```
                              M  5
```

```
MMM         MMM     AAAAAAAAA        CCCCCCCCCCCC  RRRRRRRRRRRR        000000000
MMM         MMM     AAAAAAAAA        CCCCCCCCCCCC  RRRRRRRRRRRR        000000000
MMM         MMM     AAAAAAAAA        CCCCCCCCCCCC  RRRRRRRRRRRR        000000000
MMMMMM   MMMMMM  AAA         AAA  CCC              RRR         RRR  000         000
MMMMMM   MMMMMM  AAA         AAA  CCC              RRR         RRR  000         000
MMMMMM   MMMMMM  AAA         AAA  CCC              RRR         RRR  000         000
MMM   MMM   MMM  AAA         AAA  CCC              RRR         RRR  000         000
MMM   MMM   MMM  AAA         AAA  CCC              RRR         RRR  000         000
MMM   MMM   MMM  AAA         AAA  CCC              RRR         RRR  000         000
MMM         MMM  AAA         AAA  CCC              RRRRRRRRRRRR     000         000
MMM         MMM  AAA         AAA  CCC              RRRRRRRRRRRR     000         000
MMM         MMM  AAA         AAA  CCC              RRRRRRRRRRRR     000         000
MMM         MMM  AAAAAAAAAAAAAAA  CCC              RRR   RRR        000         000
MMM         MMM  AAAAAAAAAAAAAAA  CCC              RRR   RRR        000         000
MMM         MMM  AAAAAAAAAAAAAAA  CCC              RRR   RRR        000         000
MMM         MMM  AAA         AAA  CCC              RRR      RRR     000         000
MMM         MMM  AAA         AAA  CCC              RRR      RRR     000         000
MMM         MMM  AAA         AAA  CCC              RRR      RRR     000         000
MMM         MMM  AAA         AAA     CCCCCCCCCCCC  RRR         RRR     000000000
MMM         MMM  AAA         AAA     CCCCCCCCCCCC  RRR         RRR     000000000
MMM         MMM  AAA         AAA     CCCCCCCCCCCC  RRR         RRR     000000000
```

```
**FILE**ID**PARSER                                   G 6
```

```
PPPPPPPP      AAAAAA    RRRRRRRR      SSSSSSSS  EEEEEEEEEE  RRRRRRRR
PPPPPPPP      AAAAAA    RRRRRRRR      SSSSSSSS  EEEEEEEEEE  RRRRRRRR
PP      PP  AA      AA  RR      RR  SS          EE          RR      RR
PP      PP  AA      AA  RR      RR  SS          EE          RR      RR
PP      PP  AA      AA  RR      RR  SS          EE          RR      RR
PP      PP  AA      AA  RR      RR  SS          EE          RR      RR
PPPPPPPP    AA      AA  RRRRRRRR      SSSSSS    EEEEEEEE    RRRRRRRR
PPPPPPPP    AA      AA  RRRRRRRR      SSSSSS    EEEEEEEE    RRRRRRRR
PP          AAAAAAAAAA  RR  RR              SS  EE          RR  RR
PP          AAAAAAAAAA  RR  RR              SS  EE          RR  RR
PP          AA      AA  RR    RR            SS  EE          RR    RR        ....
PP          AA      AA  RR    RR            SS  EE          RR    RR        ....
PP          AA      AA  RR      RR  SSSSSSSS    EEEEEEEEEE  RR      RR      ....
PP          AA      AA  RR      RR  SSSSSSSS    EEEEEEEEEE  RR      RR      ....

LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0000            .TITLE  MAC$PARSER PARSER FOR VAX-11 MACRO
0000            .IDENT  'V04-000'
0000
0000     ;
0000     ;****************************************************************************
0000     ;*                                                                          *
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0000     ;*                                                                          *
0000     ;*                                                                          *
0000     ;****************************************************************************
0000     ;
0000
0000     ;++
0000     ; FACILITY:     VAX MACRO ASSEMBLER OBJECT LIBRARY
0000     ;
0000     ; ABSTRACT:
0000     ;
0000     ; The VAX-11 MACRO assembler translates MACRO-32 source code into object
0000     ; modules for input to the VAX-11 LINKER.
0000     ;
0000     ; ENVIRONMENT:  USER MODE
0000     ;
0000     ; AUTHOR: Benn Schreiber, CREATION DATE: 28-AUG-78
0000     ;
0000     ; MODIFIED BY:
0000     ;
0000     ;       V02.06  HJ0001          Herb Jacobs     14-Aug-1980
0000     ;               Performance improvement to parse driver loop.
0000     ;
0000     ;       V01.05  RN0023          R. Newland      3-Nov-1979
0000     ;               New message codes to get error messages from system
0000     ;               message file.
0000     ;
0000     ;       V01.04  RN0005          R. Newland      27-Aug-1979
0000     ;               Remove .ALIGN LONG statements and change L^ to W^.
