```
 OPTIONS NODECK,LIST,XREF,NOREL,OBJ(P)

THE LIST OF OPTIONS USED DURING THIS ASSEMBLY IS--   NODECK,LIST,XREF,NOREL,OBJ
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                        EXTERNAL SYMBOL LIST

SYMBOL    TYPE                                    VER 15, MOD 00  09/05/20  PAGE   1

#EFKEY    MODULE
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```
ERR LOC  OBJECT CODE     ADDR STMT SOURCE STATEMENT        VER 15, MOD 00  09/05/20  PAGE   2

    0000                      1 #EFKEY START 0
                              2       PRINT ON,NODATA
                              3 *     @SYS  EXP-Y
                              5+      PRINT ON
```

```
                             7+*******************************************************************
                             8+*        CPU EQUATES                                              *
                             9+*******************************************************************
                            10+*
                            11+***     REGISTER EQUATES
                            12+*
                 0002       13+@REGL  EQU   2                          HARDWARE REGISTER LENGTH
                 0001       14+@BR    EQU   1                          BASE REGISTER
                 0002       15+@XR    EQU   2                          USABLE INDEX REGISTER
                 0004       16+@PSR   EQU   4                          PROGRAM STATUS REGISTER
                 0008       17+@ARR   EQU   8                          ADDRESS RECALL REGISTER
                 0010       18+@IAR   EQU   16                         INSTRUCTION ADDRESS REGISTER
                 0020       19+@P1IAR EQU   32                         PROGRAM LEVEL 1 IAR
                 00C0       20+@I1IAR EQU   X'C0'                      INTERRUPT LEVEL 1 IAR Q-CODE
                            21+*
                            22+***     EQUATES FOR BYTES AF AN INSTRUCTION
                            23+*
                 0001       24+@Q     EQU   1                          Q-CODE BYTE
                 0001       25+@VQ    EQU   1                          VARIABLE Q CODE FOR LENGTH
                 0002       26+@D1    EQU   2                          1ST DISPLACEMENT
                 0003       27+@OP1   EQU   3                          1ST ADDRESS
                 0004       28+@DOP2  EQU   4                          2ND ADDR OF 5 BYTE INSTR.
                 0004       29+@OPD2  EQU   4                          2ND DISP OF 5 BYTE INSTR.
                 0003       30+@DD2   EQU   3                          2ND DISP OF 4 BYTE INSTR.
                 0005       31+@OP2   EQU   5                          2ND ADDR OF 5 BYTE INSTR.
                 0003       32+@INST3 EQU   3                          LENGTH OF 1 DISP INSTRUCTION
                 0004       33+@INST4 EQU   4                          LENGTH OF 1 ADDR INSTRUCTION
                 0005       34+@INST5 EQU   5                          LENGTH OF 1 DISP 1 ADDR INSTR.
                 0006       35+@INST6 EQU   6                          LENGTH OF 2 ADDR INSTR.
                            36+*
                            37+***     CONDITION CODES FOR BRANCHES
                            38+*
                 0087       39+@UCB   EQU   X'87'                      UNCONDITIONAL BRANCH
                 0080       40+@NOP   EQU   X'80'                      NO BRANCH
                 0084       41+@BH    EQU   X'84'                      BRANCH HIGH
                 0082       42+@BL    EQU   X'82'                      BRANCH LOW
                 0081       43+@BE    EQU   X'81'                      BRANCH EQUAL
                 0004       44+@BNH   EQU   X'04'                      BRANCH NOT HIGH
                 0002       45+@BNL   EQU   X'02'                      BRANCH NOT LOW
                 0001       46+@BNE   EQU   X'01'                      BRANCH NOT EQUAL
                 0088       47+@BOZ   EQU   X'88'                      BRANCH OVERFLOW ZONED
                 00A0       48+@BOL   EQU   X'A0'                      BRANCH OVERFLOW LOGICAL
                 0008       49+@BNOZ  EQU   X'08'                      BRANCH NO OVERFLOW ZONED
                 0020       50+@BNOL  EQU   X'20'                      BRANCH NO OVERFLOW LOGICAL
                 0010       51+@BT    EQU   X'10'                      BRANCH TRUE
                 0090       52+@BF    EQU   X'90'                      BRANCH FALSE
                 0084       53+@BP    EQU   X'84'                      BRANCH PLUS
                 0082       54+@BM    EQU   X'82'                      BRANCH MINUS
                 0081       55+@BZ    EQU   X'81'                      BRANCH ZERO
                 0004       56+@BNP   EQU   X'04'                      BRANCH NOT PLUS
                 0002       57+@BNM   EQU   X'02'                      BRANCH NOT MINUS
                 0001       58+@BNZ   EQU   X'01'                      BRANCH NOT ZERO
                            59+*
                            60+***     MISCELLANEOUS CONSTANTS
                            61+*
                 0000       62+@ZERO  EQU   0                          ZERO
```

```
                         0001   63+@B1    EQU   1                          BINARY ONE
                         00F0   64+@DZERO EQU   X'F0'                      DECIMAL ZERO
                         0040   65+@BLANK EQU   C' '                       EBCDIC BLANK
                         006B   66+@COMMA EQU   C','                       EBCDIC COMMA
                         0061   67+@SLASH EQU   C'/'                       EBCDIC FORWARD SLASH
                         005B   68+$DOLAR EQU   C'$'                       EBCDIC DOLLAR SIGN
                         005C   69+@ASTER EQU   C'*'                       EBCDIC ASTERISK
                         007B   70+@NUMBR EQU   C'#'                       EBCDIC NUMBER #
                         007C   71+@ASIGN EQU   C'@'                       EBCDIC ASSIGN @
                         00C1   72+@CHARA EQU   C'A'                       EBCDIC CHAR A
                         00C6   73+@CHARF EQU   C'F'                       EBCDIC CHAR F
                         00D9   74+@CHARR EQU   C'R'                       EBCDIC CHAR R
                         00E9   75+@CHARZ EQU   C'Z'                       EBCDIC CHAR Z
                         001E   76+@EOS   EQU   X'1E'                      RETURN CARRIAGE
                         001C   77+@EOF   EQU   X'1C'                      END OF FILE CHARACTER
                         005A   78+@UPARW EQU   X'5A'                      UPARROW FROM KEYBOARD INPUT
                         004E   79+@CPLUS EQU   C'+'                       EBCDIC PLUS SIGN
                         0060   80+@MINUS EQU   C'-'                       EBCDIC MINUS SIGN
                         0001   81+@DCALK EQU   X'01'                      DCAL REQUESTED INDICATOR
                         0020   82+@PGCSZ EQU   32                         CORE SIZE IN PAGES
                         2000   83+@MINCR EQU   256*@PGCSZ                 CORE SIZE IN BYTES
                         00F4   84+@LINSZ EQU   244                        LENGTH OF INPUT LINE BUFFER
                         0018   85+@DTRSZ EQU   24                         NO. OF DISK SECTORS PER TRACK
                         0030   86+@SECCY EQU   48                         SECTORS PER CYLINDER
                         0060   87+@CARDL EQU   96                         LENGTH OF 3700 INPUT CARD
                         0050   88+@BCRDL EQU   80                         LENGTH OF 5081 INPUT CARD
                         0005   89+@MAPEN EQU   5                          DISP TO END OF FE CORE MAP
                         0007   90+@SDFLN EQU   7                          LENGTH OF SDF
                         0006   91+@VOLID EQU   6                          LENGTH OF DISK ID FIELD
                         0007   92+@HDRLN EQU   7                          LENGTH OF PROGRAM HEADER
                         0011   93+@CLON  EQU   X'11'                      TURN ON COMMAND LITE Q-CODE
                         0010   94+@CLOFF EQU   X'10'                      TURN Off COMMAND LITE Q-CODE

                                96+************************************************************************
                                97+*         DISK REGION EQUATES                                        *
                                98+************************************************************************
                         0100   99+@SCTSZ EQU   256                        LENGTH OF ONE SECTOR
                         0500  100+@WSFIT EQU   X'0500'                    SECTOR ADDR OF WS FIT SCTRS
                         0503  101+@WSTBL EQU   X'0503'                    SECTOR ADDR OF WORKING STORAGE
                         0005  102+@DWBCY EQU   5                          BASE CYL SYSTEM WORK FILE
                         0003  103+@DWTB1 EQU   3                          LOGICAL SCTR 1ST TEXT BLOCK
                         00C0  104+@DWSIZ EQU   192                        NO. OF WORK FILE DISK SECTORS
                         0004  105+@DSBCY EQU   4                          BASE CYL SYSTEM ROUTINES
                         0000  106+@DSCS1 EQU   0                          COMPILER SUBROUTINE 1ST SCTR
                         0007  107+@DVBCY EQU   7                          BASE CYL VIRTUAL MEMORY
                         0000  108+@VMFD1 EQU   0                          FILE DIRECTORY 1 PAGE
                         0001  109+@VMFD2 EQU   1                          FILE DIRECTORY 2 PAGE
                         0001  110+@VMTRL EQU   1                          TRACE REFERENCE LIST PAGE
                         0002  111+@VMRS3 EQU   2                          START OF VM RESIDENT SUBROUTINE
                         0056  112+@VENTA EQU   86                         FIRST PSEUDO CODE PAGE IN VM
                         00FE  113+@VMDDV EQU   254                        FUNC AND ARRAY TABLE - PAGE ONE
                         0009  114+@DCBCY EQU   9                          BASE CYL COMPILER VADDR TABLES
                         0040  115+@DCST1 EQU   64                         STMT ADDRESS TABLE 1ST SECTOR
                         0050  116+@DCBT1 EQU   80                         BRANCH ADDRESS TABLE 1ST SECTOR

                               118+************************************************************************
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```
        @SYSEQ - SYSTEM SOFTWARE EQUATES
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```
                              119+*      DISK IOCR EQUATES                                            *
                              120+*****************************************************************************
                              121+*
                              122+***    DISK PARAMETER LIST (DPL) EQUATES
                              123+*
               0000  124+@DCTRL EQU    0                           CONTROL PARAMETER
               0001  125+@DCYL  EQU    1                           LOGICAL CYLINDER NUMBER
               0002  126+@DSAD  EQU    2                           HEAD/SECTOR ADDRESS
               0003  127+@DCNT  EQU    3                           SECTOR COUNT
               0004  128+@DBFR1 EQU    4                           1ST BYTE OF DATA AREA
               0005  129+@DBFR2 EQU    5                           DATA AREA ADDRESS
               0002  130+@DSPIN EQU    X'02'                       SPINDLE BIT IN DISK ADDRESS
               0006  131+@DPLNG EQU    6                           LENGTH OF DSL
               0000  132+@DPOS  EQU    X'00'                       DPL - SEEK FUNCTION CODE
               0001  133+@DGET  EQU    X'01'                       DPL - READ FUNCTION CODE
               0002  134+@DPUT  EQU    X'02'                       DPL - WRITE FUNCTION CODE
               0031  135+@DVRFY EQU    X'31'                       DPL - VERIFY FUNCTION CODE
               00FF  136+@DWAIT EQU    X'FF'                       DPL - WAIT I/O COMPLETE FUNC COD
               0003  137+@DSIVF EQU    X'03'                       SIO CTRL CODE FOR VERIFY
                              138+*
               0002  139+@DADDR EQU    2                           LENGTH OF DISK ADDRESS
               0002  140+@VADDR EQU    2                           LENGTH OF VIRTUAL ADDRESS
               0002  141+@CADDR EQU    2                           LENGTH OF CORE ADDRESS

                              143+*****************************************************************************
                              144+*      PRINT PARAMETER LIST (PPL) EQUATES                              *
                              145+*****************************************************************************
               0004  146+@PPLNG EQU    4                           LENGTH OF PPL
               0000  147+@PCTRL EQU    0                           CONTROL BYTE DISPLACEMENT
               0001  148+@PRCNT EQU    1                           COUNT BYTE DISPLACEMENT
               0003  149+@PDATA EQU    3                           DATA ADDR DISPLACEMENT
               0040  150+@PRINT EQU    X'40'                       PRINT CONTROL
               0080  151+@RETRN EQU    X'80'                       RETURN CARRIER CONTROL
               00C0  152+@PRETR EQU    @PRINT+@RETRN               PRINT AND RETURN CARRIER
               0010  153+@TBLEF EQU    X'10'                       TAB LEFT CONTROL
               0001  154+@INDEX EQU    X'01'                       INDEX FORMS CONTROL
               0011  155+@TBLIX EQU    @TBLEF+@INDEX               TAB LEFT AND INDEX CONTROL
               00FF  156+@PWAIT EQU    X'FF'                       WITH AND CHECK ERROR CONTROL
               004F  157+@RLDWN EQU    X'4F'                       ROLL DOWN CONTROL (CRT ONLY)
               0000  158+@TBCNT EQU    0                           TAB LEFT COUNT
               0080  159+@RTRNC EQU    X'80'                       CARRIER RETURN COUNT
               0075  160+@EOFTC EQU    X'75'                       EOF RECORD TYPE CODE
                              161+*
                              162+***    STATEMENT/SEGMENT HEADER EQUATES
                              163+*
               0000  164+@SDF0  EQU    0                           DISP TO NULL SEG INDICATOR
               0001  165+@SDF1  EQU    1                           DISP TO LENGTH OF SEGMENT
               0002  166+@SDF2  EQU    2                           DISP TO SEGMENTATION CODE
               0003  167+@SDF3  EQU    3                           DISP TO END OF SDF
               0005  168+@SDLN  EQU    5                           DISP TO STMT BINARY LINE NO.
               0006  169+@STYPE EQU    6                           DISP TO STMT TYPE CODE
               0007  170+@STEXT EQU    7                           DISP TO 1ST TEXT BYTE OF STMT
               0080  171+@SNULL EQU    X'80'                       MASK FOR NULL SEG INDICATOR
                              172+*                                * 1 = SEGMENT IS NULL
                              173+*                                * 0 = SEGMENT IS NOT NULL
                              174+*
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                            175+*                            FOLLOWING ARE THE MASKS FOR THE SEGMENTATION
                            176+*                            CODE. THE SEGMENTATION IS INDICATED BY VALUE
                            177+*                            IN @SDF2 AS FOLLOWS:
                 0000       178+@SONLY EQU   0                    ONLY SEG. IN RECORD
                 0001       179+@SIST  EQU   1                    1ST SEG. OF A MULTI-SEG RCD
                 0003       180+@SMIDL EQU   3                    MIDDLE SEG. OF A MULTI-SEG RCD
                 0002       181+@SLAST EQU   2                    LAST SEG. OF MULTI-SEG RCD
                 0002       182+@SBLNL EQU   2                    LENGTH OF STMT BINARY LINE NO.
                            183+*
                            184+****    FILE INDEX TABLE EQUATES SECTION
                            185+*
                            186+*                            ALL DISPLACEMENT ARE CALCULATED FROM THE
                            187+*                            FIRST BYTE OF THE FIT TO THE RIGHTMOST BYTE
                            188+*                            OF THE SPECIFIED FIELD UNLESS OTHERWISE
                            189+*                            NOTED.
                            190+*
                 0002       191+@FDLNC EQU   2                    DISP TO FILE LINE COUNT
                 0002       192+@FLLNC EQU   2                    LNG OF FILE LINE COUNT FIELD
                 0000       193+@FDDBC EQU   0                    DISP TO FILE DATA BLOCK COUNT
                 0001       194+@FLDBC EQU   1                    LNG OF FILE DATA BLOCK COUNT
                 0009       195+@FLACE EQU   9                    DISP O ADDR OF CURR ENTRY
                 000B       196+@FDFNA EQU   11                   DISP TO ADDR OF 1ST NULL ENTRY
                 0002       197+@FLFNA EQU   2                    LNG OF ADDR OF 1ST NULL ENTRY
                 000C       198+@FDE1  EQU   12                   DISP TO 1ST BYTE OF 1ST ENTRY
                 0004       199+@FLENT EQU   4                    LNG OF A FIT ENTRY
                            200+*
                            201+*                            ENTRY FIELD DISPLACEMENTS ARE CALCULATED FROM
                            202+*                            THE 1ST BYTE OF THE ENTRY.
                            203+*
                 0000       204+@FDSD  EQU   0                    DISP TO DB SECTOR DISP
                 0001       205+@FLSD  EQU   1                    LNG OF DB SECTOR DISP FIELD
                 0002       206+@FDHLN EQU   2                    DISP TO HIGH LINE NO. FIELD
                 0002       207+@FLHLN EQU   2                    LNG OF HIGH LINE NO. FIELD
                 0003       208+@FDNSC EQU   3                    DISP TO DB NULL SPACE CNT FIELD
                 0001       209+@FLNSC EQU   1                    LNG OF DB NULL SPACE CNT FIELD
                            210+*
                            211+*      END OF SYSTEM SOFTWARE EQUATES
                            212+       PRINT ON
                            213 *      @FXD  EXP-Y
                            215+       PRINT ON
```

```
                              217+********************************************************************
                              218+*        GLOBAL INDICATORS STORED IN THE SYSTEM NUCLEUS, ENTRY POINTS  *
                              219+*        FOR SYSNUC INTERFACE ROUINES.                                *
                              220+********************************************************************
    0000                      221+         ORG     X'0000'                       *
              0000            222+$$ZERO EQU     *                         ENTRY POINT TO LOAD DUMP PGM
              0004            223+$FEARR EQU     $$ZERO+4                  VALUE OF ADDR IN ARR ON FE AID
                              224+*
              0025            225+$DISKN EQU     $$ZERO+37                 ADDR OF ENTRY TO DISK IOCS
              00DE            226+$KE090 EQU     $$ZERO+X'00DE'            ADDR OF DKDISK ERR-PEND EXIT
              01D5            227+$KE130 EQU     $$ZERO+X'01D5'            ADDR OF DKDISK HARD ERROR EXIT

    0345                      229+         ORG     X'0345'                       *
              0345            230+$ERLOG EQU     *                         ADDR OF ENTRY TO LOG I/O ERRORS
              0363            231+$ER050 EQU     $$ZERO+X'0363'            START OF DISK OPS IN NERLOG


                              233+********************************************************************
                              234+*        COMMUNICATION AREA REFERENCING NUCLEUS                      *
                              235+********************************************************************
    03C0                      236+         ORG     X'03C0'                       *
              03C0            237+$NUCBS EQU     *                         START OF COMMUNICATION AREA
              03C0            238+$RMRGN EQU     $NUCBS                    ADDR OF BYTE CONTAINING THE
                              239+*                                       * SOFTWARE RIGHT MARGIN VALUE
              03C1            240+$LMRGN EQU     $RMRGN+1                  ADDR OF BYTE CONTAINING THE
                              241+*                                       * SOFTWARE LEFT MARGIN VALUE
              03C2            242+$PRPOS EQU     $LMRGN+1                  ADDR OF BYTE CONTAINING CURRENT
                              243+*                                       * POSITION OF MATRIX PRINTER
                              244+*                                       * HEAD
              03C3            245+$KEYCD EQU     $PRPOS+1                  ADDR OF BYTE CONTAINING KEYBOARD
                              246+*                                       * INDICATORS. A LIST OF THE
                              247+*                                       * INDICATORS AND MASKS FOLLOW
              0001            248+$CARDI EQU     X'01'                     INPUT SOURCE INDR MASK
                              249+*                                       * 0 - KEYBOARD INPUT
                              250+*                                       * 1 - CARD OR PROC INPUT
              0002            251+$IOYES EQU     X'02'                     I/O ROUTINES IN CORE INDR MASK
                              252+*                                       * 0 - I/O ROUTINES NOT IN CORE
                              253+*                                       * 1 - I/O ROUTINES IN CORE
              0004            254+$NOLST EQU     X'04'                     NO LIST INDR MASK
                              255+*                                       * 0 - LISTING REQUIRED
                              256+*                                       * 1 - NO LISTING RESIRED
              0008            257+$GUFIR EQU     X'08'                     GUFUDI ABORT INDR
                              258+*                                       * 1 - GUFUDI INTERRUPT, NOT ABOR
                              259+*                                       * 0 - GUFUDI ABORTED
                              260+*                                       * FOR THE ABOVE INDICATOR TO BE
                              261+*                                       * VALID, $INTRP MUST BE PRESENT
              0010            262+$KYBSY EQU     X'10'                     KEYBOARD BUSY INDR
                              263+*                                       * 0 - LINE FINISHED
                              264+*                                       * 1 - LINE NOT YET COMPLETE
              0020            265+$INRPT EQU     X'20'                     INTERRUPT INDR
                              266+*                                       * 0 - PROGRAM NOT ABORTED
                              267+*                                       * 1 - PROGRAM ABOPRTED
              0040            268+$DTNMB EQU     X'40'                     * 1 - AUTOMATIC LINE NUMBERS
                              269+*                                       * GENERATED FOR CARD INPUT
              0080            270+$TRUNK EQU     X'80'                     TRUNCATED LINE INDR
                              271+*                                       * 1 - LAST LINE TRUNCATED
                              272+*                                       * 0 - LAST LINE COMPLETED
```

```
      @FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS
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```
                          274+*********************************************************************
                          275+*        REGISTER SAVE AREAS. THESE AREAS ARE AVAILABLE FOR          *
                          276+*        TEMPORARELY USE BY ANY PROGRAM                              *
                          277+*********************************************************************

                 03C5     279+$BRSAV EQU    $KEYCD+2                    ADDR OF 2 BYTE BASE REG SAVE
                 03C7     280+$XRSAV EQU    $BRSAV+2                    ADDR OF 2 BYTE XR SAVE AREA

                 03CB     282+$TABLN EQU    $XRSAV+4                    CURRENT AUTOMATIC LINE NUMBER
                          283+*                                        * TO BE INSERTED IF TAB KEY
                          284+*                                        * PRESSED. (ADDR OF LINE NO.)
                 03CD     285+$CAERR EQU    $TABLN+2                    ADDR OF ERROR CODE SAVED FOR
                          286+*                                        * INTERFACE WITH ERRPGM
                 03CF     287+$INLNO EQU    $CAERR+2                    ADDR OF EXECUTION TIME LINE
                          288+*                                        * NUMBER FOR INTERPRETER
                 03CE     289+$ERRPG EQU    $INLNO-1                    ADDR OF INDICATOR BYTE IF
                          290+*                                        * SPECIAL FUNCTION REQUESTED
                          291+*                                        * OF ERROR PROGRAM
                 0030     292+$ERSTK EQU    X'30'                       TO BE MOVED TO $ERRPG IF A STACK
                          293+*                                        * OF ERROR CODES IS TO BE PROCES
                 0035     294+$ERSFL EQU    X'35'                       SYNTAX CHECKERS $ERRPG SETTING
                 0040     295+$ERFIL EQU    X'40'                       TO BE MOVED TO $ERRPG IF FILE
                          296+*                                        * LINE ERROR OCCURS
                 0050     297+$ER1N2 EQU    X'50'                       TO BE MOVED TO $ERRPG IF LEVEL
                          298+*                                        * 1 AND 2 MESSAGES REQUIRED
                 0080     299+$ERKEY EQU    X'80'                       STANDARD ERROR SETTING USED BY
                          300+*                                        * COMMAND ANALYZER ONLY
                 03CF     301+$ERRCT EQU    $INLNO                      ADDR OF COUNT BYTE FOR STACK
                          302+*                                        * OF ERROR MESSAGES
```

