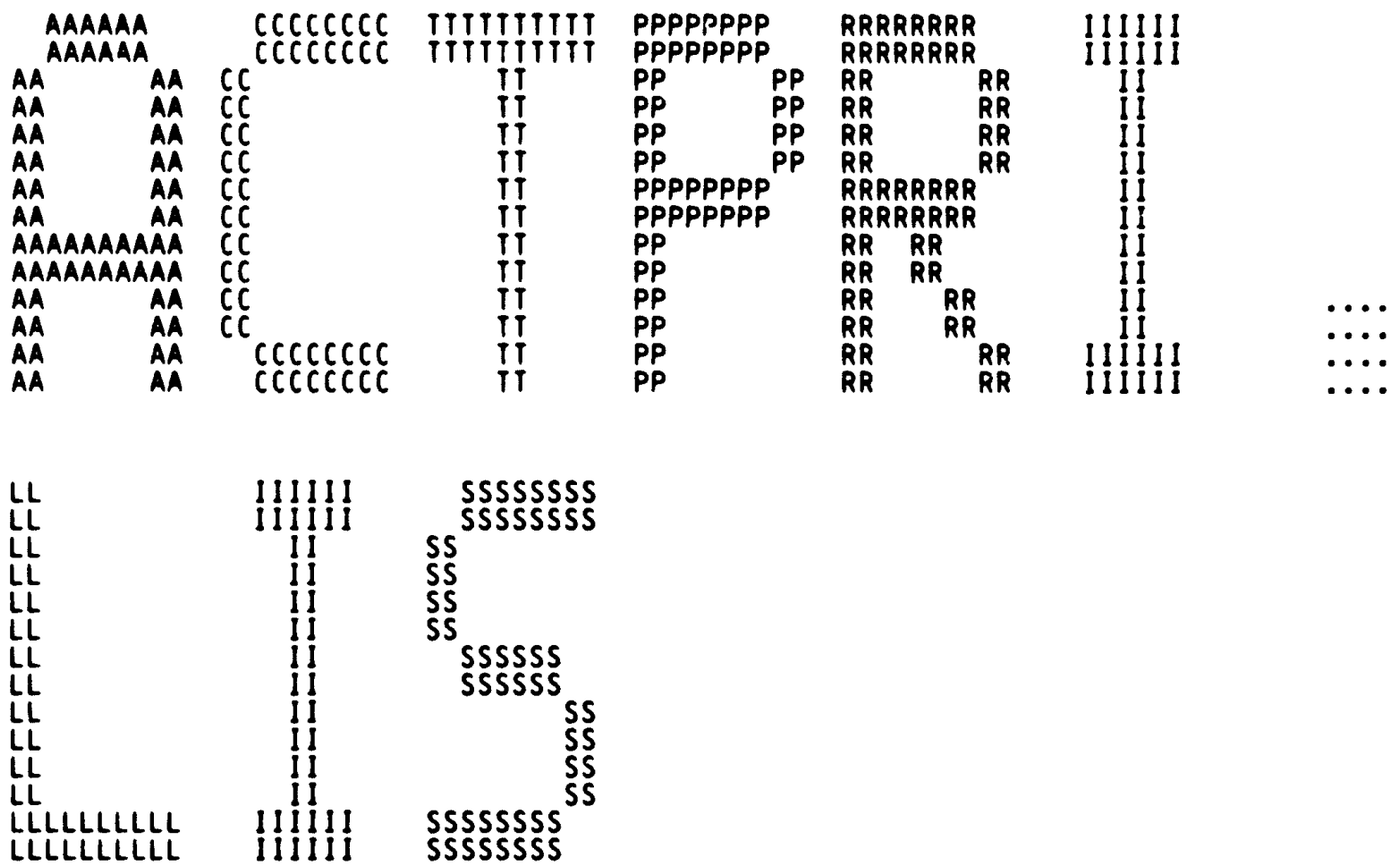

MMM MMM AAAAAAAAA CCCCCCCCCCC RRRRRRRRRRR 000000000
MMM MMM AAAAAAAAA CCCCCCCCCCC RRRRRRRRRRR 000000000
MMM MMM AAAAAAAAA CCCCCCCCCCC RRRRRRRRRRR 000000000
MMMMMM MMMMMM AAA AAA CCC RRR RRR OOO OOO
MMMMMM MMMMMM AAA AAA CCC RRR RRR OOO OOO
MMMMMM MMMMMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM AAA AAA CCC RRRRRRRRRRR OOO OOO
MMM MMM AAA AAA CCC RRRRRRRRRRR OOO OOO
MMM MMM AAA AAA CCC RRRRRRRRRRR OOO OOO
MMM MMM AAAAAAAAAAAAAAA CCC RRR RRR OOO OOO
MMM MMM AAAAAAAAAAAAAAA CCC RRR RRR OOO OOO
MMM MMM AAAAAAAAAAAAAAA CCC RRR RRR OOO OOO
MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM AAA AAA CCC RRR RRR OOO OOO
MMM MMM AAA AAA CCCCCCCCCCC RRR RRR 000000000
MMM MMM AAA AAA CCCCCCCCCCC RRR RRR 000000000
MMM MMM AAA AAA CCCCCCCCCCC RRR RRR 000000000
MMM MMM AAA AAA CCCCCCCCCCC RRR RRR 000000000