0000     ;
0000     ;--
```

```
                    0000     55         .SBTTL  DECLARATIONS
                    0000     56 ;
                    0000     57 ; INCLUDE FILES:
                    0000     58 ;
                    0000     59
                    0000     60 ;
                    0000     61 ; MACROS:
                    0000     62 ;
                    0000     63
                    0000     64         $MAC_GENVALDEF                  ;DEFINE COMMON SYMBOLS
                    0000     65         $MAC_CTLFLGDEF                  ;DEFINE BIT FLAGS
                    0000     66         $MAC_INTCODDEF                  ;DEFINE INT. FILE ACTIONS
                    0000     67         $MACMSGDEF                      ; Define message codes
                    0000     68
                    0000     69 ;
                    0000     70 ; EQUATED SYMBOLS:
                    0000     71 ;
                    0000     72
          FFFFFFFD  0000     73 ELSE_CODE       =       -3              ;ELSE CODE
          FFFFFFFC  0000     74 CONT_CODE       =       -4              ;CONTINUE CODE
          0000270E  0000     75 SCAN_CODE       =       9998.           ;SCAN CODE
          0000270F  0000     76 ERR_CODE        =       9999.           ;ERROR CODE
          00000009  0000     77 ERR_MAX         =       9.              ;MAX ERROR CODE
                    0000     78
                    0000     79 ;
                    0000     80 ; OWN STORAGE:
                    0000     81 ;
                    0000     82
```

```
0000            .SBTTL  MAC$PARSE PARSE VAX-11 MACRO PROGRAM
0000
0000    ;++
0000    ; FUNCTIONAL DESCRIPTION:
0000    ;       THE PARSE ROUTINE PERFORMS THE FOLLOWING ACTIONS:
0000    ;
0000    ;       1) INITIALIZE VARIABLES
0000    ;
0000    ;       2) MAKE AN INITIAL CALL TO 'MAC$GETCHR' TO GET THE FIRST
0000    ;          CHARACTER (AND FIRST DATA RECORD)
0000    ;
0000    ;       3) MAKE AN INITIAL CALL TO 'MAC$TOKEN' TO DETERMINE THE
0000    ;          FIRST LEXICAL ITEM, AND TO CLASSIFY IT INTO ONE OF
0000    ;          THE LEXICAL CLASS.
0000    ;
0000    ;       4) IT THEN DETERMINES THE NEXT TRANSITION STATE BY USING
0000    ;          THE CURRENT STATE AS <J> THE INDEX INTO THE STATE TABLE
0000    ;          OF TRANSITIONS.
0000    ;
0000    ;       5) THE JTH TRANSITION STATE IS THEN COMPARED TO THE CLASS
0000    ;          OF THE TOKEN.  IF IT IS EQUAL TO THE <CLASS> OR IT IS
0000    ;          EQUAL TO THE <ELSE_CODE> THEN A 'MATCH' IS PERFORMED
0000    ;          AND THE SEQUENCE STARTS BACK AT 4).
0000    ;
0000    ;       6) IF THE <TRANSITION> DID NOT MATCH EITHER THE <ELSE_CODE>
0000    ;          OR THE <CLASS> THEN IF THE <TRANSITION> EQUALS THE
0000    ;          <CONT_CODE> THEN <J>, THE INDEX INTO THE <TRANSITION>
0000    ;          TABLE IS CHANGED TO BE THE JTH ITEM IN THE <ACTION>
0000    ;          TABLE.  IF IT DOES NOT EQUAL THE CONTINUE CODE <J> IS
0000    ;          SIMPLY INCREMENTED BY 1.
0000    ;
0000    ;       7) ACTION NOW CONTINUES AT 5).
0000    ;
0000    ;
0000    ; CALLING SEQUENCE:
0000    ;
0000    ;       JSB     MAC$PARSE
0000    ;
0000    ;
0000    ; INPUT PARAMETERS:
0000    ;
0000    ;       NONE
0000    ;
0000    ; IMPLICIT INPUTS:
0000    ;
0000    ;       NONE
0000    ;
0000    ; OUTPUT PARAMETERS:
0000    ;
0000    ;       NONE
0000    ;
0000    ; IMPLICIT OUTPUTS:
0000    ;
0000    ;       NONE
0000    ;
0000    ; COMPLETION CODES:
0000    ;
```

```
                          0000  ;       NONE
                          0000  ;
                          0000  ; SIDE EFFECTS:
                          0000  ;
                          0000  ;       NONE
                          0000  ;
                          0000  ; REGISTER USAGE:
                          0000  ;
                          0000  ;       R11     POINTER TO 'MAC$GL_FLAGS'
                          0000  ;       R10     CURRENT CHARACTER
                          0000  ;       R9      FRAME BUFFER POINTER
                          0000  ;       R8      TOKEN RETURNED FROM MAC$TOKEN AND SEMANTIC ROUTINES
                          0000  ;       R7      EXPRESSION STACK POINTER (0-100)
                          0000  ;       --------------------------------------------------------
                          0000  ;       REGISTERS R11-R7 MUST NOT BE ALTERED BY SEMANTIC ROUTINES.
                          0000  ;       REGISTERS R6-R0 ARE AVAILABLE FOR SEMANTIC ROUTINES TO USE
                          0000  ;       WITHOUT SAVING (SEE LRPTAB FOR A LIST OF SEMANITC ROUTINES).
                          0000  ;       IN ADDITION, ANY ROUTINES CALLED BY 'MAC$TOKEN' MAY ALTER
                          0000  ;       REGISTERS R0-R6.