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                      304+*************************************************************************
                      305+*        SYSTEM STATUS EQUATES                                          *
                      306+*************************************************************************

         03D0  308+$XIND1 EQU    $INLNO+1                 ADDR OF PRIMARY EXEC MODE INDRS
                      309+*                                          * ENTRIES FOLLOW
         0001  310+$RUNIT EQU    X'01'                    1 - EXECUTE IN RUN MODE
         0002  311+$STEPT EQU    X'02'                    1 - EXECUTE IN STEP MODE
         0004  312+$TRACE EQU    X'04'                    1 - EXECUTE IN TRACE MODE
                      313+*                                          THE THREE MODE INDICATORS ARE
                      314+*                                          MUTUALLY EXCLUSIVE. IF $TRACE
                      315+*                                          IS ON, AT LEAST 1 OF THE TRACE
                      316+*                                          TYPE CODE MUST ALSO BE ON.
         0008  317+$TFLOW EQU    X'08'                    1 - TRACE FLOW
         0010  318+$TRALL EQU    X'10'                    1 - TRACE ALL
         0020  319+$TRVAR EQU    X'20'                    1 - TRACE SELECTED VARIABLES
         0040  320+$XPREC EQU    X'40'                    EXECUTION PRECISION INDR
                      321+*                                          * 0 - SHORT PRECISION
                      322+*                                          * 1 - LONG PRECISION
         0080  323+$VMDEF EQU    X'80'                    VM USAGE INDR
                      324+*                                          * 1 - VIRTUAL MEMORY NOT EMPTY
                      325+*                                          * 0 - VIRTUAL MEMORY EMPTY

         03D1  327+$XIND2 EQU    $XIND1+1                 ADDR OF EXECUTION INDICATORS
                      328+*                                          * MASK AND INDRS FOLLOW
         0001  329+$EXCMD EQU    X'01'                    EXECUTION INDR
                      330+*                                          * 1 - IN EXECUTION
         0002  331+$PAUSE EQU    X'02'                    1 - PROGRAM IN PAUSE STATE
         0004  332+$PSTEP EQU    X'04'                    1 - PAUSE CAUSED BY STEP MODE
         0008  333+$PSTMT EQU    X'08'                    1 - PAUSE CAUSED BY PAUSE STMT
         0010  334+$ABORT EQU    X'10'                    1 - ABORT EXECUTION

