```
MMM          MMM     AAAAAAAAA         CCCCCCCCCCC   RRRRRRRRRRR        OOOOOOOOO
MMM          MMM     AAAAAAAAA         CCCCCCCCCCC   RRRRRRRRRRR        OOOOOOOOO
MMM          MMM     AAAAAAAAA         CCCCCCCCCCC   RRRRRRRRRRR        OOOOOOOOO
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      OOOOOOOOO
MMM         MMM    AAA         AAA      CCCCCCCCCCC   RRR         RRR      OOOOOOOOO
MMM         MMM    AAA         AAA      CCCCCCCCCCC   RRR         RRR      OOOOOOOOO
```

FILEID**CRFDAT

```
  CCCCCCCC  RRRRRRRR    FFFFFFFFFF  DDDDDDDD      AAAAAA    TTTTTTTTTT
  CCCCCCCC  RRRRRRRR    FFFFFFFFFF  DDDDDDDD      AAAAAA    TTTTTTTTTT
CC          RR      RR  FF          DD      DD  AA      AA      TT
CC          RR      RR  FF          DD      DD  AA      AA      TT
CC          RR      RR  FF          DD      DD  AA      AA      TT
CC          RR      RR  FF          DD      DD  AA      AA      TT
CC          RRRRRRRR    FFFFFFFF    DD      DD  AA      AA      TT
CC          RRRRRRRR    FFFFFFFF    DD      DD  AA      AA      TT
CC          RR  RR      FF          DD      DD  AAAAAAAAAA      TT
CC          RR  RR      FF          DD      DD  AAAAAAAAAA      TT
CC          RR    RR    FF          DD      DD  AA      AA      TT          ....
  CCCCCCCC  RR      RR  FF          DDDDDDDD    AA      AA      TT          ....
  CCCCCCCC  RR      RR  FF          DDDDDDDD    AA      AA      TT          ....

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
```