                          0000  ;       --------------------------------------------------------
                          0000  ;       R6      TOKEN IN PASS 1
                          0000  ;       R5      POINTER INTO PARSE TABLES
                          0000  ;       R4      CURRENT PARSE STATE
                          0000  ;       R3      ACTION
                          0000  ;       R2-R0   SCRATCH
                          0000  ;
                          0000  ;--
                          0000
                          0000
                          0000
                      00000000          .PSECT  MAC$RO_CODE_P1,NOWRT,GBL,LONG
                          0000
                          0000  MAC$PARSE::
         00 6B    01  E3  0000          BBCS    #FLG$V_BOL,(R11),.+1     ;FLAG BEGINNING OF LINE
         00 6B    0F  E3  0004          BBCS    #FLG$V_SKAN,(R11),.+1    ;FLAG SCANNING PERMITTED
         00 6B    0D  E5  0008          BBCC    #FLG$V_OPRND,(R11),.+1   ;NOT IN OPERAND FIELD
         00 6B    20  E5  000C          BBCC    #FLG$V_CRSEEN,(R11),.+1  ;FLAG CR NOT SEEN YET FOR TOKEN
            5A    0D  9A  0010          MOVZBL  #CR,R10                  ;FORCE READING OF NEW LINE
               FFEA'  30  0013          BSBW    MAC$GETCHR               ;GET FIRST CHARACTER
                  57  D4  0016          CLRL    R7                       ;INIT PARSE STACK POINTER
                010F  30  0018          BSBW    MAC$TOKEN                ;GET FIRST TOKEN TYPE
                  54  D4  001B          CLRL    R4                       ;CLEAR CURRENT STATE
            56    58  D0  001D          MOVL    R8,R6                    ;SET CURRENT TOKEN CLASS
                          0020          .ENABL  LSB
                          0020  ;
                          0020  ; THIS CODE IS DEPENDENT ON THE SIZE OF THE ENTRIES IN THE SYMLST TABLE!
                          0020  ;
                          0020  PARSE_LOOP:
            55    54  D0  0020  10$:    MOVL    R4,R5                    ;COPY CURRENT STATE
  52   00000000'EF45  9E  0023  15$:    MOVAB   L^PAT$AB_SYMLST[R5],R2   ;GET ADDRESS OF STATE TABLE OFFSET
                  56  B5  002B          TSTW    R6                       ;ERROR PROCESSING TOKEN CLASS?
                  0D  12  002D          BNEQ    20$                      ;IF NE NO
            62    09  91  002F  18$:    CMPB    #ERR_MAX,(R2)            ;TOKEN CLASS ERROR?
                  2B  1E  0032          BGEQU   40$                      ;IF GTRU YES
         82    FC 8F  91  0034          CMPB    #CONT_CODE,(R2)+         ;TOKEN CLASS EQUAL ELSE OR CONTINUE?
                  F5  1A  0038          BGTRU   18$                      ;BRANCH IF NEITHER TO STILL SEARCH
                  0B  11  003A          BRB     25$                      ;PROCESS ELSE OR CONTINUE
```

```
                               003C
          56   62    91   003C      20$:    CMPB    (R2),R6                      ;STATE EQUAL TO TOKEN CLASS?
               1E    13   003F              BEQL    40$                          ;IF EQ YES
       82   FC 8F    91   0041              CMPB    #CONT_CODE,(R2)+             ;TOKEN CLASS EQUAL ELSE OR CONTINUE?
               F5    1A   0045              BGTRU   20$                          ;BRANCH IF NEITHER TO STILL SEARCH
               14    12   0047      25$:    BNEQ    41$                          ;BRANCH IF ELSE
   53    00000001'EF    9E   0049           MOVAB   L^PAT$AB_SYMLST+1,R3         ;GET ADDR OF START OF TABLE (FIX R2+1)
          52   53    C2   0050              SUBL    R3,R2                        ;FORM OFFSET INTO TABLE
  55   00000000'EF42    32   0053           CVTWL   L^PAT$AW_ACTION[R2],R5       ;GET CONTINUE LOCATION
               C6    11   005B              BRB     15$
                          005D      ;
                          005D      ; PERFORM MATCH
                          005D      ;
                          005D      ; THIS CODE IS DEPENDENT ON THE SIZE OF THE ENTRIES IN THE SYMLST TABLE!
                          005D      ;
               52    D7   005D      41$:    DECL    R2                           ;ADJUST R2, WE WENT 1 TO FAR
   53    00000000'EF    9E   005F   40$:    MOVAB   L^PAT$AB_SYMLST,R3           ;GET ADDRESS OF START OF TABLE
          52   53    C2   0066              SUBL    R3,R2                        ;FORM OFFSET INTO TABLE
  53   00000000'EF42    32   0069           CVTWL   L^PAT$AW_ACTION[R2],R3       ;GET ACTION TO PERFORM
       53   270F 8F    B1   0071            CMPW    #ERR_CODE,R3                 ;ERROR DETECTED?
               10    12   0076              BNEQ    60$                          ;IF NEQ NO
               56    B5   0078              TSTW    R6                           ;BACKTRACKING ERROR?
               08    12   007A              BNEQ    50$                          ;IF NEQ NO
               57    D7   007C              DECL    R7                           ;YES--BACK UP PARSE STACK POINTER
     54    0000'CF47    D0   007E           MOVL    W^MAC$AL_PSTACK[R7],R4       ; Back up to previous state
               56    D4   0084      50$:    CLRL    R6                           ;START BACKTRACKING IF NOT ALREADY
               98    11   0086              BRB     10$                          ;...
       53   D8F2 8F    B1   0088    60$:    CMPW    #-SCAN_CODE,R3               ;LOOK AHEAD (NO SCAN)?
               0E    18   008D              BGEQ    70$                          ;IF GEQ YES
    0000'CF47    54    D0   008F              MOVL    R4,W^MAC$AL_PSTACK[R7]       ; No--save current state
 0000'CF47    0000'CF    D0   0095            MOVL    W^MAC$GL_VACUE,W^MAC$AL_VALSTACK[R7] ; ...
