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1
2
          .REM _
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IDENTIFICATION

PRODUCT CODE: AC-E664G-MC

PRODUCT NAME: CXCPAG0 PROCESSOR TST

PRODUCT DATE: SEPTEMBER 1978

MAINTAINER: DEC/X11 SUPPORT GROUP

1. ABSTRACT:

CPA IS A BKMOD THAT EXERCISES THE PROCESSOR, IT IS A STRAIGHT LINE INSTUCTION TEST THAT TESTS ALL OF THE BASIC PDP 11 INSTUCTION SET EXCEPT TRAPS. IT DOES NOT TEST ANY OF THE ADDITIONAL INSTUCTIONS AVAILABLE WITH AN 11/40 OR 11/45 PROCESSOR.

2. REQUIREMENTS:

HARDWARE: ANY PDP 11 PROCESSOR
STORAGE:: CPA REQUIRES:
1. DECIMAL WORDS: 473
2. OCTAL WORDS: 0731
3. OCTAL BYTES: 1662

3. PASS DEFINITION:

ONE PASS OF THE CPA MODULE CONSISTS OF EXECUTING EACH SUBTEST 30000 TIMES.

4. EXECUTION TIME:

CPA RUNNING ALONE ON A PDP 11/05 PROCESSOR TAKES APPROXIMATELY ONE MINUTE.

5. CONFIGURATION REQUIREMENTS:

NONE.

6. DEVICE/OPTION SETUP:

NONE.

7.MODULE OPERATION:

TEST SEQUENCE:
BRANCH INSTRUCTIONS
UNARY WORD OPS, MODES 3&5
UNARY BYTE OPS, MODES 3&5
BINARY WORD OPS, MODES 3&5
BINARY BYTE OPS, MODES 3&5
JMP INSTUCTION
JSR INSTUCTION

8. OPERATION OPTIONS:

NONE.