Table of contents

```
0000     1          .TITLE  MAC$CRFDAT      CROSS REFERENCE DATA BASE
0000     2          .IDENT  'V04-000'
0000     3
0000     4  ;
0000     5  ;****************************************************************************
0000     6  ;*                                                                          *
0000     7  ;*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
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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: 25-AUG-78
0000    40  ;
0000    41  ; MODIFIED BY:
0000    42  ;
0000    43  ;       V01.05  RN0024          R. Newland      13-Dec-1979
0000    44  ;               New cref control macros
0000    45  ;
0000    46  ;       V01.04  RN0008          R. Newland      31-Aug-1979
0000    47  ;               31 character symbols
0000    48  ;
0000    49  ;--
```

```
0000     51          .SBTTL  DECLARATIONS
0000     52
0000     53 ;
0000     54 ; MACROS
0000     55 ;
0000     56          $MAC_SYMBLKDEF                  ;DEFINE SYMBOL BLOCK OFFSETS
0000     57                                          ;AND FLAGS
```

```
                     59          .SBTTL  DATA BASE FOR SYMBOL CROSS REFERENCE
                     60
                     61 ;
                     62 ; FIELD DESCRIPTORS
                     63 ;
                     64
00000000             65          .PSECT  MAC$RO_DATA,NOWRT,NOEXE,GBL,LONG
                     66
                     67 SYMBOLFIELD::                                ; Symbol name field
                     68          $CRFFIELD       -
                     69          BIT_MASK=0,-
                     70          FAO_STRING=<!15AC>,-                ;FAO CONTROL STRING
                     71          FIELD_WIDTH=15,-                    ;FIELD WIDTH
                     72          SET_CLEAR=SET
                     73
                     74          $CRFFIELDEND                        ;END OF SYMBOL FIELD
                     75
                     76 SYMBOLFIELD_31::                             ;SYMBOL NAME FIELD FOR 31 CHAR SYMBOLS
                     77          $CRFFIELD       -
                     78          BIT_MASK=0,-
                     79          FAO_STRING=<!31AC>,-                ;FAO CONTROL STRING
                     80          FIELD_WIDTH=31,-                    ;FIELD WIDTH
                     81          SET_CLEAR=SET
                     82
                     83          $CRFFIELDEND                        ;END OF SYMBOL FIELD
                     84
                     85 ASSIGNFIELD:                                 ;SEPARATE SYMBOL NAME FROM VALUE
                     86                                              ;WITH SPACE OR EQUAL SIGN
                     87          $CRFFIELD       -
                     88          BIT_MASK=0,-
                     89          FAO_STRING=< >,-                    ;USE THIS FIELD IF NOT ASSIGN
                     90          FIELD_WIDTH=1,-
                     91          SET_CLEAR=SET
                     92
                     93          $CRFFIELD       -                   ;IF SYMBOL CREATED BY ASSIGNMENT
                     94          BIT_MASK=SYM$M_ASN,-                ;CHECK THIS BIT PLEASE
                     95          FAO_STRING=<=>,-                    ;OUTPUT AN EQUAL SIGN
                     96          FIELD_WIDTH=1,-
                     97          SET_CLEAR=SET
                     98
                     99          $CRFFIELDEND
                    100
                    101 VALUEFIELD:                                 ;SYMBOL VALUE FIELD
                    102          $CRFFIELD       -
                    103          BIT_MASK=0,-
                    104          FAO_STRING=<!XL>,-                  ;FAO CONTROL STRING
                    105          FIELD_WIDTH=8,-                     ;OUTPUT VALUE IN 8 DIGITS
                    106          SET_CLEAR=SET
                    107
                    108          $CRFFIELDEND
                    109
                    110 VALFLGFIELD:                                ;VALUE FLAGS FIELD
                    111          $CRFFIELD       -
                    112          BIT_MASK=0,-
                    113          FAO_STRING=<!3* >,-                 ;JUST SKIP SOME SPACES
                    114          FIELD_WIDTH=3,-                     ;IF NONE OTHERS FIT
                    115          SET_CLEAR=SET
```

```
                        0050   116          $CRFFIELD       -
                        0050   117          BIT_MASK=SYM$M_ABS,-            ;IF SYMBOL IS NOT ABS (RELOC)
                        0050   118          FAO_STRING=<-R >,-              ;THEN SAY SO
                        0050   119          FIELD_WIDTH=3,-
                        0050   120          SET_CLEAR=CLEAR
                        005C   121          $CRFFIELD       -
                        005C   122          BIT_MASK=SYM$M_DEF,-            ;IF SYMBOL NOT DEFINED
                        005C   123          FAO_STRING=<-X >,-
                        005C   124          FIELD_WIDTH=3,-
                        005C   125          SET_CLEAR=CLEAR
                        0068   126          $CRFFIELD       -
                        0068   127          BIT_MASK=SYM$M_ABS!SYM$M_DEF,-
                        0068   128          FAO_STRING=<-XR>,-
                        0068   129          FIELD_WIDTH=3,-