               53    B5   009D      70$:    TSTW    R3                           ;TIME TO READ NEXT TOKEN?
               29    19   009F              BLSS    90$                          ;IF LSS NO
                          00A1      ;
                          00A1      ; READ NEXT TOKEN
                          00A1      ;
          54   53    D0   00A1              MOVL    R3,R4                        ;SET CURRENT STATE TO ACTION
               57    D6   00A4              INCL    R7                           ;ADVANCE STACK POINTER
       0F   6B   0F    E2   00A6            BBSS    #FLG$V_SKAN,(R11),80$        ;BR IF OK TO SCAN FOR NEXT TOKEN
                          00AA                                                   ; AND SET SCAN OK FLAG
          0000'CF    D0   00AA              MOVL    W^MAC$GL_VNEXT,-             ;RESET CONTEXT,
          0000'CF         00AE                              @^MAC$GL_VALUE       ;       symbol already scanned
     56   0000'CF    D0   00B1              MOVL    W^MAC$GL_NEXT,R6             ;       during a look-ahead
             FF67    31   00B6              BRW     10$                          ;CONTINUE SCANNING
          0070 8F    BB   00B9      80$:    PUSHR   #^M<R4,R5,R6>                ;SAVF REGISTERS
             006A    30   00BD              BSBW    MAC$TOKEN                    ;GET NEXT TOKEN
          0070 8F    BA   00C0              POPR    #^M<R4,R5,R6>                ;RESTORE REGISTERS
          56   58    D0   00C4              MOVL    R8,R6                        ;SET CLASS TO TOKEN TYPE
             FF56    31   00C7              BRW     10$                          ;CONTINUE SCANNING
                          00CA      ;
                          00CA      ; CALL SEMANTIC ROUTINE TO PERFORM REDUCTION TO NON-TERMINAL STATE
                          00CA      ;
     D8F2 8F   53    B1   00CA      90$:    CMPW    R3,#-SCAN_CODE               ;NO-SCAN?
               17    14   00CF              BGTR    100$                         ;IF GTR THEN NOT NO-SCAN
       53   270E 8F    A0   00D1            ADDW2   #SCAN_CODE,R3                ;NO-SCAN--CORRECT ACTION CODE
               57    D7   00D6              DECL    R7                           ;BACK UP STACK POINTER
     0000'CF   56    D0   00D8              MOVL    R6,W^MAC$GL_NEXT             ; Save current flags
```

```
              0000'CF  D0  00DD   255           MOVL    W^MAC$GL_VALUE,-
              0000'CF      00E1   256                             @^MAC$GL_VNEXT  ; Save current value
          00 6B    0F  E5  00E4   257           BBCC    #FLG$V_SKAN,(R11),100$  ;PROHIBIT SCANNING
0000'CF   0000'CF47    D0  00E8   258 100$:     MOVL    W^MAC$AL_VALSTACK[R7],-
                           00F0   259                             @^MAC$GL_VALUE  ; Get current value
              53   53  CE  00F0   260           MNEGL   R3,R3                   ;GET ACTION ROUTINE NUMBER
    52   00000000'EF43 D0  00F3   261           MOVL    L^PAT$AL_SEM[R3],R2     ;GET ADDRESS OF SEMANTIC ROUTINE
                   0A  13  00FB   262           BEQL    110$                    ;IF EQL NULL ACTION
              0078 8F  BB  00FD   263           PUSHR   #^M<R3,R4,R5,R6>        ;SAVE REGISTERS
                           0101   264 MAC$CALL_SEM::
                   62  16  0101   265           JSB     (R2)                    ;CALL SEMANTIC ROUTINE
              0078 8F  BA  0103   266           POPR    #^M<R3,R4,R5,R6>        ;RESTORE REGISTERS
    52    00000000'E3  9A  0107   267 110$:     MOVZBL  L^PAT$AB_POP(R3),R2     ;GET NUMBER OF ITEMS TO POP
              57   52  C2  010E   268           SUBL2   R2,R7                   ;"POP" THE STACK
       54   0000'CF47  D0  0111   269           MOVL    W^MAC$AL_PSTACK[R7],R4  ; Get current state
              0000'CF  D0  0117   270           MOVL    W^MAC$GL_VALUE,-
            0000'CF47      011B   271                             @^MAC$AL_VALSTACK[R7] ; Put result on stack
    56    00000000'E3  9A  011F   272           MOVZBL  L^PAT$AB_LHS(R3),R6     ;PICK UP CLASS OF LEFT HAND SIDE
                 FEF7  31  0126   273           BRW     10$                     ;CONTINUE SCANNING
                           0129   274 ;
                           0129   275 ; THE FOLLOWING ARE ROUTINES WHICH NEED TO BE DEFINED FOR THE
                           0129   276 ; GRAMMAR.  IT IS A NO-OP SEMANTIC ROUTINE.
                           0129   277 ;
                           0129   278 GOAL::
                       05  0129   279           RSB
                           012A   280           .DSABL  LSB
```

```
                        012A            .SBTTL  MAC$TOKEN GET NEXT LEXICAL TOKEN
                        012A
                        012A     ;++
                        012A     ;      THE NEXT LEXICAL TOKEN TYPE IS RETURNED IN R8.  THE VALUE
                        012A     ;      ASSOCIATED WITH THE TOKEN IS RETURNED IN MAC$GL_VALUE.
