```
CCCCCCCCCCC     RRRRRRRRRRR        FFFFFFFFFFFFFFF
CCCCCCCCCCC     RRRRRRRRRRR        FFFFFFFFFFFFFFF
CCCCCCCCCCCC    RRRRRRRRRRR        FFFFFFFFFFFFFFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRRRRRRRRRR        FFFFFFFFFFF
CCC             RRRRRRRRRRR        FFFFFFFFFFF
CCC             RRRRRRRRRRR        FFFFFFFFFFF
CCC             RRR    RRR         FFF
CCC             RRR    RRR         FFF
CCC             RRR    RRR         FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
CCC             RRR        RRR     FFF
   CCCCCCCCCCC  RRR        RRR     FFF
   CCCCCCCCCCC  RRR        RRR     FFF
   CCCCCCCCCCC  RRR        RRR     FFF
```

CRFMAC

REQ

```
;        Version 'V03-000'


;++

; MODULE: CRFMAC.REQ

; FACILITY: CROSS REFERENCE UTILITY INTERFACE

; ABSTRACT: REQUIRE FILE WHICH DEFINES THE CRF INTERFACING MACROS
;                I.E. THOSE WHICH INITIALIZE THE FORMAT DESCRIPTION TABLES

; HISTORY:

;        VERSION: 'V04-000'

;        AUTHOR: T.J. PORTER 24-MAY-77

;        MODIFICATIONS:

; NO.    DATE            PROGRAMMER      PURPOSE
; ---    ----            ----------      -------
; 001    24-JUN-77       T.J. PORTER     CROSS REFERENCE KEY TYPES IN MACROS.
; 002    11-JUL-77       T.J. PORTER     ADD ERROR AND OUTPUT ROUTINE ADDRESSES
;                                            TO CONTROL TABLE.
;                                        INITIALIZE ENTRY AND NODE SIZES IN TABLE.
;                                        KEY TYPES ARE NOW EXTERNAL.
; 003    29-OCT-79       B.L. SCHREIBER  DEFINE ALL LITERALS SO IT CAN GO INTO SYSTEM
;                                        LIBRARIES.
```

