```
 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  30/05/22  PAGE   1

#KWIDT    MODULE
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ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  30/05/22  PAGE   2

    0000                        1 #KWIDT START 0
                                2         PRINT ON,NODATA
                                3 *       @SYS  EXP-N
                          214+            PRINT ON
                          215 *           @FXD  EXP-N
                          620+            PRINT ON
                          621 *           @CAN  EXP-N
                          724+            PRINT ON
                          725 *           @ERM  EXP-N
                         1347+            PRINT ON
                         1348 *           @SPF  EXP-N
                         1811+            PRINT ON
    0C00                 1812            ORG   $$KLD3
```

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      @SPFEQ - SYSTEM PROGRAM FILE EQUATES

ERR LOC  OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  30/05/22  PAGE   3
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#KWIDT - WRITE KEYWORD PROGRAM

```
                          1815 ***********************************************************************
                          1816 * 5703-XM1        COPYRIGHT IBM CORP. 1970                             *
                          1817 *                       REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083   *
                          1818 *                                                                     *
                          1819 ***********************************************************************
                          1820 *STATUS -                                                             *
                          1821 *    VERSION 1 MODIFICATION 0                                          *
                          1822 *                                                                     *
                          1823 *FUNCTION                                                              *
                          1824 *    KWIDTH PROCESSES THE WIDTH SYSTEM COMMAND.  IT IS RESPONSIBLE FOR *
                          1825 *    ALTERING THE WIDTH AND LEFT MARGIN OF THE PRINT LINE.             *
                          1826 *                                                                     *
                          1827 *ENTRY POINTS                                                          *
                          1828 *    THE ENTRY POINT TO KWIDTH IS THE FIRST BYTE OF THE MODULE.        *
                          1829 *    LABELLED #KWIDT.                                                  *
                          1830 *                                                                     *
                          1831 *INPUT                                                                 *
                          1832 *    INPUT TO KWIDTH IS THE COMMAND MN TNE INPUT LINE BUFFER WHICH     *
                          1833 *    CONTAINS THE REQUIRED LINE WITDH AND OPTIONAL LEFT MARGIN         *
                          1834 *    SPECIFICATIONS.                                                   *
                          1835 *                                                                     *
                          1836 *OUTPUT                                                                *
                          1837 *    NONE                                                              *
                          1838 *                                                                     *
                          1839 *EXTERNAL REFERENCES                                                   *
                          1840 *    * $XRSAV - REGISTER 2 (@XR) SAVE AREA                             *
                          1841 *    * $LMRGN - NUCLEUS BYTE CONTAINING LEFT MARGIN VALUE              *
                          1842 *    * $RMRGN - NUCLEUS BYTE CONTAINING RIGHT MARGIN VALUE             *
                          1843 *    * $CONFG - NUCLEUS BYTE WHICH GIVES PRINTER MAXIMUM WIDTH         *
                          1844 *    * $PRPOS - NUCLEUS BYTE WHICH GIVES CURRENT PRINT POSITION        *
                          1845 *    * $KEYCD - NUCLEUS INDICATOR WHERE 'I/O ROUTINES NOT IN CORE      *
                          1846 *                INDICATOR' IS SET                                     *
                          1847 *    * $CARPL - EXIT TO LOAD FILE UPDATE PROGRAM. #GUFUD              *
                          1848 *    * $CAERR - ERROR CODE SAVE AREA                                   *
                          1849 *    * $CAERK - EXIT TO LOAD THE ERROR PROGRAM. #ERRPG                *
                          1850 *    * $$PRNT - ENTRY TO PRINT ROUTINE                                 *
                          1851 *    * C4BIN2 - ENTRY TO MODULE TO CONVERT DECIMAL TO BINARY           *
                          1852 *    * C4BVAL - TWO-BYTE FIELD CONTAINING CONVERTED BINARY NUMBER      *
                          1853 *    * C4BSAV - @XR SAVE AREA IN C4BIN2                                *
                          1854 *    * SCANIT - ENTRY TO DELIMETER SCAN MODULE                         *
                          1855 *    * SCAMMA - SCANIT INDICATOR SET TO ALLOW A COMMA                  *
                          1856 *    * SCACNT - SCANIT COUNTER OF DELIMITERS BYPASSED                  *
                          1857 *                                                                     *
                          1858 *EXITS, NORNAL                                                         *
                          1859 *    KWIDTH EXITS TO $CARPL TO LOAD #GUFUD FOR A NORMAL RETURN         *
                          1860 *                                                                     *
                          1861 *EXITS, ERROR                                                          *
                          1862 *    KWIDTH EXITS TO $CAERK TO LOAD #ERRPG IF AN ERROR IS DETECTED     *
                          1863 *                                                                     *
                          1864 *TABLES/WORKAREAS                                                      *