         03D2  336+$IOIND EQU    $XIND2+1                 I/O STATUS INDICATORS
                      337+*                                          * MASKS AND EXPLANATION FOLLOW
         0001  338+$MPDWN EQU    X'01'                    MP STATE
                      339+*                                          * 0 - MATRIX PRINTER OPERATIONAL
                      340+*                                          * 1 - MATRIX PRINTER DOWN
         0002  341+$CRTAV EQU    X'02'                    CRT AVAILABILITY
                      342+*                                          * 0 - NO CRT ON SYSTEM
                      343+*                                          * 1 - CRT ON THE SYSTEM
         0004  344+$CRTNO EQU    X'04'                    SYSPRNT ON CRT
                      345+*                                          * 0 - CRT NOT AVAIL FOR SYSPRNT
                      346+*                                          * 1 - CRT MAY BE USED FOR SYSPRN
         0008  347+$CMDKY EQU    X'08'                    KEYBOARD MODE
                      348+*                                          * 0 - NORMAL KEYBOARD INPUT
                      349+*                                          * 1 - COMMAND KEYS USE ONLY
         0010  350+$PGMST EQU    X'10'                    PGM START KEY
                      351+*                                          * 0 - MAY BE USED FOR AUTO LINE
                      352+*                                          * 1 - NOT USED FOR AUTO LINE #
         0020  353+$HRDER EQU    X'20'                    HARD ERROR INDICATOR
                      354+*                                          * 0 - SOFT ERROR
                      355+*                                          * 1 - HARD ERROR
         0040  356+$DTRDR EQU    X'40'                    DATA RECORDER
                      357+*                                          * 0 - DATA RECORDER NOT ON SYSTE
                      358+*                                          * 1 - DATA RECORDER IS ON SYSTEM
         0080  359+$LNPTR EQU    X'80'                    MP OPTION
```

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                        360+*                                  * 1 - 50 LPM OPTION AVAILABLE

              03D3  362+$CRTIN EQU    $IOIND+1                 CRT COMMAND INDICATORS
                    363+*                                      * MASKS AND EXPLANATION FOLLOW
        0001  364+$CRTUP EQU    X'01'                    1 - CRT IN ROLL UP MODE
        0002  365+$CRTDN EQU    X'02'                    1 - CRT IN ROLL DOWN MODE
        0004  366+$CRTPU EQU    X'04'                    1 - POP UP CONDITION REQUESTED
        0008  367+$CRTSP EQU    X'08'                    1 - ROLL STOP REQUESTED

              03D4  369+$INDR1 EQU    $CRTIN+1                 WORK FILE STATUS INDICATORS
                    370+*                                      * MASKS AND EXPLANATION FOLLOW
        0001  371+$PROCI EQU    X'01'                    PROCEDURE FILE INDR
                    372+*                                      * 0 - NOT A PROCEDURE
                    373+*                                      * 1 - A PROCEDURE
        0002  374+$PRESN EQU    X'02'                    WORK FILE PRECISION INDR
                    375+*                                      * 0 - SHORT PRECISION USED
                    376+*                                      * 1 - LONG PRECISION BEING USED
        0004  377+$WSIND EQU    X'04'                    WORKING STORAGE INDR MASK
                    378+*                                      * 0 - WORKING STOR ON DISK IS EM
                    379+*                                      * 1 - WORKING STORAGE IS NOT EMP
        0008  380+$WFLOK EQU    X'08'                    WORK FILE LOCK INDR
                    381+*                                      * 0 - FILE NOT PROTECTED
                    382+*                                      * 1 - FILE PROTECTED
        0010  383+$FITIN EQU    X'10'                    FIT SECTORS INDR MASK
                    384+*                                      * 0 - FIT SECTORS NOT PRESENT
                    385+*                                      * 1 - FIT SECTORS IN CORE
        0020  386+$PGMDT EQU    X'20'                    PGM DATA FILE INDR
                    387+*                                      * 1 - PROGRAM GENERATED
                    388+*                                      * DATA FILE IN WORK FILE
        0040  389+$KEYDT EQU    X'40'                    KEYBOARD OR CARD FILE INDR
                    390+*                                      * 1 - KYBRD OR CARD GENERATED
                    391+*                                      * DATA FILE IN WORK FILE
        0080  392+$BASIC EQU    X'80'                    BASIC PROGRAM INDR
                    393+*                                      * 1 - BASIC PGM IN WORK FILE

              03D5  395+$INDR2 EQU    $INDR1+1                 ADDR OF SYSTEM 1-BIT INDRS
                    396+*                                      * MASKS AND EXPLANATION FOLLOW
        0002  397+$CMODE EQU    X'02'                    CONVERSATIONAL MODE INDR MASK
                    398+*                                      * 0 - UTILITY MODE
                    399+*                                      * 1 - CONVERSATIONAL MODE
        0004  400+$ERPND EQU    X'04'                    ERROR LOG PENDING INDR
                    401+*                                      * 0 - NO LOGGING REQUIRED
                    402+*                                      * 1 - ERROR LOGGING PENDING
        0008  403+$DKERR EQU    X'08'                    DISK ERROR INDR
                    404+*                                      * 0 - ERROR WAS NOT DISK
                    405+*                                      * 1 - ERROR WAS DISK, 2 ENTRIES
                    406+*                                      * REQUIRED IN HISTORY LOG
        0010  407+$FCIND EQU    X'10'                    CRUSH INDR MASK
                    408+*                                      * 1 - SINGLE LINE NO DELETION
                    409+*                                      * THROUGH THE CMD ANALYZER REQUI
                    410+*                                      * IF $FUIND, $FCIND AND $FDIND A
                    411+*                                      * ALL ZERO, CRUCHING OP REQUIRED
        0020  412+$FUIND EQU    X'20'                    LINE PASSED INDR MASK
                    413+*                                      * 1 - LINE PASSED
        0040  414+$FDIND EQU    X'40'                    LINE NUMBER LIST
                    415+*                                      * 1 - LINE NO LIST IS DELETED
```

```
                          0080  416+$READY EQU   X'80'                    PRINT READY INDR
                                417+*                                     * 0 - READY WILL BE PRINTED
                                418+*                                     * 1 - READY WON'T BE PRINTED

                    03D6  420+$INDR3 EQU   $INDR2+1                 ADDR OF SYSTEM 1-BIT INDRS
                                421+*                                     * MASKS AND EXPLANATION FOLLOW
                    0001  422+$DBLOK EQU   X'01'                    SAVE PROTECTED WORK FILE MASK
                                423+*                                     * 1 - FILE MAY BE SAVED TO $$LIB
                    0002  424+$LIST  EQU   X'02'                    KLISTN INDR
                                425+*                                     * 0 - IGNORE ROLL DOWN KEY
                                426+*                                     * 1 - EXCEPT ROLL DOWN KEY
                    0004  427+$ERHRD EQU   X'04'                    ERRPGM HARD ERROR INDR
                                428+*                                     * 1 - ERRPGM WILL EXECUTE HARD
                                429+*                                     *     HALT AFTER PRINTING MSG
                    0008  430+$NOENB EQU   X'08'                    KEYBOARD ENABLE INDR
                                431+*                                     * 0 - KEYBOARD NOT ENABLED -
                                432+*                                     *     GUFUDI WILL ENABLE
                                433+*                                     * 1 - KEYBOARD HAS ALREADY
                                434+*                                     *     BEEN ENABLED
                    0010  435+$CLBFR EQU   X'10'                    CLEAR INPUT LINE BUFFER INDR
                                436+*                                     * 0 - DON'T CLEAR LINE BUFFER
                                437+*                                     * 1 - CLEAR THE INPUT LINE BUFF
                    0020  438+$MOUNT EQU   X'20'                    MOUNT KEYBOARD INDR MASK
                                439+*                                     * 1 - ONLY MOUNT COMMAND VALID
                    0040  440+$NWRKR EQU   X'40'                    REMOVABLE DISK WORK AREA INDR
                                441+*                                     * 0 - CORRECT WORK AREA ON R1
                                442+*                                     * 1 - NO WORK AREA ON R1
                    0080  443+$NWRKF EQU   X'80'                    FIXED DISK WORK AREA INDR
                                444+*                                     * 0 - CORRECT WORK AREA ON F1
                                445+*                                     * 1 - NO WORK AREA ON F1

                    03D7  447+$DKSIZ EQU   $INDR3+1                 ADDR OF DISK SIZE INDR
                                448+*                                     * MASKS AND EXPLANATION FOLLOW
                    0001  449+$DK100 EQU   X'01'                    1 - SYSTEM HAS 100 CYLS
                    0002  450+$DK200 EQU   X'02'                    1 - SYSTEM HAS 200 CYLS
                    0004  451+$DK400 EQU   X'04'                    1 - SYSTEM HAS 400 CYLS
                    0008  452+$DK600 EQU   X'08'                    1 - SYSTEM HAS 600 CYLS
                    0010  453+$DK800 EQU   X'10'                    1 - SYSTEM HAS 800 CYLS

                    03D8  455+$XIND3 EQU   $DKSIZ+1                 PAST $XIND1
                                456+*                                     * SEE $XIND1 FOR INDR MASKS

                    03DA  458+$FILIB EQU   $XIND3+2                 ADDR OF CURRENT FILE LIB DADDR
                    03DC  459+$USRDR EQU   $FILIB+2                 ADDR OF REL DISP TO 1ST USER BK
                    03DD  460+$CONFG EQU   $USRDR+1                 CONFIGURATION INDRS
                    0001  461+$22IMP EQU   X'01'                    0 - 13 INCH MATRIX PRINTER
                                462+*                                     1 - 22 INCH MATRIX PRINTER
                    0002  463+$16K   EQU   X'02'                    1 - CPU HAS 12 KBYTE
                    0004  464+$12K   EQU   X'04'                    1 - CPU HAS 16 KBYTE
                                465+*                                     * IF BOTH OFF: CPU HAS 8 KBYTE
                    0008  466+$16CKY EQU   X'08'                    0 - KEYBOARD HAS  8 CMD KEYS
                                467+*                                     1 - KEYBOARD HAS 16 CMD KEYS
                    0080  468+$BIGCD EQU   X'80'                    1 - CPU HAS 129 DATA RECORDER

                    03DF  470+$LEVEL EQU   $CONFG+2                 ADDR OF SYSTEM LEVEL NUMBER
```

```
                        03E0  472+$DBGUF EQU   $LEVEL+1                   ADDR OF GUFUDI DEBUG INDR
                        0080  473+$CRUSH EQU   X'80'                      0 - CRUSH THE FILE
                        0040  474+$REORD EQU   X'40'                      0 - REORDER THE FILE
                        0020  475+$IRKEY EQU   X'20'                      1 - ENABLE KEYBOARD INPUT
                        0010  476+$IOPGS EQU   X'10'                      D1 PAGES INDR: 0 - ONE
                        0008  477+$CALLI EQU   X'08'                      PROCEDURE CALL INDR
                              478+*                                      * 0 - NOT A CALL
                              479+*                                      * 1 - A CALL

                        03E1  481+$KEYBD EQU   $DBGUF+1                   KEYBOARD TYPE INDR
                              482+*                                      * THIS VALUE WILL BE A BINARY
                              483+*                                      * VALUE FROM 1 TO 12 INDICATING
                              484+*                                      * WHICH DATA TABLE IS IN USE

                        03E2  486+$CRPOS EQU   $KEYBD+1                   ADDR OF CURRENT CURSOR POSITION
                        03E3  487+$BUFPT EQU   $CRPOS+1                   LINE PRINTER BUFFER POINTER
                        03E4  488+$LPRP3 EQU   $BUFPT+1                   LINE PRINTER FLAGS
                        03E5  489+$LPROS EQU   $LPRP3+1                   TRUE LINE PRINTER PRINT POSITION

                        03E6  491+$NEXTB EQU   $LPROS+1                   REL DADDR PROCEDURE CALL
                        03E7  492+$NEXTL EQU   $NEXTB+1                   DISPLACEMENT WITHIN DB
                        03E8  493+$DFDET EQU   $NEXTL+1                   GRAPRO INTERNAL INDR
                        03E9  494+$LPRIO EQU   $DFDET+1                   LINE PRINTER BUFF INC. + PDAR

                        03F5  496+$PTCH1 EQU   $DKSIZ+30                  LAST BYTE OF NUCLUES AREA
                              497+****************************************************************************
                              498+*       TABLES AND SYSTEM WORK AREAS                                     *
                              499+****************************************************************************
                        03F6  500+$VOLID EQU   $PTCH1+1                   ADDR OF LEFT BYTE VOLID TABLE
                        03F6  501+$VOLR1 EQU   $VOLID                     ADDR LEFT BYTE VOLID FOR R1
                        03FE  502+$VOLF1 EQU   $VOLR1+8                   ADDR LEFT BYTE VOLID FOR F1
                        0406  503+$VOLR2 EQU   $VOLF1+8                   ADDR LEFT BYTE VOLID FOR R2
                        040E  504+$VOLF2 EQU   $VOLR2+8                   ADDR LEFT BYTE VOLID FOR F2
                        0419  505+$PKERT EQU   $VOLID+35                  ADDR OF 1ST ENTRY IN PACK ERROR
                              506+*                                      * RATE TABLE
                        042D  507+$PASWD EQU   $PKERT+20                  ADDR OF CURRENT PASSWORD
                        042E  508+$HISTE EQU   $PASWD+1                   LEFT BYTE OF HISTORY LOG ENTRY
                        0435  509+$HIST1 EQU   $HISTE+7                   ADDR OF 1ST ENTRY OF HIST LOG
                        043A  510+$DATE  EQU   $HIST1+5                   ADDR OF CURRENT DATE
                        043B  511+$EXFTR EQU   $DATE+1                    ADDR OF CORE EXPANSION FACTOR
                              512+*                                      * THIS VALUE WILL BE ADDED TO
                              513+*                                      * BUFFER ADDRESS (SET FOR 8K)
                              514+*                                      * TO RE-POSITION THEM FOR
                              515+*                                      * LARGER MACHINES
                        0443  516+$WFNME EQU   $EXFTR+8                   ADDR OF WORK FILE NAME
                        0040  517+$WFDEF EQU   X'40'                      WORK FILE DEFINED INDR
                              518+*                                      * THIS MASK IS USED ON $WFNME
                              519+*                                      * 0 - WORK FILE UNDEFINED
                              520+*                                      * 1 - WORK FILE DEFINED
                        0449  521+$DPLSV EQU   $WFNME+6                   ADDR OF 6 BYTE DPL SAVE AREA
                              522+*                                      * FOR KEYBOARD PROGRAMS
                        044B  523+$PRDEV EQU   $DPLSV+2                   ADDR OF 2 BYTE FIELD POINTING
                              524+*                                      * TO THE SYSTEM PRINTER IOCR
                        044D  525+$CRTAD EQU   $PRDEV+2                   ADDR OF ENTRY TO RELOCATE CRT
                        0454  526+$PLST1 EQU   $CRTAD+7                   ADDR OF THREE 7-BYTES ENTRY I/O
                        045B  527+$PLST2 EQU   $PLST1+7                   * PARM LISTS MOST RECENTLY USED
```

```
                            0462  528+$PLST3 EQU   $PLST2+7                    * THE 1ST ENTRY IS MOST RECENT
                            0464  529+$C0001 EQU   $PLST3+2                    ADDR OF 2 BYTE CONSTANT 1
```

```
                             531+*********************************************************************
                             532+*        ENTRY POINTS TO INTERFACE ROUTINES AND THEIR WORK AREAS        *
                             533+*********************************************************************

                        0465 535+$SPRNT EQU   $C0001+1                      ADDR OF ENTRY TO THE SYSTEM
                             536+*                                          * PRINTER IOCR
                        0469 537+$CAERK EQU   $SPRNT+4                      ADDR OF ENTRY TO ERR ROUTINE
                             538+*                                          * INTERFACE. ERROR CODE MUST
                             539+*                                          * BE STORED PREVIOUS TO ENTRY
                        046F 540+$ERDPL EQU   $CAERK+6                      ADDR OF LEFT BYTE OF ERRPGM
                             541+*                                          * LOAD DPL
                        0472 542+$ERMAD EQU   $ERDPL+3                      ADDR OF DK ADDR, CNT OF ERRPGM
                        0476 543+$CIMSK EQU   $ERMAD+4                      ADDR OF THE INQUIRY REQUEST INDR
                             544+*                                          * X'87' IR NOT DISABLED
                             545+*                                          * X'80' IR MASKED
                        0480 546+$CIEXT EQU   $CIMSK+10                     ADDR OF IR EXIT INSTRUCTION
                        0483 547+$CIENT EQU   $CIEXT+3                      ADDR OF ENTRY FOR IR
                        048D 548+$UNMSK EQU   $CIENT+10                     ADDR OF ENTRY TO UNMASK IR
                             549+*                                          * IF NO SUSPENDED IR, CALLING
                             550+*                                          * PROGRAM RETURNED TO
                        0496 551+$CISUS EQU   $UNMSK+9                      ADDR OF INDR FOR SUSPENDED IR
                             552+*                                          * IF X'80' AN IR OCCURRED WHILE
                             553+*                                          * IR WAS MASKED
                             554+*                                          * IF X'87' NO IR TOOK PLACE
                             555+*                                          * WHILE IR WAS MASKED
                        049D 556+$CAIPL EQU   $CISUS+7                      ADDR OF ENTRY TO ABORT CURRENT
                             557+*                                          * OP AND RE-ENABLE KEYBOARD AND
                        04A1 558+$CARPL EQU   $CAIPL+4                      ADDR OF ENTRY TO ABORT CURRENT
                             559+*                                          * OP AND ENABLE IR
                        04B4 560+$CABLD EQU   $CARPL+X'13'                  ADDR OF ENTRY TO ABORT CURRENT O
                        04BA 561+$PAUSD EQU   $CABLD+6                      ADDR OF ENTRY OF ROUTINE TO
                             562+*                                          * SWAP CORE
                        04D6 563+$RSTR  EQU   $PAUSD+X'1C'                  ADDR OF ENTRY TO ENTRY CORE
                             564+*                                          * FROM DISK
                        04F2 565+$PSDXR EQU   $RSTR+X'1C'                   ADDR OF SAVED XR IN NPAUSE
                        04FA 566+$PSDBR EQU   $PSDXR+8                      ADDR OF SAVED BR IN NPAUSE
                        04FE 567+$SRTRN EQU   $RSTR+X'28'                   ADDR OF RETURN ADDR FROM $PAUSD
                        050D 568+$SFAID EQU   $SRTRN+15                     ADDR OF RETURN IF FE AID REQUEST
                             569+*                                          * IF THE ABOVE TWO ADDRESSES ARE
                             570+*                                          * EQUAL, RETURN TO $RSTR WILL BE
                             571+*                                          * BE FROM THE FE AID PROGRAM
                        050E 572+$CSDPL EQU   $RSTR+X'38'                   ADDR OF LEFT BYTE OF SAVE/RSTR D
                        0511 573+$SWPCR EQU   $CSDPL+3                      ADDR OF DKADDR, COUNT FOR CORE
                             574+*                                          * SAVE AREA
                        0517 575+$EXADR EQU   $SWPCR+6                      ADDRR OF DK ADDR, COUNT OF EXEC
                             576+*                                          * TIME MESSAGE PROGRAM
                        051A 577+$LOADR EQU   $EXADR+3                      ADDR OF ENTRY TO BLAST LOAD
                             578+*                                          * PROGRAM NOT RESIDING ON CYL 4
                             579+*                                          * RETURN IS TO CALLING PROGRAM
                        051E 580+$RLOAD EQU   $LOADR+4                      ADDR OF ENTRY TO BLAST LOAD
                             581+*                                          * PROGRAM NOT RESIDING ON CYL 4
                        0522 582+$BLOAD EQU   $RLOAD+4                      ADDR OF ENTRY TO BLAST LOAD
                             583+*                                          * PROGRAM RESIDING ON CYL 4
                        054A 584+$LOADB EQU   $BLOAD+X'28'                  ADDR OF SPECIAL ENTRY TO
                             585+*                                          * NBLOAD FOR SFLOAD/SFFIND
                             586+*                                          * AND FZPINV
```

```
       @FXDEQ - FIXED ADDRESSES FOR SYSTEM NUCLEUS
```

```
                        054E  587+$TROVR EQU    $BLOAD+X'2C'              ADDR OF FE TRACE INDR
                              588+*                                      * @NOP - NO TRACE PERFORMED
                              589+*                                      * @UCB - TRACE PERFORMED
                        0550  590+$BLRTN EQU    $TROVR+2                  ADDR OF RETURN POINT FROM ZTRACE
                        0569  591+$BLNOE EQU    $BLRTN+X'19'              ADDR OF NO EXECUTE INDR-NBLOAD
                              592+*                                      * @NOP - CALLING PGM RETURNED TO
                              593+*                                      * @UCB - LOADED PROGRAM EXECUTED
                              594+*                                      * ENTRY TO $LOADR SETS THE ABOVE
                              595+*                                      * INDR TO @NOP.  IF THE CALLING
                              596+*                                      * SETS THE INDR TO @NOP BEFORE
                              597+*                                      * CALLING $BLOAD, RETURN WILL BE
                              598+*                                      * MADE UPON COMPLETION OF THE
                              599+*                                      * ABSOLUE LOAD
                        0571  600+$LDRTN EQU    $BLOAD+X'4F'              ADDR OF THE RETURN ADDR IN NBLOA
                        0579  601+$BLDPL EQU    $BLOAD+X'57'              ADDR OF LEFT BYTE OF $BLOAD'S
                              602+*                                      * DPL (DPL OF LAST PGM LOADED)
                        057F  603+$WAITF EQU    $BLDPL+6                  ADDR OF LEFT BYTE OF DISK
                              604+*                                      * WAIT AND CHECK ERRORS DPL
                        0583  605+$GUFIO EQU    $WAITF+4                  ADDR OF DK ADDR, COUNT OF GUFUDI
                        0587  606+$BSADR EQU    $GUFIO+4                  ADDR OF DADDR RELOCATION FACTOR
                              607+*                                      * FOR PGMS NOT RESIDING ON CYL 6
                        0588  608+$FEMAP EQU    $BSADR+1                  ADDR OF START OF CORE MAP
                        05A2  609+$ZTRAD EQU    $FEMAP+X'1A'              ADDR OF ZTRACE DADDR

      05FF                    611+       ORG    X'05FF'
                        05FF  612+$IPLDV EQU    *                        ADDR OF IPL INDR
                              613+*                                      * X'00' - IPL WAS FROM R1
                              614+*                                      * X'01' - IPL WAS FROM F1
                        0600  615+$ENDNU EQU    $IPLDV+1                  ADDR OF THE FIRST BYTE
                              616+*                                      * FOLLOWING SYSNUC
                              617+*       END OF FIXED ADDRESSES SYSTEM NUCLEUS EQUATES
                              618+       PRINT ON
                              619 *       @CAN  EXP-Y
                              621+       PRINT ON
```

```
                          623+****************************************************************************
                          624+*        INPUT LINE HEADER                                                 *
                          625+****************************************************************************
               0600       626+$$ILHD EQU    $ENDNU                      FIRST BYTE OF INPUT LINE HEADER
                          627+*
               0601       628+$$ILEN EQU    $$ILHD+1                    SECOND BYTE OF SDF LENGTH FIELD
                          629+*
               0602       630+$$UPAR EQU    $$ILEN+1                    UP ARROW LOCATION IN LAST LINE
                          631+*
               0603       632+$$CKEY EQU    $$UPAR+1                    CMD KEY FUNCTION CODE
                          633+*                                         * EXECUTABLE CMD KEYS
               0605       634+$$BNLN EQU    $$ILEN+4                    SECOND BYTE OF BINARY LINE NO.
                          635+*
               0606       636+$$TPCD EQU    $$BNLN+1                    TYPE CODE FIELD

                          638+****************************************************************************
                          639+*        INPUT LINE TEXT                                                   *
                          640+****************************************************************************
               0607       641+$$INLN EQU    $$TPCD+1                    FIRST BYTE CHAR OF INPUT LINE
                          642+*
               0666       643+$$CDND EQU    $$INLN+@CARDL-1             LAST CHAR OF CARD INPUT
                          644+*
               06FA       645+$$INND EQU    $$INLN+@LINSZ-1             LAST CHAR OF INPUT LINE BUFFER

                          647+****************************************************************************
                          648+*        KEYBOARD ROUTINE LOCATIONS AND MASKS                              *
                          649+****************************************************************************
               0890       650+$$PRES EQU    $ENDNU+X'0290'              ENABLE KEYBOARD ENTRY TO DEPRES
                          651+*
               09E1       652+$$KBDT EQU    $$PRES+X'0151'              DATA BYTE FROM KEYBOARD
               0081       653+$$$STD EQU    B'10000001'                 CLI MASK FOR START KEY DATA
               0091       654+$$$EPL EQU    B'10010001'                 CLI MASK FOR ENTER PLUS KEY
                          655+*
               09E2       656+$$KBSN EQU    $$KBDT+1                    TYPE BYTE FROM KEYBOARD
               0040       657+$$$DAT EQU    B'01000000'                 TBM MASK FOR DATA KEY
               0020       658+$$$CMD EQU    B'00100000'                 TBM MASK FOR COMMAND KEY
               0010       659+$$$FUN EQU    B'00010000'                 TBM MASK FOR FUNCTION KEY
                          660+*
               09EB       661+$$LPOS EQU    $$KBSN+9                    PRINT HEAD POSITION ADDR
               0AFE       662+$$EOSA EQU    $$PRES+X'026E'              LOCATION OF EOS ADDR
               0B44       663+$$COFF EQU    $$PRES+X'02B4'              ENTRY TO TURN OFF CMD LIGHTS
               0B3D       664+$$CKFF EQU    $$PRES+X'02AD'              ENTRY TO TURN OFF CMD LIGHTS 1-1
               0BBF       665+$$DATB EQU    $$PRES+X'032F'              ADDR OF DATA TABLE TYPE INDR IN
                          666+*                                         * DEPRES (VALUE: 1-9)

                          668+****************************************************************************
                          669+*        MATRIX PRINTER ROUTINE ENTRY POINT                                *
                          670+****************************************************************************
               0707       671+$$PRNT EQU    $ENDNU+X'0100'+@HDRLN       DPRINT ENTRY
               0782       672+$$PRTN EQU    $$PRNT+X'007B'              ADDR OF CARRIER RETURN TEST IN
                          673+*                                         * DPRINT.  MASKS FOLLOE
                          674+*                                         * @NOP - NO TEST MADE
                          675+*                                         * @BNL - TEST WILL BE MADE
               07CE       676+$$PSIO EQU    $$PRNT+X'00C7'              ADDR OF SIO CTRL IN DPRINT
               07E9       677+$$PCNT EQU    $$PRNT+X'00E2'              ADDR OF PPL CNT IN DPRINT
```

```
              679+*********************************************************************
              680+*        CARD READER LOCATIONS                                      *
              681+*********************************************************************
0890          682+$$CDRD EQU    $$PRES                     ENTRY POINT TO READ CARDS
              683+*
08C0          684+$$CDBS EQU    $$CDRD+X'0030'             ENTRY POINT TO WAIT FOR READ

              686+*********************************************************************
              687+*        CRT OUTPUT ROUTINE LOCATIONS                               *
              688+*********************************************************************
2000          689+$$PYMP EQU    $$ZERO+X'2000'             ENTRY POINT TO CRT PLUS PRINT
              690+*
2004          691+$$PLYN EQU    $$PYMP+4                   ENTRY POINT TO CRT ONLY
              692+*
209C          693+$$CSNS EQU    $$PYMP+X'009C'             LOCATION OF SENSE BYTE IN
              694+*                                        * DSPLYN
2143          695+$$PRFL EQU    $$PYMP+X'0143'             ENTRY POINT FOR PRINTER FAILURE
              696+*
2200          697+$$PYCD EQU    $$PYMP+X'0200'             ENTRY POINT FOR COMMAND KEYS
              698+*                                        * OR CLEAR CRT FUNCTION

              700+*********************************************************************
              701+*        MISCELLANEOUS LOCATIONS                                    *
              702+*********************************************************************
1C00          703+$$ERSK EQU    X'1C00'                    START ADDR OF ERROR CODE STACK
00A0          704+$$$NLN EQU    X'00A0'                    HIGH ORDER BYTE OF LINE NUMBER
              705+*                                        * IN STACK IF NO. NOT DESIRED
1C00          706+$$SLIB EQU    X'1C00'                    SECONDAIRY LINE INPUT BUFFER
06FF          707+$$XIND EQU    $ENDNU+X'00FF'             EXEC INDR PASS AREA
0080          708+$$$ERN EQU    B'10000000'                RUN FUNC SAVED FILE INDR MASK
1E00          709+$$WSPB EQU    X'1E00'                    LOCATION OF BAGETC BUFFER
06FF          710+$$FLIB EQU    $$XIND                     FILE LIB ADDR PASS AREA
1D00          711+$$FITS EQU    X'1D00'                    LOCATION OF FIT

              713+*********************************************************************
              714+*        KEYWORD COMMAND LOAD ADDRESSES                             *
              715+*********************************************************************
0600          716+$$KLD1 EQU    $ENDNU                     PROGRAMS THAT LOAD BEHIND
              717+*                                        * SYSNUC
0700          718+$$KLD2 EQU    $ENDNU+X'0100'             PROGRAMS THAT LOAD BEHIND
              719+*                                        * THE INPUT LINE BUFFER
0C00          720+$$KLD3 EQU    $ENDNU+X'0600'             STANDARD LOAD ADDRESS BEHIND
              721+*                                        * I/O ROUTINES
              722+*        END OF COMMON CORE LOCATIONS EQUATES
              723+        PRINT ON
              724 *        @WKA  EXP-Y
              726+        PRINT ON
```

```
                              728+***************************************************************************
                              729+*       THIS EQUATE MODULE PROVIDES THE FIXED PHYSICAL DISK           *
                              730+*       ADDRESSES OF PGM'S AND WA'S IN THE SYSTEM WORK AREA.           *
                              731+***************************************************************************
                              732+*
                              733+***     SELECTED SYSTEM PROGRAMS AND BAD LINE
                              734+*
                 0400   735+#@WAR1 EQU   X'0400'                   DADDR OF SELECTED PGM AREA
                 0401   736+#@WAF1 EQU   X'0401'                   DADDR OF SELECTED PGM AREA
                 0400   737+#@BOVL EQU   X'0400'                   PHYSICAL DADDR OF #BOVLY
                 0018   738+#@@BOV EQU   24                        SECTOR COUNT OF #BOVLY
                 0480   739+#@SFSY EQU   X'0480'                   PHYSICAL DADDR OF #SFSYN
                 0011   740+#@@SFS EQU   17                        SECTOR COUNT OF #SFSYN
                 0401   741+#@GUFU EQU   X'0401'                   PHYSICAL DADDR OF #GUFUD
                 0010   742+#@@GUF EQU   16                        SECTOR COUNT OF #GUFUD
                 04AD   743+#@SDSY EQU   X'04AD'                   PHYSICAL DADDR OF #SDSYN
                 0004   744+#@@SDS EQU   4                         SECTOR COUNT OF #SDSYN
                 0441   745+#@ERRP EQU   X'0441'                   PHYSICAL DADDR OF #ERRPG
                 0003   746+#@@ERR EQU   3                         SECTOR COUNT OF #ERRPG
                 044D   747+#@LDSV EQU   X'044D'                   PHYS DADDR OF #LOADR SAVE AREA
                 0002   748+#@@LDS EQU   2                         SECTOR COUNT OF #LOADR SA
                 0455   749+#@#BAD EQU   X'0455'                   PHYSICAL DADDR OF THE BAD LINE
                 0001   750+#@@#BA EQU   1                         SECTOR COUNT OF ##BADL
                 0481   751+#@ECMA EQU   X'0481'                   PHYSICAL DADDR OF #ECMAN
                 0006   752+#@@ECM EQU   6                         SECTOR COUNT OF #ECMAN
                 0449   753+#@SFLO EQU   X'0449'                   PHYSICAL DADDR OF SFLOAD
                 0005   754+#@@SFL EQU   5                         SECTOR COUNT OF SFLOAD
                 04BD   755+#@SFFI EQU   X'04BD'                   PHYSICAL DADDR OF SFFIND
                 0008   756+#@@SFF EQU   8                         SECTOR COUNT OF SFFIND
                 0459   757+#@#IO1 EQU   X'0459'                   PHYSICAL DADDR OF 1ST I/O SECTOR
                 045D   758+#@#IO2 EQU   X'045D'                   PHYSICAL DADDR OF 2ST I/O SECTOR
                 0002   759+#@@#SC EQU   2                         SECTOR COUNT OF I/O SECTOR
                 0008   760+#@@#08 EQU   8                         NO. ENTRIES IN 1ST I/O SECTOR
                 0004   761+#@@#04 EQU   4                         NO. ENTRIES IN 2ND I/O SECTOR
                 0001   762+#@@#IO EQU   1                         SECTOR COUNT OF I/O SECTOR
                 04C4   763+#@SFOV EQU   X'04C4'                   PHYSICAL DADDR OF #SFOVR
                 0005   764+#@@SFO EQU   5                         SECTOR COUNT OF #SFOVR
                              765+*
                              766+***     WORK FILE ADDRESSES
                              767+*
                 0500   768+#@#WFT EQU   X'0500'                   PHYSICAL DADDR 1ST SCTR OF FIT
                 0003   769+#@@#WF EQU   3                         SCTR COUNT OF FIT
                 050C   770+#@#WDB EQU   X'050C'                   PHYSICAL DADDR OF 1ST DATA BLOCK
                 00BD   771+#@@#WD EQU   189                       SCTR COUNT OF DATA BLOCKS
                              772+*
                              773+***     VIRTUAL MEMORY ADDRESSES
                              774+*
                 0700   775+#@#VFP EQU   X'0700'                   PHYSICAL DADDR FIRST PAGE OF VM
                 0708   776+#@VTRL EQU   X'0708'                   DADDR OF SAVED 'TRACE' VAR.LIST
                 0001   777+#@@VTR EQU   1                         SCTR COUNT SAVED 'TRACE' VAR.LIS
                 093D   778+#@#VLP EQU   X'093D'                   PHYSICAL DADDR LAST PAGE OF VM
                 0100   779+#@@#VM EQU   256                       SCTR COUNT OF VIRTUAL MEMORY
                              780+*
                              781+***     TEMPORARELY WORK AREA ADDRESSES
                              782+*
                 0941   783+#@#TFS EQU   X'0941'                   PHYISCAL DADDR 1ST SCTR TEMP WK
```

```
        @WKAEQ - SYSTEM WORK AREA ADDRESSES

ERR LOC   OBJECT CODE       ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  09/05/20  PAGE  19

                            0020  784+#@@#TW EQU   32                      SCTR COUNT OF TEMP WORKAREA
                            0941  785+#@#TAT EQU   X'0941'                 PHYISCAL DADDR STMT ADDR TABLE
                            0010  786+#@@#TA EQU   16                      SCTR COUNT OF STMT ADDR TABLE
                            0941  787+#@#TSY EQU   X'0941'                 PHYISCAL DADDR SYMBOL TBL SAVE A
                            0005  788+#@@#TS EQU   5                       SCTR COUNT OF SYMBOL TBL SAVE AR
                            09A1  789+#@#TBA EQU   X'09A1'                 PHYISCAL DADDR BRANCH ADDR TABLE
                            0010  790+#@@#TB EQU   16                      SCTR COUNT OF OF BRANCH ADDR TAB
                            09A1  791+#@VSFI EQU   X'09A1'                 PHYISCAL DADDR VSFINT
                            0010  792+#@@VSF EQU   16                      SCTR COUNT OF VSFINT
                            000F  793+#@@VSL EQU   15                      SCTR COUNT OF VSFLOA
                                  794+*         END OF WORK AREA EQUATES
                                  795+          PRINT ON
                                  796 *         @SPF  EXP-Y
                                  798+          PRINT ON
```