9. NON-STANDARD PRINTOUTS:

NONE

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000000'                 BKMOD   <CPAG >,0,0,0,0,0,7500,1
000000'                 MODULE  40020,CPAG ,0,0,0,0,0,7500,1
                        .TITLE  CPAG DEC/X11 SYSTEM EXERCISER MODULE
                ;       DDXCOM  VERSION  6       23-MAY-78
                                .LIST   BIN
                                ;*****************************************************************************
000000'                         BEGIN:
000000' 050103  043501      040 MODNAM: .ASCII  /CPAG / ;MODULE NAME.
000005'     000                 XFLAG:  .BYTE   0PEN        ;USED TO KEEP TRACK OF WBUFF USAGE
000006' 000000                  ADDR:   0+0                 ;1ST DEVICE ADDR.
000010' 000000                  VECTOR: 0+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' 040020                  STAT:   40020               ;STATUS WORD.
000030' 000224'                 INIT:   START               ;MODULE START ADDR.
000032' 000224'                 SPOINT: MODSP               ;MODULE STACK POINTER.
000034' 000000                  PASCNT: 0                   ;PASS COUNTER.
000036' 007500                  ICONT:  7500                ;# OF ITERATIONS PER PASS=7500
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.
000106'                         ERRTYP:                     ;TYPE OF ERROR
000106' 000000                  ASB:    OPEN                ;EXPECTED DATA.
000110' 000000                  AWAS:   OPEN                ;ACTUAL DATA.
000112' 000224'                 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' 000001                  IDNUM:  1                   ;MODULE IDENTIFICATION NUMBER=1
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```
                000040                  .REPT   SPSIZ          ;MODULE STACK STARTS HERE.
                                        .NLIST
                                        .WORD   0
                                        .LIST
                                        .ENDR
000224'                                 MODSP:
                                        ;*****************************************************************************
                                        ;CHECK BRANCH INSTRUCTIONS
000224'                                 START:
000224' 000257                          RESTRT: CCC
000226' 103407                                  BCS     CC0
000230' 102406                                  BVS     CC0
000232' 001405                                  BEQ     CC0
000234' 100404                                  BMI     CC0
000236' 002403                                  BLT     CC0
000240' 003402                                  BLE     CC0
000242' 101401                                  BLOS    CC0
000244' 101003                                  BHI     CON1
000246'                                 CC0:
                                        ;***************************************************************
000246' 104405  000000' 000000                  $RDERR$,BEGIN,NULL      ;
                                        ;***************************************************************
                                        ;CONTINUE
000254' 000262                          CON1:   SEV                     ;CC'S=1010
000256' 000270                                  SEN
000260' 102003                                  BVC     CC2
000262' 002402                                  BLT     CC2
000264' 003401                                  BLE     CC2
000266' 002003                                  BGE     CON3
000270'                                 CC2:
                                        ;***************************************************************
000270' 104405  000000' 000000                  $RDERR$,BEGIN,NULL      ;
                                        ;***************************************************************
                                        ;CONTINUE
000276' 000264                          CON3:   SEZ                     ;CC'S=1111
000300' 000261                                  SEC
000302' 001003                                  BNE     CC4
000304' 003002                                  BGT     CC4
000306' 101001                                  BHI     CC4
000310' 003403                                  BLE     YT15
000312'                                 CC4:
                                        ;***************************************************************
000312' 104405  000000' 000000                  $RDERR$,BEGIN,NULL      ;
                                        ;***************************************************************
                                        ;CHECK UNARY WORD OPS USING ADDRESS MODES 3 AND 5
000320' 000402                          YT15:   BR      1$
000322' 000000                                  .WORD   0
000324' 000000                                  .WORD   0
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000326' 010703                  1$:     MOV     PC,R3
000330' 162703  000004                  SUB     #4,R3
000334' 005013                          CLR     (R3)
000336' 010300                          MOV     R3,R0
000340' 005743                          TST     -(R3)
000342' 010013                          MOV     R0,(R3)
000344' 010304                          MOV     R3,R4
000346' 000257                          CCC
000350' 005733                          TST     @(R3)+          ;(R0)=000000,CC=0100
000352' 001403                          BEQ     2$
                                        ;*****************************************************************
000354' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000362' 000261                  2$:     SEC
000364' 006053                          ROR     @-(R3)          ;(R0)=100000,CC=1010
000366' 103402                          BCS     ROR5
000370' 102001                          BVC     ROR5
000372' 100403                          BMI     RD
000374'                         ROR5:
                                        ;*****************************************************************
000374' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000402' 000257                  RD:     CCC
000404' 006234                          ASR     @(R4)+          ;(R0)=140000,CC=1010
000406' 102001                          BVC     ASR3
000410' 100403                          BMI     RD1
000412'                         ASR3:
                                        ;*****************************************************************
000412' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000420' 000250                  RD1:    CLN
000422' 006333                          ASL     @(R3)+          ;(R0)=100000,CC=1001
000424' 103002                          BCC     ASL3
000426' 102401                          BVS     ASL3
000430' 100403                          BMI     RD2
000432'                         ASL3:
                                        ;*****************************************************************
000432' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000440' 000277                  RD2:    SCC
000442' 005354                          DEC     @-(R4)          ;(R0)=077777, CC=0010
000444' 103003                          BCC     DEC5
000446' 102002                          BVC     DEC5
000450' 001401                          BEQ     DEC5
000452' 100003                          BPL     RD3
000454'                         DEC5:
                                        ;*****************************************************************
000454' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000462' 005453                  RD3:    NEG     @-(R3)          ;(R0)=100001, CC=1001
000464' 103002                          BCC     NEG5
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000466' 102401                          BVS     NEG5
000470' 100403                          BMI     RD4
000472'                         NEG5:
                                        ;*****************************************************************
000472' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000500' 000262                  RD4:    SEV
000502' 005134                          COM     @(R4)+          ;(R0)=077776, CC=0001
000504' 103001                          BCC     COM3
000506' 102003                          BVC     RD5
000510'                         COM3:
                                        ;*****************************************************************
000510' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000516' 005233                  RD5:    INC     @(R3)+          ;(R0)=077777, CC=0001
000520' 103001                          BCC     INC3
000522' 100003                          BPL     RD6
000524'                         INC3:
                                        ;*****************************************************************
000524' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000532' 005554                  RD6:    ADC     @-(R4)          ;(R0)=100000, CC=1010
000534' 103402                          BCS     ADC5
000536' 102001                          BVC     ADC5
000540' 100403                          BMI     RD7
000542'                         ADC5:
                                        ;*****************************************************************
000542' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000550' 000257                  RD7:    CCC
000552' 006134                          ROL     @(R4)+          ;(R0)=000000,CC=0111
000554' 103002                          BCC     ROL3
000556' 102001                          BVC     ROL3
000560' 001403                          BEQ     RD8
000562'                         ROL3:
                                        ;*****************************************************************
000562' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