                        0068   130          SET_CLEAR=CLEAR
                        0074   131
                        0074   132          $CRFFIELDEND
                        0076   133
                        0076   134 REFLAGFIELD:                            ;REFERENCE FLAGS
                        0076   135          $CRFFIELD       -
                        0076   136          BIT_MASK=0,-
                        0076   137          FAO_STRING=<!2* >,-             ;JUST SKIP SPACES
                        0076   138          FIELD_WIDTH=2,-
                        0076   139          SET_CLEAR=SET
                        0082   140
                        0082   141          $CRFFIELD       -               ;USE THIS IF WRITE REFERENCE
                        0082   142          BIT_MASK=1,-
                        0082   143          FAO_STRING=<#->,-
                        0082   144          FIELD_WIDTH=2,-
                        0082   145          SET_CLEAR=SET
                        008E   146
                        008E   147          $CRFFIELDEND
                        0090   148
                        0090   149 REFERENCER:                             ;REFERENCER (LINE/PAGE)
                        0090   150          $CRFFIELD       -
                        0090   151          BIT_MASK=0,-
                        0090   152          FAO_STRING=<!12AC>,-            ;COUNTED ASCII STRING
                        0090   153          FIELD_WIDTH=14,-                ;WITH 2 SPACES
                        0090   154          SET_CLEAR=SET
                        009C   155
                        009C   156          $CRFFIELDEND
                        009E   157 ;
                        009E   158 ; NOW THE CROSS-REFERENCE CONTROL TABLE
                        009E   159 ;
                        009E   160
                    00000000   161          .PSECT  MAC$RW_DATA,NOEXE,LONG
                        0000   162
                        0000   163 MAC$AL_CRFSYCTB::                        ;CONTROL TABLE FOR SYMBOL CREF
                        0000   164          $CRFCTLTABLE    -               ; Control table for symbol cref
                        0000   165                  OUTPUT=MAC$CRF_OUTPUT,- ; Output routine
                        0000   166                  ERROR=MAC$CRF_ERROR,-   ; Error routine
                        0000   167                  KEYTYPE=ASCIC,-         ; Key type is ASCIC
                        0000   168                  KEY1TABLE=SYMBOLFIELD,- ;SYMBOL NAME
                        0000   169                  KEY2TABLE=ASSIGNFIELD,- ;'=' IF ASSIGNMENT STATEMENT
                        0000   170                  VAL1TABLE=VALUEFIELD,-  ;SYMBOL VALUE
                        0000   171                  VAL2TABLE=VALFLGFIELD,- ;SYMBOL VALUE FLAGS (NYI)
                        0000   172                  REF1TABLE=REFLAGFIELD,- ;SYMBOL REFERENCER FLAGS
```

```
0000   173                    REF2TABLE=REFERENCER    ;SYMBOL REFERENCER NAME (LINE/PAGE)
```

```
                        .SBTTL  DATA BASE FOR MACRO CROSS REFERENCE

                ;
                ; FIELD DESCRIPTORS
                ;
                        .PSECT  MAC$RO_DATA,NOWRT,NOEXE,GBL,LONG

                MACROFIELD::                            ; Macro name field
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!15AC>,-
                        FIELD_WIDTH=15,-
                        SET_CLEAR=SET

                        $CRFFIELDEND                    ;END OF MACRO NAME FIELD

                MACROFIELD_31::                         ;MACRO NAME FIELD FOR 31 CHAR MACROS
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!31AC>,-
                        FIELD_WIDTH=31,-
                        SET_CLEAR=SET

                        $CRFFIELDEND                    ;END OF MACRO NAME FIELD

                DELFIELD:                               ;MACRO DELETED FLAG FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-                    ;NYI
                        FAO_STRING=<   >,-
                        FIELD_WIDTH=3,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

                SIZINPAGESFIELD:                        ;STORAGE USED FOR MACRO
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!SL>,-
                        FIELD_WIDTH=8,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

                SIZFLGFIELD:                            ;FLAGS FOR SIZE FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<   >,-
                        FIELD_WIDTH=3,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

                MCREFLGFIELD:                           ;MACRO REFERENCER LINE/PAGE
                                                        ;FLAGS
                        $CRFFIELD       -
                        BIT_MASK=0,-
```

```
00E4   232          FAO_STRING=<    >,-
00E4   233          FIELD_WIDTH=3,-
00E4   234          SET_CLEAR=SET
00F0   235
00F0   236          $CRFFIELDEND
00F2   237
00F2   238 MCREFFIELD:                                  ;MACRO REFERENCER
00F2   239          $CRFFIELD       -
00F2   240          BIT_MASK=0,-
00F2   241          FAO_STRING=<!12AC>,-                ;COUNTED ASCII STRING
00F2   242          FIELD_WIDTH=14,-
00F2   243          SET_CLEAR=SET
00FE   244
00FE   245          $CRFFIELDEND
0100   246
0100   247 ;
0100   248 ; THE CROSS-REFERENCE CONTROL TABLE FOR MACRO CROSS-REFERNCE
