```
                        .REM %

                                IDENTIFICATION
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                        PRODUCT CODE:           AC-F542A-MC

                        PRODUCT NAME:           CXBMIA0 BOOT ROM MODULE

                        PROGRAM DATE:           MAY 1979

                        MAINTAINER:             DEC/X11 SUPPORT GROUP
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                1. ABSTRACT

                        BMI IS A BKMOD THAT DOES A READ CRC AND
                        LPC CHECK ON THE ROM SELECTED BY SR1.


                2. REQUIREMENTS

                        HARDWARE: ANY PDP-11 WITH A ROM.
                        STORAGE : BMI REQUIRES
                                        1. DECIMAL WORDS: 417
                                        2. OCTAL WORDS  :641
                                        3. OCTAL BYTES  :1502


                3. PASS DEFINITION

                        ONE PASS CONSISTS OF DOING A CRC AND LPC CHECK ON
                        THE ROM 3000(8) TIMES.


                4. EXECUTION TIME

                        BMI RUNNING ALONE TAKES APPROXIMATELY ONE MINUTE
                        45 SECONDS.


                5. CONFIGURATION REQUIREMENTS

                        SR1 IS USED TO SELECTTHE VERSION OF THE ROM BOOTSTRAP TO BE TESTED
                        ACCORDING TO THE FOLLOWING TABLE. NOTE: THESE SETTINGS ARE
                        OCTAL NUMBERS, THEY ARE NOT PARTICULAR SWITCHES SET TO A
                        ONE. FOR EXAMPLE, TO SELECT THE M9301-YH VERSION, SET
                        SWITCHES #3 AND #1 IN SR1.THIS CORRESPONDS TO AN OCTAL 12.

                                SWR     MODULE VERSION
                                ---     --------------

                                1       M9301-YA
                                2       M9301-YB
                                3       M9301-YC
                                4       M9400-YA (OR YC)
                                5       M9301-YF
                                6       M7942-YB
                                7       M9301-YD
                                10      M9400-YH (OR YK)
                                11      M9311
                                12      M9301-YH
                                13      M9301-YE
                                14      M9301-YJ
                                15      M9400-YN
                                16      UNUSED
```

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                        6. DEVICE/OPTION SETUP

                                NONE


                        7. MODULE OPERATION

                                READS EACH ROM LOCATION AND CALCULATES A CRC WORD
                                AND LPC WORD FOR THE SELECTED ROM. IT COMPARES BOTH
                                WORDS AGAINST THE EXPECTED VALUE THAT IS GETS FROM
                                THE TABLE.


                        8. OPERATING OPTIONS

                                NONE


                        9. NON-STANDARD PRINTOUTS

                                NONE



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                                    PKMOD   <BMIA >,,,,,,300,13
                                            MODULE  40020,BMIA ,,,,,,300,13
                                            .TITLE  BMIA DEC/X11 SYSTEM EXERCISER MODULE
                                    ;       DDXCOM  VERSION  6      23-MAY-78
                                            .LIST   BIN
                                    ;*****************************************************************
                                    BEGIN:
000000' 046502  040511      040     MODNAM: .ASCII  /BMIA / ;MODULE NAME.
000005'     000                     XFLAG:  .BYTE   OPEN            ;USED TO KEEP TRACK OF WBUFF USAGE
000006' 000000                      ADDR:   +0              ;1ST DEVICE ADDR.
000010' 000000                      VECTOR: +0                      ;1ST DEVICE VECTOR.
000012'     000                     BR1:    .BYTE   PRTY+0          ;1ST BR LEVEL.
000013'     000                     BR2:    .BYTE   PRTY+0          ;2ND BR LEVEL.
000014' 000001                      DVID1:  +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' 000252'                     INIT:   START                   ;MODULE START ADDR.
000032' 000224'                     SPOINT: MODSP                   ;MODULE STACK POINTER.
000034' 000000                      PASCNT: 0                       ;PASS COUNTER.
000036' 000300                      ICONT:  300                     ;# OF ITERATIONS PER PASS=300
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' 000252'                     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' 000013                      IDNUM:  13                      ;MODULE IDENTIFICATION NUMBER=13
        000040                              .REPT   SPSIZ           ;MODULE STACK STARTS HERE.
```