FILEID**ACTPRI



```
0000     1          .TITLE  MAC$ACTPRI PRIMARIES
0000     2          .IDENT  'V04-000'
0000     3
0000     4  ;
0000     5  ;*****************************************************************************
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0000    24  ;*                                                                           *
0000    25  ;*                                                                           *
0000    26  ;*****************************************************************************
0000    27  ;
0000    28
0000    29  ;++
0000    30  ; FACILITY:     VAX MACRO ASSEMBLER OBJECT LIBRARY
0000    31  ;
0000    32  ; ABSTRACT:
0000    33  ;
0000    34  ; The VAX-11 MACRO assembler translates MACRO-32 source code into object
0000    35  ; modules for input to the VAX-11 LINKER.
0000    36  ;
0000    37  ; ENVIRONMENT:  USER MODE
0000    38  ;
0000    39  ; AUTHOR: Benn Schreiber, CREATION DATE: 20-AUG-78
0000    40  ;
0000    41  ; MODIFIED BY:
0000    42  ;
0000    43  ;       V03.01  MTR0013         Mike Rhodes     07-Jun-1982
0000    44  ;               Modify routine EXPBIN to test the Absolute
0000    45  ;               Expression flag MAC$GL_ABSFLAG a little closer
0000    46  ;               in order to interpret the expression type correctly.
0000    47  ;
0000    48  ;       V03.00  MTR0001         Mike Rhodes     15-Mar-1982
0000    49  ;               Modify routine NUMASC to use FLG$V_DLIMSTR flag
0000    50  ;               to allow passing hyphens and semicolons.
0000    51  ;               Fixes SPR #11-42904.
0000    52  ;
0000    53  ;       V02.12  PCG0008         Peter George    28-Aug-1981
0000    54  ;               Fix test for floating negation in PRMUN.
0000    55  ;
0000    56  ;       V02.11  PCG0002         Peter George    05-May-1981
0000    57  ;               Set SYM$M_RELPSECT flag in IDLIST and PRMSYM.
```

```
0000     58 ;
0000     59 ;       V01.10  RN0023          R. Newland       3-Nov-1979
0000     60 ;               New message codes to get error message from system
0000     61 ;               message file.
0000     62 ;
0000     63 ;       V01.09  RN0014          R. Newland       17-Oct-1979
0000     64 ;               Support for G_floating, H_floating, and Octaword data types.
0000     65 ;
0000     66 ;       V01.07  RN0005          R. Newland       12-Aug-1979
0000     67 ;               Remove .ALIGN LONG statements
0000     68 ;
0000     69 ;       V01.11  RN0027          R. Newland       14-Jan-1980
0000     70 ;               Fix problems with negative floating point literals.
0000     71 ;               SPR 11-27884.
0000     72 ;
0000     73 ;       V01.08  RN0007          R. Newland       28-Aug-1979
0000     74 ;               Fix problem with quadword ^A literals less
0000     75 ;               than 8 characters.  SPR 11-25674.
0000     76 ;
0000     77 ;       V01.05  0003            B. Schreiber     10-JAN-1979
0000     78 ;               Catch syntax error if pound sign forgotten before
0000     79 ;               ASCII immediate (^A) in operands.
0000     80 ;       V01.06  0006            B. Schreiber     16-JAN-1979
0000     81 ;               Fix problem with data generation if repeated data
0000     82 ;               and uparrow-A data (i.e. .BYTE ^A/ /[10])
0000     83 ;--
```

```
                     0000     85          .SBTTL  DECLARATIONS
                     0000     86 ;
                     0000     87 ; INCLUDE FILES:
                     0000     88 ;
                     0000     89
                     0000     90 ;
                     0000     91 ; MACROS:
                     0000     92 ;
                     0000     93
                     0000     94 $MAC_SYMBLKDEF                          ;DEFINE SYMBOL BLOCK OFFSETS
                     0000     95 $MAC_CTLFLGDEF                          ;DEFINE CONTROL FLAGS
                     0000     96 $MAC_INTCODDEF                          ;DEFINE INT. FILE COMMANDS
                     0000     97 $MAC_GENVALDEF                          ;DEFINE OTHER GOOD SYMBOLS
                     0000     98 $MACMSGDEF                              ; Define message codes
                     0000     99
                     0000    100 ;
                     0000    101 ; EQUATED SYMBOLS:
                     0000    102 ;
                     0000    103
           80000000  0000    104          SIGN_BIT        =       ^X80000000      ;SIGN BIT
                     0000    105
                     0000    106 ;
                     0000    107 ; OWN STORAGE:
                     0000    108 ;
                     0000    109
           00000000  0000    110          .PSECT  MAC$RO_DATA,NOEXE,NOWRT,GBL,LONG
                     0000    111
                     0000    112 ;++
                     0000    113 ;       THIS DISPATCH TABLE IS USED DURING PASS 1 TO JSB TO
                     0000    114 ;       MATH ACTION ROUTINES.
                     0000    115 ;--
                     0000    116
                     0000    117 P1$ARITH_DISP::
           00000000  0000    118          .LONG   0                          ;(0)--SHOULD NOT HAPPEN
           00000000' 0004    119          .LONG   P1$ARITH_ADD               ;INT$_ADD
           00000000' 0008    120          .LONG   P1$ARITH_AND               ;INT$_AND
           00000000' 000C    121          .LONG   P1$ARITH_ASH               ;INT$_ASH
           00000000' 0010    122          .LONG   P1$ARITH_DIV               ;INT$_DIV
           00000000' 0014    123          .LONG   P1$ARITH_MUL               ;INT$_MUL
           00000000' 0018    124          .LONG   P1$ARITH_NEG               ;INT$_NEG
           00000000' 001C    125          .LONG   P1$ARITH_NOT               ;INT$_NOT
           00000000' 0020    126          .LONG   P1$ARITH_OR                ;INT$_OR
           00000000' 0024    127          .LONG   P1$ARITH_SAME              ;INT$_SAME
           00000000' 0028    128          .LONG   P1$ARITH_SUB               ;INT$_SUB
           00000000' 002C    129          .LONG   P1$ARITH_XOR               ;INT$_XOR
                     0030    130
           00000000  0000    131          .PSECT  MAC$ACTPRI_DATA,NOEXE,LONG
                     0000    132
     0000  0000    0000    133 SYM_FLAG:.WORD  0                          ;USED FOR GLOBAL/DEBUG/WEAK/EXTERN
                     0002    134 ENTRY_MASK:
     0000  0002    0002    135          .WORD   0                          ;USED FOR .ENTRY/.VECTOR
```

```
                        0004   137          .SBTTL  PRMUN   PRIMARY UNARY OPERATORS
                        0004   138
                        0004   139 ;++
                        0004   140 ; FUNCTIONAL DESCRIPTION:
                        0004   141 ;
                        0004   142 ;       PRMUN IS CALLED WHEN A UNARY OPERATOR PRODUCTION IS
                        0004   143 ;       ENCOUNTERED.  IT CHECKS FOR UNARY FLOATING NEGATION
                        0004   144 ;       AND CHANGES IT TO AN XOR OF THE SIGN BIT.  IF THE
                        0004   145 ;       EXPRESSION IS TO BE EVALUATED IN PASS 2 THE INTERMEDIATE
                        0004   146 ;       CODE IS EMITTED.  THE EXPRESSION IS THEN EVALUATED
                        0004   147 ;       AND THE RESULT IS RETURNED IN MAC$GL_VALUE.
                        0004   148 ;
                        0004   149 ; INPUTS:
                        0004   150 ;
                        0004   151 ;       MAC$AL_VALSTACK[R7]     VALUE OF EXPRESSION
                        0004   152 ;       MAC$AL_VALSTACK-4[R7]   OPERATION
                        0004   153 ;
                        0004   154 ; OUTPUTS:
                        0004   155 ;
                        0004   156 ;       MAC$GL_VALUE            COMPUTED VALUE
                        0004   157 ;
                        0004   158 ;--
                        0004   159
                  00000000   160          .PSECT  MAC$RO_CODE_P1,NOWRT,GBL,LONG
                        0000   161
                        0000   162          .ENABL  LSB
                        0000   163
                        0000   164 PRMUN::                                      ;PRIMITIVE = OPUNARY PRIMITIVE
        56  0000'CF47   DE  0000   165          MOVAL   W^MAC$AL_VALSTACK[R7],R6;POINT TO TOP OF VALUE STACK
                        0006   166          $VPUSH  (R6)                        ;PUSH VALUE ONTO STACK
                     76 D5  000E   167          TSTL    -(R6)                       ;BACK UP TO ROUTINE VALUE
                        0010   168 ;
                        0010   169 ; IF OPERATION IS FLOATING NEGATION, CHANGE TO XOR OF SIGN BIT
                        0010   170 ;
                     06 66  91  0010   171          CMPB    (R6),#INT$_NEG              ;ARE WE DOING A NEGATE?
                        26  12  0013   172          BNEQ    20$                         ;IF NEQ NO
                  0000'CF   91  0015   173          CMPB    W^MAC$GB_RDXNDX,-           ;YES--AND IS IT A FLOATING NEGATE?
                        04      0019   174                  #RDX$V_FLOAT                ;...
                        1F  1F  001A   175          BLSSU   20$                         ;IF LESS NO
                  0C 6B 06  E1  001C   176          BBC     #FLG$V_EVALEXPR,(R11),10$ ;YES--ARE WE EVALUATING ON PASS 2
                        0020   177          $INTOUT_LW INT$_STKL,<#^X8000>  ; Yes--stack floating point sign bit
                     66 0B  9A  002C   178 10$:     MOVZBL  #INT$_XOR,(R6)              ;CHANGE COMMAND TO XOR
                        002F   179          $VPUSH  #^X8000                     ; Stack sign bit
                     50 66  D0  003B   180 20$:     MOVL    (R6),R0                     ;GET ACTION
                     56 50  D0  003E   181          MOVL    R0,R6                       ;REMEMBER IT FOR LATER