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

```
                          800+*******************************************************************
                          801+*         SYSTEM PROGRAM FILE (SPF) EQUATES                        *
                          802+*******************************************************************
                0004      803+@SYLVL EQU   4                            SYSTEM LEVEL NUMBER 1-4
                          804+*
                0000      805+#$#0TR EQU   X'0000'                      DISK ADDR OF ##0TRK
                0700      806+#$$#0T EQU   X'0700'                      CORE LOAD ADDRESS OF ##0TRK
                0018      807+#$@#0T EQU   24                           SECTOR COUNT OF ##0TRK
                          808+*
                0080      809+#$#1TR EQU   X'0080'                      DISK ADDR OF ##1TRK
                0000      810+#$$#1T EQU   X'0000'                      CORE LOAD ADDRESS OF ##1TRK
                0018      811+#$@#1T EQU   24                           SECTOR COUNT OF ##1TRK
                          812+*
                0000      813+#$#DRT EQU   X'0000'                      DISK ADDR OF ##DRTY
                0000      814+#$$#DR EQU   X'0000'                      CORE LOAD ADDRESS OF ##DRTY
                0008      815+#$@#DR EQU   08                           SECTOR COUNT OF ##DRTY
                          816+*
                0020      817+#$INST EQU   X'0020'                      DISK ADDR OF #INSTD
                0600      818+#$$INS EQU   X'0600'                      CORE LOAD ADDRESS OF #INSTD
                0010      819+#$@INS EQU   16                           SECTOR COUNT OF #INSTD
                          820+*
                0080      821+#$BCOM EQU   X'0080'                      DISK ADDR OF #BCOMP
                0600      822+#$$BCO EQU   X'0600'                      CORE LOAD ADDRESS OF #BCOMP
                0018      823+#$@BCO EQU   24                           SECTOR COUNT OF #BCOMP
                          824+*
                0100      825+#$LOAD EQU   X'0100'                      DISK ADDR OF #LOADR
                0600      826+#$$LOA EQU   X'0600'                      CORE LOAD ADDRESS OF #LOADR
                0013      827+#$@LOA EQU   19                           SECTOR COUNT OF #LOADR
                          828+*
                014C      829+#$DPRI EQU   X'014C'                      DISK ADDR OF #DPRIN
                0700      830+#$$DPR EQU   X'0700'                      CORE LOAD ADDRESS OF #DPRIN
                0005      831+#$@DPR EQU   05                           SECTOR COUNT OF #DPRIN
                          832+*
                0180      833+#$KGOS EQU   X'0180'                      DISK ADDR OF #KGOSL
                0C00      834+#$$KGO EQU   X'0C00'                      CORE LOAD ADDRESS OF #KGOSL
                0002      835+#$@KGO EQU   02                           SECTOR COUNT OF #KGOSL
                          836+*
                0188      837+#$KEDI EQU   X'0188'                      DISK ADDR OF #KEDIT
                0C00      838+#$$KED EQU   X'0C00'                      CORE LOAD ADDRESS OF #KEDIT
                000E      839+#$@KED EQU   14                           SECTOR COUNT OF #KEDIT
                          840+*
                01C4      841+#$KENA EQU   X'01C4'                      DISK ADDR OF #KENAB
                0C00      842+#$$KEN EQU   X'0C00'                      CORE LOAD ADDRESS OF #KENAB
                0006      843+#$@KEN EQU   06                           SECTOR COUNT OF #KENAB
                          844+*
                0200      845+#$DREA EQU   X'0200'                      DISK ADDR OF #DREAD
                0889      846+#$$DRE EQU   X'0889'                      CORE LOAD ADDRESS OF #DREAD
                0001      847+#$@DRE EQU   01                           SECTOR COUNT OF #DREAD
                          848+*
                0204      849+#$KMOU EQU   X'0204'                      DISK ADDR OF #KMOUN
                0C00      850+#$$KMO EQU   X'0C00'                      CORE LOAD ADDRESS OF #KMOUN
                0004      851+#$@KMO EQU   04                           SECTOR COUNT OF #KMOUN
                          852+*
                0214      853+#$KRMO EQU   X'0214'                      DISK ADDR OF #KRMOV
                0C00      854+#$$KRM EQU   X'0C00'                      CORE LOAD ADDRESS OF #KRMOV
                0003      855+#$@KRM EQU   03                           SECTOR COUNT OF #KRMOV
```

```
      @SPFEQ - SYSTEM PROGRAM FILE EQUATES


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  09/05/20  PAGE  21

                                856+*
                 0220  857+#$KPAS EQU    X'0220'                    DISK ADDR OF #KPASW
                 0C00  858+#$$KPA EQU    X'0C00'                    CORE LOAD ADDRESS OF #KPASW
                 0005  859+#$@KPA EQU    05                         SECTOR COUNT OF #KPASW
                                860+*
                 0234  861+#$KEXT EQU    X'0234'                    DISK ADDR OF #KEXTR
                 0C00  862+#$$KEX EQU    X'0C00'                    CORE LOAD ADDRESS OF #KEXTR
                 0003  863+#$@KEX EQU    03                         SECTOR COUNT OF #KEXTR
                                864+*
                 0240  865+#$DSPL EQU    X'0240'                    DISK ADDR OF #DSPLY
                 2800  866+#$$DSP EQU    X'2800'                    CORE LOAD ADDRESS OF #DSPLY
                 0004  867+#$@DSP EQU    04                         SECTOR COUNT OF #DSPLY
                                868+*
                 0250  869+#$TSYK EQU    X'0250'                    DISK ADDR OF #TSYKT
                 1000  870+#$$TSY EQU    X'1000'                    CORE LOAD ADDRESS OF #TSYKT
                 0003  871+#$@TSY EQU    03                         SECTOR COUNT OF #TSYKT
                                872+*
                 0280  873+#$KRNU EQU    X'0280'                    DISK ADDR OF #KRNUM
                 1000  874+#$$KRN EQU    X'1000'                    CORE LOAD ADDRESS OF #KRNUM
                 0003  875+#$@KRN EQU    03                         SECTOR COUNT OF #KRNUM
                                876+*
                 028C  877+#$KROV EQU    X'028C'                    DISK ADDR OF #KROVL
                 0D00  878+#$$KRO EQU    X'0D00'                    CORE LOAD ADDRESS OF #KROVL
                 000A  879+#$@KRO EQU    10                         SECTOR COUNT OF #KROVL
                                880+*
                 0290  881+#$KOVM EQU    X'0290'                    DISK ADDR OF #KOVME
                 0E00  882+#$$KOV EQU    X'0E00'                    CORE LOAD ADDRESS OF #KOVME
                 0009  883+#$@KOV EQU    09                         SECTOR COUNT OF #KOVME
                                884+*
                 02B4  885+#$KWRI EQU    X'02B4'                    DISK ADDR OF #KWRIT
                 0C00  886+#$$KWR EQU    X'0C00'                    CORE LOAD ADDRESS OF #KWRIT
                 0002  887+#$@KWR EQU    02                         SECTOR COUNT OF #KWRIT
                                888+*
                 02BC  889+#$KREA EQU    X'02BC'                    DISK ADDR OF #KREAD
                 0C00  890+#$$KRE EQU    X'0C00'                    CORE LOAD ADDRESS OF #KREAD
                 0002  891+#$@KRE EQU    02                         SECTOR COUNT OF #KREAD
                                892+*
                 02C4  893+#$KWID EQU    X'02C4'                    DISK ADDR OF #KWIDT
                 0C00  894+#$$KWI EQU    X'0C00'                    CORE LOAD ADDRESS OF #KWIDT
                 0002  895+#$@KWI EQU    02                         SECTOR COUNT OF #KWIDT
                                896+*
                 02CC  897+#$KRUN EQU    X'02CC'                    DISK ADDR OF #KRUNI
                 0C00  898+#$$KRU EQU    X'0C00'                    CORE LOAD ADDRESS OF #KRUNI
                 0003  899+#$@KRU EQU    03                         SECTOR COUNT OF #KRUNI
                                900+*
                 0300  901+#$KDNT EQU    X'0300'                    DISK ADDR OF #KDNTE
                 0C00  902+#$$KDN EQU    X'0C00'                    CORE LOAD ADDRESS OF #KDNTE
                 0010  903+#$@KDN EQU    16                         SECTOR COUNT OF #KDNTE
                                904+*
                 030C  905+#$KMER EQU    X'030C'                    DISK ADDR OF #KMERG
                 0D00  906+#$$KME EQU    X'0D00'                    CORE LOAD ADDRESS OF #KMERG
                 0003  907+#$@KME EQU    03                         SECTOR COUNT OF #KMERG
                                908+*
                 0350  909+#$TDCK EQU    X'0350'                    DISK ADDR OF #TDCKT
                 1000  910+#$$TDC EQU    X'1000'                    CORE LOAD ADDRESS OF #TDCKT
                 0003  911+#$@TDC EQU    03                         SECTOR COUNT OF #TDCKT
```

```
                            912+*
                  035C  913+#$KDEL EQU    X'035C'                DISK ADDR OF #KDELE
                  0C00  914+#$$KDE EQU    X'0C00'                CORE LOAD ADDRESS OF #KDELE
                  0010  915+#$@KDE EQU    16                     SECTOR COUNT OF #KDELE
                        916+*
                  03BC  917+#$KCTL EQU    X'03BC'                DISK ADDR OF #KCTL0
                  0C00  918+#$$KCT EQU    X'0C00'                CORE LOAD ADDRESS OF #KCTL0
                  0009  919+#$@KCT EQU    09                     SECTOR COUNT OF #KCTL0
                        920+*
                  0400  921+#$KLIS EQU    X'0400'                DISK ADDR OF #KLIST
                  0C00  922+#$$KLI EQU    X'0C00'                CORE LOAD ADDRESS OF #KLIST
                  0008  923+#$@KLI EQU    08                     SECTOR COUNT OF #KLIST
                        924+*
                  0444  925+#$KLOG EQU    X'0444'                DISK ADDR OF #KLOGO
                  0C00  926+#$$KLO EQU    X'0C00'                CORE LOAD ADDRESS OF #KLOGO
                  0008  927+#$@KLO EQU    08                     SECTOR COUNT OF #KLOGO
                        928+*
                  0484  929+#$SPSY EQU    X'0484'                DISK ADDR OF #SPSYN
                  0C00  930+#$$SPS EQU    X'0C00'                CORE LOAD ADDRESS OF #SPSYN
                  0001  931+#$@SPS EQU    01                     SECTOR COUNT OF #SPSYN
                        932+*
                  0488  933+#$KSAV EQU    X'0488'                DISK ADDR OF #KSAVE
                  0C00  934+#$$KSA EQU    X'0C00'                CORE LOAD ADDRESS OF #KSAVE
                  0004  935+#$@KSA EQU    04                     SECTOR COUNT OF #KSAVE
                        936+*
                  04CC  937+#$SPAC EQU    X'04CC'                DISK ADDR OF #SPACK
                  0C00  938+#$$SPA EQU    X'0C00'                CORE LOAD ADDRESS OF #SPACK
                  0004  939+#$@SPA EQU    04                     SECTOR COUNT OF #SPACK
                        940+*
                  04DC  941+#$SPOV EQU    X'04DC'                DISK ADDR OF #SPOVL
                  0806  942+#$$SPO EQU    X'0806'                CORE LOAD ADDRESS OF #SPOVL
                  0003  943+#$@SPO EQU    03                     SECTOR COUNT OF #SPOVL
                        944+*
                  0508  945+#$KPOO EQU    X'0508'                DISK ADDR OF #KPOOL
                  0C00  946+#$$KPO EQU    X'0C00'                CORE LOAD ADDRESS OF #KPOOL
                  000D  947+#$@KPO EQU    13                     SECTOR COUNT OF #KPOOL
                        948+*
                  053C  949+#$KCHA EQU    X'053C'                DISK ADDR OF #KCHAN
                  0C00  950+#$$KCH EQU    X'0C00'                CORE LOAD ADDRESS OF #KCHAN
                  000C  951+#$@KCH EQU    12                     SECTOR COUNT OF #KCHAN
                        952+*
                  058C  953+#$KSVL EQU    X'058C'                DISK ADDR OF #KSVLA
                  0980  954+#$$KSV EQU    X'0980'                CORE LOAD ADDRESS OF #KSVLA
                  0002  955+#$@KSV EQU    02                     SECTOR COUNT OF #KSVLA
                        956+*
                  0594  957+#$KSSP EQU    X'0594'                DISK ADDR OF #KSSPN
                  0C00  958+#$$KSS EQU    X'0C00'                CORE LOAD ADDRESS OF #KSSPN
                  000B  959+#$@KSS EQU    11                     SECTOR COUNT OF #KSSPN
                        960+*
                  05C0  961+#$KNAM EQU    X'05C0'                DISK ADDR OF #KNAME
                  0C00  962+#$$KNA EQU    X'0C00'                CORE LOAD ADDRESS OF #KNAME
                  0008  963+#$@KNA EQU    08                     SECTOR COUNT OF #KNAME
                        964+*
                  0600  965+#$KSYM EQU    X'0600'                DISK ADDR OF #KSYMB
                  0C00  966+#$$KSY EQU    X'0C00'                CORE LOAD ADDRESS OF #KSYMB
                  000F  967+#$@KSY EQU    15                     SECTOR COUNT OF #KSYMB
```

```
      @SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC  OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  09/05/20  PAGE  23

                               968+*
                          063C  969+#$KPRT EQU   X'063C'                  DISK ADDR OF #KPRTC
                          0C00  970+#$$KPR EQU   X'0C00'                  CORE LOAD ADDRESS OF #KPRTC
                          0009  971+#$@KPR EQU   09                       SECTOR COUNT OF #KPRTC
                               972+*
                          0680  973+#$KSET EQU   X'0680'                  DISK ADDR OF #KSETI
                          0E00  974+#$$KSE EQU   X'0E00'                  CORE LOAD ADDRESS OF #KSETI
                          0004  975+#$@KSE EQU   04                       SECTOR COUNT OF #KSETI
                               976+*
                          0690  977+#$GRAP EQU   X'0690'                  DISK ADDR OF #GRAPR
                          0889  978+#$$GRA EQU   X'0889'                  CORE LOAD ADDRESS OF #GRAPR
                          0003  979+#$@GRA EQU   03                       SECTOR COUNT OF #GRAPR
                               980+*
                          06A4  981+#$KALL EQU   X'06A4'                  DISK ADDR OF #KALLO
                          0C00  982+#$$KAL EQU   X'0C00'                  CORE LOAD ADDRESS OF #KALLO
                          000F  983+#$@KAL EQU   15                       SECTOR COUNT OF #KALLO
                               984+*
                          0700  985+#$KRLA EQU   X'0700'                  DISK ADDR OF #KRLAB
                          0700  986+#$$KRL EQU   X'0700'                  CORE LOAD ADDRESS OF #KRLAB
                          0004  987+#$@KRL EQU   04                       SECTOR COUNT OF #KRLAB
                               988+*
                          0710  989+#$KRVL EQU   X'0710'                  DISK ADDR OF #KRVLA
                          0800  990+#$$KRV EQU   X'0800'                  CORE LOAD ADDRESS OF #KRVLA
                          000D  991+#$@KRV EQU   13                       SECTOR COUNT OF #KRVLA
                               992+*
                          0744  993+#$KDIS EQU   X'0744'                  DISK ADDR OF #KDISP
                          0D00  994+#$$KDI EQU   X'0D00'                  CORE LOAD ADDRESS OF #KDISP
                          0005  995+#$@KDI EQU   05                       SECTOR COUNT OF #KDISP
                               996+*
                          0780  997+#$KDOV EQU   X'0780'                  DISK ADDR OF #KDOVR
                          0E00  998+#$$KDO EQU   X'0E00'                  CORE LOAD ADDRESS OF #KDOVR
                          000C  999+#$@KDO EQU   12                       SECTOR COUNT OF #KDOVR
                              1000+*
                          07B4 1001+#$VCRT EQU   X'07B4'                  DISK ADDR OF #VCRTI
                          2000 1002+#$$VCR EQU   X'2000'                  CORE LOAD ADDRESS OF #VCRTI
                          0008 1003+#$@VCR EQU   08                       SECTOR COUNT OF #VCRTI
                              1004+*
                          07D4 1005+#$EXMS EQU   X'07D4'                  DISK ADDR OF #EXMSG
                          0C00 1006+#$$EXM EQU   X'0C00'                  CORE LOAD ADDRESS OF #EXMSG
                          0003 1007+#$@EXM EQU   03                       SECTOR COUNT OF #EXMSG
                              1008+*
                          0800 1009+#$#COR EQU   X'0800'                  DISK ADDR OF ##CORE
                          0000 1010+#$$#CO EQU   X'0000'                  CORE LOAD ADDRESS OF ##CORE
                          003A 1011+#$@#CO EQU   58                       SECTOR COUNT OF ##CORE
                              1012+*
                          0928 1013+#$#ERM EQU   X'0928'                  DISK ADDR OF ##ERMS
                          0000 1014+#$$#ER EQU   X'0000'                  CORE LOAD ADDRESS OF ##ERMS
                          0032 1015+#$@#ER EQU   50                       SECTOR COUNT OF ##ERMS
                              1016+*
                          0A30 1017+#$KHEL EQU   X'0A30'                  DISK ADDR OF #KHELP
                          0C00 1018+#$$KHE EQU   X'0C00'                  CORE LOAD ADDRESS OF #KHELP
                          000C 1019+#$@KHE EQU   12                       SECTOR COUNT OF #KHELP
                              1020+*
                          0A80 1021+#$MIPP EQU   X'0A80'                  DISK ADDR OF #MIPPE
                          0C00 1022+#$$MIP EQU   X'0C00'                  CORE LOAD ADDRESS OF #MIPPE
                          000D 1023+#$@MIP EQU   13                       SECTOR COUNT OF #MIPPE
```