```
                                            .NLIST
                                            .WORD   0
                                            .LIST
                                            .ENDR
000224'                             MODSP:
                                    ;*****************************************************************
000224' 173000                      ROMSA1: 173000
000226' 001000                      DATLN1: 512.
000230' 165000                      ROMSA2: 165000
000232' 001000                      DATLN2: 512.
000234' 000000                      XORS:   0
000236' 000000                      EXCRC:  0
000240' 000000                      EXLPC:  0
000242' 000000                      ACTCRC: 0
000244' 000000                      ACTLPC: 0
000246' 000000                      PARCNT: 0
000250' 000000                      TYPOUT: 0

000252'                             START:
000252'                             RESTRT:
000252' 016700  177540              1$:     MOV     SR1,R0                  ;GET SR1
000256' 001005                              BNE     ST2
000260' 104403  000000' 001442'             MSGN$,BEGIN,ADR ;ASCII MESSAGE CALL WITH COMMON HEADER
000266' 104410  000000'                     END$,BEGIN                      ;
000272' 006300                      ST2:    ASL     R0
000274' 016067  001142' 177736              MOV     TXLPC(R0),EXLPC         ;FETCH EXPECT. LPC
000302' 016067  001074' 177726              MOV     TXCRC(R0),EXCRC         ;FETCH EXPECTED CRC
000310' 016067  001212' 177710              MOV     TDLN1(R0),DATLN1        ;FETCH 1ST LENGTH
000316' 016067  001260' 177700              MOV     TRMSA1(R0),ROMSA1       ;FETCH 1ST STARTING ADDR.
000324' 016067  001326' 177700              MOV     TDLN2(R0),DATLN2        ;FETCH 2ND LENGTH
000332' 016067  001374' 177670              MOV     TRMSA2(R0),ROMSA2       ;FETCH 2ND STARTING ADDR
000340' 005067  177676              1$:     CLR     ACTCRC                  ;CLEAR STORAGE FOR ACTUAL CRC
000344' 005067  177674                      CLR     ACTLPC                  ;CLEAR STORAGE FOR ACTULAL LPC
000350' 016700  177652                      MOV     DATLN1,R0               ;SET LENGTH OF 1ST ROM SPACE
000354' 001413                              BEQ     CH0                     ;IF NO VERSION SELECTED:  BR
000356' 016701  177642                      MOV     ROMSA1,R1               ;POINT TO START OF 1ST ROM SPACE
000362' 004767  000200                      JSR     PC,CRC                  ;COMPUTE FIRST HALF OF CRC
000366' 016701  177632                      MOV     ROMSA1,R1               ;POINT TO START OF 1ST ROM ADDRS.
000372' 016700  177630                      MOV     DATLN1,R0               ;SET LENGTH OF 1ST ROM ADDRS.
000376' 006200                              ASR     R0                      ;CONVERT TO WORDS
000400' 004767  000432                      JSR     PC,LPC                  ;COMPUTE FIRST HALF OF CRC
000404' 016701  177620              CH0:    MOV     ROMSA2,R1               ;POINT TO 2ND ROM ADDRS.
000410' 016700  177616                      MOV     DATLN2,R0               ;SET LENGTH OF 2ND ROM ADDRS.
000414' 001411                              BEQ     CH1                     ;BR IF THIS SPACE NOT USED
000416' 004767  000144                      JSR     PC,CRC                  ;COMPUTE REMAINDER OF CRC
000422' 016701  177602                      MOV     ROMSA2,R1               ;POINT TO START OF 2ND ROM ADDRS.
000426' 016700  177600                      MOV     DATLN2,R0               ;SET LENGTH OF 2ND ROM ADDRS.
000432' 006200                              ASR     R0                      ;CONVERT TO WORDS
000434' 004767  000376                      JSR     PC,LPC                  ;COMPUTE REMAINDER OF LPC
000440' 026767  177572  177574      CH1:    CMP     EXCRC,ACTCRC            ;COMPUTED = EXPECTED ?
000446' 001420                              BEQ     CK1                     ;IF SO:  BR
000450' 016767  177550  177424              MOV     ROMSA1,ACSR
000456' 016767  177542  177416              MOV     ROMSA1,SBADR
000464' 005067  177414                      CLR     WASADR
000470' 016767  177542  177410              MOV     EXCRC,ASB
000476' 016767  177540  177404              MOV     ACTCRC,AWAS
```