                          1865 *    KWIDTH REQUIRES A 202-BYTE BUFFER OF BLANKS OF WHICH PART OF ALL  *
                          1866 *    MAY IT PRINTED IF THE CURRENT PRINT POSITION IS NOT GREATER THAN  *
                          1867 *    THE LEFT MARGIN.                                                  *
                          1868 *                                                                     *
                          1869 *ATTRINTES                                                             *
                          1870 *    RELOCATABLE                                                       *
```

```
                              1871 *                                                      *
                              1872 *CHARACTER CODE DEPENDENCY                             *
                              1873 *    NONE                                              *
                              1874 *                                                      *
                              1875 *NOTES                                                 *
                              1876 *    ERROR PROCEDURES                                  *
                              1877 *        UPON DETECTING AN ERROR CONDITION, KWIDTH LEAVES THE ERROR    *
                              1878 *        CODE SET IN $CAERR AND EXITS TO $CAERK TO LOAD #ERRPG, THE    *
                              1879 *        ERROR PROGRAM.  IF IT IS A SYNTAX ERROR, @XR IS REFERENCING   *
                              1880 *        THE INVALID CHARACTER; OTHERWISE, @XR IS POINTING OUTSIDE THE *
                              1881 *        INPUT LINE BUFFER.                            *
                              1882 *                                                      *
                              1883 *    REGISTER USAGE                                    *
                              1884 *        REGISTER 1 (@BR) IS USED AS A BASE REGISTER FOR ADDRESSABILITY,*
                              1885 *        WITH THE STATEMENT LABELED KWI500 SERVING AS THE BASE ADDRESS. *
                              1886 *        REGISTER 2 (@XR) IS USED AS A POINTER ACROSS THE INPUT LINE    *
                              1887 *        BUFFER.                                       *
                              1888 *                                                      *
                              1889 *    SAVED/RESTORED AREAS                              *
                              1890 *        NONE                                          *
                              1891 *                                                      *
                              1892 *    MODIFICATION CONSIDERATIONS                       *
                              1893 *        NONE                                          *
                              1894 *                                                      *
                              1895 *    REQUIRED MODULES                                  *
                              1896 *        * @SYSEQ - COMMON SYSTEM EQUATES              *
                              1897 *        * @FXDEQ - NUCLEUS FIXED ADDRESS EQUATES      *
                              1898 *        * @CANEQ - FIXED ADDRESSES OUTSIDE THE NUCLEUS EQUATES    *
                              1899 *        * @ERMEQ - ERROR MESSAGE EQUATES (SELECTED ERROR CODES)   *
                              1900 *        * C4BIN2 - MODULE TO CONVERT DECIMAL TO BINARY            *
                              1901 *        * SCANIT - MODULE TO SCAN ACROSS DELIMITERS               *
                              1902 *                                                      *
                              1903 *    OTHER                                             *
                              1904 *        NONE                                          *
                              1905 ************************************************************************
```

```
                       0C88 1907          USING KWI500,@BR                   BASE VALUE
                       0C00 1908 KWIDTH EQU   *                              WIDTH KEYWORD PROGRAM
                            1909 *
                            1910 *      HDR   #KWIDT,1                        GENERATE PROGRAM HEADER
                            1911 ***********************************************************************
                            1912 * PROGRAM HEADER FOR DISK LOAD
                            1913 ***********************************************************************
                            1914 *#$KWID EQU   X'02C4'                        DISK ADDR OF #KWIDT
                            1915 *#$$KWI EQU   X'0C00'                        CORE LOAD ADDRESS OF #KWIDT
                            1916 *#$@KWI EQU   002                            SECTOR CNT OF #KWIDT
     0C00                   1917          ORG   #$$KWI                        CORE LOAD ADDRESS
                       0C00 1918 $$$$$$ EQU   *                              FIRST LOCATION IN PROGRAM
     0C00 7BD2E6C9C4E3 0C05 1919          DC    CL6'#KWIDT'                   PROGRAM NAME
     0C06 16            0C06 1920          DC    IL1'022'                      PROGRAM NUMBER OF #KWIDT
                       0C07 1921 #KWID  EQU   *                              ENTRY POINT TO PROGRAM
                            1922 *** END OF EXPANSION ***

     0C07 C2 01 0C88        1924          LA    KWI500,@BR                    SET UP BASE REGISTER
                            1925 *
     0C0B 3C 40 0EC9        1926          MVI   KWIBUF+KWILBF,@BLANK          CLEAR BUFFER AREA OF 202
     0C0F 0C C8 0EC8 0EC9   1927          MVC   KWIBUF+KWILBF-1(KWILBF),KWIBUF+KWILBF * BYTES TO BLANKS
                            1928 *
     0C15 4C 00 96 03C1     1929          MVC   KWILFM(,@BR),$LMRGN(KWIBL1)   INITLZ LEFT MARGIN TO OLD ONE
                            1930 *                                           * IF NEW ONE IS NOT SPECIFIED
     0C1A 35 02 03C7        1931          L     $XRSAV,@XR                    POINT XR TO BYTE AFTER KEYWORD
     0C1E BD 60 00          1932          CLI   0(,@XR),KWIDSH                IS KEYWORD FOLLOWED BY '-' ?