                  0B 6B 06  E1  0041   182          BBC     #FLG$V_EVALEXPR,(R11),30$ ;BRANCH IF NOT EVAL ON PASS 2
                     51 02  9A  0045   183          MOVZBL  #2,R1                       ;SET BYTE COUNT
                     FFB5'  30  0048   184          BSBW    MAC$INTOUT_X                ;EMIT TO INT. FILE
               0000'CF   59  D0  004B   185          MOVL    R9,W^MAC$GL_EXPEND          ;SAVE END OF EXPR POINTER
        56  0000'CF46   D0  0050   186 30$:     MOVL    W^P1$ARITH_DISP[R6],R6      ;GET ADDRESS OF ROUTINE
                     66 16  0056   187          JSB     (R6)                        ;CALL IT
                        0058   188          $VPOP   W^MAC$GL_VALUE              ;RETRIEVE VALUE
                        05  0062   189          RSB
                        0063   190
                        0063   191          .DSABL  LSB
```

```
                                0063   193          .SBTTL  PRMSYM  PRIMARY SYMBOLS
                                0063   194
                                0063   195 ;++
                                0063   196 ; FUNCTIONAL DESCRIPTION
                                0063   197 ;
                                0063   198 ;       PRMSYM IS INVOKED WHEN AN ID IS FOUND IN THE PRODUCTION.
                                0063   199 ;       BASED ON THE SYMBOL ATTRIBUTES (LOCAL, GLOBAL, EXTERNAL,
                                0063   200 ;       DEFINED, ABSOLUTE) IT WILL SET CONTROL FLAGS FOR LATER
                                0063   201 ;       PROCESSING OF THE ID.
                                0063   202 ;
                                0063   203 ; INPUTS:
                                0063   204 ;
                                0063   205 ;       MAC$GL_VALUE            POINTER TO ID SYMBOL BLOCK
                                0063   206 ;
                                0063   207 ; OUTPUTS:
                                0063   208 ;
                                0063   209 ;--
                                0063   210
                                0063   211 PRMSYM::                                    ;PRIMARY = ID
                                0063   212
    56   0000'CF    D0          0063   213          MOVL    W^MAC$GL_VALUE,R6          ;GET POINTER TO SYMBOL BLOCK
      18 6B    18   E0          0068   214          BBS     #FLG$V_NOREF,(R11),5$      ;BRANCH IF WE SHOULD NOT REF SYMBOL
 09 A6    0080 8F   A8          006C   215          BISW2   #SYM$M_REF,SYM$W_FLAG(R6) ;FLAG SYMBOL AS REFERENCED
50   00000000'EF   D0          0072   216          MOVL    MAC$GL_PSECTPTR,R0         ;GET POINTER TO PSECT DATA
   06 0D A0   03   E1          0079   217          BBC     #PSC$V_REL, -              ;IF ABS PSECT
                               007E   218                  PSC$W_OPTIONS(R0),5$       ;THEN SKIP
 09 A6    0800 8F   A8          007E   219          BISW2   #SYM$M_RELPSECT,SYM$W_FLAG(R6)  ;SET REL PSECT FLAG
 09 A6    4000 8F   AA          0084   220 5$:      BICW2   #SYM$M_SUPR,SYM$W_FLAG(R6) ;AND CLEAR SUPPRESS BIT
   03 09 A6   00   E0          008A   221          BBS     #SYM$V_DEF,SYM$W_FLAG(R6),10$
                               008F   222                                             ;IF SYMBOL NOT YET DEFINED
       6B   04   CA          008F   223          BICL2   #FLG$M_COMPEXPR,(R11)       ;THEN EXPR VALUE NOT YET KNOWN
         0C   B3          0092   224 10$:      BITW    #SYM$M_GLOBL!SYM$M_EXTRN,- ;SYMBOL GLOBAL OR EXTERNAL?
           09 A6          0094   225                          SYM$W_FLAG(R6)
         1B   13          0096   226          BEQL    20$                        ;IF EQL NO
       0041 8F   B3          0098   227          BITW    #SYM$M_DEF!SYM$M_LOCAL,-;YES--DEFINED OR LOCAL?
           09 A6          009C   228                          SYM$W_FLAG(R6)     ;
         13   12          009E   229          BNEQ    20$                        ;IF NEQ NO
                               00A0   230                                             ;
                               00A0   231                                             ;SYMBOL IS EXTERNAL OR GLOBAL
                               00A0   232                                             ; SYMBOL NOT YET DEFINED
    3C 6B   06   E1          00A0   233          BBC     #FLG$V_EVALEXPR,(R11),50$ ;EVALUATE ON PASS 2?
                               00A4   234          $INTOUT_LW INT$_STKG,R6            ;YES--STACK GLOBAL
 0000'CF   59   D0          00AC   235          MOVL    R9,W^MAC$GL_EXPEND         ;SAVE END OF EXPRESSION
         2D   11          00B1   236          BRB     50$
                               00B3   237 ;
                               00B3   238 ; LOCAL OR DEFINE SYMBOL
                               00B3   239 ;
0000'CF   0C A6   91          00B3   240 20$:      CMPB    SYM$B_SEG(R6),W^MAC$GL_PRMSEG ;DIFFERENT PSECTS?
         0E   13          00B9   241          BEQL    30$                        ;IF EQL NO
  09 09 A6   04   E0          00BB   242          BBS     #SYM$V_ABS,SYM$W_FLAG(R6),30$ ;YES--UNLESS SYMBOL ABSOLUTE
                               00C0   243                                             ;(BRANCH IF ABSOLUTE)
       0000'CF   D5          00C0   244          TSTL    W^MAC$GL_PRMSEG            ;REALLY DIFFERENT PSECTS?
         03   13          00C4   245          BEQL    30$                        ;IF EQL NO
       6B   04   CA          00C6   246          BICL2   #FLG$M_COMPEXPR,(R11)      ;YES--VALUE NOT YET KNOWN
    0D 6B   06   E1          00C9   247 30$:      BBC     #FLG$V_EVALEXPR,(R11),40$ ;EVALUATE ON PASS 2?
                               00CD   248          $INTOUT_LW INT$_STKS,R6            ;YES--STACK SYMBOL
 0000'CF   59   D0          00D5   249          MOVL    R9,W^MAC$GL_EXPEND         ;SAVE END OF EXPRESSION
```

```
0000'CF    05 A6    D0  00DA   250 40$:    MOVL    SYM$L_VAL(R6),W^MAC$GL_VALUE ;VALUE IS VALUE OF SYMBOL
  04 09 A6    04    E1  00E0   251 50$:    BBC     #SYM$V_ABS,SYM$W_FLAG(R6),60$ ;IS SYMBOL ABSOLUTE?
     10 6B    02    E0  00E5   252          BBS     #FLG$V_COMPEXPR,(R11),70$ ;YES--DO WE KNOW EXPR VALUE?
        0000'CF    D6  00E9   253 60$:     INCL    W^MAC$GL_ABSFLAG          ;NO--NOT ABSOLUTE EXPRESSION
        0000'CF    D5  00ED   254          TSTL    W^MAC$GL_PRMSEG           ;DOES EXPR HAVE A SEG YET?
              06   12  00F1   255          BNEQ    70$                       ;IF NEQ YES
0000'CF    0C A6    9A  00F3   256          MOVZBL  SYM$B_SEG(R6),W^MAC$GL_PRMSEG ;NO--USE SYMBOL SEGMENT
     55    00'8F    9A  00F9   257 70$:     MOVZBL  #CRF$K_REF,R5             ;SET REFERENCE
           FF00'    31  00FD   258          BRW     MAC$CREF_SYM              ;CREF SYMBOL IF CREFFING AND RETURN
```

```
                                0100   260          .SBTTL  NUMERIC PRIMARIES
                                0100   261
                                0100   262 ;++
                                0100   263 ; FUNCTIONAL DESCRIPTION:
                                0100   264 ;
                                0100   265 ;       NUMFLT IS CALLED WHEN '^F' IS SEEN. A FLOATING POINT NUMBER
                                0100   266 ;       IS SCANNED.
                                0100   267 ;
                                0100   268 ;--
                                0100   269
                                0100   270 NUMFLT::                                ;SPECIAL OPERATOR = DUPF
                      FEFD'  30 0100   271          BSBW    MAC$SKIPSP              ;SKIP SPACES
                      FEFA'  30 0103   272          BSBW    MAC$GETFLOAT            ;ACCUMULATE FLOATING POINT NUMBER
                        00   11 0106   273          BRB     PRMINT                  ;TREAT AS INTEGER
                                0108   274
                                0108   275 ;++
                                0108   276 ; FUNCTIONAL DESCRIPTION:
                                0108   277 ;
                                0108   278 ;       PRMINT IS CALLED WHEN AN INTEGER (OR INTEGER-LIKE) TOKEN
                                0108   279 ;       IS FOUND.  IF THE EXPRESSION IS BEING EVALUATED IN PASS 2
                                0108   280 ;       THE VALUE IS EMITTED TO THE INTERMEDIATE FILE.
                                0108   281 ;
                                0108   282 ;--
                                0108   283
                                0108   284 PRMINT::                                ;PRIMARY = DINTEGER
                   OF 6B    06  E1 0108   285          BBC     #FLG$V_EVALEXPR,(R11),10$ ;EVALUATE ON PASS 2?
                                010C   286          $INTOLT_LW INT$_STKL,<W^MAC$GL_VALUE> ;YES--STACK VALUE
                0000'CF    59  D0 0116   287          MOVL    R9,W^MAC$GL_EXPEND      ;SAVE END OF EXPRESSION
                                05 011B   288 10$:     RSB
                                011C   289
                                011C   290 ;++
                                011C   291 ; FUNCTIONAL DESCRIPTION:
                                011C   292 ;
                                011C   293 ;       PRMBRK IS CALLED WHEN AN EXPRESSION IN ANGLE BRACKETS IS
                                011C   294 ;       SCANNED.  THE VALUE IS PICKED OFF OF THE STACK AND PLACED
                                011C   295 ;       IN MAC$GL_VALUE.
                                011C   296 ;
                                011C   297 ;--
                                011C   298
                                011C   299 PRMBRK::                                ;PRIMARY = DANGOPN EXPR DANGCLS
      0000'CF    FFFC'CF47  D0 011C   300          MOVL    W^MAC$AL_VALSTACK-4[R7],- ;VALUE IS ON STACK
                                0124   301                  @^MAC$GL_VALUE  ;
                                05 0124   302          RSB