```
                                        ;*****************************************************************
                                        DATER$,BEGIN            ;DATA ERROR!!!
                                        ;*****************************************************************
554
(1)  000504' 104404  000000'
(1)
555
556  000510' 026767  177530  177522  CK1:   CMP     ACTLPC,EXLPC            ;COMPARE EXPT. LPC=ACTUAL LPC
557  000516' 001420                         BEQ     PASS                    ;IF SO:  BR
558  000520' 016767  177500  177354         MOV     ROMSA1,ACSR
559  000526' 016767  177472  177346         MOV     ROMSA1,SBADR
560  000534' 005067  177344                 CLR     WASADR
561  000540' 016767  177474  177340         MOV     EXLPC,ASB
562  000546' 016767  177472  177334         MOV     ACTLPC,AWAS
                                        ;*****************************************************************
                                        DATER$,BEGIN            ;DATA ERROR!!!
                                        ;*****************************************************************
563
(1)  000554' 104404  000000'
(1)
564
565  000560'                        PASS:
(1)  000560' 104413  000000'           ENDIT$,BEGIN            ;SIGNAL END OF ITERATION,
                                                               ;MONITOR SHALL TEST END OF PASS
(1)
566  000564' 000632                    BR      RESTPT
567
568  000566' 016767  177450  177440  CRC:   MOV     ACTCRC,XORS
569  000574' 111104                 CL0:   MOVB    (R1),R4                 ;GET CHAR.
570  000576' 022701  173024                 CMP     #173024,R1              ;LOCATION EFFECTED BY SWITCHES
571  000602' 001004                         BNE     CL3                     ;IF NOT:  BR
572  000604' 005300                         DEC     R0                      ;FIX COUNTERS
573  000606' 005300                         DEC     R0
574  000610' 005721                         TST     (R1)+                   ;FIX POINTER
575  000612' 000770                         BR      CL0                     ;CONTINUE
576  000614' 004767  000114         CL3:   JSR     PC,PARITY               ;GO GET PARITY
577  000620' 004767  000166                 JSR     PC,XOR                  ;XOR CHAR
578  000624' 000241                         CLC
579  000626' 006004                         ROR     R4                      ;ROTATE 1 POS. RIGHT
580  000630' 103014                         BCC     CL2                     ;IF NO CARRY: BR
581  000632' 052704  000400                 BIS     #400,R4                 ;SET BIT NINE
582  000636' 000241                         CLC
583  000640' 010405                 CL1:   MOV     R4,R5                   ;SAVE CHAR
584  000642' 042705  177703                 BIC     #177703,R5
585  000646' 005105                         COM     R5
586  000650' 042705  177703                 BIC     #177703,R5
587  000654' 042704  000074                 BIC     #74,R4
588  000660' 050504                         BIS     R5,R4
589  000662' 010467  177346         CL2:   MOV     R4,XORS
590  000666' 005300                         DEC     R0
591  000670' 001402                         BEQ     CLLAST                  ;IF LAST CAR.:  BR
592  000672' 000167  177676                 JMP     CL0                     ;GET NEXT CHAR.
593  000676' 016704  177332         CLLAST: MOV     XORS,R4
594  000702' 005167  177326                 COM     XORS
595  000706' 042767  177050  177320         BIC     #177050,XORS
596  000714' 042704  177727                 BIC     #177727,R4              ;COMPLEMENT ALL BUT BITS 3 & 5
597  000720' 050467  177310                 BIS     R4,XORS
598  000724' 016767  177304  177310         MOV     XORS,ACTCRC
599  000732' 000207                         RTS     PC
600  000734' 005067  177306         PARITY: CLR     PARCNT                  ;CLEAR BIT COUNTER
601  000740' 012703  000010                 MOV     #10,R3                  ;SET NO. OF BITS
602  000744' 032704  000001         CLP0:  BIT     #1,R4                   ;SEE IF ONE BIT
603  000750' 001402                         BEQ     CLP1                    ;IF NOT:  BR
```