     0C21 F2 81 C6          1933          JE    KWI800                        YES, 'INV DELIMITER ERROR'
     0C24 C0 87 0D9D        1934          B     SCANIT                        SCAN ACROSS BLANKS
                            1935 *
     0C28 BD 1E 00          1936          CLI   @ZERO(,@XR),@EOS             IS IT CARRIAGE RETURN ?
     0C2B F2 81 C2          1937          JE    KWI900                        IF YES, SET ERR CODE FOR REO
                            1938 *                                           * PARAMETER MISSING
     0C2E C0 87 0D2D        1939          B     C4BIN2                        ELSE, CHECK FOR VALID INTEGER
     0C32 F2 82 2A          1940          JL    KWI130                        CALL ERR PROG IF ERR IN C4BIN2
     0C35 F2 81 BE          1941          JZ    KWI910                        SET ERROR CODE FOR 'INVALID
                            1942 *                                           * PARAMETER' IF NOT AN INTEGER
                            1943 *
     0C38 4C 01 94 0D97     1944          MVC   KWILEN(KWIBL2,@BR),C4BVAL MOVE COMPUTED BINARY WIDTH TO
                            1945 *                                           * A WORK AREA
                            1946 *
     0C3D 3C 01 0DBA        1947          MVI   SCAMMA,SCACOM                 SET INDR TO ALLOW COMMA
     0C41 C0 87 0D9D        1948          B     SCANIT                        BYPASS BLANKS
     0C45 F2 82 CF          1949          JL    KWI960                        CALL ERR PROG IF ERR IN SCANIT
                            1950 *
     0C48 BD 1E 00          1951          CLI   @ZERO(,@XR),@EOS             IS NEXT CHAR CARRIAGE RETURN ?
     0C4B F2 81 3A          1952          JE    KWI500                        IF YES, CHECK FOR WITHIN LIMITS
                            1953 *
     0C4E 3D 00 0DDD        1954          CLI   SCACNT,@ZERO                  ELSE, WERE ANY CHARS SCANNED ?
     0C52 F2 81 A1          1955          JE    KWI910                        NO, GIVE 'INV PARAMETER' ERROR
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                                 1957 *
                                 1958 *              GET LEFT MARGIN
                                 1959 *
     0C55 C0 87 0D2D             1960 KWI100 B     C4BIN2                 CONVERT LEFT MARGIN TO BINARY
     0C59 F2 81 9A              1961        JZ    KWI910                 ERR IF C4BIN2 DID NOT FIND INTG
     0C5C F2 84 07              1962        JH    KWI150                 IF GOOD, JUMP TO MOVE IN NO.
                                 1963 *
     0C5F 35 02 0D9B            1964 KWI130 L     C4BSAV,@XR             POINT XR TO FIRST CHAR IN NO.
     0C63 F2 87 B1              1965        J     KWI960                 CALL ERROR PROGRAM
                                 1966 *
     0C66 4C 01 96 0D97         1967 KWI150 MVC   KWILFM(KWIBL2,@BR),C4BVAL MOVE COMPUTED BINARY LEFT
                                 1968 *                                 * MARGIN TO WORK AREA
     0C6B 5F 00 96 9D           1969        SLC   KWILFM(KWIBL1,@BR),KWIONE(,@BR)  SUB '1' FROM LEFT MARGIN
     0C6F F2 82 84              1970        JM    KWI910                 ERROR IF ZERO ENTERED AS LEFT
                                 1971 *                                 * MARGIN
     0C72 C0 87 0D9D            1972        B     SCANIT                 SCAN TO ALPHANUMERIC CHAR
     0C76 F2 82 9E              1973        JL    KWI960                 CALL ERR PROG IF ERR IN SCANIT
     0C79 F2 01 06              1974        JNZ   KWI200                 IF CHARS SCANNED, OMIT EOS CHECK
                                 1975 *
     0C7C BD 1E 00              1976        CLI   @ZERO(,@XR),@EOS       IS IT A CARRIAGE RETURN ?
     0C7F F2 01 74              1977        JNE   KWI910                 NO, RESTORE XR & SET ERR CODE
     0C82 BD 1E 00              1978 KWI200 CLI   @ZERO(,@XR),@EOS       IS IT A CARRIAGE RETURN ?