                                0125   303
                                0125   304 ;++
                                0125   305 ; FUNCTIONAL DESCRIPTION:
                                0125   306 ;
                                0125   307 ;       PRMRDX IS CALLED WHEN A RADIX CONTROL PRIMARY HAS BEEN
                                0125   308 ;       SCANNED.  THE RADIX IS RESET TO THE PREVIOUS RADIX.
                                0125   309 ;
                                0125   310 ;--
                                0125   311
                                0125   312 PRMRDX::                                ;PRIMARY = RADIX CONTROL PRIMARY
      0000'CF    FFFC'CF47  F6 0125   313          CVTLB   W^MAC$AL_VALSTACK-4[R7],- ;RESET TO PREVIOUS
                                012D   314                  @^MAC$GB_RDXNDX   ;RADIX
                                05 012D   315          RSB
```

```
                                012E    317          .SBTTL  PROGRAM COUNTER PRIMARY
                                012E    318
                                012E    319 ;++
                                012E    320 ; FUNCTIONAL DESCRIPTION:
                                012E    321 ;
                                012E    322 ;       PRMPC IS CALLED WHEN A PC REFERENCE ('.') IS SCANNED.
                                012E    323 ;       IF THE EXPRESSION IS BEING EVALUATED ON PASS 2 THE
                                012E    324 ;       CODE IS EMITTED TO STACK THE PC VALUE.  IF THE EXPRESSION
                                012E    325 ;       CONTAINS CROSS-PSECT REFERENCES THEN THE EXPRESSION IS
                                012E    326 ;       NOT A COMPILE-TIME EXPRESSION AND THE FLAG (FLG$M_COMPEXPR)
                                012E    327 ;       IS CLEARED IN THE FLAGS WORD.
                                012E    328 ;
                                012E    329 ;--
                                012E    330
                                012E    331 PRMPC::                                     ;PRIMARY = DPC
          0B 6B    06    E1    012E    332          BBC     #FLG$V_EVALEXPR,(R11),10$ ;BR IF NOT EVALUATE ON PASS 2
                                0132    333          $INTOUT_X INT$_STKPC               ;YES--STACK PC
      0000'CF    59    D0    0138    334          MOVL    R9,W^MAC$GL_EXPEND         ;SAVE END OF EXPRESSION
0000'CF    0000'CF    D0    013D    335 10$:     MOVL    W^MAC$GL_PC,W^MAC$GL_VALUE ;RETURN VALUE IS PC
     50    0000'CF    D0    0144    336          MOVL    W^MAC$GL_PSECTPTR,R0       ;GET POINTER TO CURRENT PSECT
   1F 0D A0    03    E1    0149    337          BBC     #PSC$V_REL,PSC$W_OPTIONS(R0),30$
                                014E    338                                             ;BRANCH IF ABS PSECT
          0000'CF    D6    014E    339          INCL    W^MAC$GL_ABSFLAG           ;RELOCATABLE--FLAG NOT ABS EXPR
          0000'CF    D5    0152    340          TSTL    W^MAC$GL_PRMSEG            ;EXPR HAVE A PSECT YET?
                09    12    0156    341          BNEQ    20$                        ;IF NEQ YES
          0000'CF    D0    0158    342          MOVL    W^MAC$GL_PSECT,-           ;NO--USE CURRENT PSECT
          0000'CF          015C    343                  @^MAC$GL_PRMSEG
                0C    11    015F    344          BRB     30$
          0000'CF    D1    0161    345 20$:     CMPL    W^MAC$GL_PRMSEG,-          ;YES--CROSS PSECT REFERENCES?
          0000'CF          0165    346                  @^MAC$GL_PSECT
                03    13    0168    347          BEQL    30$                        ;IF EQL NO
          6B    04    CA    016A    348          BICL2   #FLG$M_COMPEXPR,(R11)     ;YES--FLAG NOT COMPILE EXPRESSION
                      05    016D    349 30$:     RSB
```

```
                     016E    351          .SBTTL  ENTRY POINT MASK ROUTINES
                     016E    352
                     016E    353 ;++
                     016E    354 ; FUNCTIONAL DESCRIPTION:
                     016E    355 ;
                     016E    356 ;       RGLST1 AND REGLST ARE CALLED TO ACCUMULATE AN ENTRY-POINT
                     016E    357 ;       MASK.  RGLST1 IS CALLED FOR THE FIRST ITEM TO INITIALIZE THE
                     016E    358 ;       ENTRY MASK TO ZERO, AND REGLST IS CALLED FOR EACH SUCCESSIVE
                     016E    359 ;       ITEM IN THE MASK.  THE APPROPRIATE BIT IN ENTRY_MASK IS
                     016E    360 ;       SET FOR LATER PROCESSING BY THE 'MASK' ROUTINE.
                     016E    361 ;
                     016E    362 ;--
                     016E    363
                     016E    364 RGLST1::                                ;REGLIS = MASK_ITEM
              0002'CF   B4   016E    365          CLRW    W^ENTRY_MASK           ;START WITH 0
                     0172    366 REGLST::                                ;REGLIS = REGLIS MASK_ITEM
           50   0000'CF47   D0  0172    367          MOVL    W^MAC$AL_VALSTACK[R7],R0;GET THE MASK BIT NUMBER
         00 0002'CF   50   E3  0178    368          BBCS    R0,W^ENTRY_MASK,10$    ;SET THE BIT IN THE MASK
                     05   017E    369 10$:     RSB
                     017F    370
                     017F    371 ;++
                     017F    372 ; FUNCTIONAL DESCRIPTION:
                     017F    373 ;
                     017F    374 ;       MASK IS CALLED WHEN AN ENTRY-POINT MASK HAS BEEN ACCUMULATED
                     017F    375 ;       IN ENTRY_MASK.  IF WE ARE EVALUATEING EXPRESSIONS THE VALUE
                     017F    376 ;       WILL BE STACKED IN PASS 2.
                     017F    377 ;
                     017F    378 ;--
                     017F    379
                     017F    380          .ENABL  LSB
                     017F    381
                     017F    382 MASK::                                  ;REGISTER_MASK = DUPM DANGOPN REGLIS DANGCLS
     50   0002'CF   3C  017F    383          MOVZWL  W^ENTRY_MASK,R0        ;PICK UP MASK WORD
                10   11  0184    384          BRB     10$                    ;FINISH IN COMMON CODE
                     0186    385
                     0186    386 ;++
                     0186    387 ; FUNCTIONAL DESCRIPTION:
                     0186    388 ;
                     0186    389 ;       MASKX IS CALLED WHEN '^MRn' IS SCANNED.  A MASK IS CREATED
                     0186    390 ;       AND THE VALUE IS SENT TO PASS 2 IF EXPRESSIONS ARE BEING
                     0186    391 ;       EVALUATED.
                     0186    392 ;
                     0186    393 ;--
                     0186    394
                     0186    395 MASKX::                                 ;REGISTER_MASK = DUPM MASK_ITEM
     51   0000'CF47   D0  0186    396          MOVL    W^MAC$AL_VALSTACK[R7],R1;GET MASK BIT NUMBER
                50   D4  018C    397          CLRL    R0                     ;START WITH A CLEAN SLATE
           04 50   51   E3  018E    398          BBCS    R1,R0,10$              ;SET THE MASK BIT AND JOIN COMMON CODE
                02   11  0192    399          BRB     10$                    ;BETTER SAFE THAN SORRY
                     0194    400
                     0194    401 ;++
                     0194    402 ; FUNCTIONAL DESCRIPTION:
                     0194    403 ;
                     0194    404 ;       MASKNL IS CALLED WHEN A NULL ENTRY-MASK IS SCANNED.  IF
                     0194    405 ;       EXPRESSSIONS ARE BEING EVALUATED, A ZERO  IS STACKED IN
                     0194    406 ;       PASS 2.
                     0194    407 ;
```

```
                        0194    408 ;--
                        0194    409
                        0194    410 MASKNL::                                    ;REGISTER_MASK = DUPM DANGOPN DANGCLS
                 50     D4  0194    411             CLRL    R0                  ;RESULT IS 0
0000'CF          50     D0  0196    412 10$:        MOVL    R0,W^MAC$GL_VALUE   ;STORE RESULT
  0F 6B          06     E1  019B    413             BBC     #FLG$V_EVALEXPR,(R11),20$ ;BRANCH IF NO EXPRESSION EVALUATION
                             019F    414             $INTOUT_LW INT$_STKL,<W^MAC$GL_VALUE> ;YES--SEND VALUE TO PASS 2
0000'CF          59     D0  01A9    415             MOVL    R9,W^MAC$GL_EXPEND  ;SAVE END OF EXPRESSION
                 05     01AE    416 20$:        RSB
                        01AF    417
                        01AF    418             .DSABL  LSB
```

```
                     01AF   420          .SBTTL  EXPRESSIONS
                     01AF   421
                     01AF   422 ;++
                     01AF   423 ;       VAX-11 MACRO RECOGNIZES DIFFERENT TYPES OF EXPRESSIONS. THESE
                     01AF   424 ;       ROUTINES PROCESS COMPILE-TIME EXPRESSIONS.  THE RESULT OF SUCH
                     01AF   425 ;       AN EXPRESSION IS A LONGWORD WHICH WILL BE KNOWN BY PASS2
                     01AF   426 ;       (OR AT LINK TIME IF THE EXPRESSION INVOLVES GLOBALS OR
                     01AF   427 ;       EXTERNALS).  THE MOST COMMON USAGE OF THIS TYPE OF EXPRESSIONS
                     01AF   428 ;       IS IN OPERANDS.   ANOTHER TYPE OF EXPRESSION IS FOUND IN THE
                     01AF   429 ;       ASSIGNMENT STATMENT WHERE AN EXPRESSION GENERATES CODE TO
                     01AF   430 ;       EVALUATE THE EXPRESSION AT RUN TIME.
                     01AF   431 ;
                     01AF   432 ;       THE 'PRIMITIVE' ROUTINES SET FLAGS DESCRIBING THE EXPRESSION.
                     01AF   433 ;       THESE FLAGS MUST BE INITIALIZED BY THE EXPRESSION CALLER IF
                     01AF   434 ;       THEY ARE TO BE USED.
                     01AF   435 ;
                     01AF   436 ;       FLG$M_COMPEXPR  FALSE IF EXPRESSION VALUE NOT YET KNOWN
                     01AF   437 ;       FLG$M_EVALEXPR  TRUE CAUSES EVALUATION TO OCCUR ON PASS 2