000570' 005253                  RD8:    INC     @-(R3)          ;(R0)=000001, CC=0001
000572' 005654                          SBC     @-(R4)          ;(R0)=000000, CC=0100
000574' 103401                          BCS     SBC5
000576' 001403                          BEQ     RD9
000600'                         SBC5:
                                        ;*****************************************************************
000600' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

                                ;CHECK UNARY BYTE OPS USING ADDRESS MODES 3 AND 5
000606' 000403                  RD9:    BR      1$              ;RESERVE 3 WORDS
000610' 000000                          .WORD   0               ;1 FOR EVEN BYTE ADDRESS
000612' 000000                          .WORD   0               ;1 FOR ODD BYTE ADDRESS
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```
000614' 000000                  .WORD   0               ;AND 1 FOR DATA
000616' 010702          1$:     MOV     PC,R2
000620' 005742                  TST     -(R2)           ;BACK R2 UP TO
000622' 005742                  TST     -(R2)           ;DATA WORD
000624' 010200                  MOV     R2,R0           ;R0 POINTS TO THE DATA WORD
000626' 005010                  CLR     (R0)            ;PRESET DATA
000630' 005742                  TST     -(R2)           ;BACK R2 UP TO
000632' 005742                  TST     -(R2)           ;EVEN BYTE ADDRESS WORD
000634' 010022                  MOV     R0,(R2)+        ;LOAD ADDRESS
000636' 005200                  INC     R0              ;ODD BYTE ADDRESS
000640' 010022                  MOV     R0,(R2)+        ;LOAD ODD BYTE ADDRESS
000642' 010200                  MOV     R2,R0           ;RESET R0
000644' 010205                  MOV     R2,R5

000646' 105152                  COMB    @-(R2)          ;(R0)=177400,CC=1001
000650' 103001                  BCC     COMB5
000652' 100403                  BMI     T5
000654'                 COMB5:
                        ;*****************************************************************
000654' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

000662' 105752          TB:     TSTB    @-(R2)          ;(R0)=177400, CC=0100
000664' 001403                  BEQ     1$
                        ;*****************************************************************
000666' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

000674' 000262          1$:     SEV
000676' 106255                  ASRB    @-(R5)          ;(R0)=177400, CC=1001
000700' 103002                  BCC     ASRB5
000702' 102401                  BVS     ASRB5
000704' 100403                  BMI     TB1
000706'                 ASRB5:
                        ;*****************************************************************
000706' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

000714' 105232          TB1:    INCB    @(R2)+          ;(R0)=177401, CC=000
000716' 103001                  BCC     INCB3
000720' 100003                  BPL     TB2
000722'                 INCB3:
                        ;*****************************************************************
000722' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

000730' 000241          TB2:    CLC
000732' 106055                  RORB    @-(R5)          ;(R0)=177400, CC=0111
000734' 103003                  BCC     RORB5
000736' 102002                  BVC     RORB5
000740' 001001                  BNE     RORB5
000742' 100003                  BPL     TB3
000744'                 RORB5:
                        ;*****************************************************************
000744' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************
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000752' 106332          TB3:    ASLB    @(R2)+          ;(R0)=177000, CC=1001
000754' 103002                  BCC     ASLB3
000756' 102401                  BVS     ASLB3
000760' 100403                  BMI     TB4
000762'                 ASLB3:
                        ;*****************************************************************
000762' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