0100   249 ;
00000060   250          .PSECT  MAC$RW_DATA,NOEXE,LONG
0060   251
0060   252 MAC$AL_CRFMCCTB::
0060   253          $CRFCTLTABLE    -
0060   254                  OUTPUT=MAC$CRF_OUTPUT,- ; Output routine
0060   255                  ERROR=MAC$CRF_ERROR,-   ; Error routine
0060   256                  KEYTYPE=ASCIC,-         ; Key type is ASCIC
0060   257                  KEY1TABLE=MACROFIELD,-   ;MACRO NAME
0060   258                  KEY2TABLE=DELFIELD,-     ;FLAG IF DELETED OR NOT
0060   259                  VAL1TABLE=SIZINPAGESFIELD,- ;SIZE TO DEFINE MACRO
0060   260                  VAL2TABLE=SIZFLGFIELD,-  ;SIZE FLAGS
0060   261                  REF1TABLE=MCREFLGFIELD,- ;REFERENCER FLAGS
0060   262                  REF2TABLE=MCREFFIELD     ;REFERENCER LINE/PAGE
```

```
                        .SBTTL  DATA BASE FOR OPCODE CROSS REFERENCE

                ;
                ; FIELD DESCRIPTORS
                ;
00000100                .PSECT  MAC$RO_DATA,NOWRT,NOEXE,GBL,LONG

0100            OPCODEFIELD:                                    ;OPCODE NAME FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!15AC>,-
                        FIELD_WIDTH=15,-
                        SET_CLEAR=CLEAR

010C                    $CRFFIELDEND

010E            OPFLGFIELD:                                     ;OPCODE FLAGS FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<>,-
                        FIELD_WIDTH=0,-
                        SET_CLEAR=CLEAR

011A                    $CRFFIELDEND

011C            OPVALFIELD:                                     ;OPCODE VALUE FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!4XW>,-
                        FIELD_WIDTH=5,-
                        SET_CLEAR=CLEAR

0128                    $CRFFIELDEND

012A            OPVALFLGFIELD:                                  ;OPCODE VALUE FLAGS FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!5* >,-
                        FIELD_WIDTH=5,-
                        SET_CLEAR=CLEAR

0136                    $CRFFIELDEND

0138            OPREFLAGFIELD:                                  ;REFERENCER FLAG FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<>,-
                        FIELD_WIDTH=0,-
                        SET_CLEAR=CLEAR

0144                    $CRFFIELDEND

0146            OPREFFIELD:                                     ;REFERENCER FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!12AC>,-
                        FIELD_WIDTH=14,-
```

```
                0146    321          SET_CLEAR=CLEAR
                0152    322
                0152    323          $CRFFIELDEND
                0154    324
                0154    325 ;
                0154    326 ; THE CROSS-REFERENCE CONTROL TABLE FOR OPCODE CROSS REFERENCE
                0154    327 ;
            000000C0    328          .PSECT  MAC$RW_DATA,NOEXE,LONG
                00C0    329
                00C0    330 MAC$AL_CRFOPCTB::
                00C0    331          $CRFCTLTABLE    -
                00C0    332                  OUTPUT=MAC$CRF_OUTPUT,- ; Output routine
                00C0    333                  ERROR=MAC$CRF_ERROR,-   ; Error routine
                00C0    334                  KEYTYPE=ASCIC,-         ; Key type is ASCIC
                00C0    335                  KEY1TABLE=OPCODEFIELD,-  ;OPCODE NAME
                00C0    336                  KEY2TABLE=OPFLGFIELD,-   ;OPCODE FLAGS
                00C0    337                  VAL1TABLE=OPVALFIELD,-   ;OPCODE VALUE
                00C0    338                  VAL2TABLE=OPVALFLGFIELD,-;OPCODE VALUE FLAGS
                00C0    339                  REF1TABLE=OPREFLAGFIELD,-;REFERENCER FLAGS
                00C0    340                  REF2TABLE=OPREFFIELD     ;REFERENCER
```

```
                     342          .SBTTL  DATA BASE FOR DIRECTIVE CROSS REFERENCE
                     343
                     344 ;
                     345 ; FIELD DESCRIPTORS
                     346 ;
00000154             347          .PSECT  MAC$RO_DATA,NOWRT,NOEXE,GBL,LONG
                     348
                     349 DIRFIELD:                                        ;DIRECTIVE NAME FIELD
                     350          $CRFFIELD       -
                     351          BIT_MASK=0,-
                     352          FAO_STRING=<!15AC>,-
                     353          FIELD_WIDTH=15,-
                     354          SET_CLEAR=SET
                     355
                     356          $CRFFIELDEND
                     357
                     358 DIRFLGFIELD:                                     ;DIRECTIVE FLAGS FIELD
                     359          $CRFFIELD       -
                     360          BIT_MASK=0,-
                     361          FAO_STRING=<>,-
                     362          FIELD_WIDTH=0,-
                     363          SET_CLEAR=SET
                     364
                     365          $CRFFIELDEND
                     366
                     367 DIRVALFIELD:                                     ;DIRECTIVE VALUE FIELD
                     368          $CRFFIELD       -
                     369          BIT_MASK=0,-
                     370          FAO_STRING=<>,-
                     371          FIELD_WIDTH=0,-
                     372          SET_CLEAR=SET
                     373
                     374          $CRFFIELDEND
                     375