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

```
                          1024+*
              0AC8 1025+#$KSOV EQU    X'0AC8'                    DISK ADDR OF #KSOVR
              0C20 1026+#$$KSO EQU    X'0C20'                    CORE LOAD ADDRESS OF #KSOVR
              000D 1027+#$@KSO EQU    13                         SECTOR COUNT OF #KSOVR
                          1028+*
              0B00 1029+#$VXIT EQU    X'0B00'                    DISK ADDR OF #VXITI
              0600 1030+#$$VXI EQU    X'0600'                    CORE LOAD ADDRESS OF #
              0002 1031+#$@VXI EQU    02                         SECTOR COUNT OF #
                          1032+*
              0B08 1033+#$#VUF EQU    X'0B08'                    DISK ADDR OF ##VUFA
              0600 1034+#$$#VU EQU    X'0600'                    CORE LOAD ADDRESS OF #
              0002 1035+#$@#VU EQU    02                         SECTOR COUNT OF #
                          1036+*
              0B80 1037+#$VLOA EQU    X'0B80'                    DISK ADDR OF #VLOAD
              0600 1038+#$$VLO EQU    X'0600'                    CORE LOAD ADDRESS OF #
              0002 1039+#$@VLO EQU    02                         SECTOR COUNT OF #
                          1040+*
              0B88 1041+#$VODK EQU    X'0B88'                    DISK ADDR OF #VODKA
              0600 1042+#$$VOD EQU    X'0600'                    CORE LOAD ADDRESS OF #
              0016 1043+#$@VOD EQU    22                         SECTOR COUNT OF #
                          1044+*
              0BAC 1045+#$TVKB EQU    X'0BAC'                    DISK ADDR OF #TVKBT
              0FC0 1046+#$$TVK EQU    X'0FC0'                    CORE LOAD ADDRESS OF #TVKBT
              0001 1047+#$@TVK EQU    01                         SECTOR COUNT OF #TVKBT
                          1048+*
              0C00 1049+#$VVMR EQU    X'0C00'                    DISK ADDR OF #VVMRS
              0000 1050+#$$VVM EQU    X'0000'                    CORE LOAD ADDRESS OF #
              0030 1051+#$@VVM EQU    48                         SECTOR COUNT OF #
                          1052+*
              0D00 1053+#$FMST EQU    X'0D00'                    DISK ADDR OF #FMSTD
              0200 1054+#$$FMS EQU    X'0200'                    CORE LOAD ADDRESS OF #
              0052 1055+#$@FMS EQU    82                         SECTOR COUNT OF #
                          1056+*
              0EA8 1057+#$UEXL EQU    X'0EA8'                    DISK ADDR OF #UEXLI
              0C00 1058+#$$UEX EQU    X'0C00'                    CORE LOAD ADDRESS OF #
              000E 1059+#$@UEX EQU    14                         SECTOR COUNT OF #
                          1060+*
              0F00 1061+#$UALL EQU    X'0F00'                    DISK ADDR OF #UALLO
              0C00 1062+#$$UAL EQU    X'0C00'                    CORE LOAD ADDRESS OF #
              0011 1063+#$@UAL EQU    17                         SECTOR COUNT OF #
                          1064+*
              0F80 1065+#$KCND EQU    X'0F80'                    DISK ADDR OF #KCNDI
              0C00 1066+#$$KCN EQU    X'0C00'                    CORE LOAD ADDRESS OF #
              0010 1067+#$@KCN EQU    16                         SECTOR COUNT OF #
                          1068+*
              1000 1069+#$#CSA EQU    X'1000'                    DISK ADDR OF #CSAV
              0000 1070+#$$#CS EQU    X'0000'                    CORE LOAD ADDRESS OF #
              003A 1071+#$@#CS EQU    58                         SECTOR COUNT OF #
                          1072+*
              1128 1073+#$@SSA EQU    X'1128'                    DISK ADDR OF #SSAV
              0000 1074+#$$#SS EQU    X'0000'                    CORE LOAD ADDRESS OF #
              0001 1075+#$@#SS EQU    01                         SECTOR COUNT OF #
                          1076+*
              1180 1077+#$#SAV EQU    X'1180'                    DISK ADDR OF ##SAVM
              0000 1078+#$$#SA EQU    X'0000'                    CORE LOAD ADDRESS OF #
              0108 1079+#$@#SA EQU    264                        SECTOR COUNT OF #
```

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

```
                              1080+*
               1700 1081+#$FIST EQU   X'1700'                 DISK ADDR OF #FISTD
               0E00 1082+#$$FIS EQU   X'0E00'                 CORE LOAD ADDRESS OF #
               0009 1083+#$@FIS EQU   09                      SECTOR COUNT OF #
                              1084+*
               1724 1085+#$FILN EQU   X'1724'                 DISK ADDR OF #FILNG
               0E00 1086+#$$FIL EQU   X'0E00'                 CORE LOAD ADDRESS OF #
               0009 1087+#$@FIL EQU   09                      SECTOR COUNT OF #
                              1088+*
               1780 1089+#$#RSP EQU   X'1780'                 DISK ADDR OF ##RSPG
               0000 1090+#$$#RS EQU   X'0000'                 CORE LOAD ADDRESS OF #
               0030 1091+#$@#RS EQU   48                      SECTOR COUNT OF #
                              1092+*
               1780 1093+#$BOLV EQU   X'1780'                 DISK ADDR OF #BOLVY
               0800 1094+#$$BOV EQU   X'0800'                 CORE LOAD ADDRESS OF #
               0018 1095+#$@BOV EQU   24                      SECTOR COUNT OF #
                              1096+*
               1800 1097+#$SFSY EQU   X'1800'                 DISK ADDR OF #SFSYN
               0C00 1098+#$$SFS EQU   X'0C00'                 CORE LOAD ADDRESS OF #
               0011 1099+#$@SFS EQU   17                      SECTOR COUNT OF #
                              1100+*
               1844 1101+#$SFOV EQU   X'1844'                 DISK ADDR OF #SFOVR
               1500 1102+#$$SFO EQU   X'1500'                 CORE LOAD ADDRESS OF #
               0003 1103+#$@SFO EQU   03                      SECTOR COUNT OF #
                              1104+*
               1850 1105+#$STRO EQU   X'1850'                 DISK ADDR OF #STROV
               1600 1106+#$$STR EQU   X'1600'                 CORE LOAD ADDRESS OF #
               0002 1107+#$@STR EQU   02                      SECTOR COUNT OF #
                              1108+*
               1880 1109+#$#FSP EQU   X'1880'                 DISK ADDR OF ##FSPG
               0000 1110+#$$#FS EQU   X'0000'                 CORE LOAD ADDRESS OF #
               0030 1111+#$@#FS EQU   48                      SECTOR COUNT OF #
                              1112+*
               1880 1113+#$GUFU EQU   X'1880'                 DISK ADDR OF ##GUFUD
               0C00 1114+#$$GUF EQU   X'0C00'                 CORE LOAD ADDRESS OF #
               0010 1115+#$@GUF EQU   16                      SECTOR COUNT OF #
                              1116+*
               18C0 1117+#$ERRP EQU   X'18C0'                 DISK ADDR OF #ERRPG
               0C00 1118+#$$ERR EQU   X'0C00'                 CORE LOAD ADDRESS OF #
               0003 1119+#$@ERR EQU   03                      SECTOR COUNT OF #
                              1120+*
               18D4 1121+#$#BLN EQU   X'18D4'                 DISK ADDR OF ##BLNB
               0000 1122+#$$#BL EQU   X'0000'                 CORE LOAD ADDRESS OF #
               0001 1123+#$@#BL EQU   01                      SECTOR COUNT OF #
                              1124+*
               1900 1125+#$ECMA EQU   X'1900'                 DISK ADDR OF #ECMAN
               0C00 1126+#$$ECM EQU   X'0C00'                 CORE LOAD ADDRESS OF #
               0006 1127+#$@ECM EQU   06                      SECTOR COUNT OF #
                              1128+*
               1918 1129+#$SFLO EQU   X'1918'                 DISK ADDR OF #SFLOA
               0F00 1130+#$$SFL EQU   X'0F00'                 CORE LOAD ADDRESS OF #
               0005 1131+#$@SFL EQU   05                      SECTOR COUNT OF #
                              1132+*
               192C 1133+#$SDSY EQU   X'192C'                 DISK ADDR OF #SDSYN
               0C00 1134+#$$SDS EQU   X'0C00'                 CORE LOAD ADDRESS OF #
               0004 1135+#$@SDS EQU   04                      SECTOR COUNT OF #
```

```
                              1136+*
                         193C 1137+#$SFFI EQU    X'193C'                    DISK ADDR OF #SFFIN
                         0E00 1138+#$$SFF EQU    X'0E00'                    CORE LOAD ADDRESS OF #
                         0008 1139+#$@SFF EQU    08                         SECTOR COUNT OF #
                              1140+*
                         1980 1141+#$UPAC EQU    X'1980'                    DISK ADDR OF #UPACK
                         0C00 1142+#$$UPA EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         0004 1143+#$@UPA EQU    04                         SECTOR COUNT OF #
                              1144+*
                         1990 1145+#$EFKE EQU    X'1990'                    DISK ADDR OF #EFKEY
                         0C00 1146+#$$EFK EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         0002 1147+#$@EFK EQU    02                         SECTOR COUNT OF #
                              1148+*
                         19B8 1149+#$UCNF EQU    X'19B8'                    DISK ADDR OF #UCNFI
                         0C00 1150+#$$UCN EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         0009 1151+#$@UCN EQU    09                         SECTOR COUNT OF #
                              1152+*
                         19DC 1153+#$UCPL EQU    X'19DC'                    DISK ADDR OF #UCPLI
                         0700 1154+#$$UCP EQU    X'0700'                    CORE LOAD ADDRESS OF #
                         000F 1155+#$@UCP EQU    15                         SECTOR COUNT OF #
                              1156+*
                         1A38 1157+#$UATR EQU    X'1A38'                    DISK ADDR OF #UATRC
                         0900 1158+#$$UAT EQU    X'0900'                    CORE LOAD ADDRESS OF #
                         000C 1159+#$@UAT EQU    12                         SECTOR COUNT OF #
                              1160+*
                         1A88 1161+#$UINI EQU    X'1A88'                    DISK ADDR OF #UINIT
                         0C00 1162+#$$UIN EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         000F 1163+#$@UIN EQU    15                         SECTOR COUNT OF #
                              1164+*
                         1AD8 1165+#$UCDI EQU    X'1AD8'                    DISK ADDR OF #UCDIS
                         0900 1166+#$$UCD EQU    X'0900'                    CORE LOAD ADDRESS OF #
                         000B 1167+#$@UCD EQU    11                         SECTOR COUNT OF #
                              1168+*
                         1B24 1169+#$UDEL EQU    X'1B24'                    DISK ADDR OF #UDELV
                         0C00 1170+#$$UDE EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         000E 1171+#$@UDE EQU    14                         SECTOR COUNT OF #
                              1172+*
                         1B5C 1173+#$UDIS EQU    X'1B5C'                    DISK ADDR OF #UDISV
                         0C00 1174+#$$UDI EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         0008 1175+#$@UDI EQU    08                         SECTOR COUNT OF #
                              1176+*
                         1B9C 1177+#$ZTRA EQU    X'1B9C'                    DISK ADDR OF #ZTRAC
                         1000 1178+#$$ZTR EQU    X'1000'                    CORE LOAD ADDRESS OF #
                         0001 1179+#$@ZTR EQU    01                         SECTOR COUNT OF #
                              1180+*
                         1BA4 1181+#$ZDUM EQU    X'1BA4'                    DISK ADDR OF #ZDUMP
                         1100 1182+#$$ZDU EQU    X'1100'                    CORE LOAD ADDRESS OF #
                         0008 1183+#$@ZDU EQU    08                         SECTOR COUNT OF #
                              1184+*
                         1BC4 1185+#$ZLOA EQU    X'1BC4'                    DISK ADDR OF #ZLOAD
                         1100 1186+#$$ZLO EQU    X'1100'                    CORE LOAD ADDRESS OF #
                         000C 1187+#$@ZLO EQU    12                         SECTOR COUNT OF #
                              1188+*
                         1C14 1189+#$ZUTM EQU    X'1C14'                    DISK ADDR OF #ZUTMO
                         0C00 1190+#$$ZUT EQU    X'0C00'                    CORE LOAD ADDRESS OF #
                         0014 1191+#$@ZUT EQU    20                         SECTOR COUNT OF #
```

@SPFEQ - SYSTEM PROGRAM FILE EQUATES

```
                      1192+*
                 1C84 1193+#$INLN EQU    X'1C84'              DISK ADDR OF #INLNG
                 0600 1194+#$$INL EQU    X'0600'              CORE LOAD ADDRESS OF #
                 0010 1195+#$@INL EQU    16                   SECTOR COUNT OF #
                      1196+*
                 1CC4 1197+#$KCAL EQU    X'1CC4'              DISK ADDR OF #KCALL
                 0C00 1198+#$$KCA EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 000C 1199+#$@KCA EQU    12                   SECTOR COUNT OF #
                      1200+*
                 1D24 1201+#$KRSU EQU    X'1D24'              DISK ADDR OF #KRSUM
                 0C00 1202+#$$KRS EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 000A 1203+#$@KRS EQU    10                   SECTOR COUNT OF #
                      1204+*
                 1D5C 1205+#$UPTF EQU    X'1D5C'              DISK ADDR OF #UPTFI
                 0C00 1206+#$$UPT EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 0012 1207+#$@UPT EQU    18                   SECTOR COUNT OF #
                      1208+*
                 1D24 1209+#$UPOV EQU    X'1D24'              DISK ADDR OF #UPOVL
                 0C00 1210+#$$UPO EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 0005 1211+#$@UPO EQU    05                   SECTOR COUNT OF #
                      1212+*
                 1E00 1213+#$FMLN EQU    X'1E00'              DISK ADDR OF #FMLNG
                 0200 1214+#$$FML EQU    X'0200'              CORE LOAD ADDRESS OF #
                 0052 1215+#$@FML EQU    82                   SECTOR COUNT OF #
                      1216+*
                 2000 1217+#$#CNF EQU    X'2000'              DISK ADDR OF ##CNFI
                 0000 1218+#$$#CN EQU    X'0000'              CORE LOAD ADDRESS OF #
                 0001 1219+#$@#CN EQU    01                   SECTOR COUNT OF #
                      1220+*
                 2004 1221+#$KLLA EQU    X'2004'              DISK ADDR OF #KLLAY
                 0920 1222+#$$KLL EQU    X'0920'              CORE LOAD ADDRESS OF #
                 0001 1223+#$@KLL EQU    01                   SECTOR COUNT OF #
                      1224+*
                 2008 1225+#$ZLBM EQU    X'2008'              DISK ADDR OF #ZLBMA
                 1100 1226+#$$ZLB EQU    X'1100'              CORE LOAD ADDRESS OF #
                 0002 1227+#$@ZLB EQU    02                   SECTOR COUNT OF #
                      1228+*
                 2010 1229+#$ZL1M EQU    X'2010'              DISK ADDR OF #ZL1MA
                 0F00 1230+#$$ZL1 EQU    X'0F00'              CORE LOAD ADDRESS OF #
                 0007 1231+#$@ZL1 EQU    07                   SECTOR COUNT OF #
                      1232+*
                 2030 1233+#$ZL2M EQU    X'2030'              DISK ADDR OF #ZL2MA
                 0F00 1234+#$$ZL2 EQU    X'0F00'              CORE LOAD ADDRESS OF #
                 000D 1235+#$@ZL2 EQU    13                   SECTOR COUNT OF #
                      1236+*
                 2088 1237+#$ZL3M EQU    X'2088'              DISK ADDR OF #ZL3MA
                 0C00 1238+#$$ZL3 EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 000A 1239+#$@ZL3 EQU    10                   SECTOR COUNT OF #
                      1240+*
                 20B0 1241+#$ZLVR EQU    X'20B0'              DISK ADDR OF #ZLVRL
                 0F00 1242+#$$ZLV EQU    X'0F00'              CORE LOAD ADDRESS OF #
                 0006 1243+#$@ZLV EQU    06                   SECTOR COUNT OF #
                      1244+*
                 2100 1245+#$KKEY EQU    X'2100'              DISK ADDR OF #KKEYS
                 0C00 1246+#$$KKE EQU    X'0C00'              CORE LOAD ADDRESS OF #
                 0006 1247+#$@KKE EQU    06                   SECTOR COUNT OF #
```

```
      @SPFEQ - SYSTEM PROGRAM FILE EQUATES
```