                        012A     ;--
                        012A
                        012A     MAC$TOKEN::
          0000'CF   D0  012A            MOVL    W^MAC$GL_ERRPTX,-
          0000'CF       012E                            @^MAC$GL_ERRPT  ;POINT TO PREVIOUS TOKEN
          0000'CF   D0  0131            MOVL    W^MAC$GL_LINEPT,-
          0000'CF       0135                            @^MAC$GL_ERRPTX ;POINT TO THIS TOKEN
          0000'CF   7C  0138            CLRQ    W^MAC$GL_VALUE          ;DEFAULT VALUE IS 0
            FEC1'   30  013C     10$:   BSBW    MAC$SKIPSP              ;SKIP SPACES
               06   E0  013F            BBS     #CHR$V_ILL_CHR,-        ;BRANCH IF ILLEGAL CHR.
       1F 0000'CA       0141                    W^MAC$AB_CMSK_TAB(R10),40$
58   00000000'EF4A  D0  0145            MOVL    MAC$AL_CHRTAB[R10],R8   ;NO--GET TOKEN FOR CHARACTER
        11 58   1F  E5  014D            BBCC    #31.,R8,30$             ;BR IF NOT A TOKEN
           0D   5A  91  0151            CMPB    R10,#CR                 ;IS CHARACTER A CARRIAGE RETURN?
                09  12  0154            BNEQ    20$                     ;IF NEQ NO--GET NEXT CHARACTER
        05 6B   20  E4  0156            BBSC    #FLG$V_CRSEEN,(R11),20$ ;YES--HAVE WE SEEN IT BEFORE?
                        015A                                            ;     (AND CLEAR FLAG)
        00 6B   20  E3  015A            BBCS    #FLG$V_CRSEEN,(R11),.+1 ;NO--SET FLAG FOR LATER
                    05  015E            RSB                             ;RETURN WITH CR TOKEN
            FE9E'   31  015F     20$:   BRW     W^MAC$GETCHR            ;GET NEXT CHARACTER
                        0162                                            ;AND RETURN TO CALLER
                        0162     ;
                        0162     ; CHARACTER IS NOT A TOKEN--CALL SCANNING ROUTINE
                        0162     ;
               68   17  0162     30$:   JMP     (R8)                    ;DISPATCH TO SCANNING ROUTINE
                        0164     ;
                        0164     ; CHARACTER IS ILLEGAL
                        0164     ;
                        0164     40$:
                        0164     MAC$CHRERR::                           ;ENTRY FROM MAC$XUPARROW
                        0164                                            ; (MAC$XUPARROW IS JMP'ED TO
                        0164                                            ; FROM MAC$TOKEN)
                        0164            $MAC_ERR ILLCHR                 ; Get message code
               11   10  0169            BSBB    MAC$ERRORLN             ;REPORT CHARACTER ERROR
            FE92'   30  016B            BSBW    MAC$GETCHR              ;GET NEXT CHARACTER
               BA   11  016E            BRB     MAC$TOKEN               ;GET NEXT TOKEN
                        0170
                        0170     ;++
                        0170     ;      ERROR ROUTINES
                        0170     ;      ENTER WITH R0 CONTAINING THE ERROR MESSAGE INDEX.
                        0170     ;--
                        0170
                        0170            .ENABL  LSB
                        0170
                        0170     MAC$ERRORPX::                          ;ERROR USING MAC$GL_
          0000'CF   DD  0170            PUSHL   W^MAC$GL_ERRPTX         ;STACK POINTER
               0A   11  0174            BRB     10$
                        0176
                        0176     MAC$ERRORPT::                          ;ERROR USING MAC$GL_ERRPT
          0000'CF   DD  0176            PUSHL   W^MAC$GL_ERRPT          ;STACK POINTER
               04   11  017A            BRB     10$
                        017C
```

```
                          017C   339 MAC$ERRORLN::                                    ;ERROR USING MAC$GL_LINEPT
        0000'CF     DD    017C   340          PUSHL    W^MAC$GL_LINEPT                 ;STACK POINTER
   00 6B    07      E5    0180   341 10$:     BBCC     #FLG$V_EXPOPT,(R11),.+1         ;DO NOT ALLOW EXPRESSION OPT.