                     01AF   438 ;       FLG$M_ABSEXPR   TRUE INDICATES THAT EXPRESSION IS ABSOLUTE
                     01AF   439 ;
                     01AF   440 ;--
                     01AF   441
                     01AF   442 EXPBIN::                                    ;EXPR = EXPR OPBINARY PRIMARY
          55   57   D0  01AF   443          MOVL    R7,R5                   ;COPY STACK POINTER
                     01B2   444          $VPUSH  W^MAC$AL_VALSTACK-8[R5] ;PUSH LEFT OPERAND ONTO STACK
                     01BD   445          $VPUSH  W^MAC$AL_VALSTACK[R5]   ;PUSH RIGHT OPERAND
 56   FFFC'CF45   D0  01C8   446          MOVL    W^MAC$AL_VALSTACK-4[R5],R6 ;GET COMMAND FROM STACK
    0B 6B   06   E1  01CE   447          BBC     #FLG$V_EVALEXPR,(R11),10$ ;EVALUEATE ON PASS 2?
          50   56   D0  01D2   448          MOVL    R6,R0                   ;YES--GET COMMAND
             FE28'  30  01D5   449          BSBW    MAC$INTOUT_X            ;OUTPUT CMD TO INT FILE
   0000'CF   59   D0  01D8   450          MOVL    R9,W^MAC$GL_EXPEND      ;SAVE END OF EXPRESSSION PTR
             56   D5  01DD   451 10$:     TSTL    R6                      ;WAS ROUTINE SUPPLIED?
             58   13  01DF   452          BEQL    40$                     ;IF EQL NO
          0A   56   91  01E1   453          CMPB    R6,#INT$_SUB            ;SUBTRACTION?
             10   12  01E4   454          BNEQ    20$                     ;IF NEQ NO
    01   0000'CF   D1  01E6   455          CMPL    W^MAC$GL_ABSFLAG,#1     ;YES--SEVERAL RELATIVE REFS?
             09   15  01EB   456          BLEQ    20$                     ;IF LEQ NO
      05 6B   02   E1  01ED   457          BBC     #FLG$V_COMPEXPR,(R11),20$ ;YES--REALLY COMPILE TIME EXPR?
    0000'CF   02   C2  01F1   458          SUBL2   #2,W^MAC$GL_ABSFLAG     ;YES--MAKE RESULT ABSOLUTE
          0000'CF   D4  01F6   459 20$:     CLRL    W^MAC$GL_VAL3           ;CLEAR EXPRESSION OVERFLOWW IND.
             56   DD  01FA   460          PUSHL   R6                      ;SAVE ROUTINE IDENT.
  56   0000'CF46   D0  01FC   461          MOVL    W^P1$ARITH_DISP[R6],R6  ;GET ROUTINE ADDRESS
             66   16  0202   462          JSB     (R6)                    ;CALL ROUTINE
             56 8ED0  0204   463          POPL    R6                      ;RESTORE ROUTINE IDENT
   51   0000'CF   D0  0207   464          MOVL    W^MAC$GL_VAL3,R1        ;EXPRESSION OVERFLOW?
             33   13  020C   465          BEQL    50$                     ;IF EQL NO
          0000'CF   D5  020E   466          TSTL    W^MAC$GL_ABSFLAG        ;YES--ABSOLUTE EXPRESSION?
             2D   12  0212   467          BNEQ    50$                     ;IF NEQ NO
52   007D8810 8F   D0  0214   468          MOVL    #MAC$_EXPOVR,R2         ; No--assume expression overflow
          04   56   91  021B   469          CMPB    R6,#INT$_DIV            ;UNLESS IT WAS DIVISION
             0B   12  021E   470          BNEQ    30$                     ;IF NEQ NO
             51   D5  0220   471          TSTL    R1                      ;THEN CHECK FOR DIVIDE BY 0
             07   18  0222   472          BGEQ    30$                     ;IF GEQ THEN NOT DIVIDE BY 0
52   007D8808 8F   D0  0224   473          MOVL    #MAC$_DIVBYZERO,R2      ; It was divide by zero
                     022B   474 30$:     $INTOUT_LW INT$_WRN,<R2,W^MAC$GL_ERRPT> ;EMIT ERROR TO PASS 2
             08   11  0237   475          BRB     50$
                     0239   476 ;
```

```
                        0239   477 ; NO ROUTINE SUPPLIED
                        0239   478 ;
                        0239   479 40$:     $VPUSH  #0                      ;RESULT IS 0
                        0241   480 50$:     $VPOP   W^MAC$GL_VALUE          ;POP RESULT INTO MAC$GL_VALUE
  01    0000'CF   D1    024B   481          CMPL    W^MAC$GL_ABSFLAG,#1     ;SEVERAL RELATIVE REFERENCES?
              0C  15    0250   482          BLEQ    60$                     ;IF LEQ NO
05 00000000'GF    E9    0252   483          BLBC    G^MAC$GL_ABSFLAG,60$    ;YES -- ARE THE NUMBER OF REFs ODD?
  0000'CF   01    9A    0259   484          MOVZBL  #1,W^MAC$GL_ABSFLAG     ;YES -- CALL IT ONE (RESULT IS...
                  05    025E   485 60$:     RSB                             ;...THE EXPRESSION IS RELOCATEABLE)
```

```
                     025F   487          .SBTTL  UP-ARROW-A ASCII TEXT PRIMARY
                     025F   488
                     025F   489 ;++
                     025F   490 ; FUNCTIONAL DESCRIPTION:
                     025F   491 ;
                     025F   492 ;       NUMASC IS INVOKED WHEN THE PRODUCTION 'UP-ARROW-A' IS
                     025F   493 ;       FOUND IN THE INPUT.  IT SCANS THE NEXT CHARACTER AS A
                     025F   494 ;       DELIMITER, THEN READS TEXT, STORING UP TO THE MAXIMUM
                     025F   495 ;       NUMBER OF CHARACTERS IN 'MAC$GL_VALUE', LOOKING FOR
                     025F   496 ;       THE MATCHING DELIMITER.  IF THE MAXIMUM NUMBER OF BYTES
                     025F   497 ;       FOR THIS OPERAND IS EXCEEDED OR IF END-OF-LINE IS FOUND
                     025F   498 ;       BEFORE THE MATCHING DELIMITER, A MESSAGE IS OUTPUT
                     025F   499 ;       TO PASS 2.
                     025F   500 ;
                     025F   501 ;--
                     025F   502
                     025F   503 NUMASC::                                    ;SPECIAL OPERATOR = DUPA
  00 6B    24   E3   025F   504          BBCS    #FLG$V_UPAFLG,(R11),..+1 ;FLAG DUPA WAS SEEN
       FD9A'  30     0263   505          BSBW    MAC$SKIPSP               ;SKIP SPACES AND TABS
56  0000'CF  9E     0266   506          MOVAB   W^MAC$GQ_VALUEQ,R6       ;POINT TO RESULT AREA
         66  7C     026B   507          CLRQ    (R6)                     ;CLEAR OUT 8 BYTES
       08 A6  7C     026D   508          CLRQ    8(R6)                    ; and then the next 8 bytes
    55  5A  D0     0270   509          MOVL    R10,R5                   ;COPY DELIMITER
    0D  55  91     0273   510          CMPB    R5,#CR                   ;IS DELIMITER CR?
         1F  13     0276   511          BEQL    20$                      ;IF EQL YES--ERROR
54  0000'CF  9A     0278   512          MOVZBL  W^MAC$GL_OPSIZE,R4       ;GET MAX SIZE OF OPERAND
  00 6B    2F   E3   027D   513          BBCS    #FLG$V_DLIMSTR,(R11),..+1 ; PASS ALL CHARACTERS (EVEN -;)
       FD7C'  30     0281   514 10$:     BSBW    MAC$GETCHR               ;GET NEXT CHARACTER
    55  5A  91     0284   515          CMPB    R10,R5                   ;DELIMITER?
         1C  13     0287   516          BEQL    30$                      ;IF EQL YES
    0D  5A  91     0289   517          CMPB    R10,#CR                  ;NO--END OF LINE?
         09  13     028C   518          BEQL    20$                      ;IF EQL YES--ERROR
         54  D7     028E   519          DECL    R4                       ;NO--ROOM TO STORE BYTE?
         EF  19     0290   520          BLSS    10$                      ;DON'T STORE IF TOO MANY CHARS
    86  5A  90     0292   521          MOVB    R10,(R6)+                ;STORE CHARACTER
         EA  11     0295   522          BRB     10$                      ;LOOP FOR MORE
                     0297   523 ;
                     0297   524 ; FOUND EOL BEFORE DELIMITER
                     0297   525 ;
                     0297   526 20$:     $MAC_ERR UNTERMARG                       ; Get message code
       FD61'  30     029C   527          BSBW    MAC$ERRORPT              ;ISSUE MESSAGE TO PASS 2
  09 6B    2F   E4   029F   528          BBSC    #FLG$V_DLIMSTR,(R11),40$ ;CLEAR ALLCHR AND GO FINISH UP
         07  11     02A3   529          BRB     40$                      ;FINISH
                     02A5   530 ;
                     02A5   531 ; FOUND OTHER DELIMITER
                     02A5   532 ;
  00 6B    2F   E4   02A5   533 30$:     BBSC    #FLG$V_DLIMSTR,(R11),..+1 ;DO NOT PASS ALL CHARACTERS
       FD54'  30     02A9   534          BSBW    MAC$GETCHR               ;SKIP OVER DELIMITER
         54  D5     02AC   535 40$:     TSTL    R4                       ;TOO MANY CHARACTERS?
         10  18     02AE   536          BGEQ    50$                      ;IF GEQ NO
                     02B0   537          $INTOUT_LW INT$_WRN,<#MAC$_DATATRUNC,W^MAC$GL_ERRPT> ; Yes--report error
                     02C0   538 50$:
    08  0000'CF  91     02C0   539          CMPB    W^MAC$GL_OPSIZE,#8       ; Was this a QUAD or OCTA operand?
         15  19     02C5   540          BLSS    70$                      ; No if LSS
0000'CF  0000'CF  D0     02C7   541          MOVL    W^MAC$GL_VAL3,-          ; Yes: save bits 32 to 63
                     02CE   542                  W^MAC$GL_HIGH_32
    10  0000'CF  91     02CE   543          CMPB    W^MAC$GL_OPSIZE,#16      ; Was this an OCTA operand?
```

```
                     07   12  02D3   544          BNEQ    70$                         ; No if NEQ
          0000'CF  0000'CF   7D  02D5   545          MOVQ    W^MAC$GQ_VAL2, -            ; Yes: save bits 64 to 127
                             02DC   546                  W^MAC$GQ_HIGH_64
                   FE29      31  02DC   547 70$:      BRW     PRMINT                      ;TREAT AS INTEGER DATA
```

```
                     02DF    549          .SBTTL  RADIX CONTROL
                     02DF    550
                     02DF    551 ;++
                     02DF    552 ; FUNCTIONAL DESCRIPTION:
                     02DF    553 ;
                     02DF    554 ;       THESE FOUR ROUTINES ARE INVOKED WHEN A RADIX CONTROL
                     02DF    555 ;       PRIMARY IS ENCOUNTERED.  THESE ROUTINES SAVE THE
                     02DF    556 ;       OLD RADIX IN MAC$GL_VALUE (FOR LATER RESTORATION) AND
                     02DF    557 ;       SET THE NEW RADIX IN MAC$GB_RDXNDX.
                     02DF    558 ;