ERR LOC   OBJECT CODE   ADDR STMT SOURCE STATEMENT   VER 15, MOD 00 09/05/20 PAGE 28

```
                          1248+*
                     2118 1249+#$#CKT EQU   X'2118'                  DISK ADDR OF #CKTB
                     0000 1250+#$$#CK EQU   X'0000'                  CORE LOAD ADDRESS OF #
                     0004 1251+#$@#CK EQU   04                       SECTOR COUNT OF #
                          1252+*
                     212C 1253+#$#INV EQU   X'212C'                  DISK ADDR OF ##INVD
                     0000 1254+#$$#IN EQU   X'0000'                  CORE LOAD ADDRESS OF ##INVD
                     003A 1255+#$@#IN EQU   58                       SECTOR COUNT OF ##INVD
                          1256+*
                     2300 1257+#$#PWR EQU   X'2300'                  DISK ADDR OF ##PWRK
                     0000 1258+#$$#PW EQU   X'0000'                  CORE LOAD ADDRESS OF ##PWRK
                     00C0 1259+#$@#PW EQU   192                      SECTOR COUNT OF ##PWRK
                          1260+*      END OF SYSTEM PROGRAM FILE EQUATES
                          1261+       PRINT ON
                          1262 *      @ERM  EXP-Y
                          1264+       PRINT ON
```

```
                    1266+*************************************************************************
                    1267+*        ERROR MESSAGES EQUATES                                          *
                    1268+*************************************************************************
               0000 1269+@@E100 EQU    0                          FIRST CHARACTER NOT
                    1270+*                                        * ALPHABETIC
               0001 1271+@@E101 EQU    @@E100+1                   FIRST CHARACTER NOT
                    1272+*                                        * <ALPHAMERIC CHARACTER>
               0002 1273+@@E102 EQU    @@E101+1                   PASSWORD OR FILENAME LONGER
                    1274+*                                        * THEN 8 CHARACTERS
               0003 1275+@@E103 EQU    @@E102+1                   <DISK LABEL> LONGER THEN 6
                    1276+*                                        * CHARACTERS
               0004 1277+@@E110 EQU    @@E103+1                   COMMA FOLLOWED BY NOTHING
                    1278+*                                        *
               0005 1279+@@E112 EQU    @@E110+1                   <ARITHMETIC CONSTANT> CONTAINS
                    1280+*                                        * 2 DECIMAL POINTS
               0006 1281+@@E113 EQU    @@E112+1                   DECIMAL POINT WITHOUT
                    1282+*                                        * <ARITHMETIC CONSTANT>
               0007 1283+@@E114 EQU    @@E113+1                   INCOMPLETE <CHARACTER
                    1284+*                                        * CONSTANT>
               0008 1285+@@E115 EQU    @@E114+1                   INVALID <SYSTEM CONSTANT>
                    1286+*                                        *
               0009 1287+@@E116 EQU    @@E115+1                   VARIABLE IS NOT FOLLOWED BY A
                    1288+*                                        * COMMA OR EQUAL SIGN
               000A 1289+@@E117 EQU    @@E116+1                   INVALID EXPONENT IN CONSTANT
                    1290+*                                        *
               000B 1291+@@E120 EQU    @@E117+1                   NON-NUMERIC CHARACTER IN <LINE
                    1292+*                                        * NUMBER> OR INEGER
               000C 1293+@@E122 EQU    @@E120+1                   MORE THAN 4 DIGITS IN <LINE
                    1294+*                                        * NUMBER> OR INTEGER
               000D 1295+@@E123 EQU    @@E122+1                   UNBALANCED LINE NUMBER SERIES
                    1296+*                                        *
               000E 1297+@@E124 EQU    @@E123+1                   LINE NUMBER IS NOT GREATER
                    1298+*                                        * THAN PREVIOUS LINE NUMBER
               000F 1299+@@E129 EQU    @@E124+1                   PARAMETER FOUND WHERE NONE
                    1300+*                                        * IS ALLOWED
               0010 1301+@@E130 EQU    @@E129+1                   REQUIRED PARAMETER MISSING
                    1302+*                                        *
               0011 1303+@@E131 EQU    @@E130+1                   INVALID PARAMETER
                    1304+*                                        *
               0012 1305+@@E133 EQU    @@E131+1                   TOO MANY <PARAMETERS>
                    1306+*                                        *
               0013 1307+@@E134 EQU    @@E133+1                   DUPLICATE <PARAMETER>
                    1308+*                                        *
               0014 1309+@@E135 EQU    @@E134+1                   INVALID USE OF ONE OR TWO
                    1310+*                                        * STAR FILENAME
               0015 1311+@@E136 EQU    @@E135+1                   INVALID COMBINATION OF KEYWORDS
                    1312+*                                        * <PARAMETERS>
               0016 1313+@@E137 EQU    @@E136+1                   NO <LINE-NUMBER-LIST>
                    1314+*                                        * SPECIFIED
               0017 1315+@@E138 EQU    @@E137+1                   UNBALANCED QUOTES IN
                    1316+*                                        * <CHARACTER CONSTANT>
               0018 1317+@@E139 EQU    @@E138+1                   INVALID <DELIMITER>
                    1318+*                                        *
               0019 1319+@@E142 EQU    @@E139+1                   INCOMPLETE KEYWORD
                    1320+*                                        * MISSING DASH
               001A 1321+@@E143 EQU    @@E142+1                   INCOMPLETE KEYWORD
```

```
                    1322+*                                          * SECOND WORD UNRECOGNIZABLE
               001B 1323+@@E150 EQU    @@E143+1                     INVALID BASIC VARIABLE
                    1324+*                                          *
               001C 1325+@@E151 EQU    @@E150+1                     VARIABLE SUBSCRIPT NOT
                    1326+*                                          * AN INTEGER
               001D 1327+@@E160 EQU    @@E151+1                     MIXED DATA TYPE IN
                    1328+*                                          * ASSIGNMENT
               001E 1329+@@E162 EQU    @@E160+1                     UNBALANCED <LABEL-PAIR>
                    1330+*                                          *
               001F 1331+@@E163 EQU    @@E162+1                     DIFFERENT VARIABLE TYPES
                    1332+*                                          * IN <LABEL-PAIR>
               0020 1333+@@E164 EQU    @@E163+1                     ODD TRACK NUMBER NOT
                    1334+*                                          * ALLOWABLE
               0021 1335+@@E200 EQU    @@E164+1                     NO CURRENT <PASSWORD> OR
                    1336+*                                          * DISK DEFINED
               0022 1337+@@E205 EQU    @@E200+1                     HELP TEXT NOT FOUND
                    1338+*                                          *
               0023 1339+@@E210 EQU    @@E205+1                     <PASSWORD> NOT ON SPCIFIED
                    1340+*                                          * DISK
               0024 1341+@@E211 EQU    @@E210+1                     SPECIFIED FILE NOT FOUND
                    1342+*                                          *
               0025 1343+@@E212 EQU    @@E211+1                     DUPLICATE DISK LABELS
                    1344+*                                          * ON SYSTEM
               0026 1345+@@E213 EQU    @@E212+1                     FILE NOT ON SYSTEM
                    1346+*                                          *
               0027 1347+@@E215 EQU    @@E213+1                     SPECIFIED FILE PROTECTED
                    1348+*                                          *
               0028 1349+@@E216 EQU    @@E215+1                     DISK LABEL NOT ON SPECIFIED
                    1350+*                                          * LOCATION
               0029 1351+@@E217 EQU    @@E216+1                     SPECIFIED DISK NOT ON
                    1352+*                                          * SYSTEM
               002A 1353+@@E220 EQU    @@E217+1                     NO <WORK FILE> DEFINED
                    1354+*                                          * .
               002B 1355+@@E221 EQU    @@E220+1                     <WORK FILE> IS PROGRAM
                    1356+*                                          * GENERATED
               002C 1357+@@E222 EQU    @@E221+1                     WORK FILE IS PROTECTED
                    1358+*                                          *
               002D 1359+@@E223 EQU    @@E222+1                     NO PROGRAM FILE IN
                    1360+*                                          * <WORK FILE>
               002E 1361+@@E225 EQU    @@E223+1                     NO PROGRAM IN PAUSE STATE
                    1362+*                                          *
               002F 1363+@@E226 EQU    @@E225+1                     <WORK FILE> IS EMPTY
                    1364+*                                          * .
               0030 1365+@@E227 EQU    @@E226+1                     SPECIFIED FILE NOT
                    1366+*                                          * A PROGRAM FILE
               0031 1367+@@E228 EQU    @@E227+1                     ONE-STAR OR TWO-STAR
                    1368+*                                          * FILE PROTECTED
               0032 1369+@@E229 EQU    @@E228+1                     DESIRED CONDITION ALREADY
                    1370+*                                          * PRESENT-FUNCTION IGNORED
               0033 1371+@@E230 EQU    @@E229+1                     FUNCTION REQUIRES WORK AREA
                    1372+*                                          *
               0034 1373+@@E232 EQU    @@E230+1                     FUNCTION INVALID IN
                    1374+*                                          * PAUSE STATE
               0035 1375+@@E234 EQU    @@E232+1                     ONLY MOUNT OR INITIALIZE
                    1376+*                                          * COMMAND VALID
               0036 1377+@@E237 EQU    @@E234+1                     ORIGINAL MODE OF EXECUTION
```

```
                      1378+*                                    * NOT 'TRACE'
            0037 1379+@@E240 EQU    @@E237+1                     DATA RECORDER NOT ON SYSTEM
                      1380+*                                    *
            0038 1381+@@E241 EQU    @@E240+1                     CRT NOT ON SYSTEM
                      1382+*                                    *
            0039 1383+@@E242 EQU    @@E241+1                     DRIVE 2 NOT ON SYSTEM
                      1384+*                                    *
            003A 1385+@@E248 EQU    @@E242+1                     CRT SPECIFIED WHEN INPUT IS
                      1386+*                                    * FROM CARDS OR PROCEDURE
            003B 1387+@@E249 EQU    @@E248+1                     CARD OUTPUT SPECIFIED WHEN
                      1388+*                                    * INPUT IS FROM CARDS
            003C 1389+@@E250 EQU    @@E249+1                     VARIABLE NOT IN PROGRAM
                      1390+*                                    *
            003D 1391+@@E251 EQU    @@E250+1                     <ARITHMETIC CONSTANT> NOT IN
                      1392+*                                    * RANGE 1E-99 < X < 1E99
            003E 1393+@@E252 EQU    @@E251+1                     SUBSCRIPT EXCEEDS <ARRAY SIZE
                      1394+*                                    * LIMIT>.
            003F 1395+@@E253 EQU    @@E252+1                     ARRAY NOT IN PROGRAM.
                      1396+*                                    *
            0040 1397+@@E254 EQU    @@E253+1                     NO NON-ARRAY <VARIABLES> IN
                      1398+*                                    * PROGRAMS
            0041 1399+@@E255 EQU    @@E254+1                     NO <VARIABLES> IN PROGRAM
                      1400+*                                    *
            0042 1401+@@E256 EQU    @@E255+1                     INCONSISTENT NUMBER
                      1402+*                                    * OF SUBSCRIPTS
            0043 1403+@@E300 EQU    @@E256+1                     REQUIRED <FILE LIBRARY AREA>
                      1404+*                                    * SPACE NOT AVAILABLE
            0044 1405+@@E301 EQU    @@E300+1                     PREVIOUS FILENAME NOT
                      1406+*                                    * ALLOCATED
            0045 1407+@@E302 EQU    @@E301+1                     NEW FILENAME ALREADY
                      1408+*                                    * ALLOCATED
            0046 1409+@@E303 EQU    @@E302+1                     TWELVE FILES ALREADY ALLOCATED
                      1410+*                                    * FOR WORK FILE PROGRAM
            0047 1411+@@E304 EQU    @@E303+1                     'NEW' FILE SPECIFIED ALREADY
                      1412+*                                    * IS IN USER LIBRARY
            0048 1413+@@E305 EQU    @@E304+1                     'SPACE' PARAMETER EXECEEDS 256
                      1414+*                                    * .
            0049 1415+@@E308 EQU    @@E305+1                     SPECIFIED <LINE NUMBER>
                      1416+*                                    * DOES NOT EXIST
            004A 1417+@@E310 EQU    @@E308+1                     USER FILE POOLED
                      1418+*                                    *
            004B 1419+@@E315 EQU    @@E310+1                     <PROGRAM-GENERATED DATA FILE>
                      1420+*                                    * LARGER THEN WORK FILE
            004C 1421+@@E316 EQU    @@E315+1                     NO EXECUTED BASIC PROGRAM
                      1422+*                                    * .
            004D 1423+@@E320 EQU    @@E316+1                     SCP NOT AVAILABLE ON SYSTEM
                      1424+*                                    * DISK
            004E 1425+@@E325 EQU    @@E320+1                     LINE NUMBER LIST TOO LONG
                      1426+*                                    *
            004F 1427+@@E330 EQU    @@E325+1                     HELP KEYWORD NOT RECOGNIZED
                      1428+*                                    *
            0050 1429+@@E335 EQU    @@E330+1                     LINE NO. LIST SPECIFIED FOR
                      1430+*                                    * <PROGRAM-GENERATED FILE>
            0051 1431+@@E338 EQU    @@E335+1                     INVALID COMBINATION OF
                      1432+*                                    * <PARAMETERS>
            0052 1433+@@E340 EQU    @@E338+1                     NO ONE-STAR OR TWO STAR
```

```
                       1434+*                                    * LIBRARIES ON SYSTEM
            0053 1435+@@E350 EQU     @@E340+1                    83 <PASSWORDS> ALREADY DEFINED
                       1436+*                                    * ON DISK
            0054 1437+@@E351 EQU     @@E350+1                    NO <FILE LIBRARY AREA> ON
                       1438+*                                    * SPECIFIED DISK
            0055 1439+@@E352 EQU     @@E351+1                    FILE LIBRARY FRAGMENTED,
                       1440+*                                    * USE PACK COMMAND
            0056 1441+@@E360 EQU     @@E352+1                    MERGED FILE WOULD CONTAIN
                       1442+*                                    * MORE THEN 990 LINES
            0057 1443+@@E361 EQU     @@E360+1                    INCOMPATIBLE FILE TYPES
                       1444+*                                    * FOR <MERGE>
            0058 1445+@@E362 EQU     @@E361+1                    MERGED FILE WOULD EXCEED
                       1446+*                                    * <WORK FILE> SIZE LIMIT
            0059 1447+@@E371 EQU     @@E362+1                    <REMOVE> COMMAND NOT
                       1448+*                                    * PREVIOUSLY ISSUED
            005A 1449+@@E380 EQU     @@E371+1                    <PASSWORD> PREVIOUSLY DEFINED
                       1450+*                                    *
            005B 1451+@@E390 EQU     @@E380+1                    POOLED FILENAME ALREADY
                       1452+*                                    * DEFINED
            005C 1453+@@E400 EQU     @@E390+1                    CURRENT PASSWORD/DISK NOT THE
                       1454+*                                    * SAME AS CREATING USER
            005D 1455+@@E410 EQU     @@E400+1                    DISK LABEL NOT SAME AS LAST
                       1456+*                                    * MOUNTED
            005E 1457+@@E415 EQU     @@E410+1                    INVALID COMMAND KEY
                       1458+*                                    *
            005F 1459+@@E417 EQU     @@E415+1                    INVALID COMMAND SPECIFICATION
                       1460+*                                    *
            0060 1461+@@E420 EQU     @@E417+1                    USER FILENAME ALREADY DEFINED
                       1462+*                                    *
            0061 1463+@@E430 EQU     @@E420+1                    INVALID PARTIAL <RENUMBER>
                       1464+*                                    * .
            0062 1465+@@E432 EQU     @@E430+1                    MAX <LINE NUMBER> WOULD BE
                       1466+*                                    * EXCEEDED IF RENUMBERED
            0063 1467+@@E433 EQU     @@E432+1                    <RENUMBER> <INCREMENT> IS ZERO
                       1468+*                                    *
            0064 1469+@@E450 EQU     @@E433+1                    ANOTHER PROGRAM IS SUSPENSION
                       1470+*                                    *
            0065 1471+@@E451 EQU     @@E450+1                    SCRATCH FILE IN USE
                       1472+*                                    *
            0066 1473+@@E460 EQU     @@E451+1                    RIGHT MARGIN EXCEEDS
                       1474+*                                    * PRINTER SIZE
            0067 1475+@@E461 EQU     @@E460+1                    <WIDTH> LESS THAN 18
                       1476+*                                    *
            0068 1477+@@E464 EQU     @@E461+1                    NO SUSPENDED PROGRAM
                       1478+*                                    *
            0069 1479+@@E465 EQU     @@E464+1                    MISSING 'OPEN' DISK FILE
                       1480+*                                    *
            006A 1481+@@E466 EQU     @@E465+1                    SUSPENDED CONFIGURATION
                       1482+*                                    * DIFFERS FROM CURRENT SYSTEM
            006B 1483+@@E467 EQU     @@E466+1                    'OPEN' DISK FILE HAS BEEN
                       1484+*                                    * MODIFIED
            006C 1485+@@E469 EQU     @@E467+1                    DISK FOUND DEFECTIVE
                       1486+*                                    *
            006D 1487+@@E470 EQU     @@E469+1                    TRACK ALREADY ASSIGNED OR
                       1488+*                                    * NOT AVAILABLE
            006E 1489+@@E471 EQU     @@E470+1                    INVALID SECONDARY
```

```
                     1490+*                                    * INITIALIZATION
              006F 1491+@@E473 EQU    @@E471+1                 DISK ALREADY CONTAINS A
                     1492+*                                    * <FILE LIBRARY AREA>
              0070 1493+@@E474 EQU    @@E473+1                 SPACE NOT AVAILABLE FOR FILE
                     1494+*                                    *
              0071 1495+@@E475 EQU    @@E474+1                 NO MORE ALTERNATE TRACKS
                     1496+*                                    *
              0072 1497+@@E476 EQU    @@E475+1                 CRT, PROCESSING UNIT,
                     1498+*                                    * COMMAND KEY CONFLICT
              0073 1499+@@E477 EQU    @@E476+1                 INVALID KEYBOARD TYPE
                     1500+*                                    *
              0074 1501+@@E478 EQU    @@E477+1                 ACTIVE FILE(S) ON DISK
                     1502+*                                    *
              0075 1503+@@E479 EQU    @@E478+1                 SPECIFIED FILE NOT ON DISK
                     1504+*                                    *
              0076 1505+@@E480 EQU    @@E479+1                 FILES IN AREA TO BE DELETED
                     1506+*                                    *
              0077 1507+@@E481 EQU    @@E480+1                 CYLINDER 0 DEFECTIVE
                     1508+*                                    *
              0078 1509+@@E482 EQU    @@E481+1                 SPECIFIED <TRACK> EXCEEDS DISK
                     1510+*                                    * CAPACITY
              0079 1511+@@E483 EQU    @@E482+1                 VTOC FULL
                     1512+*                                    *
              007A 1513+@@E484 EQU    @@E483+1                 SPACE NOT AVAILABLE BEGINNING
                     1514+*                                    * AT <TRACK> SPECIFIED
              007B 1515+@@E485 EQU    @@E484+1                 WORK AREA SPACE ALLOCATED FOR
                     1516+*                                    * ANOTHER PURPOSE
              007C 1517+@@E486 EQU    @@E485+1                 <TRACK> NOT USABLE
                     1518+*                                    *
              007D 1519+@@E487 EQU    @@E486+1                 NUMBER OF TRACKS REQUESTED
                     1520+*                                    * EXCEEDS DISK CAPACITY
              007E 1521+@@E488 EQU    @@E487+1                 CONTRACTION PARAMETER EXCEED
                     1522+*                                    * LIBRARY SIZE
              007F 1523+@@E489 EQU    @@E488+1                 RELEASE LEVEL ON HELP
                     1524+*                                    * TEXT IS INCORRECT
              0080 1525+@@E490 EQU    @@E489+1                 NO SUSPECTED DEFECTIVE
                     1526+*                                    * TRACKS
              0081 1527+@@E491 EQU    @@E490+1                 INVALID COMPONENT NAME
                     1528+*                                    *
              0082 1529+@@E492 EQU    @@E491+1                 NO 'HDR' OR 'PTF' STATEMENT
                     1530+*                                    *
              0083 1531+@@E493 EQU    @@E492+1                 INCORRECT CHECKSUM
                     1532+*                                    *
              0084 1533+@@E494 EQU    @@E493+1                 NO 'PTF' FILE ON DISK
                     1534+*                                    *
              0085 1535+@@E495 EQU    @@E494+1                 SYSTEM RELEASE LEVEL
                     1536+*                                    * INCORRECT
              0086 1537+@@E496 EQU    @@E495+1                 THIS PTF NOT IN 'PTF'
                     1538+*                                    * DISK FILE
              0087 1539+@@E497 EQU    @@E496+1                 NO WORKAREA ON 'CURRENT'
                     1540+*                                    * SYSTEM DISK
              0088 1541+@@E498 EQU    @@E497+1                 TRACK NOT ASSIGNED
                     1542+*                                    *
              0089 1543+@@E500 EQU    @@E498+1                 LINE LENGTH LIMIT EXCEED-1
                     1544+*                                    * OR MORE LINES TRUNCATED
              008A 1545+@@E501 EQU    @@E500+1                 <WORK FILE> SIZE LIMIT
```

```
      @ERMEQ - GENERAL ERROR MESSAGE EQUATES

ERR LOC  OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  09/05/20  PAGE  34
                               1546+*                                   * EXCEEDED - FILE TRUNCATED
                          008B 1547+@@E530 EQU    @@E501+1             <WORK FILE> SIZE LIMIT
                               1548+*                                   * EXCEEDED
                          008C 1549+@@E531 EQU    @@E530+1             <WORK FILE> SIZE LIMIT
                               1550+*                                   * EXCEEDED
                          008D 1551+@@E535 EQU    @@E531+1             WRONG/ NO <WORKAREA> ON R1 OR F1
                               1552+*                                   *
                          008E 1553+@@E540 EQU    @@E535+1             RIGHT MARGIN EXCEEDED
                               1554+*                                   * LINE IGNORED
                          008F 1555+@@E541 EQU    @@E540+1             'CURRENT' PASSOWRD/DISK LABEL
                               1556+*                                   * CANCELLED
                          0090 1557+@@E542 EQU    @@E541+1             DISK CYLINDER SIZE DOES NOT
                               1558+*                                   * MATCH MACHINE CAPACITY
                          0091 1559+@@E543 EQU    @@E542+1             R1 DISK NOT INITIALIZED
                               1560+*                                   *
                          0092 1561+@@E544 EQU    @@E543+1             F1 DISK NOT INITIALIZED
                               1562+*                                   *
                          0093 1563+@@E545 EQU    @@E544+1             R2 DISK NOT INITIALIZED
                               1564+*                                   *
                          0094 1565+@@E546 EQU    @@E545+1             F2 DISK NOT INITIALIZED
                               1566+*                                   *
                          0095 1567+@@E547 EQU    @@E546+1             MINIMUM CONFIGURATION
                               1568+*                                   * RECORD ASSUMED
                          0096 1569+@@E549 EQU    @@E547+1             PRINTER UNAVAILABLE DUE TO
                               1570+*                                   * PREVIOUS PRINTER FAILURE
                          0097 1571+@@E550 EQU    @@E549+1             TRAGIC DISK ERROR - BAD
                               1572+*                                   * WORK FILE
                          0098 1573+@@E551 EQU    @@E550+1             TRAGIC DISK ERROR - BAD
                               1574+*                                   * SAVED FILE
                          0099 1575+@@E552 EQU    @@E551+1             TRAGIC DISK ERROR - 'CURRENT'
                               1576+*                                   * PASSWORD NOT FOUND
                          009A 1577+@@E553 EQU    @@E552+1             TRAGIC DISK ERROR - POOLED
                               1578+*                                   * FILE NOT IN DIRECTORY
                          009B 1579+@@E554 EQU    @@E553+1             TRAGIC DISK ERROR - BAD
                               1580+*                                   * FILENAME IN POOLED DIRECTORY
                          009C 1581+@@E555 EQU    @@E554+1             TRAGIC DISK ERROR - 'OPEN'
                               1582+*                                   * DISK FILE GONE
                          009D 1583+@@E556 EQU    @@E555+1             TRAGIC DISK ERROR - PARAMETERS
                               1584+*                                   * HAVE BEEN DESTROYED
                          009E 1585+@@E558 EQU    @@E556+1             CURRENT SYSTEM PROGRAM FILE
                               1586+*                                   * ON DISK SPECIFIED
                          009F 1587+@@E570 EQU    @@E558+1             ONE OR MORE LINES TRUNCATED
                               1588+*                                   * WHEN PUNCHED
                          00A0 1589+@@E571 EQU    @@E570+1             ONE OR MORE DISABLED LINES
                               1590+*                                   * PUNCHED
                          00A1 1591+@@E572 EQU    @@E571+1             WRONG OR NO <WORKAREA> ON F1
                               1592+*                                   *
                          00A2 1593+@@E573 EQU    @@E572+1             WRONG OR NO <WORKAREA> ON R1
                               1594+*                                   *
                          00A3 1595+@@E574 EQU    @@E573+1             NEXT AUTOMATIC LINE NUMBER
                               1596+*                                   * WILL EXCEED 9999
                          00A4 1597+@@E578 EQU    @@E574+1             RESPONSE NOT ALLOWED WITH
                               1598+*                                   * CARDS OR PROCEDURE INPUT
                          00A5 1599+@@E585 EQU    @@E578+1             REQUESTED TRACK SPACE EXCEEDS
                               1600+*                                   * DISK CONFIGURATION
                               1601+*   ALMOST THE
```

```
                          1602+*       END OF ERROR MESSAGES EQUATES
                          1603+        PRINT ON
```

```
      #EFKEY -- COMMAND KEY PROCESSOR


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  09/05/20  PAGE  36

                              1605 **********************************************************************************
                              1606 *                                                                                *
                              1607 * 5703-XM1  COPYRIGHT IBM CORP. 1970                                             *
                              1608 *             REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083       *
                              1609 *                                                                                *
                              1610 **********************************************************************************
                              1611 *      HDR   #EFKEY
                              1612 **********************************************************************************
                              1613 *  PROGRAM HEADER FOR DISK LOAD
                              1614 **********************************************************************************
                              1615 *#$EFKE EQU   X'1990'                      DISK ADDR OF #EFKEY
                              1616 *#$$EFK EQU   X'0C00'                       CORE LOAD ADDRESS OF #EFKEY
                              1617 *#$OEFK EQU   002                           SECTOR CNT OF #EFKEY
     0C00                     1618        ORG    #$$EFK                        CORE LOAD ADDRESS
          0C00 1619 $$$$$$ EQU    *                             FIRST LOCATION IN PROGRAM
     0C00 7BC5C6D2C5E8   0C05 1620        DC     CL6'#EFKEY'                   PROGRAM NAME
     0C06 51             0C06 1621        DC     IL1'081'                      PROGRAM NUNBER OF 4EFKEY
                    0C07 1622 $EFKEY EQU   *                             ENTRY POINT TO PROGRAM
                              1623 *** END OF EXPANSION ***
                              1624 *
                              1625 *              ESTABLISH ADDRESSABILITY
                              1626 *
     0C07 C0 87 051A          1627        B      $LOADR                        READ COMMAND KEY TABLE
     0C0B 0CF2           0C0C 1628        DC     AL(@CADDR)(EFUKEY)
     0C0D C2 01 0C91          1629        LA     EFUBRB,@BR                    SET BASE REGISTER FOR ADDRESSING
                    0C91 1630        USING EFUBRB,@BR                    SET BASE REGISTER VALUE
                              1631 *
     0C11 4C 00 6B 0603       1632        MVC    EFUSVE(1,@BR),$$CKEY          SAVE SPECIFIED KEY
     0C16 3C 40 0603          1633        MVI    $$CKEY,@BLANK                 TURN OFF COMMAND KEY INDICATOR
     0C1A C2 02 0DFF          1634        LA     EFUBFR-1,@XR                  POINT XR TO LEFT OF BUFFER
     0C1E 76 02 6B            1635        A      EFUSVE(,@BR),@XR              POINT XR TO COMMAND LENGTH
                              1636 *
     0C21 7D 00 00            1637        CLI    0(,@BR),@ZERO                 ZERO LENGTH FOR SPECIAL KEY ?
     0C24 F2 01 78            1638        JNE    EFU850                        NO, GO BUILD COMMAND IN I/P BFR
                              1639 *
     0C27 7D 04 6B            1640        CLI    EFUSVE(,@BR),EFUCK4           COMMAND KEY 4 SPECIFIED ?
     0C2A F2 84 36            1641        JH     EFUK07                        HIGH -> COMKAND KEY 7
     0C2D F2 81 07            1642        JE     EFUK04                        EQUAL -> COMMAND KEY 4
                              1643 *
                              1644 *              KEY 1
                              1645 *
     0C30 3C 01 0607          1646 EFUK01 MVI    $$INLN,@DCALK                 SET DCAL INDICATOR
     0C34 F2 87 A5            1647        J      EFU995                        EXIT
                              1648 *
                              1649 *              KEY 4
                              1650 *
     0C37 4C 00 5D 0602       1651 EFUK04 MVC    EFUPP2+@PRCNT(1,@BR),$$UPAR  SET PRINT COUNT
     0C3C 5F 00 5D 67         1652        SLC    EFUPP2+@PRCNT(1,@BR),EFUDEC(,@BR)  * FOR INPUT BUFFER
     0C40 F2 84 09            1653        JP     EFU200                        BRANCH IF NOT ZERO
                              1654 *     $PRNT EFUPPR                           RETURN CARRIAGE
     0C43 C0 87 0465          1655        B      $SPRNT                        PRINT ON SYSTEM PRINTER
     0C47 0CF1           0C48 1656        DC     AL2(EFUPPR)                   PPL ADDRESS
                              1657 *** END OF EXPANSION ***
     0C49 F2 87 0F            1658        J      EFU300                        EXIT
                              1659 *EFU200 $PRNT EFUPP2
     0C4C C0 87 0465          1660 EFU200 B      $SPRNT                        PRINT ON SYSTEM PRINTER
```

```
       #EFKEY -- COMMAND KEY PROCESSOR
```

```
     0C50 0CED            0C51 1661          DC    AL2(EFUPP2)                 PPL ADDRESS
                               1662 *** END OF EXPANSION ***
     0C52 5E 00 5F 5D          1663          ALC   EFUPP2+@PDATA(1,@BR),EFUPP2+@PRCNT(,@BR)  CLUDG FOR
     0C56 1C 01 09EB 5F        1664          MVC   $$LPOS,EFUPP2+@PDATA(@CADDR,@BR)  * I/O ROUTINES
     0C5B 3A 80 03D5           1665 EFU300 SBN   $INDR2,$READY               SET OFF READY INDICATOR
     0C5F C0 87 04B4           1666          B     $CABLD                      EXIT TO GUFUDI
                               1667 *
                               1668 *                      KEY 7
                               1669 *
     0C63 3D 00 03D9           1670 EFUK07 CLI   $FILIB-1,@ZERO              BRANCH IF USER NOT
     0C67 F2 81 0E             1671          JE    EFU400                     * LOGGED ON
     0C6A 4C 01 73 0427        1672          MVC   EFUPSW(EFULPS,@BR),$PASWD-EFUDPW  ON BUILD WORK FILE
     0C6F 7D 40 73             1673          CLI   EFUPSW(,@BR),@BLANK        BRANCH IF PASSWORD MORE
     0C72 F2 01 03             1674          JNE   EFU400                     * THAN ONE CHAR LONG
     0C75 7C E2 73             1675          MVI   EFUPSW(,@BR),C'S'          MORE DEFAULT SECOND CHAR
     0C78 48 02 74 0438        1676 EFU400 MNZ   EFUDA1(,@BR),$DATE-2        * NAME FROM FIRST TWO CHAR
     0C7D 48 03 75 0438        1677          MNN   EFUDA2(,@BR),$DATE-2       * OF PASSWORD AND FOUR CHAR
     0C82 48 02 76 0439        1678          MNZ   EFUDA3(,@BR),$DATE-1       * OF DATE AND TWO CHAR
     0C87 48 03 77 0439        1679          MNN   EFUDA4(,@BR),$DATE-1       * FROM AUTO
     0C8C 4C 01 7B 03CA        1680          MVC   EFURND+EFULRN(,@BR),$TABLN-1  * LINE NUMBER
     0C91 1C 0D 0614 7A        1681 EFU700 MVC   $$INLN+EFUT07-EFUS07(EFUE07-EFUS07),EFUT07(,@BR) MOVE MSG
     0C96 7C 0D 58             1682          MVI   EFUPPL+@PRCNT(,@BR),EFUT07-EFUS07  SET MSG LENGTH
     0C99 75 02 03             1683          L     EFU700+@OP1(,@BR),@XR        POINT XR TO ADDR OF EOS
     0C9C F2 87 33             1684          J     EFU990                      GO PRINT LINE AND EXII
                               1685 *
                               1686 *               PROCESS A NON-SPECIAL KEY
                               1687 *
     0C9F 5C 00 58 00          1688 EFU850 MVC   EFUPPL+@PRCNT(1,@BR),0(,@BR)  SET PRINT LENGTH
     0CA3 5C 00 34 00          1689          MVC   EFU950+@Q(1,@BR),0(,@BR)    SET LENGTH OF COMMAND TO MOVE
     0CA7 5F 00 34 67          1690          SLC   EFU950+@Q(1,@BR),EFUDEC(,@BR)  DECR BY 1 FOR MVC INST
     0CAB 5C 00 37 34          1691          MVC   EFU950+@DOP2(1,@BR),EFU950+@Q(,@BR) SET LENGTH AS DISP
     0CAF 5E 00 36 34          1692          ALC   EFU950+@OP1(1,@BR),EFU950+@Q(,@BR)  INCR 'MOVE TO' ADDR
                               1693 *
     0CB3 C2 02 0E22           1694          LA    EFUCMD,@XR                 POINT XR TO COMMAND FIELDS
     0CB7 5F 00 6B 67          1695 EFU900 SLC   EFUSVE(1,@BR),EFUDEC(,@BR)  DECR KEY NUMBER BY ONE
     0CBB F2 81 06             1696          JZ    EFU950                     IF ZERO, XR IS POINTING TO CMD
                               1697 *
     0CBE 76 02 69             1698          A     EFUL90(,@BR),@XR           ELSE, PT XR TO NEXT COMMAND
     0CC1 D0 87 26             1699          B     EFU900(,@BR)               GO TRY AGAIN
                               1700 *
     0CC4 2C 00 0607 00        1701 EFU950 MVC   $$INLN+*-*(@VQ),*-*(,@XR)  SET COMMAND IN INPUT LINE BFR
                               1702 *
     0CC9 75 02 36             1703          L     EFU950+@OP1(,@BR),@XR      SET XR * ADDR OF LAST CHAR
     0CCC E2 02 01             1704          LA    1(,@XR),@XR                POINT XR TO EOS POSITION
     0CCF BC 1E 00             1705          MVI   0(,@XR),@EOS               SET EOS IN INPUT LINE BUFFER
     0CD2 34 02 0AFE           1706 EFU990 ST    $$EOSA,@XR                  SET EOS ADDRESS
                               1707 *       $PRNT EFUPPL                     PRINT THE COMMAND
     0CD6 C0 87 0465           1708          B     $SPRNT                     PRINT ON SYSTEM PRINTER
     0CDA 0CE8            0CDB 1709          DC    AL2(EFUPPL)                 PPL ADDRESS
                               1710 *** END OF EXPANSION ***
                               1711 *EFU995 RLOAD EFUDPL                     CALL COMMAND ANALYZER
     0CDC C0 87 051E           1712 EFU995 B     $RLOAD                      LOAD AND EXECUTE PGM
     0CE0 0CE2            0CE1 1713          DC    AL2(EFUDPL)                 DPL ADDRESS
                               1714 *** END OF EXPANSION ***
                               1715 *
                               1716 *               PARAMETER LISTS
```

```
      #EFKEY -- COMMAND KEY PROCESSOR


ERR LOC   OBJECT CODE        ADDR STMT SOURCE STATEMENT              VER 15, MOD 00  09/05/20  PAGE  38

                            1717 *
                            1718 *EFUDPL DPL FUNC=@DGET,DADDR=$ECMA,CNT=#$@ECM,CADDR=#$$ECM
                  0CE2 1719 EFUDPL EQU     *                        DISK PARAMETER LIST
   0CE2 01        0CE2 1720        DC     AL1(@DGET)               REQUESTED FUNCTION
   0CE3 1900      0CE4 1721        DC     AL2(#$ECMA)              DISK ADDRESS
   0CE5 06        0CE5 1722        DC     AL1(#$@ECM)              SECTOR COUNT
   0CE6 0C00      0CE7 1723        DC     AL2(#$$ECM)              BUFFER ADDRESS
                            1724 *** END OF EXPANSION ***
                            1725 *EFUPPL PPL    FUNC=@PRETR,CADDR=$$INLN
                  0CE8 1726 EFUPPL EQU     *                        PPL ADDRESS
   0CE8 C0        0CE8 1727        DC     AL1(@PRETR)              FUNCTION REQUESTED
   0CE9 0000      0CEA 1728        DC     AL2(*-*)                 PRINT COUNT
   0CEB 0607      0CEC 1729        DC     AL2($$INLN)              DATA ADDRESS
                            1730 *** END OF EXPANSION ***
                            1731 *EFUPP2 PPL FUNC=PRINT,CADDR=$$INTN
                  0CED 1732 EFUPP2 EQU     *                        PPL ADDRESS
   0CED 40        0CED 1733        DC     AL1(@PRINT)              FUNCTION REQUESTED
   0CEE 00        0CEE 1734        DC     AL1(*-*)                 PRINT COUNT
   0CEF 0607      0CF0 1735        DC     AL2($$INLN)              DATA ADDRESS
                            1736 *** END OF EXPANSION ***
   0CF1 80        0CF1 1737 EFUPPR DC     AL1(@RETRN)              CARRIAGE
                            1738 *EFUKEY DPL    FUNC=$DGET,DADDR=#$#CKT,CNT=#$@CK,CADDR=EFUBFR
                  0CF2 1739 EFUKEY EQU *                           DISK PARAMETER LIST
   0CF2 01        0CF2 1740        DC     AL1(@DGET)               REQUESTED FUNCTION
   0CF3 2118      0CF4 1741        DC     AL2(#$#CKT)              DISK ADDRESS
   0CF5 04        0CF5 1742        DC     AL1(#$@#CK)              SECTOR COUNT
   0CF6 0E00      0CF7 1743        DC     AL2(EFUBFR)              BUFFER ADDRESS
                            1744 *** END OF EXPANSION ***
                            1745 *
                            1746 *                CONSTANTS, SAVE AREAS
                            1747 *
   0CF8 01        0CF8 1748 EFUDEC DC     IL1'1'                   DECK COMMAND KEY SPEC
   0CF9 005A      0CFA 1749 EFUL90 DC     XL(@CADDR)'5A'           90 BYTE COMMANDS
                  0CFB 1750 EFUSV1 EQU     *                        SAVE AREA FOR COMMAND KEY
   0CFB           0CFC 1751        DS     XL(@CADDR)               * NUMBER --
   0CFB           1752        ORG     EFUSV1                   * INITIALIZED TO ZERO, LEFT
   0CFB 0000      0CFC 1753 EFUSVE DC     XL(@CADDR)'0'            * BYTE ALWAYS ZERO
   0CFD           0CFD 1754 EFUCNF DS     XL1                      SAVE AREA FOR NUMBER OF CMD
   0CFD           1755        ORG     EFUCNF                   * KEYS AVAILABLE, INITIALIZED
   0CFD 08        0CFD 1756        DC     AL1(EFU8CK)              * TO EIGHT
                            1757 *
                            1758 *                EQUATES
                            1759 *
                  0C91 1760 EFUBRB EQU     EFU700                   BR BASE VALUE
                  0008 1761 EFU8CK EQU     8                        EIGHT CMD KEYS AVAILABLE (8CK)
                  000B 1762 EFUBCK EQU     11                       11 CMD KEYS AVAILABLE (16CK)
                            1763 *
                            1764 *                LENGTH EQUATES
                            1765 *
                  0002 1766 EFULPS EQU     2                        CHAR COUNT FROM PASSWORD
                  0006 1767 EFUDPW EQU     6                        NEG DISP TO PASSWORD
                  0004 1768 EFUCK4 EQU     4                        BINARY CODE FOR CMD KEY 4
                  0002 1769 EFULRN EQU     2                        CHAR COUNT OF DTABLN CHARS
                            1770 *
                            1771 *                TEXT MESSAGE FOR CMD KEY 7
                            1772 *
```

```
        #EFKEY -- COMMAND KEY PROCESSOR

ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  09/05/20  PAGE  39

                           0CFE 1773 EFUS07 EQU   *                      START OF TEXT OUTPUT FOR KEY 07
     0CFE C5C4C9E340        0D02 1774        DC    CL05'EDIT'
     0D03 5B5B              0D04 1775 EFUPSW DC    CL(EFULPS)'$$'         TWO CHARS FROM PASSWORD
     0D05 F0                0D05 1776 EFUDA1 DC    XL1'F0'                FOUR
     0D06 F0                0D06 1777 EFUDA2 DC    XL1'F0'                * CHARS
     0D07 F0                0D07 1778 EFUDA3 DC    XL1'F0'                * FROM
     0D08 F0                0D08 1779 EFUDA4 DC    XL1'F0'                * DATE
     0D09                   0D0A 1780 EFURND DS    CL2                    TWO CHARS FROM LINE NUMBER
     0D0B 1E                0D0B 1781 EFUT07 DC    AL1(@EOS)              END OF STATEMENT CHAR
                           0D0C 1782 EFUE07 EQU   *                      END OF TEXT OUTPUT FOR KEY 07
                                1783 *        PATCH
```

```
                             1785 ***********************************************************************
                             1786 * PATCH AREA 1
                             1787 ***********************************************************************
                             1788 *
                             1789 * CALCULATE AREA LEFT IN THIS SECTOR
                             1790 *
                   0D0C 1791 $$$$L1 EQU   *                         START OF PATCH AREA 1
     0E00                    1792        ORG   *,256,0             SET LOC CNTR TO NEXT SECTOR
                   0E00 1793 $$$$T1 EQU   *                         DEFINE ADDR OF SCTR BNDRY
     0D0C                    1794        ORG   $$$$L1              SET LOC CNTR TO START OF
                             1795 *                                 * PATCH AREA
     0D0C            0DFF 1796 $$$$$1 DS    CL($$$$T1-$$$$L1)       PATCH AREA
                             1797 ***********************************************************************
                             1798 *** END OF EXPANSION ***
                   0E00 1799 EFUBFR EQU   *                         BUFFER FOR COMMAND KEY TABLE
                   0E22 1800 EFUCMD EQU   EFUBFR+34               START OF COMMANDS IN CMD KEY TBL
                             1801        PRINT ON
     FFFF            1802        END
```