     0C85 F2 01 78              1979        JNE   KWI920                 IF NOT, SET ERROR CODE FOR
                                 1980 *                                 * 'TOO MANY PARAMETERS'
```

```
                              1982 *
                              1983 *              CHECK FOR VALID SPECIFICATION
                              1984 *
     0C88 5D 01 94 98         1985 KWI500 CLC    KWILEN(KWIBL2,@BR),KWIMIN(,@BR)  WIDTH GREATER THAN 18 ?
     0C8C F2 82 77            1986        JL     KWI930                           IF NOT, SET ERROR CODE FOR
                              1987 *                                             * MINIMUM SIZE
     0C8F 5E 01 94 96         1988        ALC    KWILEN(KWIBL2,@BR),KWILFM(,@BR)  ADD WIDTH TO LEFT MARGIN
                              1989 *                                             * GIVING KWILEN = RIGHT MARGIN
     0C93 38 01 03DD          1990        TBN    $CONFG,$22IMP                    IS MAX WIDTH = 220 ?
     0C97 F2 90 0A            1991        JF     KWI600                           IF NOT, CHECK RIGHT MARGIN < 132
                              1992 *                                             * WITHIN LIMIT
     0C9A 5D 01 94 9A         1993        CLC    KWILEN(KWIBL2,@BR),KWIMR2(,@BR)  IS RIGHT MARGIN > 220 ?
     0C9E F2 84 6B            1994        JH     KWI940                           IF YES, SET ERROR CODE FOR
                              1995 *                                             * INVALID RIGHT MARGIN
     0CA1 F2 87 07            1996        J      KWI650                           TEST CURRENT PRINT POSITION
                              1997 *
     0CA4 5D 01 94 9C         1998 KWI600 CLC    KWILEN(KWIBL2,@BR),KWIMR1(,@BR) IS RIGHT MARGIN > 132 ?
     0CA8 F2 84 61            1999        JH     KWI940                           IF YES, SET ERROR CODE FOR
                              2000 *                                             * INVALID RIGHT MARGIN
     0CAB 1D 00 03C2 96       2001 KWI650 CLC    $PRPOS,KWILFM(KWIBL1,@BR) IS PRINT POSITION < LEFT MARGIN
     0CB0 F2 02 19            2002        JNL    KWI700                           IF NOT, STORE NEW MARGINS
                              2003 *
     0CB3 5C 00 A4 96         2004        MVC    KWIHLD(,@BR),KWILFM(KWIBL1,@BR) SAVE LEFT MARGIN
     0CB7 4F 00 A4 03C2       2005        SLC    KWIHLD(,@BR),$PRPOS(KWIBL1)  GET NO. OF BLANKS NEEDED
     0CBC 1C 00 0D27 A4       2006        MVC    KWIBNK+1,KWIHLD(KWIBL1,@BR)  MOVE NO. NEEDED TO PPL
                              2007 *
     0CC1 1C 00 03C0 9A       2008        MVC    $RMRGN,KWIMR2(KWIBL1,@BR) SET RT MARGIN = 220 TEMPORARILY
     0CC6 C0 87 0707          2009        B      $$PRNT                           MOVE BLANKS OVER TO NEW
     0CCA 0D26           0CCB 2010        DC     AL2(KWIBNK)                      * LEFT MARGIN POSITION
                              2011 *
                              2012 *              STORE NEW MARGINS IN SYSTEM NUCLEUS AND EXIT
                              2013 *
     0CCC 1C 00 03C1 96       2014 KWI700 MVC    $LMRGN(KWIBL1),KWILFM(,@BR)  STORE NEW LEFT MARGIN
                              2015 *
     0CD1 C0 87 0707          2016        B      $$PRNT                           MOVE IN CARRIAGE RETURN
     0CD5 0D2A           0CD6 2017        DC     AL2(KWIEOS)
     0CD7 3B 02 03C3          2018        SBF    $KEYCD,$IOYES                    SET 'I/O ROUTINES IN CORE' OFF
     0CDB C0 87 0707          2019        B      $$PRNT                           BRANCH TO DPRINT
     0CDF 057F           0CE0 2020        DC     AL2($WAITF)                      * FOR WAIT
     0CE1 1C 00 03C0 94       2021        MVC    $RMRGN(KWIBL1),KWILEN(,@BR)  STORE NEW RIGHT MARGIN
     0CE6 C0 87 04A1          2022        B      $CARPL                           EXIT
```

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                         2024 *
                         2025 *            SET ERROR CODES AND CALL ERROR PROGRAM
