	#3-135							
ICOUNT	000040 R	#3-135							
IDNUM	000122 R	#3-135							
INDPAR	= 000040	#3-135							
INIT	000030 R	#3-135							
INTFLG	000240 R	#3-154	*4-337	4-343	*4-357				
INTR	000120 R	#3-135	*4-163						
KTPRES	= 000400	#3-135							
KTXTND	= 040000	#3-135							
MAP22$	= 104416	#3-135							
MBITC	002114 R	4-283	#4-416						
MBITS	002110 R	4-274	#4-413						
MES1	002140 R	4-389	#4-431						
MES10	002466 R	4-416	#4-440						
MES11	002513 R	4-419	#4-441						
MES12	002557 R	4-422	#4-442						
MES13	002624 R	4-425	#4-443						
MES14	002662 R	4-428	#4-444						
MES2	002167 R	4-393	#4-432						
MES3	002217 R	4-396	#4-433						
MES4	002257 R	4-399	#4-434						
MES5	002320 R	4-402	#4-435						
MES6	002344 R	4-405	#4-436						
MES7	002370 R	4-408	#4-437						
MES8	002415 R	4-411	#4-438						
MES9	002442 R	4-413	#4-439						
MODNAM	000000 R	#3-135							
MODREV	000224 R	#3 145							
MODSP	000224 R	3 155	#3-135						
MSGN$	= 104403	#3-135	4-197	4-206	4-215	4-224	4-233	4-242	4-251	4-265

E2

SYMBOL CROSS REFERENCE CREF V01

SYMBOL	VALUE	REFERENCES								
		4-274	4-283	4-292	4-301	4-350	4-368			
MSGS$	= 104402	#3-135								
MSG$	= 104401	#3-135								
NCPUOP	= 000020	#3-135								
NOAPTY	= 000002	#3-135								
NOINT	002130 R	4-350	#4-425							
NULL	= 000000	#3-135	4-200	4-208	4-217	4-226	4-235	4-244	4-253	4-267
		4-276	4-285	4-294	4-303	4-352	4-370			
OPEN	= 000000	3-135	3-135	3-135	3-135	3-135	3-135	3-135	3-135	3-135
		3-135	3-135	3-135	3-135	3-135	3-135	3-135	3-135	3-135
		3-135	3-135	#3-135						
OTOA$	= 104420	#3-135								
PARPRE	= 002000	#3-135								
PASCNT	000034 R	#3-135								
PDPF11	= 000002	#3-135								
PDPL5I	= 020000	#3-135								
PDP44	= 100000	#3-135								
PDP60	= 004000	#3-135								
PDP70	= 010000	#3-135								
PIRQ$	= 000004	#3-135								
POPSP	= 005726	#3-135								
POPSP2	= 022626	#3-135								
PRHMS$	= 000002	#3-135								
PRTY	= 000000	#3-135								
PRTY0	= 000000	3-135	3-135	#3-135						
PRTY1	= 000040	#3-135								
PRTY2	= 000100	#3-135								
PRTY3	= 000140	#3-135								
PRTY4	= 000200	#3-135								
PRTY5	= 000240	#3-135								
PRTY6	= 000300	#3-135								
PRTY7	= 000340	#3-135								
PS	= 177776	#3-135								
PSW	= 177776	#3-135								
PUSH	= 005746	#3-135								
PUSH2	= 024646	#3-135								
PWRFLG	= 000002	#3-135								
QMON22	= 000010	#3-135								
RAND$	= 104417	#3-135								
RANNUM	000054 R	#3-135								
RESTRT	000276 R	3-135	#4-167	4-384						
RES1	000056 R	#3-135								
RES2	000060 R	#3-135								
RH70	= 001000	#3-135								
RIFCLR	002056 R	4-206	#4-393							
RIFNOT	002052 R	4-197	#4-389							
RSTRT	000112 R	#3-135								
R6	=%000006	#3-135								
R7	=%000007	#3-135								
SBADR	000102 R	#3-135								
SOFCNT	000042 R	#3-135								
SOFER$	= 104406	#3-135								

F2

SYMBOL CROSS REFERENCE CREF V01 SEQ 0018

SYMBOL VALUE REFERENCES

SOFPAS 000046 R #3-135
SPOINT 000032 R #3-135
SPSIZ = 000040 #1-29 3-135
SR1 000016 R #3-135
SR2 000020 R #3-135
SR3 000022 R #3-135
SR4 000024 R #3-135
START 000250 R 3-135 #4-163
STAT 000026 R #3-135
SVR0 000062 R #3-135
SVR1 000064 R #3-135
SVR2 000066 R #3-135
SVR3 000070 R #3-135
SVR4 000072 R #3-135
SVR5 000074 R #3-135
SVR6 000076 R #3-135
SYSCNT 000052 R #3-135
TBITC 002102 R 4-251 #4-408
TBITS 002076 R 4-242 #4-405
TEMP1 000226 R #3-149 *4-338 *4-345
TEMP2 000230 R #3-150
TEMP3 000232 R #3-151
TRPDFD = 000023 #3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135 3-135 3-135 #3-135 3-135 3-135
#3-135 3-135 3-135 #3-135
USTACK = 000001 #3-135
VECTOR 000010 R #3-135 4-333 4-334
VECT2 000246 R #3-157 *4-334 *4-335 4-336
WASADR 000104 R #3-135
WDFR 000116 R #3-135 *4-165
WDTO 000114 R #3-135 *4-164
XFLAG 000005 R #3-135

MACRO CROSS REFERENCE CREF V01

MACRO NAME	REFERENCES								
BKMOD	#1-125								
BREAK	#1-223	4-341							
BTOD	#1-247								
CKDATA	#1-283								
CLKSP	#1-150								
DATACK	#1-292								
DATERR	#1-176	4-189	4-323	4-371					
DFSEVN	#1-315	3-135	3-135	3-135	3-135	3-135	3-135	3-135	3-135
	3-135	3-135	3-135						
DSEVNT	#1-325	3-135	3-135	3-135	3-135	3-135	3-135	3-135	
END	#1-213	4-385							
ENDIT	#1-204	4-383							
ENDMOD	#1-209								
EQUATS	#1-331	3-135							
EXIT	#1-158								
GETPA	#1-274								
GWBUFF	#1-262								
HLFBRK	#1-228								
HRDER	#1-166	4-200	4-208	4-217	4-226	4-235	4-244	4-253	4-267	4-276
	4-285	4-294	4-303	4-352	4-370				
IOMOD	#1-121	3-135							
IOMODP	#1-145								
IOMODR	#1-141								
IOMODX	#1-137								
MAP22	#1-278								
MODULE	#1-30	3-135							
MSG	#1-192								
MSGN	#1-196	4-197	4-206	4-215	4-224	4-233	4-242	4-251	4-265	4-274
	4-283	4-292	4-301	4-350	4-368				
MSGS	#1-200								
NBKMOD	#1-133								
OTOA	#1-233								
PIRQ	#1-217								
RAND	#1-162								
SBKMOD	#1-129								
SOFER	#1-182								

PCSC DEC/X11 SYSTEM B1
....C1
....D1
....E1
....F1
....G1
....H1
....I1
....J1
....K1
....L1
....M1
....N1

....B2
....C2
....D2
....E2
....F2
....G2