                     02DF    559 ;--
                     02DF    560
                     02DF    561 RDXBIN::                                ;RADIX_CONTROL = DUPB
          0A   10    02DF    562          BSBB    SET_RADIX              ;GO SET THE INDEX FOR BINARY
          00         02E1    563          .BYTE   RDX$V_BINARY
                     02E2    564
                     02E2    565 RDXDEC::                                ;RADIX_CONTROL = DUPD
          07   10    02E2    566          BSBB    SET_RADIX              ;SET DECIMAL RADIX
          02         02E4    567          .BYTE   RDX$V_DECIMAL
                     02E5    568
                     02E5    569 RDXOCT::                                ;RADIX_CONTROL = DUPO
          04   10    02E5    570          BSBB    SET_RADIX              ;SET OCTAL RADIX
          01         02E7    571          .BYTE   RDX$V_OCTAL
                     02E8    572
                     02E8    573 RDXHEX::                                ;RADIX_CONTROL = DUPX
          01   10    02E8    574          BSBB    SET_RADIX              ;SET HEX RADIX
          03         02EA    575          .BYTE   RDX$V_HEX
                     02EB    576
                     02EB    577 SET_RADIX:
                     02EB    578
    0000'CF    9A    02EB    579          MOVZBL  W^MAC$GB_RDXNDX,-      ;SAVE CURRENT INDEX
    0000'CF          02EF    580                  @^MAC$GL_VALUE
0000'CF    9E   90    02F2    581          MOVB    @(SP)+,W^MAC$GB_RDXNDX ;SET NEW RADIX AND CLEAN STACK
                05    02F7    582          RSB                            ;RETURN TO CALLER'S CALLER
                      02F8    583
```

```
                     .SBTTL  OPERATORS

                ;++
                ; FUNCTIONAL DESCRIPTION:
                ;
                ;       THESE OPERATOR ROUTINES ARE CALLED WHEN A BINARY OPERATOR
                ;       IS ENCOUNTERED IN THE TEXT.  THESE ROUTINES MERELY SET
                ;       THE OPERATOR NUMBER INTO MAC$GL_VALUE FOR LATER PROCESSING
                ;       BY THE EXPRESSION EVALUATION ROUTINE (EXPBIN).
                ;
                ;--


                     .MACRO  OP      OPR
                     BSBB    SET_UP_OPERATOR
                     .BYTE   INT$_'OPR
                     .ENDM

02F8  OPPLUS::                                  ;OPBINARY = DDPLUS
                     OP      ADD
02FB  OPMINU::                                  ;OPBINARY = DDMINUS
                     OP      SUB
02FE  OPMUL::                                   ;OPBINARY = DDTIMES
                     OP      MUL
0301  OPDIV::                                   ;OPBINARY = DDDIV
                     OP      DIV
0304  OPAND::                                   ;OPBINARY = DDAND
                     OP      AND
0307  OPOR::                                    ;OPBINARY = DDOR
                     OP      OR
030A  OPXOR::                                   ;OPBINARY = DDXOR
                     OP      XOR
030D  OPASH::                                   ;OPBINARY = DDASH
                     OP      ASH
0310  OPCOM::                                   ;OPBINARY = DDUPC
                     OP      NOT
0313  OPNEG::                                   ;OPBINARY = DDMINUS
                     OP      NEG
0316  OPSAME::                                  ;OPBINARY = DDPLUS
                     OP      SAME

0319  SET_UP_OPERATOR:
0000'CF  9E  9A 0319          MOVZBL  @(SP)+,W^MAC$GL_VALUE   ;GET THE OPERATOR NUMBER
             05 031E          RSB                             ;RETURN TO CALLER'S CALLER
```

```
                     031F    632          .SBTTL  SYMBOL ATTRIBUTE DIRECTIVES -GLOBL/DEBUG/WEAK/EXTRN
                     031F    633
                     031F    634 ;++
                     031F    635 ; FUNCTIONAL DESCRIPTION:
                     031F    636 ;
                     031F    637 ;       GLOBAL/DEBUG/WEAK/EXTRN ARE CALLED WHEN THE CORRESPONDING
                     031F    638 ;       DIRECTIVE IS SCANNED.  FLAGS ARE SET IN SYM_FLAG FOR THE
                     031F    639 ;       ROUTINE 'IDLIST'.  'IDLIST' IS CALLED FOR EACH SYMBOL IN
                     031F    640 ;       THE LIST AND IT SETS THE BITS IN SYM_FLAG IN THE SYMBOL
                     031F    641 ;       BLOCK FOR THAT SYMBOL.
                     031F    642 ;
                     031F    643 ;--
                     031F    644
                     031F    645 GLOBAL::                                ;ID_LIST_HEAD = KGLOBL
              0E  10 031F    646          BSBB    SET_SYM_FLAG           ;SET FLAG TO REMEMBER
                0004 0321    647          .WORD   SYM$M_GLOBL
                     0323    648
                     0323    649 DEBUG::                                 ;ID_LIST_HEAD = KDEBUG
              0A  10 0323    650          BSBB    SET_SYM_FLAG           ;SET FLAGS TO REMEMBER
                00A0 0325    651          .WORD   SYM$M_DEBUG!SYM$M_REF
                     0327    652
                     0327    653 WEAK::                                  ;ID_LIST_HEAD = KWEAK
              06  10 0327    654          BSBB    SET_SYM_FLAG           ;SET FLAGS TO REMEMBER
                0006 0329    655          .WORD   SYM$M_WEAK!SYM$M_GLOBL
                     032B    656
                     032B    657 EXTRN::                                 ;ID_LIST_HEAD = KEXTRN
              02  10 032B    658          BSBB    SET_SYM_FLAG           ;SET THE FLAG
                0008 032D    659          .WORD   SYM$M_EXTRN
                     032F    660
                     032F    661
                     032F    662 SET_SYM_FLAG:
   0000'CF    9E  B0 032F    663          MOVW    @(SP)+,W^SYM_FLAG      ;REMEMBER THE FLAG BIT
                  05 0334    664          RSB                            ;RETURN TO CALLER'S CALLER
                     0335    665
                     0335    666 ;++
                     0335    667 ; FUNCTIONAL DESCRIPTION:
                     0335    668 ;
                     0335    669 ;       AFTER A GLOBAL/DEBUG/WEAK/EXTRN DIRECTIVE HAS BEEN SCANNED,
                     0335    670 ;       'IDLIST' IS CALLED FOR EACH SYMBOL IN THE LIST OF SYMBOLS
                     0335    671 ;       ACCOMPANYING THE DIRECTIVE   THE FLAGS CONTAINED IN SYM_FLAG
                     0335    672 ;       ARE SET FOR THE SYMBOL.  IF THE DIRECTIVE IS .EXTRN AND
                     0335    673 ;       THE SYMBOL IS ALREADY DEFINED, AN ERROR MESSAGE IS ISSUED
                     0335    674 ;       TO PASS 2.
                     0335    675 ;
                     0335    676 ;--
                     0335    677
                     0335    678 IDLIST::                                ;ID_LIST = ID
  56   0000'CF47    D0 0335    679          MOVL    W^MAC$AL_VALSTACK[R7],R6;GET POINTER TO SYMBOL BLOCK
0D 000U'CF   03    E1 033B    680          BBC     #SYM$V_EXTRN,W^SYM_FLAG,10$ ;BRANCH IF NOT .EXTRN
  08 09 A6   00    E1 0341    681          BBC     #SYM$V_DEF,SYM$W_FLAG(R6),10$ ;BRANCH IF SYMBOL NOT DEFINED
                    0346    682          $MAC_ERR SYMDEFINMO             ; Yes--get error message
          FCB2'  30 034B    683          BSBW    MAC$ERRORPT            ;SYMBOL DECLARED EXTERNAL BUT ALREADY DEFINE
09 A6   0000'CF  A8 034E    684 10$:     BISW    W^SYM_FLAG,SYM$W_FLAG(R6) ;SET BIT(S) IN SYMBOL FLAGS
  05 09 A6   05  E1 0354    685          BBC     #SYM$V_DEBUG,SYM$W_FLAG(R6),20$ ;BRANCH IF NOT .DEBUG
  00 09 A6   0E  E4 0359    686          BBSC    #SYM$V_SUPR,SYM$W_FLAG(R6),.+1 ;.DEBUG--CLEAR SUPR BIT
     55   00'8F  9A 035E    687 20$:     MOVZBL  #CRF$K_REF,R5          ;SET REFERENCE
50   00000000'EF  D0 0362    688          MOVL    MAC$GL_PSECTPTR,R0     ;GET POINTER TO PSECT DATA
```

```
                                                H 4

                     06 0D A0    03    E1  0369    689          BBC     #PSC$V_REL,-              ;IF ABS PSECT
                                             036E    690                  PSC$W_OPTIONS(R0),30$     ;THEN SKIP
                  09 A6    0800 8F    A8  036E    691          BISW2   #SYM$M_RELPSECT,SYM$W_FLAG(R6)   ;SET REL PSECT FLAG
                                FC89'   31  0374    692 30$:     BRW     MAC$CREF_SYM              ;CREF SYMBOL IF CREFFING AND RETURN
                                            0377    693
                                            0377    694          .END
```

```
$COUNT            =  0000003B
ARG$K_SIZE        =  000003E8
AUD$K_SIZE        =  00000010
BLNK              =  00000020
CHR$M_COMMA_CR    =  00000020
CHR$M_ILL_CHR     =  00000040
CHR$M_NUM_BER     =  00000010
CHR$M_SPA_MSK     =  00000001
CHR$M_SYM_CH1     =  00000008
CHR$M_SYM_CHR     =  00000004
CHR$M_SYM_DLM     =  00000002
CHR$V_COMMA_CR    =  00000005
CHR$V_CVTLWC      =  00000061
CHR$V_ILL_CHR     =  00000006
CHR$V_NOCVT       =  0000007F
CHR$V_NUM_BER     =  00000004
CHR$V_SPA_MSK     =  00000000
CHR$V_SYM_CH1     =  00000003
CHR$V_SYM_CHR     =  00000002
CHR$V_SYM_DLM     =  00000001
CNT               =  00000002
CR                =  0000000D
CRF$K_REF            ********    X  05
DEBUG                00000323 RG     05
ENTRY_MASK           00000002 R      04
ERR               =  00000001
EXPBIN               000001AF RG     05
EXTRN                0000032B RG     05
FF                =  0000000C
FLG$M_ALLCHR      =  00000001
FLG$M_BOL         =  00000002
FLG$M_CHKLPND     =  00100000
FLG$M_COMPEXPR    =  00000004
FLG$M_CONT        =  00000008
FLG$M_CRF         =  40000000
FLG$M_CRSEEN      =  00000001
FLG$M_DATRPT      =  00000010
FLG$M_DBGOUT      =  00004000
FLG$M_DLIMSTR     =  00008000
FLG$M_ENDMCH      =  00000020
FLG$M_EVALEXPR    =  00000040
FLG$M_EXPOPT      =  00000080
FLG$M_EXTERR      =  00010000
FLG$M_EXTWRN      =  00020000
FLG$M_FIRSTLN     =  00000200
FLG$M_IFSTAT      =  00800000
FLG$M_IIF         =  00400000