                     376 DIRVALFLGFIELD:                                  ;DIRECTIVE VALUE FLAGS
                     377          $CRFFIELD       -
                     378          BIT_MASK=0,-
                     379          FAO_STRING=<>,-
                     380          FIELD_WIDTH=0,-
                     381          SET_CLEAR=SET
                     382
                     383          $CRFFIELDEND
                     384
                     385 DIREFLAGFIELD:                                   ;REFERENCER FLAG FIELD
                     386          $CRFFIELD       -
                     387          BIT_MASK=0,-
                     388          FAO_STRING=<>,-
                     389          FIELD_WIDTH=0,-
                     390          SET_CLEAR=SET
                     391
                     392          $CRFFIELDEND
                     393
                     394 DIRREFFIELD:                                    ;REFERENCER FIELD
                     395          $CRFFIELD       -
                     396          BIT_MASK=0,-
                     397          FAO_STRING=<!12AC>,-
                     398          FIELD_WIDTH=14,-
```

```
                019A    399          SET_CLEAR=SET
                01A6    400
                01A6    401          $CRFFIELDEND
                01A8    402
                01A8    403 ;
                01A8    404 ; THE CROSS-REFERENCE CONTROL TABLE FOR DIRECTIVE CROSS REFERENCE
                01A8    405 ;
            00000120    406          .PSECT  MAC$RW_DATA,NOEXE,LONG
                0120    407
                0120    408 MAC$AL_CRFDRCTB::
                0120    409          $CRFCTLTABLE    -
                0120    410                  OUTPUT=MAC$CRF_OUTPUT,- ; Output routine
                0120    411                  ERROR=MAC$CRF_ERROR,-   ; Error routine
                0120    412                  KEYTYPE=ASCIC,-         ; Key type is ASCIC
                0120    413                  KEY1TABLE=DIRFIELD,-     ;DIRECTIVE NAME
                0120    414                  KEY2TABLE=DIRFLGFIELD,-  ;DIRECTIVE FLAGS
                0120    415                  VAL1TABLE=DIRVALFIELD,-  ;DIRECTIVE VALUE
                0120    416                  VAL2TABLE=DIRVALFLGFIELD,- ;DIRECTIVE VALUE FLAGS
                0120    417                  REF1TABLE=DIREFLAGFIELD,- ;REFERENCER FLAGS
                0120    418                  REF2TABLE=DIRREFFIELD    ;REFERENCER
```

```
                        .SBTTL  DATA BASE FOR REGISTER CROSS REFERENCE
                ;
                ; FIELD DESCRIPTORS
                ;
000001A8                .PSECT  MAC$RO_DATA,NOWRT,NOEXE,GBL,LONG

01A8            REGFIELD:                                       ;REGISTER NAME FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!AC!3* >,-
                        FIELD_WIDTH=10,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

01B6            REGFLGFIELD:                                    ;REGISTER FLAG FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<>,-
                        FIELD_WIDTH=0,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

01C4            REGVALFIELD:                                    ;REGISTER VALUE FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!10SL>,-
                        FIELD_WIDTH=14,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

01D2            REGVALFLGFIELD:                                 ;REGISTER VALUE FLAGS FIELD
                        $CRFFIELD       -
                        BIT_MASK=0,-
                        FAO_STRING=<!5* >,-
                        FIELD_WIDTH=5,-
                        SET_CLEAR=SET

                        $CRFFIELDEND

01E0            REGREFLAGFIELD:                                 ;REGISTER REFERENCER FLAGS
                        $CRFFIELD       -                       ;USE THIS FORMAT IF NOT WRITE REF
                        BIT_MASK=0,-
                        FAO_STRING=<!2* >,-
                        FIELD_WIDTH=2,-
                        SET_CLEAR=SET

                        $CRFFIELD       -                       ;WRITE REFERENCE
                        BIT_MASK=1,-
                        FAO_STRING=<#->,-
                        FIELD_WIDTH=2,-
                        SET_CLEAR=SET

                        $CRFFIELDEND
```

```
                01FA   477
                01FA   478 REGREFFIELD:                                    ;REGISTER REFERENCER
                01FA   479         $CRFFIELD       -
                01FA   480         BIT_MASK=0,-
                01FA   481         FAO_STRING=<!12AC>,-
                01FA   482         FIELD_WIDTH=14,-
                01FA   483         SET_CLEAR=SET
                0206   484
                0206   485         $CRFFIELDEND
                0208   486
                0208   487 ;
                0208   488 ; THE CROSS-REFERENCE CONTROL TABLE FOR REGISTERS CROSS REFERENCE
                0208   489 ;
            00000180   490         .PSECT  MAC$RW_DATA,NOEXE,LONG
                0180   491
                0180   492 MAC$AL_CRFRGCTB::
                0180   493         $CRFCTLTABLE    -
                0180   494                 OUTPUT=MAC$CRF_OUTPUT,- ; Output routine
                0180   495                 ERROR=MAC$CRF_ERROR,-   ; Error routine
                0180   496                 KEYTYPE=ASCIC,-         ; Key type is ASCIC