000770' 105552          TB4:    ADCB    @-(R2)          ;(R0)=177400, CC=1000
000772' 103401                  BCS     ADCB5
000774' 100403                  BMI     TB5
000776'                 ADCB5:
                        ;*****************************************************************
000776' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

001004' 000277          TB5:    SCC
001006' 106135                  ROLB    @(R5)+          ;(R0)=177401, CC=0000
001010' 101402                  BLOS    ROLB3           ;BRANCH IF C OR Z IS SET
001012' 102401                  BVS     ROLB3
001014' 100003                  BPL     TB6
001016'                 ROLB3:
                        ;*****************************************************************
001016' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

001024' 000352          TB6:    SWAB    @-(R2)          ;(R0)=000777, CC=1000
001026' 100403                  BMI     1$
                        ;*****************************************************************
001030' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

001036' 000261          1$:     SEC
001040' 105635                  SBCB    @(R5)+          ;(R0)=000377, CC=0100
001042' 103401                  BCS     SBCB3
001044' 001403                  BEQ     TB7
001046'                 SBCB3:
                        ;*****************************************************************
001046' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************

001054' 105432          TB7:    NEGB    @(R2)+          ;(R0)=000001
001056' 105352                  DECB    @-(R2)          ;(R0)=000000, CC=0101
001060' 103001                  BCC     DECB5
001062' 001403                  BEQ     B1
001064'                 DECB5:
                        ;*****************************************************************
001064' 104405  000000' 000000  HRDERS,BEGIN,NULL       ;
                        ;*****************************************************************
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```
                                        ;CHECK BINARY WORD OPS USING ADDRESS MODES 3 & 5.
001072' 000404                  B1:     BR      1$              ;RESERVE SPACE FOR DATA AND ADDRESSES
001074' 000000                          .WORD   0               ;CONTAINS ADDRESS OF SOURCE DATA
001076' 000000                          .WORD   0               ;CONTAINS ADDRESS OF DEST DATA
001100' 000000                          .WORD   0               ;CONTAINS SOURCE DATA
001102' 000000                          .WORD   0               ;CONTAINS DEST DATA
001104' 010701                  1$:     MOV     PC,R1
001106' 010100                          MOV     R1,R0
001110' 024040                          CMP     -(R0),-(R0)     ;SET SCOPE PTR
001112' 010005                          MOV     R0,R5           ;ADJUST R0
001114' 024545                          CMP     -(R5),-(R5)     ;R5 POINTS TO DEST DATA
001116' 010015                          MOV     R0,(R5)         ;SUB 4 FROM R5
001120' 010502                          MOV     R5,R2           ;R5 POINTS TO ADDRESS OF DEST DATA
001122' 010004                          MOV     R0,R4           ;R4 POINTS TO DEST DATA
001124' 005740                          TST     -(R0)
001126' 010003                          MOV     R0,R3           ;R3 POINTS TO SOURCE DATA
001130' 010042                          MOV     R0,-(R2)        ;R2 POINTS TO ADDRESS OF SOURCE DATA
001132' 005013                          CLR     (R3)            ;PRESET SOURCE DATA
001134' 005014                          CLR     (R4)            ;PRESET DEST DATA

001136' 000277                          SCC
001140' 000244                          CLZ
001142' 163235                          SUB     @(R2)+,@(R5)+   ;(R3)=000000,(R4)=000000, CC=0100
001144' 103402                          BCS     SUB3
001146' 102401                          BVS     SUB3
001150' 001403                          BEQ     H3
001152'                         SUB3:
                                        ;*****************************************************************
001152' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