                         2026 *
   0CEA 7C 18 8C         2027 KWI800 MVI   KWI950+@Q(,@BR),@@E139    SET ERR CODE-'INVALID DELIM'
   0CED F2 87 23         2028        J     KWI950                   CALL ERROR PROGRAM

   0CF0 7C 10 8C         2030 KWI900 MVI   KWI950+@Q(,@BR),@@E130    SET ERROR CODE FOR 'REQUIRED
   0CF3 F2 87 1D         2031        J     KWI950                   * OPERAND MISSING' AND EXIT

   0CF6 7C 11 8C         2033 KWI910 MVI   KWI950+@Q(,@BR),@@E131    SET ERR CODE - 'INV PARAM'
                         2034 *
   0CF9 35 02 0D9B       2035 KWI915 L     C4BSAV,@XR               RESTORE XR
   0CFD F2 87 13         2036        J     KWI950                   CALL ERROR PROGRAM

   0D00 7C 12 8C         2038 KWI920 MVI   KWI950+@Q(,@BR),@@E133    SET ERROR CODE FOR 'TOO MANY
   0D03 F2 87 0D         2039        J     KWI950                   * PARAMETERS' AND CALL ERR PROG

   0D06 7C 67 8C         2041 KWI930 MVI   KWI950+@Q(,@BR),@@E461    SET ERROR CODE FOR 'WIDTH TOO
   0D09 F2 87 03         2042        J     KWI945                   * SMALL' AND CALL ERROR PROG

   0D0C 7C 66 8C         2044 KWI940 MVI   KWI950+@Q(,@BR),@@E460    SET ERROR CODE FOR 'INVALID
                         2045 *                                     * RIGHT MARGIN'
   0D0F C2 02 0C00       2046 KWI945 LA    KWIDTH,@XR               INCR XR OUTSIDE INPUT BUFFER
   0D13 3C 00 03CD       2047 KWI950 MVI   $CAERR,*-*               SET ERROR CODE
   0D17 C0 87 0469       2048 KWI960 B     $CAERK                   CALL ERROR PROGRAM
```

```
                              2050 *
                              2051 *            EQUATES AND WORK AREAS FOR KWIDTH
                              2052 *
                    0000 2053 KWI000 EQU   0                           COMPARE OF ZERO W/ CHAR SCANNED
                    0001 2054 KWI001 EQU   1                           INCR OF '1' FOR XR
                    0002 2055 KWIBL2 EQU   2                           LENGTH OF BINARY INTEGER
                    0001 2056 KWIBL1 EQU   1                           LENGTH OF RIGHTMOST BYTE OF
                              2057 *                                   * BINARY INTEGER
                    00C9 2058 KWILBF EQU   202-1                       DISP TO RIGHT BYTE OF BLANK BFR
                    0060 2059 KWIDSH EQU   C'-'                        DASH - INV CHAR AFTER KEYWORD
                              2060 *
    0D1B            0D1C 2061 KWILEN DS    CL2                         WORK AREA FOR BINARY WIDTH AND
                              2062 *                                   * LATER FOR RIGHT MARGIN
    0D1D            0D1E 2063 KWILFM DS    CL2                         WORK AREA FOR BINARY LEFT MARGIN
    0D1D                      2064        ORG   *-2                    * INITIALIZE LEFT BYTE OF LEFT
    0D1D 00         0D1D 2065             DC    XL1'00'                * MARGIN TO ZERO
    0D1F                      2066        ORG   KWILFM+1               REESTABLISH CURRENT ADDRESS
                              2067 *
    0D1F 0012       0D20 2068 KWIMIN DC    XL2'0012'                   MINIMUM WIDTH ALLOWED 18
    0D21 00DC       0D22 2069 KWIMR2 DC    XL2'00DC'                   COMPARE RIGHT MARGIN WITH 220
    0D23 0084       0D24 2070 KWIMR1 DC    XL2'0084'                   COMPARE RIGHT MARGIN WITH 132
    0D25 01         0D25 2071 KWIONE DC    XL1'01'                     TO DECR RIGHT MARGIN
    0D26 40         0D26 2072 KWIBNK DC    AL1(@PRINT)                 PPL FOR MOVING BLANKS
    0D27            0D27 2073        DS    IL1                         * OVER TO NEW LEFT
    0D28 0E00       0D29 2074        DC    AL2(KWIBUF)                 * MARGIN
                    0D2A 2075 KWIEOS EQU *                             PPL FOR CARRIER RETURN
    0D2A 8080       0D2B 2076        DC    2AL1(@RETRN)
                              2077 *
    0D2C            0D2C 2078 KWIHLD DS    CL1                         SAVE AREA FOR LEFT MARGIN
                              2079 *      $C4BD