                0180   497                 KEY1TABLE=REGFIELD,-     ;REGISTER NAME
                0180   498                 KEY2TABLE=REGFLGFIELD,-  ;REGISTER FLAGS
                0180   499                 VAL1TABLE=REGVALFIELD,-  ;REGISTER VALUE
                0180   500                 VAL2TABLE=REGVALFLGFIELD,- ;REGISTER VALUE FLAGS
                0180   501                 REF1TABLE=REGREFLAGFIELD,- ;REFERENCER FLAGS
                0180   502                 REF2TABLE=REGREFFIELD    ;REFERENCER
                01E0   503
                01E0   504         .END
```

```
$$$LNG1          = 0000007B R     04      PSC$M_RD         = 00000080          SYM$V_CRFO       = 0000000D
$$$LNG2          = 00000080 R     04      PSC$M_REL        = 00000008          SYM$V_DEBUG      = 00000005
ASSIGNFIELD        0000001C R     03      PSC$M_SHR        = 00000020          SYM$V_DEF        = 00000000
CRF$K_ASCIC        ********    X  05      PSC$M_USR        = FFFFFFFD          SYM$V_DELMAC     = 00000009
DELFIELD           000000BA R     03      PSC$M_VEC        = 00000200          SYM$V_EPT        = 00000009
DIREFLAGFIELD      0000018C R     03      PSC$M_WORD       = 00004400          SYM$V_EXTRN      = 00000003
DIRFIELD           00000154 R     03      PSC$M_WRT        = 00000180          SYM$V_GLOBL      = 00000002
DIRFLGFIELD        00000162 R     03      PSC$S_ALIGNMENT= 00000004            SYM$V_LOCAL      = 00000006
DIRREFFIELD        0000019A R     03      PSC$V_ALIGNFLG = 0000000E            SYM$V_ODBG       = 0000000A
DIRVALFIELD        00000170 R     03      PSC$V_ALIGNMENT= 0000000A            SYM$V_REF        = 00000007
DIRVALFLGFIELD     0000017E R     03      PSC$V_EXE        = 00000006          SYM$V_RELPSECT   = 0000000B
MAC$AL_CRFDRCTB    00000120 RG    05      PSC$V_GBL        = 00000004          SYM$V_SUPR       = 0000000E
MAC$AL_CRFMCCTB    00000060 RG    05      PSC$V_LIB        = 00000001          SYM$V_WEAK       = 00000001
MAC$AL_CRFOPCTB    000000C0 RG    05      PSC$V_OVR        = 00000002          SYM$V_XCRF       = 0000000C
MAC$AL_CRFRGCTB    00000180 RG    05      PSC$V_PIC        = 00000000          SYM$W_FLAG         00000009
MAC$AL_CRFSYCTB    00000000 RG    05      PSC$V_RD         = 00000007          SYMBOLFIELD        00000000 RG    03
MAC$CRF_ERROR      ********    X  05      PSC$V_REL        = 00000003          SYMBOLFIELD_31     0000000E RG    03
MAC$CRF_OUTPUT     ********    X  05      PSC$V_SHR        = 00000005          VALFLGFIELD        00000044 R     03
MACROFIELD         0000009E RG    03      PSC$V_VEC        = 00000009          VALUEFIELD         00000036 R     03
MACROFIELD_31      000000AC RG    03      PSC$V_WRT        = 00000008          X1               = 00000400
MCREFFIELD         000000F2 R     03      PSC$W_FLAG         00000009          X2               = 0000000F
MCREFLGFIELD       000000E4 R     03      PSC$W_OPTIONS      0000000D
OPCODEFIELD        00000100 R     03      REFERENCER         00000090 R     03
OPFLGFIELD         0000010E R     03      REFLAGFIELD        00000076 R     03
OPREFFIELD         00000146 R     03      REGFIELD           000001A8 R     03
OPREFLAGFIELD      00000138 R     03      REGFLGFIELD        000001B6 R     03
OPVALFIELD         0000011C R     03      REGREFFIELD        000001FA R     03
OPVALFLGFIELD      0000012A R     03      REGREFLAGFIELD     000001E0 R     03
PSC$B_NAME         00000004               REGVALFIELD        000001C4 R     03
PSC$B_SEG          0000000C               REGVALFLGFIELD     000001D2 R     03
PSC$B_UNUSED       0000000B               SIZFLGFIELD        000000D6 R     03
PSC$K_BLKSIZ       00000013               SIZINPAGESFIELD    000000C8 R     03
PSC$K_NO_OPTNS   = 0000000A               SYM$B_NAME         00000004
PSC$L_CURLOC       0000000F               SYM$B_SEG          0000000C
PSC$L_LINK         00000000               SYM$B_TOKEN        0000000B
PSC$L_MAXLGTH      00000005               SYM$K_BLKSIZ       0000000D
PSC$M_ABS        = FFFFFFF7               SYM$K_MAXLEN     = 0000001F
PSC$M_ALIGNFLG   = 00004000               SYM$L_LINK         00000000
PSC$M_ALLOPTNS   = 000003FF               SYM$L_VAL          00000005
PSC$M_BYTE       = 00004000               SYM$M_ABS        = 00000010
PSC$M_CON        = FFFFFFFB               SYM$M_ASN        = 00000100
PSC$M_DEFAULT    = 000001C8               SYM$M_CRFO       = 00002000
PSC$M_EXE        = 000000C0               SYM$M_DEBUG      = 00000020
PSC$M_GBL        = 00000010               SYM$M_DEF        = 00000001
PSC$M_LCL        = FFFFFFEF               SYM$M_DELMAC     = 00000200
PSC$M_LIB        = 00000002               SYM$M_EPT        = 00000200
PSC$M_LONG       = 00004800               SYM$M_EXTRN      = 00000008
PSC$M_NOEXE      = FFFFFFBF               SYM$M_GLOBL      = 00000004
PSC$M_NOPIC      = FFFFFFFE               SYM$M_LOCAL      = 00000040
PSC$M_NORD       = FFFFFF7F               SYM$M_ODBG       = 00000400
PSC$M_NOSHR      = FFFFFFDF               SYM$M_REF        = 00000080
PSC$M_NOVEC      = FFFFFDFF               SYM$M_RELPSECT   = 00000800
PSC$M_NOWRT      = FFFFFEFF               SYM$M_SUPR       = 00004000
PSC$M_OVR        = 00000004               SYM$M_WEAK       = 00000002
PSC$M_PAGE       = 00006400               SYM$M_XCRF       = 00001000
PSC$M_PIC        = 00000001               SYM$V_ABS        = 00000004
PSC$M_QUAD       = 00004C00               SYM$V_ASN        = 00000008
```