            50      DD    0184   342          PUSHL    R0                              ;STACK ERROR MESSAGE INDEX
        50  12      9A    0186   343          MOVZBL   #INT$_ERR,R0                    ;SET INT. CODE FOR ERROR
          FE74'     30    0189   344          BSBW     MAC$INTOUT_2_LW                 ;OUTPUT TO INT. FILE
                          018C   345                                                  ;(NOTE: MUST BE BSBW/RSB; SEE
                          018C   346                                                  ; INTOUT.MAR)
                    05    018C   347          RSB                                     ;ALL DONE
                          018D   348
                          018D   349          .DSABL   LSB
                          018D   350
                          018D   351          .END
```

```
$COUNT          = 0000003B          FLG$M_NTYPEPC  = 00000020          FLG$V_ORDLST    = 00000011
ARG$K_SIZE      = 000003E8          FLG$M_NULCHR   = 00040000          FLG$V_P2        = 0000000E
AUD$K_SIZE      = 00000010          FLG$M_OBJXST   = 00200000          FLG$V_RPTIRP    = 0000001C
BLNK            = 00000020          FLG$M_OPNDCHK  = 00000100          FLG$V_SEQFIL    = 00000019
CHR$M_COMMA_CR  = 00000020          FLG$M_OPRND    = 00002000          FLG$V_SKAN      = 0000000F
CHR$M_ILL_CHR   = 00000040          FLG$M_OPTVFLIDX= 00001000          FLG$V_SPECOP    = 00000022
CHR$M_NUM_BER   = 00000010          FLG$M_ORDLST   = 00020000          FLG$V_SPLALL    = 0000001A
CHR$M_SPA_MSK   = 00000001          FLG$M_P2       = 00004000          FLG$V_STOIMF    = 00000012
CHR$M_SYM_CH1   = 00000008          FLG$M_RPTIRP   = 10000000          FLG$V_SYM2COL   = 0000002A
CHR$M_SYM_CHR   = 00000004          FLG$M_SEQFIL   = 02000000          FLG$V_TOCFLG    = 00000013
CHR$M_SYM_DLM   = 00000002          FLC$M_SKAN     = 00008000          FLG$V_UPAFLG    = 00000024
CHR$V_COMMA_CR  = 00000005          FLG$M_SPECOP   = 00000004          FLG$V_UPDFIL    = 00000027
CHR$V_CVTLWC    = 00000061          FLG$M_SPLALL   = 04000000          FLG$V_UPMARG    = 00000026
CHR$V_ILL_CHR   = 00000006          FLG$M_STOIMF   = 00040000          FLG$V_XCRF      = 0000001F
CHR$V_NOCVT     = 0000007F          FLG$M_SYM2COL  = 00000400          GOAL              00000129 RG     02
CHR$V_NUM_BER   = 00000004          FLG$M_TOCFLG   = 00080000          HASHSZ          = 0000007F
CHR$V_SPA_MSK   = 00000000          FLG$M_UPAFLG   = 00000010          HYPHEN          = 0000002D
CHR$V_SYM_CH1   = 00000003          FLG$M_UPDFIL   = 00000080          INP$K_BUFSIZ    = 000003E8
CHR$V_SYM_CHR   = 00000002          FLG$M_UPMARG   = 00000040          INT$K_BUFSIZ    = 000013F4
CHR$V_SYM_DLM   = 00000001          FLG$M_XCRF     = 80000000          INT$K_BUFWRN    = 00001390
CONT_CODE       = FFFFFFFC          FLG$V_ALLCHR   = 00000000          INT$_ADD        = 00000001
CR              = 0000000D          FLG$V_BOL      = 00000001          INT$_AND        = 00000002
ELSE_CODE       = FFFFFFFD          FLG$V_CHKLPND  = 00000014          INT$_ASH        = 00000003
ERR_CODE        = 0000270F          FLG$V_COMPEXPR = 00000002          INT$_ASN        = 0000000C
ERR_MAX         = 00000009          FLG$V_CONT     = 00000003          INT$_AUGPC      = 0000000D
FF              = 0000000C          FLG$V_CRF      = 0000001E          INT$_BDST       = 0000000E
FLG$M_ALLCHR    = 00000001          FLG$V_CRSEEN   = 00000020          INT$_CHKL       = 0000000F
FLG$M_BOL       = 00000002          FLG$V_DATRPT   = 00000004          INT$_DIV        = 00000004
FLG$M_CHKLPND   = 00100000          FLG$V_DBGOUT   = 0000002E          INT$_END        = 00000010
FLG$M_COMPEXPR  = 00000004          FLG$V_DLIMSTR  = 0000002F          INT$_EPT        = 00000011
FLG$M_CONT      = 00000008          FLG$V_ENDMCH   = 00000005          INT$_ERR        = 00000012
FLG$M_CRF       = 40000000          FLG$V_EVALEXPR = 00000006          INT$_ETX        = 00000013
FLG$M_CRSEEN    = 00000001          FLG$V_EXPOPT   = 00000007          INT$_FNEWL      = 00000014
FLG$M_DATRPT    = 00000010          FLG$V_EXTERR   = 00000030          INT$_ILG        = 00000000
FLG$M_DBGOUT    = 00004000          FLG$V_EXTWRN   = 00000031          INT$_INFO       = 0000003A
FLG$M_DLIMSTR   = 00008000          FLG$V_FIRSTLN  = 00000029          INT$_LGLAB      = 00000015
FLG$M_ENDMCH    = 00000020          FLG$V_IFSTAT   = 00000017          INT$_MACL       = 00000016
FLG$M_EVALEXPR  = 00000040          FLG$V_IIF      = 00000016          INT$_MUL        = 00000005
FLG$M_EXPOPT    = 00000080          FLG$V_INSERT   = 00000008          INT$_NEG        = 00000006
FLG$M_EXTERR    = 00010000          FLG$V_IRPC     = 0000001D          INT$_NEWL       = 00000017
FLG$M_EXTWRN    = 00020000          FLG$V_LEXOP    = 00000021          INT$_NEWP       = 00000018
FLG$M_FIRSTLN   = 00000200          FLG$V_LSTXST   = 00000009          INT$_NOT        = 00000007