001160' 052752  100000          H3:     BIS     #100000,@-(R2)  ;(R3)=100000
001164' 062755  000001                  ADD     #1,@-(R5)       ;(R4)=000001
001170' 163235                          SUB     @(R2)+,@(R5)+   ;(R3)=100000,(R4)=100001, CC=1011
001172' 103002                          BCC     SUB3A
001174' 102001                          BVC     SUB3A
001176' 100403                          BMI     H4
001200'                         SUB3A:
                                        ;*****************************************************************
001200' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

001206' 005414                  H4:     NEG     (R4)            ;(R4)=077777
001210' 035255                          BIT     @-(R2),@-(R5)   ;(R3)=100000,(R4)=077777
001212' 001403                          BEQ     1$
                                        ;*****************************************************************
001214' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

001222' 023235                  1$:     CMP     @(R2)+,@(R5)+
001224' 102403                          BVS     2$
                                        ;*****************************************************************
001226' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************
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001234' 005152                  2S:     COM     @-(R2)
001236' 000257                          CCC
001240' 063255                          ADD     @(R2)+,@-(R5)
001242' 102001                          BVC     ADD3
001244' 100403                          BMI     H41
001246'                         ADD3:
                                        ;*****************************************************************
001246' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

001254' 000261                  H41:    SEC
001256' 043235                          BIC     @-(R2),@(R5)+   ;(R3)=077777,(R4)=100000
001260' 103001                          BCC     BIC3
001262' 100403                          BMI     H5
001264'                         BIC3:
                                        ;*****************************************************************
001264' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************

001272' 005155                  H5:     COM     @-(R5)          ;(R4)=077777
001274' 023235                          CMP     @(R2)+,@(R5)+   ;(R3)=077777,(R4)=077777
001276' 001403                          BEQ     H6
                                        ;*****************************************************************
001300' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                        ;*****************************************************************


                                        ;CHECK BINARY BYTE OPS USING ADDRESS MODES 3 & 5.
001306' 000406                  H6:     BR      1$              ;RESERVE SPACE FOR ADDRESSES & DATA
001310' 000000                          .WORD   0               ;CONTAINS ADDRESS OF SOURCE DATA (EVEN BYTE)
001312' 000000                          .WORD   0               ;CONTAINS ADDRESS OF SOURCE DATA (ODD BYTE)
001314' 000000                          .WORD   0               ;CONTAINS ADDRESS OF DEST DATA (EVEN BYTE)
001316' 000000                          .WORD   0               ;CONTAINS ADDRESS OF DEST DATA (ODD BYTE)
001320' 000000                          .WORD   0               ;CONTAINS SOURCE DATA
001322' 000000                          .WORD   0               ;CONTAINS DEST DATA

001324' 010700                  1$:     MOV     PC,R0
001326' 024040                          CMP     -(R0),-(R0)     ;R0=ADDRESS OF DEST DATA
001330' 010003                          MOV     R0,R3           ;R3     "       "
001332' 010305                          MOV     R3,R5           ;R5     "       "
001334' 005743                          TST     -(R3)           ;SUB 2 FROM R3
001336' 010043                          MOV     R0,-(R3)        ;R3 POINTS TO ADDRESS OF DEST DATA
001340' 005213                          INC     (R3)            ;ODD BYTE
001342' 010043                          MOV     R0,-(R3)        ;EVEN BYTE
001344' 010304                          MOV     R3,R4
001346' 005740                          TST     -(R0)           ;R0=ADDRESS OF SOURCE DATA
001350' 010044                          MOV     R0,-(R4)        ;R4 POINTS TO ADDRESS OF SOURCE DATA
001352' 005214                          INC     (R4)            ;ODD BYTE
001354' 010044                          MOV     R0,-(R4)        ;EVEN BYTE

001356' 000261                          SEC                     ;SET CARRY
001360' 012734  177001                  MOV     #177001,@(R4)+
001364' 112734  000200                  MOVB    #200,@(R4)+     ;SOURCE DATA=100001
001370' 115433                          MOVB    @-(R4),@(R3)+
001372' 115433                          MOVB    @-(R4),@(R3)+   ;DEST DATA=000600
001374' 103403                          BCS     2$
                                        ;*****************************************************************
001376' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
```