```

```
     C4BIN2 - CONVERT DECIMAL TO BINARY ROUTINE
```

ERR LOC   OBJECT CODE   ADDR STMT SOURCE STATEMENT   VER 15, MOD 00 30/05/22 PAGE 11

```
                                  2081+*                                                          *
                                  2082+*                         INITIALIZATION                  *
                                  2083+*                                                          *
                        0D2D 2084+C4BIN2 EQU   *                          ENTRY POINT
                        0D2D 2085+      USING C4BIN2,@BR              BASE VALUE
                                  2086+*
     0D2D 34 01 0D8F              2087+      ST    C4B800+@OP1,@BR         SAVE CALLERS BASE REGISTER
     0D31 C2 01 0D2D              2088+      LA    C4BIN2,@BR              LOAD BASE VALUE
                                  2089+*
     0D35 74 08 66                2090+      ST    C4B850+@OP1(,@BR),@ARR  SAVE RETURN ADDRESS
                                  2091+*
     0D38 74 02 6E                2092+      ST    C4BSAV(,@BR),@XR        SAVE VALUE OF POINTER
     0D3B 3C 0C 03CD              2093+      MVI   $CAERR,@@E122           SET ERROR CODE IN CASE
     0D3F 5C 01 6A 6B             2094+      MVC   C4BVAL(C4BLVL,@BR),C4BINI(,@BR) INIT VALUE TO ZERO
     0D43 3C 04 0D9C              2095+C4B100 MVI   C4B900,4               INITLZ CHAR. COUNT
                                  2096+*
                                  2097+***    DETERMINE IF CHAR NUMERIC AND DECR CHAR COUNT
                                  2098+*
     0D47 F2 80 32                2099+C4B200 JC    C4B600,@NOP            SET TO UCB IF IMBEDDED BLANKS
                                  2100+*                                  * ALLOWED
     0D4A BD F0 00                2101+C4B300 CLI   0(,@XR),C4BLOW         THIS CHAR NUMERIC ?
     0D4D F2 82 35                2102+      JL    C4B700                  NO, GOTO RETURN
                                  2103+*
     0D50 5F 00 6F 4E             2104+      SLC   C4B900(1,@BR),C4B590+@D1(,@BR) DECR CHAR COUNT
     0D54 F2 82 35                2105+      JL    C4B800                  BR TO ERROR EXIT IF TOO MANY
                                  2106+*
                                  2107+***    MULTIPLY PREVIOUS VALUE BY TEN
                                  2108+*
     0D57 5E 01 6A 6A             2109+      ALC   C4BVAL(C4BLVL,@BR),C4BVAL(,@BR) DOUBLE PREVIOUS VALUE
     0D5B 5C 01 68 6A             2110+      MVC   C4BWRK(C4BLVL,@BR),C4BVAL(,@BR) SAVE DOUBLE VALUE
     0D5F 5E 01 6A 6A             2111+      ALC   C4BVAL(C4BLVL,@BR),C4BVAL(,@BR) QUADRUPLE PREVIOUS VALUE
     0D63 5E 01 6A 6A             2112+      ALC   C4BVAL(C4BLVL,@BR),C4BVAL(,@BR) OCTUPLE PREVIOUS VALUE
     0D67 5E 01 6A 68             2113+      ALC   C4BVAL(C4BLVL,@BR),C4BWRK(,@BR) ADD IN SAVED DOUBLE
                                  2114+*
                                  2115+***    ADD IN VALUE OF THIS CHAR AND INCR POINTER
                                  2116+*
     0D6B 68 03 6C 00             2117+      MNN   C4BCHR(,@BR),0(,@XR)       FETCH NEMERIC VALUE OF NEW CHAR
     0D6F 5E 01 6A 6C             2118+      ALC   C4BVAL(C4BLVL,@BR),C4BCHR(,@BR) INCR VALU BY THIS CHAR
                                  2119+*
     0D73 E2 02 01                2120+      LA    @B1(,@XR),@XR           INCR POINTER TO NEXT CHAR
     0D76 D0 87 1A                2121+      B     C4B200(,@BR)            GOTO DO IT AGAIN
                                  2122+*                                                          *
                                  2123+*                       ROUTINE TO SCAN BLANKS            *
                                  2124+*                                                          *
     0D79 E2 02 01                2125+C4B590 LA    @B1(,@XR),@XR          INCR POINTER TO NEXT CHAR
     0D7C BD 40 00                2126+C4B600 CLI   0(,@XR),@BLANK         IS THIS CHAR A BLANK ?