FLG$M_INSERT      =  00000100
FLG$M_IRPC        =  20000000
FLG$M_LEXOP       =  00000002
FLG$M_LSTXST      =  00000200
FLG$M_MAC2COL     =  00000800
FLG$M_MACL        =  00000800
FLG$M_MACLTB      =  08000000
FLG$M_MACTXT      =  00010000
FLG$M_MEBLST      =  00001000
FLG$M_MOREARG     =  00002000
FLG$M_MOREINP     =  00000008
FLG$M_NEWPND      =  00000400
FLG$M_NOREF       =  01000000
FLG$M_NTYPEPC     =  00000020
FLG$M_NULCHR      =  00040000
FLG$M_OBJXST      =  00200000
FLG$M_OPNDCHK     =  00000100
FLG$M_OPRND       =  00002000
FLG$M_OPTVFLIDX=  00001000
FLG$M_ORDLST      =  00020000
FLG$M_P2          =  00004000
FLG$M_RPTIRP      =  10000000
FLG$M_SEQFIL      =  02000000
FLG$M_SKAN        =  00008000
FLG$M_SPECOP      =  00000004
FLG$M_SPLALL      =  04000000
FLG$M_STOIMF      =  00040000
FLG$M_SYM2COL     =  00000400
FLG$M_TOCFLG      =  00080000
FLG$M_UPAFLG      =  00000010
FLG$M_UPDFIL      =  00000080
FLG$M_UPMARG      =  00000040
FLG$M_XCRF        =  80000000
FLG$V_ALLCHR      =  00000000
FLG$V_BOL         =  00000001
FLG$V_CHKLPND     =  00000014
FLG$V_COMPEXPR    =  00000002
FLG$V_CONT        =  00000003
FLG$V_CRF         =  0000001E
FLG$V_CRSEEN      =  00000020
FLG$V_DATRPT      =  00000004
FLG$V_DBGOUT      =  0000002E
FLG$V_DLIMSTR     =  0000002F
FLG$V_ENDMCH      =  00000005
FLG$V_EVALEXPR    =  00000006
FLG$V_EXPOPT      =  00000007
FLG$V_EXTERR      =  00000030
FLG$V_EXTWRN      =  00000031
FLG$V_FIRSTLN     =  00000029
FLG$V_IFSTAT      =  00000017
FLG$V_IIF         =  00000016
FLG$V_INSERT      =  00000008
FLG$V_IRPC        =  0000001D
FLG$V_LEXOP       =  00000021
FLG$V_LSTXST      =  00000009
FLG$V_MAC2COL     =  0000002B
FLG$V_MACL        =  0000000B
FLG$V_MACLTB      =  0000001B
FLG$V_MACTXT      =  00000010
FLG$V_MEBLST      =  0000000C
FLG$V_MOREARG     =  0000002D
FLG$V_MOREINP     =  00000023
FLG$V_NEWPND      =  0000000A
FLG$V_NOREF       =  00000018
FLG$V_NTYPEPC     =  00000025
FLG$V_NULCHR      =  00000032
FLG$V_OBJXST      =  00000015
FLG$V_OPNDCHK     =  00000028
FLG$V_OPRND       =  0000000D
FLG$V_OPTVFLIDX=  0000002C
FLG$V_ORDLST      =  00000011
FLG$V_P2          =  0000000E
FLG$V_RPTIRP      =  0000001C
FLG$V_SEQFIL      =  00000019
FLG$V_SKAN        =  0000000F
FLG$V_SPECOP      =  00000022
FLG$V_SPLALL      =  0000001A
FLG$V_STOIMF      =  00000012
FLG$V_SYM2COL     =  0000002A
FLG$V_TOCFLG      =  00000013
FLG$V_UPAFLG      =  00000024
FLG$V_UPDFIL      =  00000027
FLG$V_UPMARG      =  00000026
FLG$V_XCRF        =  0000001F
GLOBAL               0000031F RG     05
HASHSZ            =  0000007F
HYPHEN            =  0000002D
IDLIST               00000335 RG     05
INP$K_BUFSIZ      =  000003E8
INT$K_BUFSIZ      =  000013F4
INT$K_BUFWRN      =  00001390
INT$_ADD          =  00000001
INT$_AND          =  00000002
INT$_ASH          =  00000003
INT$_ASN          =  0000000C
INT$_AUGPC        =  0000000D
INT$_BDST         =  0000000E
INT$_CHKL         =  0000000F
INT$_DIV          =  00000004
INT$_END          =  00000010
INT$_EPT          =  00000011
INT$_ERR          =  00000012
INT$_ETX          =  00000013
INT$_FNEWL        =  00000014
INT$_ILG          =  00000000
INT$_INFO         =  0000003A
INT$_LGLAB        =  00000015
INT$_MACL         =  00000016
INT$_MUL          =  00000005
INT$_NEG          =  00000006
INT$_NEWL         =  00000017
INT$_NEWP         =  00000018
INT$_NOT          =  00000007
INT$_OP           =  00000019
INT$_OR           =  00000008
INT$_PRIL         =  0000001A
INT$_PRT          =  0000001B
INT$_PSECT        =  0000001C
INT$_REDEF        =  0000001D
INT$_REF          =  0000001E
INT$_REST         =  0000001F
INT$_SAME         =  00000009
INT$_SAVE         =  00000020
INT$_SBTTL        =  00000021
```

```
INT$_SETFLAG    = 00000022
INT$_SETLONG    = 00000023
INT$_SPIC       = 00000024
INT$_SPID       = 00000025
INT$_STIB       = 00000026
INT$_STIL       = 00000028
INT$_STIW       = 00000027
INT$_STKEPT     = 00000029
INT$_STKG       = 0000002A
INT$_STKL       = 0000002B
INT$_STKPC      = 0000002C
INT$_STKS       = 0000002D
INT$_STOB       = 00000034
INT$_STOL       = 0000002E
INT$_STOW       = 00000035
INT$_STRB       = 0000002F
INT$_STRL       = 00000031
INT$_STRSB      = 00000032
INT$_STRSW      = 00000033
INT$_STRW       = 00000030
INT$_STSB       = 00000036
INT$_STSW       = 00000037
INT$_SUB        = 0000000A
INT$_SUME       = 00000039
INT$_WRN        = 00000038
INT$_XOR        = 0000000B
LST$K_BUFSIZ    = 00000086
LST$K_L_P_PAGE  = 0000003C
LST$K_TITLE_SIZ= 00000028
MAC$AC_VALSTACK  ********  X  05
MAC$CREF_SYM     ********  X  05
MAC$ERRORPT      ********  X  05
MAC$GB_RDXNDX    ********  X  05
MAC$GETCHR       ********  X  05
MAC$GETFLOAT     ********  X  05
MAC$GL_ABSFLAG   ********  X  05
MAC$GL_ERRPT     ********  X  05
MAC$GL_EXPEND    ********  X  05
MAC$GL_HIGH_32   ********  X  05
MAC$GL_OPSIZE    ********  X  05
MAC$GL_PC        ********  X  05
MAC$GL_PRMSEG    ********  X  05
MAC$GL_PSECT     ********  X  05
MAC$GL_PSECTPTR  ********  X  05
MAC$GL_VAL3      ********  X  05
MAC$GL_VALUE     ********  X  05
MAC$GQ_HIGH_64   ********  X  05
MAC$GQ_VAL2      ********  X  05
MAC$GQ_VALUEQ    ********  X  05
MAC$INTERR_2_LW  ********  X  05
MAC$INTOUT_1_LW  ********  X  05
MAC$INTOUT_X     ********  X  05
MAC$SKIPSP       ********  X  05
MAC$_DATATRUNC = 007D8800
MAC$_DIVBYZERO = 007D8808
MAC$_EXPOVR32  = 007D8810
MAC$_SYMDEFINMO= 007D91E2
MAC$_UNTERMARG = 007D922A
MAC_SUBSYS     = 0000007D
MASK            0000017F RG  05
MASKNL          00000194 RG  05
MASKX           00000186 RG  05
NUMASC          0000025F RG  05
NUMFLT          00000100 RG  05
OBJ$K_BUFSIZ   = 00000200
OPAND           00000304 RG  05
OPASH           0000030D RG  05
OPCOM           00000310 RG  05
OPDIV           00000301 RG  05
OPF$M_LASTOPR  = 00002000
OPF$M_OPTEXP   = 00001000
OPF$V_LASTOPR  = 0000000D
OPF$V_OPTEXP   = 0000000C
OPMINO          000002FB RG  05
OPMUL           000002FE RG  05
OPNEG           00000313 RG  05
OPOR            00000307 RG  05
OPPLUS          000002F8 RG  05
OPSAME          00000316 RG  05
OPXOR           0000030A RG  05
P1$ARITH_ADD    ********   X 03
P1$ARITH_AND    ********   X 03
P1$ARITH_ASH    ********   X 03
P1$ARITH_DISP   00000000 RG  03
P1$ARITH_DIV    ********   X 03
P1$ARITH_MUL    ********   X 03
P1$ARITH_NEG    ********   X 03
P1$ARITH_NOT    ********   X 03
P1$ARITH_OR     ********   X 03
P1$ARITH_SAME   ********   X 03
P1$ARITH_SUB    ********   X 03
P1$ARITH_XOR    ********   X 03
PRMBRK          0000011C RG  05
PRMINT          00000108 RG  05
PRMPC           0000012E RG  05
PRMRDX          00000125 RG  05
PRMSYM          00000063 RG  05
PRMUN           00000000 RG  05
PSC$B_NAME      00000004
PSC$B_SEG       0000000C
PSC$B_UNUSED    0000000B
PSC$K_BLKSIZ    00000013
PSC$K_NO_OPTNS = 0000000A
PSC$L_CURLOC    0000000F
PSC$L_LINK      00000000
PSC$L_MAXLGTH   00000005
PSC$M_ABS      = FFFFFFF7
PSC$M_ALIGNFLG = 00004000
PSC$M_ALLOPTNS = 000003FF
PSC$M_BYTE     = 00004000
PSC$M_CON      = FFFFFFFB
PSC$M_DEFAULT  = 000001C8
PSC$M_EXE      = 000000C0
PSC$M_GBL      = 00000010
PSC$M_LCL      = FFFFFFEF
PSC$M_LIB      = 00000002
PSC$M_LONG     = 00004800
PSC$M_NOEXE    = FFFFFFBF
PSC$M_NOPIC    = FFFFFFFE
PSC$M_NORD     = FFFFFF7F
PSC$M_NOSHR    = FFFFFFDF
PSC$M_NOVEC    = FFFFFDFF
PSC$M_NOWRT    = FFFFFEFF
PSC$M_OVR      = 00000004
PSC$M_PAGE     = 00006400
PSC$M_PIC      = 00000001
PSC$M_QUAD     = 00004C00
PSC$M_RD       = 00000080
PSC$M_REL      = 00000008
PSC$M_SHR      = 00000020
PSC$M_USR      = FFFFFFFD
PSC$M_VEC      = 00000200
PSC$M_WORD     = 00004400
PSC$M_WRT      = 00000180
PSC$S_ALIGNMENT= 00000004
PSC$V_ALIGNFLG = 0000000E
PSC$V_ALIGNMENT= 0000000A
PSC$V_EXE      = 00000006
PSC$V_GBL      = 00000004
PSC$V_LIB      = 00000001
PSC$V_OVR      = 00000002
PSC$V_PIC      = 00000000
PSC$V_RD       = 00000007
PSC$V_REL      = 00000003
PSC$V_SHR      = 00000005
PSC$V_VEC      = 00000009
PSC$V_WRT      = 00000008
PSC$W_FLAG      00000009
PSC$W_OPTIONS   0000000D
RDX$V_BINARY   = 00000000
RDX$V_DECIMAL  = 00000002
RDX$V_DOUBLE   = 00000005
RDX$V_FLOAT    = 00000004
RDX$V_GFLOAT   = 00000006
RDX$V_HEX      = 00000003
RDX$V_HFLOAT   = 00000007
RDX$V_OCTAL    = 00000001
RDXBIN          000002DF RG  05
RDXDEC          000002E2 RG  05
RDXHEX          000002E8 RG  05
RDXOCT          000002E5 RG  05
REG$_PC        = 0000000F
REGLST          00000172 RG  05
RGLST1          0000016E RG  05
SEMI           = 0000003B
SET_RADIX       000002EB R   05
SET_SYM_FLAG    0000032F R   05
SET_UP_OPERATOR 00000319 R   05
SIGN_BIT       = 80000000
STB$K_PG_MISS  = 0000000A
SYM$B_NAME      00000004
```

```
SYM$B_SEG           0000000C
SYM$B_TOKEN         00000008
SYM$K_BLKSIZ        0000000D
SYM$K_MAXLEN    =   0000001F
SYM$K_TWOCOL    =   00000010
SYM$L_LINK          00000000
SYM$L_VAL           00000005
SYM$M_ABS       =   00000010
SYM$M_ASN       =   00000100
SYM$M_CRFO      =   00002000
SYM$M_DEBUG     =   00000020
SYM$M_DEF       =   00000001
SYM$M_DELMAC    =   00000200
SYM$M_EPT       =   00000200
SYM$M_EXTRN     =   00000008
SYM$M_GLOBL     =   00000004
SYM$M_LOCAL     =   00000040
SYM$M_ODBG      =   00000400
SYM$M_REF       =   00000080
SYM$M_RELPSECT  =   00000800
SYM$M_SUPR      =   00004000
SYM$M_WEAK      =   00000002
SYM$M_XCRF      =   00001000
SYM$V_ABS       =   00000004
SYM$V_ASN       =   00000008
SYM$V_CRFO      =   0000000D
SYM$V_DEBUG     =   00000005
SYM$V_DEF       =   00000000
SYM$V_DELMAC    =   00000009
SYM$V_EPT       =   00000009
SYM$V_EXTRN     =   00000003
SYM$V_GLOBL     =   00000002
SYM$V_LOCAL     =   00000006
SYM$V_ODBG      =   0000000A
SYM$V_REF       =   00000007
SYM$V_RELPSECT  =   0000000B
SYM$V_SUPR      =   0000000E
SYM$V_WEAK      =   00000001
SYM$V_XCRF      =   0000000C
SYM$W_FLAG          00000009
SYM_FLAG            00000000 R      04
TAB             =   00000009
WEAK                00000327 RG     05
X1              =   00000033
X2              =   00080000
```