```
604  000752' 005267  177270                 INC     PARCNT                  ;BUMP COUNTER
605  000756' 000241                 CLP1:  CLC
606  000760' 006004                         ROR     R4                      ;ROTATE TO NEXT BIT
607  000762' 005303                         DEC     R3
608  000764' 001367                         BNE     CLP0                    ;CONTINUE FOR ALL BITS
609  000766' 112104                         MOVB    (R1)+,R4
610  000770' 042704  177400                 BIC     #177400,R4
611  000774' 032767  000001  177244         BIT     #1,PARCNT               ;SEE IF ODD # OF ONE BITS
612  001002' 001002                         BNE     CLP2                    ;IF SO:  BR
613  001004' 052704  000400                 BIS     #400,R4                 ;SET PARITY BIT
614  001010' 000207                 CLP2:  RTS     PC                      ;EXIT
615
616  001012' 010446                 XOR:   MOV     R4,-(SP)                ;XOR SUBROUTINE: R4 WITH XORS
617  001014' 046716  177214                 BIC     XORS,(SP)
618  001020' 040467  177210                 BIC     R4,XORS
619  001024' 052667  177204                 BIS     (SP)+,XORS
620  001030' 016704  177200                 MOV     XORS,R4
621  001034' 000207                         RTS     PC
622
623  001036' 016767  177202  177170  LPC:   MOV     ACTLPC,XORS
624  001044' 012104                 LPC1:  MOV     (R1)+,R4
625  001046' 022701  173026                 CMP     #173026,R1              ;LOCATION EFFECTED BY SWITCHES
626  001052' 001402                         BEQ     LPC2                    ;IF SO:  SKIP LOC. BY BRANCHING
627  001054' 004767  177732                 JSR     PC,XOR
628  001060' 005300                 LPC2:  DEC     R0
629  001062' 001370                         BNE     LPC1
630  001064' 016767  177144  177152         MOV     XORS,ACTLPC
631  001072' 000207                         RTS     PC
632
633
634  001074' 177777                 TXCRC: =1              ;TABLE OF CRC VALUES
635  001076' 000571                         571             ;M9301 - YA VERSION
636  001100' 000457                         457             ;M9301 - YB VERSION
637  001102' 000243                         243             ;M9301 - YC VERSION
638  001104' 000635                         635             ;M9400 - YA(OR YC) VERSION
639  001106' 000207                         207             ;M9301 - YF VERSION
640  001110' 000670                         670             ;M7942 - YB VERSION
641  001112' 000132                         132             ;M9301- YD VERSION
642  001114' 000374                         374             ;M9400 - YH (OR YK) VERSION
643  001116' 000710                         710             ;M9311 VERSION
644  001120' 000536                         536             ;M9301 - YH VERSION
645  001122' 000752                         752             ;M9301 - YE VERSION
646  001124' 000633                         633             ;M9301 - YJ VERSION
647  001126' 000650                         650             ;M9400 - YN VERSION
648  001130' 177777                         =1
649  001132' 177777                         =1
650  001134' 177777                         =1
651  001136' 177777                         =1
652  001140' 177777                         =1
653
654  001142' 177777                 TXLPC: =1              ;TABLE OF LPC VALUES
655  001144' 133725                         133725          ;M9301 - YA VERSION
656  001146' 017563                         17563           ;M9301 - YB VERSION
657  001150' 141744                         141744          ;M9301 - YC VERSION
658  001152' 047613                         47613           ;M9400 - YA(OR YC) VERSION
659  001154' 114175                         114175          ;M9301 - YF VERSION
```