```
                                        ;*****************************************************************
001404' 022715  000600          2$:     CMP     #600,(R5)       ;CHECK DEST DATA
001410' 001403                          BEQ     3$
                                        ;*****************************************************************
001412' 104405  000000' 000000          ;ORDER$,BEGIN,NULL      ;
                                        ;*****************************************************************
001420' 024343                  3$:     CMP     -(R3),-(R3)     ;POINT R4 BACK TO EVEN BYTE
001422' 153433                          BISB    @(R4)+,@(R3)+
001424' 153433                          BISB    @(R4)+,@(R3)+   ;DEST DATA=100601
001426' 022715  100601                  CMP     #100601,(R5)    ;CHECK RESULT
001432' 001403                          BEQ     4$
                                        ;*****************************************************************
001434' 104405  000000' 000000          ;ORDER$,BEGIN,NULL      ;
                                        ;*****************************************************************
001442' 145453                  4$:     BICB    @-(R4),@-(R3)
001444' 145453                          BICB    @-(R4),@-(R3)
001446' 133433                          BITB    @(R4)+,@(R3)+
001450' 001002                          BNE     BITB3
001452' 135433                          BITB    @-(R4),@(R3)+
001454' 001003                          BNE     H7
001456'                         BITB3:
                                        ;*****************************************************************
001456' 104405  000000' 000000          ;ORDER$,BEGIN,NULL      ;
                                        ;*****************************************************************
001464' 123453                  H7:     CMPB    @(R4)+,@-(R3)
001466' 001002                          BNE     CMPB3
001470' 123453                          CMPB    @(R4)+,@-(R3)
001472' 001403                          BEQ     JP1
001474'                         CMPB3:
                                        ;*****************************************************************
001474' 104405  000000' 000000          ;ORDER$,BEGIN,NULL      ;
                                        ;*****************************************************************
```

```
                                ;CHECK JMP INSTRUCTIONS
001502' 010700                  JP1:    MOV     PC,R0
001504' 062700  000012                  ADD     #12,R0          ;SET ADDRESS FOR JMP INST
001510' 000277                          SCC                     ;SET CC'S
001512' 000110                          JMP     (R0)
001514' 000402                  2$:     BR      3$
001516' 000250                          CLN                     ;JMP INST JUMPS HERE
001520' 000775                          BR      2$

001522' 103003                  3$:     BCC     JMP1
001524' 102002                          BVC     JMP1
001526' 001001                          BNE     JMP1
001530' 100003                          BPL     K2
001532'                         JMP1:
                                ;*****************************************************************
001532' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                ;*****************************************************************


001540' 005002                  K2:     CLR     R2              ;SET INDICATOR
001542' 010704                          MOV     PC,R4           ;SET UP JMP REGISTER
001544' 010400                          MOV     R4,R0           ;SET UP CHECK REGISTER
001546' 000402                          BR      1$
001550' 005102                          COM     R2              ;COMPLEMENT INDICATOR
001552' 000403                          BR      2$
001554' 022424                  1$:     CMP     (R4)+,(R4)+
001556' 005724                          TST     (R4)+           ;R4=JMP ADDRESS
001560' 000144                          JMP     -(R4)           ;USE R4 AS ADDRESS
001562' 005202                  2$:     INC     R2              ;CHECK INDICATOR
001564' 001003                          BNE     JMP4
001566' 022020                          CMP     (R0)+,(R0)+
001570' 020004                          CMP     R0,R4           ;CHECK AUTO-DEC R4
001572' 001403                          BEQ     JSRTST
001574'                         JMP4:
                                ;*****************************************************************
001574' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                ;*****************************************************************