Psect synopsis

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
. BLANK .	00000000 (0.)	01 (1.)	NOPIC USR CON REL LCL NOSHR EXE RD WRT NOVEC BYTE
ABS	00000013 (19.)	02 (2.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
MAC$RO_DATA	00000030 (48.)	03 (3.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
MAC$ACTPRI_DATA	00000004 (4.)	04 (4.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC LONG

MAC$RO_CODE_P1 00000377 (887.) 05 (5.) NOPIC USR CON REL GBL NOSHR EXE RD NOWRT NOVEC LONG

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	35	00:00:00.03	00:00:02.43
Command processing	131	00:00:00.37	00:00:03.59
Pass 1	216	00:00:03.53	00:00:15.39
Symbol table sort	0	00:00:00.43	00:00:00.97
Pass 2	135	00:00:01.18	00:00:02.71
Symbol table output	32	00:00:00.15	00:00:00.32
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	553	00:00:05.72	00:00:25.43

The working set limit was 1500 pages.
34438 bytes (68 pages) of virtual memory were used to buffer the intermediate code.
There were 30 pages of symbol table space allocated to hold 462 non-local and 33 local symbols.
694 source lines were read in Pass 1, producing 25 object records in Pass 2.
16 pages of virtual memory were used to define 15 macros.

Macro library statistics

Macro library name	Macros defined
_255DUA28:[MACRO.OBJ]MACRO.MLB;1	12
_255DUA28:[SYSLIB]STARLET.MLB;2	3
TOTALS (all libraries)	15

506 GETS were required to define 15 macros.

There were no errors, warnings or information messages.

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

ACTPRI LIS

ARGSCN LIS

BDYSCN LIS

CRFSUB LIS

ACTOPC LIS

ACTSTA LIS

APSECT LIS

CRFDAT LIS

ACTREF LIS

COMPUT LIS