! 004   11-DEC-79        B.L. SCHREIBER  EXPAND CONTROL TABLE
!--

```
!++
!
! FUNCTIONAL DESCRIPTION:
!
! THIS REQUIRE FILE DEFINES THE BLISS MACROS TO BE USED BY A UTILITY
! WHICH USES THE CROSS REFERENCE UTILITY. THESE KEYWORD
! MACROS ARE THOSE FOR INITIALIZING THE TABLES REQUIRED
! BY CROSS REFERENCE FOR DESCRIPTION OF THE OUTPUT LINE
! FORMATS.
!
!--
! DECLARE TABLE AND ENTRY SIZES **NOTE** MUST CHANGE IF CRF CHANGES ***
!
LITERAL
        CRF$K_TBLSIZE = 96,                         ! SIZE OF LINE TABLE (BYTES)
        CRF$K_FIELDSIZE = 12,                       ! FIELD TABLE ENTRY SIZE (BYTES)
!
        CRF$K_ASCIC = 0,                            ! ASCII COUNTED STRING KEYS
        CRF$K_BIN_U32 = 1,                          ! 32 BIT UNSIGNED BINARY KEYS
!
!
        CRF$K_VALUES = 0,                           ! CROSS REFERENCE WITH VALUES
        CRF$K_VALS_REFS = 1,                        ! JUST REFERENCES
        CRF$K_DEFS_REFS = 2,                        ! FULL CROSS REFERENCE
        CRF$K_DELETE = 0,                           ! INDICATOR TO DELETE THE TABLES
        CRF$K_SAVE = 1,                             ! INDICATOR TO SAVE THE TABLES
        CRF$K_REF = 0,                              ! REFERENCE TO A SYMBOL
        CRF$K_DEF = 1;                              ! DEFINITION OF SYMBOL
!
! GENERATE THE CROSS REFERENCE CONTROL TABLE
!
KEYWORDMACRO
        $CRFCTLTABLE(KEYTYPE=ASCIC,ERROR=0,OUTPUT=0,
                     MEMEXP=50,
                     KEY1TABLE=0, KEY2TABLE=0,
                     VAL1TABLE=0, VAL2TABLE=0,
                     REF1TABLE=0, REF2TABLE=0)=
                BLOCK[CRF$K_TBLSIZE,BYTE] ALIGN(0)        ! THE TREE LISTHEAD
                     INITIAL(0,                           ! IS INITIALLY 0
                             LONG(0),                     ! ADDRESS OF LAST KEY LOOKED AT
                             BYTE(%NAME('CRF$K_',KEYTYPE),! TYPE OF KEY
                                  0,0,0),                 ! THREE BYTES RESERVED
                             LONG(0),                     ! NUMBER OF ENTRIES IN CROSS REFERENCE
                             LONG(0,0),                   ! LIST HEAD FOR VIRTUAL MEMORY ALLOCATED
                             LONG(MEMEXP*512),            ! SIZE IN BYTES OF VA TO ALLOCATE
                             LONG(MEMEXP),                ! SIZE IN PAGES OF VA TO ALLOCATE
                             LONG(0,0,0,0,0,0,0,0),       ! RESERVED FOR EXPANSION
                             ERROR,                       ! ERROR ROUTINE ADDRESS
                             OUTPUT,                      ! OUTPUT ROUTINE ADDRESS
                             KEY1TABLE,                   ! POINTER TO PRIMARY KEY FIELD DESCRIPTION TABLE
                             KEY2TABLE,                   ! POINTER TO SECOND KEY FIELD DESCRIPTION TABLE
                             VAL1TABLE,                   ! POINTER TO TABLE DESCRIBING
                                                          ! THE KEY VALUE FIELD
                             VAL2TABLE,                   ! POINTER TO SECONDARY
                                                          ! VALUE FIELD DESCRIPTION TABLE
```

```
                              REF1TABLE,              ! POINTER TO PRIMARY
                                                      ! REFERENCE FIELD DESCRIPTION TABLE
                              REF2TABLE)%,            ! POINTER TO SECONDARY REFERENCE
                                                      ! FIELD DESCRIPTION TABLE

! GENERATE AN ENTRY IN A TABLE DESCRIBING FORMATS OF A PARTICULAR
! FIELD OF THE LINE

       $CRFFIELD(BIT_MASK=0,FAO_STRING,SET_CLEAR=1,FIELD_WIDTH)=
       BLOCK[CRF$K_FIELDSIZE,BYTE]
               INITIAL(WORD(BIT_MASK OR %X'8000'),    ! BIT PATTERN FOR MATCH
                       BYTE(SET_CLEAR),               ! MATCH ON SET OR CLEAR
                       BYTE(FIELD_WIDTH),             ! WIDTH OF FIELD
                       LONG(%CHARCOUNT(FAO_STRING)),  ! LENGTH OF FAO STRING
                       LONG(UPLIT(FAO_STRING)))%,     ! ADDRESS OF TEXT STRING

! GENERATE A FIELD TABLE END INDICATOR

       $CRFFIELDEND = WORD INITIAL(0)%;
```

CRFOR
LIS

CRFMEM
LIS

CRFMACROS
MAR

CLITABDEF
SDL

FILINPUT
LIS

KEYS
LIS

CRFTRVEC
LIS

DCLDEF
MDL

CRFMDL
MDL

CREF
LIS

CRFERRMSG
LIS

CRF
SDL

CRF

CRFSUB
LIS

FILOUTPUT
LIS

CRFSHR
MAP

CRFGLOBAL
LIS

CRFMAC
REQ

DCL

DCL
MAP