FLG$M_IFSTAT    = 00800000          FLG$V_MAC2COL  = 0000002B          INT$_OP         = 00000019
FLG$M_IIF       = 00400000          FLG$V_MACL     = 0000000B          INT$_OR         = 00000008
FLG$M_INSERT    = 00000100          FLG$V_MACLTB   = 0000001B          INT$_PRIL       = 0000001A
FLG$M_IRPC      = 20000000          FLG$V_MACTXT   = 00000010          INT$_PRT        = 0000001B
FLG$M_LEXOP     = 00000002          FLG$V_MEBLST   = 0000000C          INT$_PSECT      = 0000001C
FLG$M_LSTXST    = 00000200          FLG$V_MOREARG  = 0000002D          INT$_REDEF      = 0000001D
FLG$M_MAC2COL   = 00000800          FLG$V_MOREINP  = 00000023          INT$_REF        = 0000001E
FLG$M_MACL      = 00000800          FLG$V_NEWPND   = 0000000A          INT$_REST       = 0000001F
FLG$M_MACLTB    = 08000000          FLG$V_NOREF    = 00000018          INT$_SAME       = 00000009
FLG$M_MACTXT    = 00010000          FLG$V_NTYPEPC  = 00000025          INT$_SAVE       = 00000020
FLG$M_MEBLST    = 00001000          FLG$V_NULCHR   = 00000032          INT$_SBTTL      = 00000021
FLG$M_MOREARG   = 00002000          FLG$V_OBJXST   = 00000015          INT$_SETFLAG    = 00000022
FLG$M_MOREINP   = 00000008          FLG$V_OPNDCHK  = 00000028          INT$_SETLONG    = 00000023
FLG$M_NEWPND    = 00000400          FLG$V_OPRND    = 0000000D          INT$_SPIC       = 00000024
FLG$M_NOREF     = 01000000          FLG$V_OPTVFLIDX= 0000002C          INT$_SPID       = 00000025
```

```
INT$_STIB       = 00000026                  PAT$AW_ACTION     ********   X    02
INT$_STIL       = 00000028                  RDX$V_BINARY    = 00000000
INT$_STIW       = 00000027                  RDX$V_DECIMAL   = 00000002
INT$_STKEPT     = 00000029                  RDX$V_DOUBLE    = 00000005
INT$_STKG       = 0000002A                  RDX$V_FLOAT     = 00000004
INT$_STKL       = 0000002B                  RDX$V_GFLOAT    = 00000006
INT$_STKPC      = 0000002C                  RDX$V_HEX       = 00000003
INT$_STKS       = 0000002D                  RDX$V_HFLOAT    = 00000007
INT$_STOB       = 00000034                  RDX$V_OCTAL     = 00000001
INT$_STOL       = 0000002E                  REG$_PC         = 0000000F
INT$_STOW       = 00000035                  SCAN_CODE       = 0000270E
INT$_STRB       = 0000002F                  SEMI            = 0000003B
INT$_STRL       = 00000031                  STB$K_PG_MISS   = 0000000A
INT$_STRSB      = 00000032                  SYM$K_MAXLEN    = 0000001F
INT$_STRSW      = 00000033                  SYM$K_TWOCOL    = 00000010
INT$_STRW       = 00000030                  TAB             = 00000009
INT$_STSB       = 00000036                  X1              = 00000033
INT$_STSW       = 00000037                  X2              = 00080000
INT$_SUB        = 0000000A
INT$_SUME       = 00000039
INT$_WRN        = 00000038
INT$_XOR        = 0000000B
LST$K_BUFSIZ    = 00000086
LST$K_L_P_PAGE  = 0000003C
LST$K_TITLE_SIZ= 00000028
MAC$AB_CMSK_TAB   ********   X    02
MAC$AL_CHRTAB     ********   X    02
MAC$AL_PSTACK     ********   X    02
MAC$AL_VALSTACK   ********   X    02
MAC$CALL_SEM      00000101 RG     02
MAC$CHRERR        00000164 RG     02
MAC$ERRORLN       0000017C RG     02
MAC$ERRORPT       00000176 RG     02
MAC$ERRORPX       00000170 RG     02
MAC$GETCHR        ********   X    02
MAC$GL_ERRPT      ********   X    02
MAC$GL_ERRPTX     ********   X    02
MAC$GL_LINEPT     ********   X    02
MAC$GL_NEXT       ********   X    02
MAC$GL_VALUE      ********   X    02
MAC$GL_VNEXT      ********   X    02
MAC$INTOUT_2_LW   ********   X    02
MAC$PARSE         00000000 RG     02
MAC$SKIPSP        ********   X    02
MAC$TOKEN         0000012A RG     02
MAC$_ILLCHR     = 007D90C2
MAC_SUBSYS      = 0000007D
OBJ$K_BUFSIZ    = 00000200
OPF$M_LASTOPR   = 00002000
OPF$M_OPTEXP    = 00001000
OPF$V_LASTOPR   = 0000000D
OPF$V_OPTEXP    = 0000000C
PARSE_LOOP        00000020 R      02
PAT$AB_LHS        ********   X    02
PAT$AB_POP        ********   X    02
PAT$AB_SYMLST     ********   X    02
PAT$AL_SEM        ********   X    02
```

```
                                                    +----------------+
                                                    ! Psect synopsis !
                                                    +----------------+

PSECT name                         Allocation          PSECT No.  Attributes
----------                         ----------          ---------  ----------
.  ABS  .                          00000000  (     0.)  00 (   0.)  NOPIC     USR    CON    ABS    LCL NOSHR NOEXE NORD   NOWRT NOVEC BYTE
$ABS$                              00000000  (     0.)  01 (   1.)  NOPIC     USR    CON    ABS    LCL NOSHR   EXE   RD     WRT NOVEC BYTE
MAC$RO_CODE_P1                     0000018D  (   397.)  02 (   2.)  NOPIC     USR    CON    REL    GBL NOSHR   EXE   RD   NOWRT NOVEC LONG

                                                 +------------------------+
                                                 ! Performance indicators !