     0D7F D0 01 1D                2127+      BNE   C4B300(,@BR)            RETURN IF NOT
     0D82 D0 87 4C                2128+      B     C4B590(,@BR)            GET NEXT CHAR IF YES
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```
                                 2130+*
                                 2131+***    ENDING ROUTINE
                                 2132+*
    0D85 74 02 68                2133+C4B700 ST     C4BLEN(,@BR),@XR         PLACE VALUE OF POINTER
    0D88 5F 01 68 6E             2134+       SLC    C4BLEN(2,@BR),C4BSAV(,@BR) SUBRACT ENTERING VALUE
                                 2135+*
    0D8C C2 01 0000              2136+C4B800 LA     *-*,@BR                  RESTORE CALLERS BR
                                 2137+*
    0D90 C0 87 0000              2138+C4B850 B      *-*                      RETURN TO CALLING ROUTINE
                                 2139+*                                                            *
                                 2140+*                       WORK AREA AND CONSTANT               *
                                 2141+*                                                            *
    0D94               0D95      2142+C4BWRK DS     CL2                      SAVE AREA FOR DOUBLED VALUE
                                 2143+*
                       0D96      2144+C4BYT1 EQU    *                        FIRST BYTE OF BINARY VALUE
    0D96               0D97      2145+C4BVAL DS     CL2                      SAVE AREA FOR BINARY VALUE
                                 2146+*
    0D98 00            0D98      2147+C4BINI DC     XL1'00'                  INITIALIZE WA TO ZERO
                                 2148+*
    0D99               0D99      2149+C4BCHR DS     CL1                      SAVE AREA FOR EACH NEW CHAR
    0D99                         2150+       ORG    *-1                      INITIALIZE
    0D99 00            0D99      2151+       DC     XL1'00'                  * TO ZERO
                                 2152+*
    0D9A               0D9B      2153+C4BSAV DS     CL2                      SAVE AREA FOR XR
                                 2154+*
    0D9C               0D9C      2155+C4B900 DS     CL1                      SAVE AREA FOR CHAR COUNTER
                                 2156+*                                                            *
                                 2157+*                    EQUATES FOR C4BIN2                      *
                                 2158+*                                                            *
                       0D95      2159+C4BLEN EQU    C4BWRK                   ON RETURN WILL CONTAIN COUNT
                                 2160+*                                      * @XR INCREMENTED BY
                       0004      2161+C4BCHC EQU    4                        NUMBER OF CHAR TO CONVERT
                                 2162+*
                       00F0      2163+C4BLOW EQU    C'0'                     LOWEST NUMERIC CHARACTER
                                 2164+*
                       0002      2165+C4BLVL EQU    C4BVAL-C4BWRK            LENGTH OF BINARY VALUE
                                 2166+*
                       0D48      2167+C4BLNK EQU    C4B200+@Q                LOCATION OF IMBEDDED BLANK IND
                                 2168+*
                       0087      2169+C4BSPC EQU    @UCB                     MOVED TO C4BLNK TO ALLOW BLANKS
                                 2170+*
                       0D44      2171+C4BNMC EQU    C4B100+@Q                LOCATION OF CONVERSION COUNT
                                 2172+*
                       0080      2173+C4BNOP EQU    @NOP                     CHANGED IF IMBEDDED BLANK OK
                       0D9D      2174+C4END  EQU    *                        DEFINE END OF CODE
                                 2175+***                      END OF C4BIN2                    ***
                                 2176 *
                                 2177 *        $CANI
```

```
                              2179+*********************************************************************
                              2180+*  5703-XM1    COPYRIGHT IBM CORP. 1970                             *
                              2181+*                REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083  *
                              2182+*                                                                    *
                              2183+*********************************************************************
                              2184+*STATUS                                                              *
                              2185+*   VERSION 1 MODIFICATION 0                                         *
                              2186+*                                                                    *
                              2187+*FUNCTION                                                            *
                              2188+*    THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND     *
                              2189+*    RETURN A POINTER TO THE FIRST CHARACTER THAT'S NOT A DELIMITER.  *
                              2190+*                                                                    *
                              2191+*ENTRY POINTS                                                        *
                              2192+*    * THE ENTRY POINT IS SCANIT.                                    *
                              2193+*    * THE CALLING SEQUENCE IS AS FOLLOWS:                           *
                              2194+*            B     SCANIT                                            *
                              2195+*      WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE    *
                              2196+*      EXAMINED.                                                     *
                              2197+*                                                                    *
                              2198+*INPUT                                                               *
                              2199+*   NONE                                                             *
                              2200+*                                                                    *
                              2201+*OUTPUT                                                              *
                              2202+*   NONE                                                             *
                              2203+*                                                                    *
                              2204+*EXTERNAL REFERENCES                                                 *
                              2205+*   $CAERR - ERROR CODE SAVE AREA                                    *
                              2206+*                                                                    *
                              2207+*EXITS, NORMAL                                                       *
                              2208+*    NORMAL EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO   *
                              2209+*    SCANIT IN THE CALLING ROUTINE. THE PSR (REGISTER 4) WILL CONTAIN *