                                ;CHECK JSR INSTRUCTIONS
001602' 012702  001624'         JSRTST: MOV     #3$,R2          ;FORM DEST ADRS
001606' 000277                          SCC                     ;PRESET CC'S
001610' 000242                          CLV
001612' 004512                          JSR     R5,(R2)         ;GO TO 3$ VIA R2
001614' 005702                  1$:     TST     R2              ;CHECK INDICATOR
001616' 001012                          BNE     JSR1            ;R2 SHOULD=0
001620' 000414                          BR      EX
001622' 000205                  2$:     RTS     R5              ;RETURN FROM SUBROUTINE
001624' 103007                  3$:     BCC     JSR1            ;CHECK THAT JSR DID NOT
001626' 102406                          BVS     JSR1
001630' 001005                          BNE     JSR1            ;AFFECT CC'S
001632' 100004                          BPL     JSR1
001634' 005002                          CLR     R2              ;CLEAR INDICATOR
```



```
001636' 012704  001614'                 MOV     #1$,R4          ;GET  RETURN ADDRESS
001642' 000767                          BR      2$
001644'                         JSR1:
                                ;*****************************************************************
001644' 104405  000000' 000000          HRDERS,BEGIN,NULL       ;
                                ;*****************************************************************


001652'                         EX:
001652' 104413  000000'                 ENDITS,BEGIN            ;SIGNAL END OF ITERATION.
                                                                ;MONITOR SHALL TEST END OF PASS

001656' 000167  176342          ST:     JMP     RESTRT

        000001                          .END
```

```
ACSR    000102R  146#
ADCB5   000776R  392   394#
ADC5    000542R  294   295   297#
ADDR    000006R  112#
ADDR22= 001000   164#
ADD3    001246R  492   494#
ASR     000106R  150#
ASLB3   000762R  383   384   386#
ASL3    000432R  248   249   251#
ASRB5   000706R  355   356   358#
ASR3    000412R  239   241#
ASTAT   000104R  148#
AWAS    000110R  151#
BEGIN   000000R  109#  177   190   203   224   234   243   253   264   273   282   290   299
                 309   318   344   350   360   368   379   388   396   406   412   421   430
                 464   475   482   487   496   504   511   544   549   557   567   576   601
                 621   643   647
BIC3    001264R  500   502#
BITB3   001456R  562   565#
BIT0  = 000001   164#
BIT1  = 000002   164#
BIT10 = 002000   164#
BIT11 = 004000   164#
BIT12 = 010000   164#
BIT13 = 020000   164#
BIT14 = 040000   164#
BIT15 = 100000   164#
BIT2  = 000004   164#
BIT3  = 000010   164#
BIT4  = 000020   164#
BIT5  = 000040   164#
BIT6  = 000100   164#
BIT7  = 000200   164#
BIT8  = 000400   164#
BIT9  = 001000   164#
BREAKS= 104407   164#
BR1     000012R  114#
BR2     000013R  115#
BTOOS = 104421   164#
B1      001072R  427   437#
CC0     000246R  167   168   169   170   171   172   173   175#
CC2     000270R  184   185   186   188#
CC4     000312R  197   198   199   201#
CDATAS= 104412   164#
CMPB3   001474R  571   574#
COMB5   000654R  340   342#
COM3    000510R  278   280#
CONFIG  000056R  134#
CON1    000254R  172   182#
CON3    000276R  187   195#
CSRA    000100R  144#
DATCKS= 104411   164#
DATERS= 104404   164#
DECB5   001064R  426   428#
DEC5    000454R  258   259   260   262#
DVID1   000014R  116#
```