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	00000208 (520.)	03 (3.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
$$CRFSTRNG	00000080 (128.)	04 (4.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC BYTE
MAC$RW_DATA	000001E0 (480.)	05 (5.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC LONG

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	36	00:00:00.06	00:00:03.61
Command processing	114	00:00:00.37	00:00:05.18
Pass 1	156	00:00:02.36	00:00:11.91
Symbol table sort	0	00:00:00.08	00:00:00.08
Pass 2	94	00:00:00.83	00:00:04.75
Symbol table output	11	00:00:00.07	00:00:00.82
Psect synopsis output	3	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	416	00:00:03.80	00:00:26.39

The working set limit was 1350 pages.
18630 bytes (37 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 135 non-local and 0 local symbols.
504 source lines were read in Pass 1, producing 21 object records in Pass 2.
4 pages of virtual memory were used to define 3 macros.

Macro library statistics

Macro library name	Macros defined
_255DUA28:[MACRO.OBJ]MACRO.MLB;1	1
_255DUA28:[SYSLIB]STARLET.MLB;2	3
TOTALS (all libraries)	4

162 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

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

ACTPRI LIS

ARGSCN LIS

BDYSCN LIS

CRFSUB LIS

ACTOPC LIS

ACTSTA LIS

APSECT LIS

CRFDAT LIS

ACTREF LIS

COMPUT LIS