```
   660  001156' 146126                          146126          ;M7942 = YB VERSION
   661  001160' 132161                          132161          ;M9301 = YD VERSION
   662  001162' 143466                          143466          ;M9400 = YH(OR YK) VERSION
   663  001164' 036743                          036743          ;M9311 VERSION
   664  001166' 125411                          125411          ;M9301 = YH VERSION
   665  001170' 066246                          066246          ;M9301 = YE VERSION
   666  001172' 132367                          132367          ;M9301 = YJ VERSION
   667  001174' 030210                          30210           ;M9400 = YN VERSION
   668  001176' 177777                          -1
   669  001200' 177777                          -1
   670  001202' 177777                          -1
   671  001204' 177777                          -1
   672  001206' 177777                          -1
   673  001210' 177777                          -1
   674
   675  001212' 177777                  TDLN1:  -1              ;TABLE OF THE LENGTH (BYTES) OF 1ST ROM ADDRESS SPACE
   676  001214' 001000                          1000            ;M9301 = YA VERSION
   677  001216' 001000                          1000            ;M9301 = YB VERISION
   678  001220' 001000                          1000            ;M9301 = YC VERSION
   679  001222' 001000                          1000            ;M9400 = YA(OR YC) VERSION
   680  001224' 001000                          1000            ;M9301 = YF VERSION
   681  001226' 004000                          4000            ;M7942 = YB VERSION
   682  001230' 001000                          1000            ;M9301 = YD VERSION
   683  001232' 001000                          1000            ;M9400 = YH(OR YK) VERSION
   684  001234' 001000                          1000            ;M9311 VERSION
   685  001236' 000734                          734             ;M9301 = YH VERSION
   686  001240' 001000                          1000            ;M9301 = YE VERSION
   687  001242' 001000                          1000            ;M9301 = YJ VERSION
   688  001244' 001000                          1000            ;M9400 = YN VERSION
   689  001246' 177777                          -1
   690  001250' 177777                          -1
   691  001252' 177777                          -1
   692  001254' 177777                          -1
   693  001256' 177777                          -1
   694
   695  001260' 177777                  TRMSA1: -1              ;TABLE OF THE STARTING ADDRESS OF 1ST ROM SPACE
   696  001262' 173000                          173000          ;M9301 = YA VERSION
   697  001264' 173000                          173000          ;M9301 = YB VERSION
   698  001266' 173000                          173000          ;M9301 = YC VERSION
   699  001270' 173000                          173000          ;M9400 = YA(OR YC) VERSION
   700  001272' 173000                          173000          ;M9301 = YF VERSION
   701  001274' 170000                          170000          ;M7942 = YB VERSION
   702  001276' 173000                          173000          ;M9301 = YD VERSION
   703  001300' 173000                          173000          ;M9400 = YH(OR YK) VERSION
   704  001302' 163000                          163000          ;M9311 VERSION
   705  001304' 173000                          173000          ;M9301 = YH VERSION
   706  001306' 173000                          173000          ;M9301 = YE VERSION
   707  001310' 173000                          173000          ;M9301 = YJ VERSION
   708  001312' 173000                          173000          ;M9301 = YN VERSION
   709  001314' 177777                          -1
   710  001316' 177777                          -1
   711  001320' 177777                          -1
   712  001322' 177777                          -1
   713  001324' 177777                          -1
   714
   715  001326' 177777                  TDLN2:  -1              ;TABLE OF THE LENGTH (BYTES) OF 2ND ROM ADDRESS SPACE
```



```
   716  001330' 001000                          1000            ;M9301 = YA VERSION
   717  001332' 001000                          1000            ;M9301 = YB VERSION
   718  001334' 001000                          1000            ;M9301 = YC VERSION
   719  001336' 001000                          1000            ;M9400 =YA(OR YC) VERSION
   720  001340' 001000                          1000            ;M9301 =YF VERSION
   721  001342' 000000                          0               ;M7942 = YB VERSION
   722  001344' 001000                          1000            ;M9301 = YD VERSION
   723  001346' 001000                          1000            ;M9400 = YH(OR YK) VERSION
   724  001350' 001000                          1000            ;M9311 VERSION
   725  001352' 000764                          764             ;M9301 = YH VERSION
   726  001354' 001000                          1000            ;M9301 = YE VERSION
   727  001356' 001000                          1000            ;M9301 = YJ VERSION
   728  001360' 001000                          1000            ;M9400 = YN VERSION
   729  001362' 177777                          -1
   730  001364' 177777                          -1
   731  001366' 177777                          -1
   732  001370' 177777                          -1
   733  001372' 177777                          -1
   734
   735  001374' 177777                  TRMSA2: -1              ;TABLE OF THE STARTING ADDRESS OF 2ND ROM ADDRESS SPACE
   736  001376' 165000                          165000          ;M9301 = YA VERSION
   737  001400' 165000                          165000          ;M9301 = YB VERSION
   738  001402' 165000                          165000          ;M9301 = YC VERSION
   739  001404' 165000                          165000          ;M9400 = YA(OR YC) VERSION
   740  001406' 165000                          165000          ;M9301 = YF VERSION
   741  001410' 000000                          0               ;M7942 = YB VERSION
   742
   743  001412' 165000                          165000          ;M9301 = YD VERSION
   744  001414' 165000                          165000          ;M9400 = YH(OR YK) VERSION
   745  001416' 166000                          166000          ;M9311 VERSION
   746  001420' 165000                          165000          ;M9301 = YH VERSION
   747  001422' 165000                          165000          ;M9301 = YE VERSION
   748  001424' 165000                          165000          ;M9301 = YJ VERSION
   749  001426' 165000                          165000          ;M9400 = YN VERSION
   750  001430' 177777                          -1
   751  001432' 177777                          -1
   752  001434' 177777                          -1
   753  001436' 177777                          -1
   754  001440' 177777                          -1
   755
   756  001442' 001446'                 ADR:    MES1
   757  001444' 177777                          177777
   758  001446' 051445  030522  047040  MES1:   .ASCIZ  /%SR1 NOT SET TO SELECT ROM'/
        001454' 052117  051440  052105
        001462' 052040  020117  042523
        001470' 042514  052103  051040
        001476' 046517  000047
   759                                          .EVEN
   760          000001                  .END
```