```
ENDITS= 104413   164#  647
END$  = 104410   164#
ERRTYP  001052R  149#
EX      001652R  632   646#
EXITS = 104400   164#
GETPAS= 104415   164#
GWBUFS= 104414   164#
HRDCNT  000044R  129#
HRDERS= 104405   164#  177   190   203   224   234   243   253   264   273   282   290   299
                 309   318   344   350   360   368   379   388   396   406   412   421   430
                 464   475   482   487   496   504   511   544   549   557   567   576   601
                 621   643
HRDPAS  000050R  131#
H3      001160R  461   467#
H4      001206R  472   478#
H41     001254R  493   498#
H5      001272R  501   507#
H6      001306R  509   515#
H7      001464R  564   570#
ICONT   000036R  126#
ICOUNT  000040R  127#
IDNUM   000122R  156#
INCB3   000722R  364   366#
INC3    000524R  286   288#
INIT    000030R  123#
INTR    000120R  155#
JMP1    001532R  595   596   597   599#
JMP4    001574R  615   619#
JP1     001502R  573   587#
JSRTST  001602R  618   626#
JSR1    001644R  631   634   635   636   637   641#
K2      001540R  599   605#
MAP22S= 104416   164#
MODNAM  000000R  110#
MODSP   000224R  124   162#
MSGN$ = 104403   164#
MSGS$ = 104402   164#
MSGS  = 104401   164#
NRG5    000472R  268   269   271#
NULL  = 000000   164#  177   190   203   224   234   243   253   264   273   282   290   299
                 309   318   344   350   360   368   379   388   396   406   412   421   430
                 464   475   482   487   496   504   511   544   549   557   567   576   601
                 621   643
OPEN  = 000000   111   117   118   119   120   137   138   139   140   141   142   143   144
                 146   148   150   151   153   154   155   164#
OTOA$ = 104420   164#
PASCNT  000034R  125#
PTRQS = 000004   164#
POPSP = 005726   164#
POPSP2= 022626   164#
PRTY  = 000000   164#
PRTY0 = 000000   114   115   164#
PRTY1 = 000040   164#
PRTY2 = 000100   164#
PRTY3 = 000140   164#
PRTY4 = 000200   164#
```

```
PRTY5 = 000240            164#
PRTY6 = 000300            164#
PRTY7 = 000340            164#
PS    = 177776            164#
PSW   = 177776            164#
PUSH  = 005746            164#
PUSH2 = 024646            164#
RAND$ = 104417            164#
RANNUM  000054R           133#
RD      000402R           231     237#
RD1     000420R           240     246#
RD2     000440R           250     256#
RD3     000462R           261     267#
RD4     000500R           270     276#
RD5     000516R           279     285#
RD6     000532R           287     293#
RD7     000550R           296     302#
RD8     000570R           306     312#
RD9     000606R           315     322#
RESTRT  000224R           152     166#    649
RES1    000056R           135#
RES2    000060R           136#
ROLR3   001016R           401     402     404#
ROL3    000562R           304     305     307#
RORR5   000744R           373     374     375     377#
ROR5    000374R           229     230     232#
RSTRT   000112R           152#
SRADR   000102R           145#
SRCR3   001046R           417     419#
SRC5    000600R           314     316#
SOFCNT  000042R           126#
SOFERS= 104406            164#
SOFPAS  000046R           130#
SPDINT  000032R           124#
SPSIZ =   000040            1#    157
SR1     000016R           117#
SR2     000020R           118#
SR3     000022R           119#
SR4     000024R           120#
ST      001656R           649#
START   000224R           123     165#
STAT    000026R           122#
SUB3    001152R           459     460     462#
SUB3A   001200R           470     471     473#
SVR0    000062R           137#
SVR1    000064R           138#
SVR2    000066R           139#
SVR3    000070R           140#
SVR4    000072R           141#
SVR5    000074R           142#
SVR6    000076R           143#
SYSCNT  000052R           132#
TE      000662R           341     347#
TE1     000714R           357     363#
TE2     000730R           365     371#
TE3     000752R           376     382#
```



```
TE4     000770R           385     391#
TE5     001004R           393     399#
TE6     001024R           403     409#
TE7     001054R           418     424#
TRPDFD= 000022            164#
VECTOR  000010R           113#
WASADP  000104R           147#
WDFR    000116R           154#
WDTO    000114R           153#
XFLAG   000005R           111#
YTI5    000320R           200     210#

. ABS.  000000      000
        001662      001

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

 XCPAG0,XCPAG0/SOL/CRF:SYM=DDXCOM,XCPAG0
 RUN-TIME:  1  2  .3 SECONDS
 RUN-TIME RATIO: 12/4=3.0
 CORE USED:  7K  (13 PAGES)
```