                                                 +------------------------+

Phase                       Page faults    CPU Time       Elapsed Time
-----                       -----------    --------       ------------
Initialization                       36    00:00:00.04    00:00:02.58
Command processing                  127    00:00:00.36    00:00:02.61
Pass 1                              179    00:00:02.36    00:00:10.50
Symbol table sort                     0    00:00:00.29    00:00:01.23
Pass 2                               77    00:00:00.66    00:00:03.79
Symbol table output                  20    00:00:00.09    00:00:00.15
Psect synopsis output                 1    00:00:00.03    00:00:00.17
Cross-reference output                0    00:00:00.00    00:00:00.00
Assembler run totals                442    00:00:03.83    00:00:21.03

The working set limit was 1350 pages.
21216 bytes (42 pages) of virtual memory were used to buffer the intermediate code.
There were 20 pages of symbol table space allocated to hold 325 non-local and 19 local symbols.
351 source lines were read in Pass 1, producing 15 object records in Pass 2.
9 pages of virtual memory were used to define 8 macros.

                                                +--------------------------+
                                                ! Macro library statistics !
                                                +--------------------------+

Macro library name                               Macros defined
------------------                               --------------
_$255$DUA28:[MACRO.OBJ]MACRO.MLB;1                          5
_$255$DUA28:[SYSLIB]STARLET.MLB;2                           3
TOTALS (all libraries)                                      8

352 GETS were required to define 8 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS$:PARSER/OBJ=OBJ$:PARSER MSRC$:PARSER/UPDATE=(ENH$:PARSER)+LIB$:MACRO/LIB
```

0227 AH-BT13A-SE
VAX/VMS V4.0

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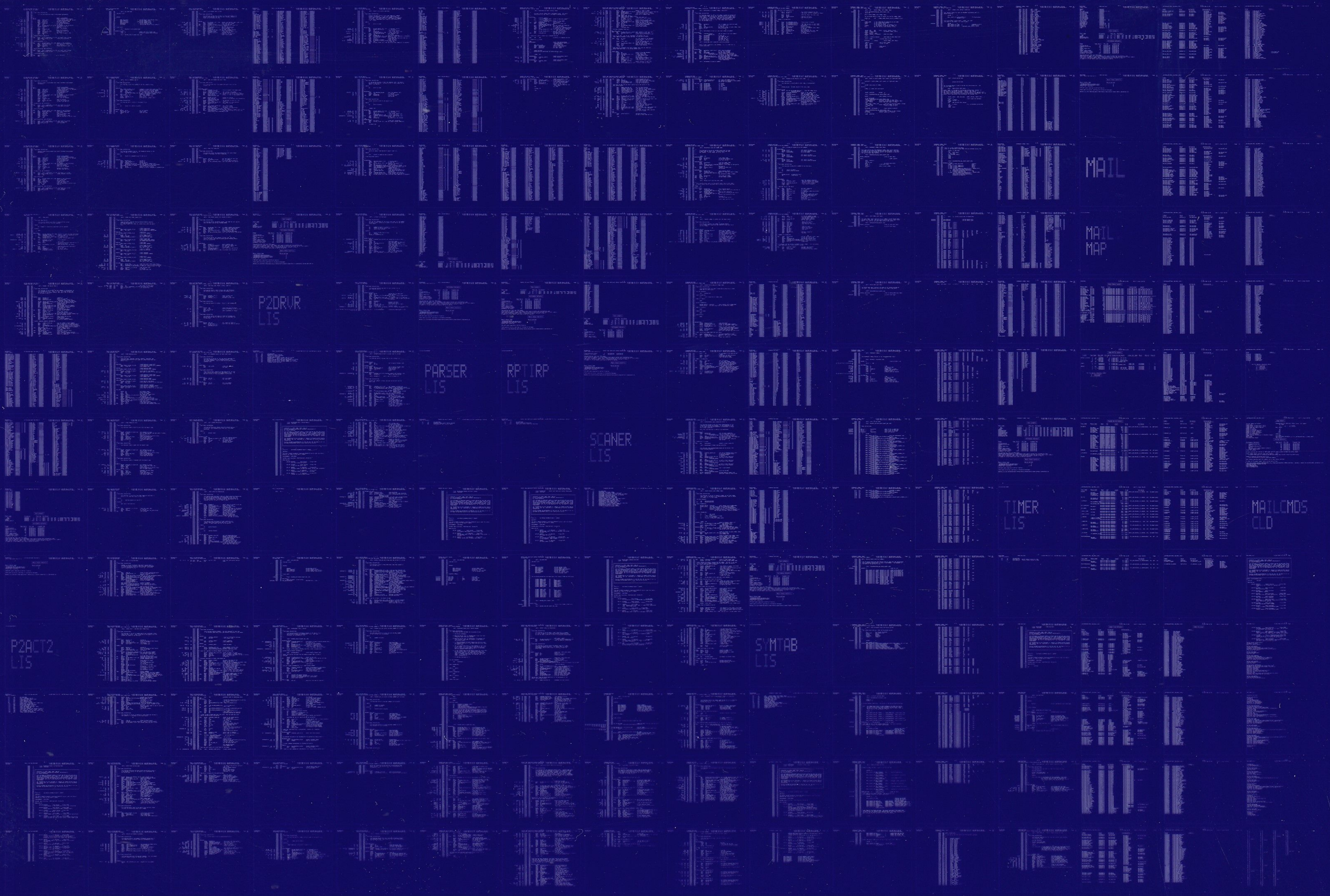

MAIL

MAIL
MAP

P2DRVR
LIS

PARSER
LIS

RPTIRP
LIS

SCANER
LIS

TIMER
LIS

MAILCMDS
CLD

P2ACT2
LIS

SYMTAB
LIS