```
AC5R    000102R     CDATA$= 104412     HRDPA5  000050R     PRTY3 = 000140     STAT    000026R
ACTCRC  000242R     CH0     000404R    ICONT   000036R     PRTY4 = 000200     ST2     000272R
ACTLPC  000244R     CH1     000440R    ICOUNT  000040R     PRTY5 = 000240     SVR0    000062R
ADDR    000006R     CK1     000510R    IDNUM   000122R     PRTY6 = 000300     SVR1    000064R
ADDR22= 001000      CLLAST  000676R    INIT    000030R     PRTY7 = 000340     SVR2    000066R
ADR     001442R     CLP0    000744P    INTR    000120R     PS    = 177776     SVR3    000070R
ASB     000106R     CLP1    000756P    LPC     001036R     PSW   = 177776     SVR4    000072R
ASTAT   000104R     CLP2    001010R    LPC1    001044R     PUSH  = 005746     SVR5    000074R
AWA5    000110R     CL0     000574R    LPC2    001060R     PUSH2 = 024646     SVR6    000076R
BEGIN   000000R     CL1     000640R    MAP22$= 104416     RAND$ = 104417     SY5CNT  000052R
BIT0  = 000001      CL2     000662R    ME51    001446R     RANNUM  000054R    TDLN1   001212R
BIT1  = 000002      CL3     000614R    MODNAM  000000R     RESTRT  000252R    TDLN2   001326R
BIT10 = 002000      CONFIG  000056R    MODSP   000224R     RE51    000056R    TRM5A1  001260R
BIT11 = 004000      CPC     000566R    MSGN$ = 104403     RE52    000060R    TRM5A2  001374R
BIT12 = 010000      CSRA    000100R    MSGS$ = 104402     ROM5A1  000224R    TRPDFD= 000022
BIT13 = 020000      DATCK$= 104411     MSG$  = 104401     ROM5A2  000230R    TXCRC   001074R
BIT14 = 040000      DATER$= 104404     NULL  = 000000     RSTRT   000112R    TXLPC   001142R
BIT15 = 100000      DATLN1  000226R    OPEN  = 000000     R6    =%000006     TYPOUT  000250R
BIT2  = 000004      DATLN2  000232R    OTOA$ = 104420     R7    =%000007     VECTOR  000010R
BIT3  = 000010      DVID1   000014R    PARCNT  000246R     5BADR   000102R    WA5ADR  000104R
BIT4  = 000020      ENDIT$= 104413     PARITY  000734R     5OFCNT  000042R    WDFR    000116R
BIT5  = 000040      END$  = 104410     PA5CNT  000034R     5OFER$= 104406     WDTO    000114R
BIT6  = 000100      ERRTYP  000106R    PA55    000560R     5OFPA5  000046R    XFLAG   000005R
BIT7  = 000200      EXCRC   000236R    PIRQ$ = 000004     5POINT  000032R    XOR     001012R
BIT8  = 000400      EXIT$ = 104400     POP5P = 005726     5P5IZ = 000040     XORS    000234R
BIT9  = 001000      EXLPC   000240R    POP5P2= 022626     5R1     000016R    .     = 001502R
BREAK$= 104407      GETPA$= 104415     PRTY  = 000000     5R2     000020R
BR1     000012R     GWBUF$= 104414     PRTY0 = 000000     5R3     000022R
BR2     000013R     HRDCNT  000044R    PRTY1 = 000040     5R4     000024R
BTOD$ = 104421      HRDER$= 104405     PRTY2 = 000100     5TART   000252R

. ABS.  000000  000
        001502  001
```

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

PACK:XBMIA0,PACK:XBMIA0=DDXCOM,PACK:XBMIA0
RUN-TIME:  3  4  .4 SECONDS
RUN-TIME RATIO:  47/8=5.4
CORE USED:  7K  (13 PAGES)
```