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =   0

```
$$$$$$   001  0C00 1619
$$$$$1   244  0DFF 1796
$$$$L1   001  0D0C 1791    1794   1796
$$$$T1   001  0E00 1793    1796
$$$CMD   001  0020 0658
$$$DAT   001  0040 0657
$$$EPL   001  0091 0654
$$$ERN   001  0080 0708
$$$FUN   001  0010 0659
$$$NLN   001  00A0 0704
$$$STD   001  0081 0653
$$BNLN   001  0605 0634    0636
$$CDBS   001  08C0 0684
$$CDND   001  0666 0643
$$CDRD   001  0890 0682    0684
$$CKEY   001  0603 0632    1632   1633*
$$CKFF   001  0B3D 0664
$$COFF   001  0B44 0663
$$CSNS   001  209C 0693
$$DATB   001  0BBF 0665
$$EOSA   001  0AFE 0662    1706*
$$ERSK   001  1C00 0703
$$FITS   001  1D00 0711
$$FLIB   001  06FF 0710
$$ILEN   001  0601 0628    0630   0634
$$ILHD   001  0600 0626    0628
$$INLN   001  0607 0641    0643   0645   1646* 1681* 1701* 1729   1735
$$INND   001  06FA 0645
$$KBDT   001  09E1 0652    0656
$$KBSN   001  09E2 0656    0661
$$KLD1   001  0600 0716
$$KLD2   001  0700 0718
$$KLD3   001  0C00 0720
$$LPOS   001  09EB 0661    1664*
$$PCNT   001  07E9 0677
$$PLYN   001  2004 0691
$$PRES   001  0890 0650    0652   0662   0663   0664   0665   0682
$$PRFL   001  2143 0695
$$PRNT   001  0707 0671    0672   0676   0677
$$PRTN   001  0782 0672
$$PSIO   001  07CE 0676
$$PYCD   001  2200 0697
$$PYMP   001  2000 0689    0691   0693   0695   0697
$$SLIB   001  1C00 0706
$$TPCD   001  0606 0636    0641
$$UPAR   001  0602 0630    0632   1651
$$WSPB   001  1E00 0709
$$XIND   001  06FF 0707    0710
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$DK100  001  0001 0449
$DK200  001  0002 0450
$DK400  001  0004 0451
$DK600  001  0008 0452
$DK800  001  0010 0453
$DOLAR  001  005B 0068
$DPLSV  001  0449 0521    0523
$DTNMB  001  0040 0268
$DTRDR  001  0040 0356
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$ENDNU  001  0600 0615    0626  0650  0671  0707  0716  0718  0720
$ERDPL  001  046F 0540    0542
$ERFIL  001  0040 0295
$ERHRD  001  0004 0427
$ERKEY  001  0080 0299
$ERLOG  001  0345 0230
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$FILIB   001  03DA 0458   0459  1670
$FITIN   001  0010 0383
$FUIND   001  0020 0412
$GUFIO   001  0583 0605   0606
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$HIST1   001  0435 0509   0510
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$IOYES   001  0002 0251
$IPLDV   001  05FF 0612   0615
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$KE130   001  01D5 0227
$KYBSY   001  0010 0262
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$LIST    001  0002 0424
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$LOADR   001  051A 0577   0580  1627
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$LPROS   001  03E5 0489   0491
$LPRP3   001  03E4 0488   0489
$MOUNT   001  0020 0438
$MPDWN   001  0001 0338
$NEXTB   001  03E6 0491   0492
$NEXTL   001  03E7 0492   0493
$NOENB   001  0008 0430
$NOLST   001  0004 0254
$NUCBS   001  03C0 0237   0238
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$NWRKR   001  0040 0440
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$PLST1	001	0454	0526	0527			
$PLST2	001	045B	0527	0528			
$PLST3	001	0462	0528	0529			
$PRDEV	001	044B	0523	0525			
$PRESN	001	0002	0374				
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$PRPOS	001	03C2	0242	0245			
$PSDBR	001	04FA	0566				
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$PSTEP	001	0004	0332				
$PSTMT	001	0008	0333				
$PTCH1	001	03F5	0496	0500			
$READY	001	0080	0416	1665			
$REORD	001	0040	0474				
$RLOAD	001	051E	0580	0582	1712		
$RMRGN	001	03C0	0238	0240			
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$RUNIT	001	0001	0310				
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$SPRNT	001	0465	0535	0537	1655	1660	1708
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$STEPT	001	0002	0311				
$SWPCR	001	0511	0573	0575			
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$TFLOW	001	0008	0317				
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$TRVAR	001	0020	0319				
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$USRDR	001	03DC	0459	0460			
$VMDEF	001	0080	0323				
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$VOLR1	001	03F6	0501	0502			
$VOLR2	001	0406	0503	0504			
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$12K	001	0004	0464				
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#$$VXI  001  0600 1030
#$$ZDU  001  1100 1182
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#$$ZLV  001  0F00 1242
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#@#TBA	001	09A1	0789
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#@#VFP	001	0700	0775
#@#VLP	001	093D	0778
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#@#WFT	001	0500	0768
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#@@#IO	001	0001	0762
#@@#SC	001	0002	0759
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#@@#TB	001	0010	0790
#@@#TS	001	0005	0788
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#@LDSV	001	044D	0747
#@SDSY	001	04AD	0743
#@SFFI	001	04BD	0755
#@SFLO	001	0449	0753
#@SFOV	001	04C4	0763
#@SFSY	001	0480	0739
#@VSFI	001	09A1	0791
#@VTRL	001	0708	0776

```
                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                          VER 15, MOD 00  09/05/20  PAGE  52

#@WAF1  001  0401 0736
#@WAR1  001  0400 0735
#EFKEY  001  0000 0001
@@E100  001  0000 1269   1271
@@E101  001  0001 1271   1273
@@E102  001  0002 1273   1275
@@E103  001  0003 1275   1277
@@E110  001  0004 1277   1279
@@E112  001  0005 1279   1281
@@E113  001  0006 1281   1283
@@E114  001  0007 1283   1285
@@E115  001  0008 1285   1287
@@E116  001  0009 1287   1289
@@E117  001  000A 1289   1291
@@E120  001  000B 1291   1293
@@E122  001  000C 1293   1295
@@E123  001  000D 1295   1297
@@E124  001  000E 1297   1299
@@E129  001  000F 1299   1301
@@E130  001  0010 1301   1303
@@E131  001  0011 1303   1305
@@E133  001  0012 1305   1307
@@E134  001  0013 1307   1309
@@E135  001  0014 1309   1311
@@E136  001  0015 1311   1313
@@E137  001  0016 1313   1315
@@E138  001  0017 1315   1317
@@E139  001  0018 1317   1319
@@E142  001  0019 1319   1321
@@E143  001  001A 1321   1323
@@E150  001  001B 1323   1325
@@E151  001  001C 1325   1327
@@E160  001  001D 1327   1329
@@E162  001  001E 1329   1331
@@E163  001  001F 1331   1333
@@E164  001  0020 1333   1335
@@E200  001  0021 1335   1337
@@E205  001  0022 1337   1339
@@E210  001  0023 1339   1341
@@E211  001  0024 1341   1343
@@E212  001  0025 1343   1345
@@E213  001  0026 1345   1347
@@E215  001  0027 1347   1349
@@E216  001  0028 1349   1351
@@E217  001  0029 1351   1353
@@E220  001  002A 1353   1355
@@E221  001  002B 1355   1357
@@E222  001  002C 1357   1359
@@E223  001  002D 1359   1361
@@E225  001  002E 1361   1363
@@E226  001  002F 1363   1365
@@E227  001  0030 1365   1367
@@E228  001  0031 1367   1369
@@E229  001  0032 1369   1371
@@E230  001  0033 1371   1373
@@E232  001  0034 1373   1375
```

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@@E234   001  0035 1375    1377
@@E237   001  0036 1377    1379
@@E240   001  0037 1379    1381
@@E241   001  0038 1381    1383
@@E242   001  0039 1383    1385
@@E248   001  003A 1385    1387
@@E249   001  003B 1387    1389
@@E250   001  003C 1389    1391
@@E251   001  003D 1391    1393
@@E252   001  003E 1393    1395
@@E253   001  003F 1395    1397
@@E254   001  0040 1397    1399
@@E255   001  0041 1399    1401
@@E256   001  0042 1401    1403
@@E300   001  0043 1403    1405
@@E301   001  0044 1405    1407
@@E302   001  0045 1407    1409
@@E303   001  0046 1409    1411
@@E304   001  0047 1411    1413
@@E305   001  0048 1413    1415
@@E308   001  0049 1415    1417
@@E310   001  004A 1417    1419
@@E315   001  004B 1419    1421
@@E316   001  004C 1421    1423
@@E320   001  004D 1423    1425
@@E325   001  004E 1425    1427
@@E330   001  004F 1427    1429
@@E335   001  0050 1429    1431
@@E338   001  0051 1431    1433
@@E340   001  0052 1433    1435
@@E350   001  0053 1435    1437
@@E351   001  0054 1437    1439
@@E352   001  0055 1439    1441
@@E360   001  0056 1441    1443
@@E361   001  0057 1443    1445
@@E362   001  0058 1445    1447
@@E371   001  0059 1447    1449
@@E380   001  005A 1449    1451
@@E390   001  005B 1451    1453
@@E400   001  005C 1453    1455
@@E410   001  005D 1455    1457
@@E415   001  005E 1457    1459
@@E417   001  005F 1459    1461
@@E420   001  0060 1461    1463
@@E430   001  0061 1463    1465
@@E432   001  0062 1465    1467
@@E433   001  0063 1467    1469
@@E450   001  0064 1469    1471
@@E451   001  0065 1471    1473
@@E460   001  0066 1473    1475
@@E461   001  0067 1475    1477
@@E464   001  0068 1477    1479
@@E465   001  0069 1479    1481
@@E466   001  006A 1481    1483
@@E467   001  006B 1483    1485
@@E469   001  006C 1485    1487
```

SYMBOL	LEN	VALUE	DEFN	REFERENCES
@@E470	001	006D	1487	1489
@@E471	001	006E	1489	1491
@@E473	001	006F	1491	1493
@@E474	001	0070	1493	1495
@@E475	001	0071	1495	1497
@@E476	001	0072	1497	1499
@@E477	001	0073	1499	1501
@@E478	001	0074	1501	1503
@@E479	001	0075	1503	1505
@@E480	001	0076	1505	1507
@@E481	001	0077	1507	1509
@@E482	001	0078	1509	1511
@@E483	001	0079	1511	1513
@@E484	001	007A	1513	1515
@@E485	001	007B	1515	1517
@@E486	001	007C	1517	1519
@@E487	001	007D	1519	1521
@@E488	001	007E	1521	1523
@@E489	001	007F	1523	1525
@@E490	001	0080	1525	1527
@@E491	001	0081	1527	1529
@@E492	001	0082	1529	1531
@@E493	001	0083	1531	1533
@@E494	001	0084	1533	1535
@@E495	001	0085	1535	1537
@@E496	001	0086	1537	1539
@@E497	001	0087	1539	1541
@@E498	001	0088	1541	1543
@@E500	001	0089	1543	1545
@@E501	001	008A	1545	1547
@@E530	001	008B	1547	1549
@@E531	001	008C	1549	1551
@@E535	001	008D	1551	1553
@@E540	001	008E	1553	1555
@@E541	001	008F	1555	1557
@@E542	001	0090	1557	1559
@@E543	001	0091	1559	1561
@@E544	001	0092	1561	1563
@@E545	001	0093	1563	1565
@@E546	001	0094	1565	1567
@@E547	001	0095	1567	1569
@@E549	001	0096	1569	1571
@@E550	001	0097	1571	1573
@@E551	001	0098	1573	1575
@@E552	001	0099	1575	1577
@@E553	001	009A	1577	1579
@@E554	001	009B	1579	1581
@@E555	001	009C	1581	1583
@@E556	001	009D	1583	1585
@@E558	001	009E	1585	1587
@@E570	001	009F	1587	1589
@@E571	001	00A0	1589	1591
@@E572	001	00A1	1591	1593
@@E573	001	00A2	1593	1595
@@E574	001	00A3	1595	1597
@@E578	001	00A4	1597	1599

```
@@E585  001  00A5 1599
@ARR    001  0008 0017
@ASIGN  001  007C 0071
@ASTER  001  005C 0069
@BCRDL  001  0050 0088
@BE     001  0081 0043
@BF     001  0090 0052
@BH     001  0084 0041
@BL     001  0082 0042
@BLANK  001  0040 0065   1633   1673
@BM     001  0082 0054
@BNE    001  0001 0046
@BNH    001  0004 0044
@BNL    001  0002 0045
@BNM    001  0002 0057
@BNOL   001  0020 0050
@BNOZ   001  0008 0049
@BNP    001  0004 0056
@BNZ    001  0001 0058
@BOL    001  00A0 0048
@BOZ    001  0088 0047
@BP     001  0084 0053
@BR     001  0001 0014   1629*  1630   1632   1635   1637   1640   1651   1652   1652   1663   1663   1664
                         1672   1673   1675   1676   1677   1678   1679   1680   1681   1682   1683   1688
                         1688   1689   1689   1690   1690   1691   1691   1692   1692   1695   1695   1698
                         1699   1703
@BT     001  0010 0051
@BZ     001  0081 0055
@B1     001  0001 0063
@CADDR  001  0002 0141   1628   1664   1749   1751   1753
@CARDL  001  0060 0087   0643
@CHARA  001  00C1 0072
@CHARF  001  00C6 0073
@CHARR  001  00D9 0074
@CHARZ  001  00E9 0075
@CLOFF  001  0010 0094
@CLON   001  0011 0093
@COMMA  001  006B 0066
@CPLUS  001  004E 0079
@DADDR  001  0002 0139
@DBFR1  001  0004 0128
@DBFR2  001  0005 0129
@DCALK  001  0001 0081   1646
@DCBCY  001  0009 0114
@DCBT1  001  0050 0116
@DCNT   001  0003 0127
@DCST1  001  0040 0115
@DCTRL  001  0000 0124
@DCYL   001  0001 0125
@DD2    001  0003 0030
@DGET   001  0001 0133   1720   1740
@DOP2   001  0004 0028   1691*
@DPLNG  001  0006 0131
@DPOS   001  0000 0132
@DPUT   001  0002 0134
@DSAD   001  0002 0126
```

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SYMBOL  LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  09/05/20  PAGE  56

@DSBCY  001  0004 0105
@DSCS1  001  0000 0106
@DSIVF  001  0003 0137
@DSPIN  001  0002 0130
@DTRSZ  001  0018 0085
@DVBCY  001  0007 0107
@DVRFY  001  0031 0135
@DWAIT  001  00FF 0136
@DWBCY  001  0005 0102
@DWSIZ  001  00C0 0104
@DWTB1  001  0003 0103
@DZERO  001  00F0 0064
@D1     001  0002 0026
@EOF    001  001C 0077
@EOFTC  001  0075 0160
@EOS    001  001E 0076   1705  1781
@FDDBC  001  0000 0193
@FDE1   001  000C 0198
@FDFNA  001  000B 0196
@FDHLN  001  0002 0206
@FDLNC  001  0002 0191
@FDNSC  001  0003 0208
@FDSD   001  0000 0204
@FLACE  001  0009 0195
@FLDBC  001  0001 0194
@FLENT  001  0004 0199
@FLFNA  001  0002 0197
@FLHLN  001  0002 0207
@FLLNC  001  0002 0192
@FLNSC  001  0001 0209
@FLSD   001  0001 0205
@HDRLN  001  0007 0092   0671
@IAR    001  0010 0018
@INDEX  001  0001 0154   0155
@INST3  001  0003 0032
@INST4  001  0004 0033
@INST5  001  0005 0034
@INST6  001  0006 0035
@I1IAR  001  00C0 0020
@LINSZ  001  00F4 0084   0645
@MAPEN  001  0005 0089
@MINCR  001  2000 0083
@MINUS  001  0060 0080
@NOP    001  0080 0040
@NUMBR  001  007B 0070
@OPD2   001  0004 0029
@OP1    001  0003 0027   1683  1692* 1703
@OP2    001  0005 0031
@PCTRL  001  0000 0147
@PDATA  001  0003 0149   1663* 1664
@PGCSZ  001  0020 0082   0083
@PPLNG  001  0004 0146
@PRCNT  001  0001 0148   1651* 1652* 1663  1682* 1688*
@PRETR  001  00C0 0152   1727
@PRINT  001  0040 0150   0152  1733
@PSR    001  0004 0016
```

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SYMBOL  LEN VALUE DEFN  REFERENCES                            VER 15, MOD 00  09/05/20  PAGE  57

@PWAIT  001  00FF 0156
@P1IAR  001  0020 0019
@Q      001  0001 0024  1689* 1690* 1691  1692
@REGL   001  0002 0013
@RETRN  001  0080 0151  0152  1737
@RLDWN  001  004F 0157
@RTRNC  001  0080 0159
@SBLNL  001  0002 0182
@SCTSZ  001  0100 0099
@SDFLN  001  0007 0090
@SDF0   001  0000 0164
@SDF1   001  0001 0165
@SDF2   001  0002 0166
@SDF3   001  0003 0167
@SDLN   001  0005 0168
@SECCY  001  0030 0086
@SIST   001  0001 0179
@SLASH  001  0061 0067
@SLAST  001  0002 0181
@SMIDL  001  0003 0180
@SNULL  001  0080 0171
@SONLY  001  0000 0178
@STEXT  001  0007 0170
@STYPE  001  0006 0169
@SYLVL  001  0004 0803
@TBCNT  001  0000 0158
@TBLEF  001  0010 0153  0155
@TBLIX  001  0011 0155
@UCB    001  0087 0039
@UPARW  001  005A 0078
@VADDR  001  0002 0140
@VENTA  001  0056 0112
@VMDDV  001  00FE 0113
@VMFD1  001  0000 0108
@VMFD2  001  0001 0109
@VMRS3  001  0002 0111
@VMTRL  001  0001 0110
@VOLID  001  0006 0091
@VQ     001  0001 0025  1701
@WSFIT  001  0500 0100
@WSTBL  001  0503 0101
@XR     001  0002 0015  1634* 1635* 1683* 1694* 1698* 1701  1703* 1704  1704* 1705  1706
@ZERO   001  0000 0062  1637  1670
EFUBCK  001  000B 1762
EFUBFR  001  0E00 1799  1634  1743  1800
EFUBRB  005  0C91 1760  1629  1630
EFUCK4  001  0004 1768  1640
EFUCMD  001  0E22 1800  1694
EFUCNF  001  0CFD 1754  1755
EFUDA1  001  0D05 1776  1676*
EFUDA2  001  0D06 1777  1677*
EFUDA3  001  0D07 1778  1678*
EFUDA4  001  0D08 1779  1679*
EFUDEC  001  0CF8 1748  1652  1690  1695
EFUDPL  001  0CE2 1719  1713
EFUDPW  001  0006 1767  1672
```

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                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN    REFERENCES                      VER 15, MOD 00  09/05/20  PAGE  58

EFUE07  001  0D0C 1782    1681
EFUKEY  001  0CF2 1739    1628
EFUK01  004  0C30 1646
EFUK04  005  0C37 1651    1642
EFUK07  004  0C63 1670    1641
EFULPS  001  0002 1766    1672  1775
EFULRN  001  0002 1769    1680*
EFUL90  002  0CFA 1749    1698
EFUPPL  001  0CE8 1726    1682* 1688* 1709
EFUPPR  001  0CF1 1737    1656
EFUPP2  001  0CED 1732    1651* 1652* 1661  1663  1663* 1664
EFUPSW  002  0D04 1775    1672* 1673  1675*
EFURND  002  0D0A 1780    1680*
EFUSVE  002  0CFC 1753    1632* 1635  1640  1695*
EFUSV1  001  0CFB 1750    1752
EFUS07  001  0CFE 1773    1681  1681* 1682
EFUT07  001  0D0B 1781    1681  1681* 1682
EFU200  004  0C4C 1660    1653
EFU300  004  0C5B 1665    1658
EFU400  005  0C78 1676    1671  1674
EFU700  005  0C91 1681    1683  1760
EFU8CK  001  0008 1761    1756
EFU850  004  0C9F 1688    1638
EFU900  004  0CB7 1695    1699
EFU950  005  0CC4 1701    1689* 1690* 1691  1691* 1692  1692* 1696  1703
EFU990  004  0CD2 1706    1684
EFU995  004  0CDC 1712    1647

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =      0

OL105 I   THE CODE LENGTH OF #EFKEY IS  3584 DECIMAL.
OL103 I   TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS     3
          NAME-#EFKEY,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000
```

```
          OVERLAY LINKAGE EDITOR CORE USAGE MAP      09/05/20


   START      CATEGORY    NAME AND       CODE LENGTH
  ADDRESS                  ENTRY      HEXADECIMAL DECIMAL

   0000          0      #EFKEY            0E00    3584


OL100 I   THE TOTAL CORE USED BY #EFKEY IS  3584 DECIMAL.
OL101 I   THE START CONTROL ADDRESS OF THIS MODULE IS 0000.
OL104 I   TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS    15
          NAME-#EFKEY,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
```