                              2210+*    A ZERO IF NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR  *
                              2211+*    MORE DELIMITERS WERE SCANNED.                                   *
                              2212+*                                                                    *
                              2213+*EXITS, ERROR                                                        *
                              2214+*    ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO    *
                              2215+*    SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW        *
                              2216+*    CONDITION.                                                      *
                              2217+*                                                                    *
                              2218+*TABLES/WORKAREAS                                                    *
                              2219+*    * SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED        *
                              2220+*    * SCAMMA - LOC WHERE SCACOM MAY BE MOVED IF ONE COMMA IS ALSO    *
                              2221+*      TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO SCAMMA   *
                              2222+*      INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIMITERS.   *
                              2223+*                                                                    *
                              2224+*ATTRIBUTES                                                          *
                              2225+*   RELOCATABLE AND RE-USABLE                                        *
                              2226+*                                                                    *
                              2227+*CHARACTER CODE DEPENDENCY                                           *
                              2228+*    THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR   *
                              2229+*    INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.          *
                              2230+*                                                                    *
                              2231+*NOTES                                                               *
                              2232+*    ERROR PROCEDURES                                                *
                              2233+*        THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE *
                              2234+*        A CARRIAGE-RETURN CODE FOLLOWS A COMMA.  UPON RETURN TO THE   *
```

```
                         2235+*       CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE         *
                         2236+*       ERROR CODE IS SET IN $CAERR, AND MG WILU BE POINTING TO THE       *
                         2237+*       CARRIAGE-RETURN CHARACTER.                                        *
                         2238+*                                                                         *
                         2239+*    REGISTER USAGE                                                       *
                         2240+*       REGISTER 2 (@XR) IS USED AS A POINTER ACROSS THE AREA BEING       *
                         2241+*       SCANNED FOR DELIMETERS.                                           *
                         2242+*                                                                         *
                         2243+*    SAVED/RESTORED AREAS                                                 *
                         2244+*       UPON ENTRY TO SCANIT, REGISTER 8 (@ARR) IS SAVED AND USED AS      *
                         2245+*       THE RETURN ADDRESS.                                               *
                         2246+*                                                                         *
                         2247+*    MODIFICATION CONSIDERATIONS                                          *
                         2248+*       NONE                                                              *
                         2249+*                                                                         *
                         2250+*    REQUIRED MODULES                                                     *
                         2251+*       * @SYSEQ - COMMON SYSTEM EQUATES                                  *
                         2252+*       * @FXDEQ - FIXED NUCLEUS ADDRESSES EQUATES                        *
                         2253+*                                                                         *
                         2254+*    OTHER                                                                *
                         2255+*       SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS         *
                         2256+*       MOVED TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.     *
                         2257+*       THE INSTRUCTION TO DO THIS IS AS FOLLOWS:                         *
                         2258+*             MVI    SCAMMA,SCACOM                                        *
                         2259+*                                                                         *
                         2260+*       TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE     *
                         2261+*       MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:                 *
                         2262+*             MVI    SCAMMA,SCACOF                                        *
                         2263+*                                                                         *
                         2264+*********************************************************************************


                         2266+*
                         2267+*                        EQUATES USED IN THIS SUBROUTINE
                         2268+*
                    0001 2269+SCAINC EQU    1                        TO INCREMENT POINTER
                    0001 2270+SCACOM EQU    @BNE                     SWITCH TO ALLOW SCANNING COMMA
                    0087 2271+SCACOF EQU    @UCB                     SWITCH TO SET OFF THE INDICATON
                         2272+*                                      * FOR SCANNING A COMMA
                    0D9D 2273+SCANIT EQU    *                        ENTRY POINT TO THIS SUBROUTINE
  0D9D 34 08 0DD9        2274+       ST     SCA500+@OP1,@ARR         SAVE RETURN ADDRESS
  0DA1 34 02 0DDB        2275+       ST     SCASVE,@XR               SAVE POINTER VALUE
  0DA5 3C 04 03CD        2276+       MVI    $CAERR,@@E110            SET ERROR CODE
  0DA9 F2 87 03          2277+       J      SCA200                   GO TO PROCESS
  0DAC E2 02 01          2278+SCA100 LA     SCAINC(,@XR),@XR         INCREMENT POINTER TO NEXT CHAR
  0DAF BD 40 00          2279+SCA200 CLI    0(,@XR),@BLANK           IS THIS CHAR BLANK ?
  0DB2 C0 81 0DAC        2280+       BE     SCA100                   YES, FETCH NEXT ONE
  0DB6 BD 6B 00          2281+       CLI    0(,@XR),@COMMA           IS IT A COMMA ?
  0DB9 F2 87 10          2282+SCA250 JC     SCA400,@UCB              UCS TO RETURN -- OR NOP IF
                         2283+*                                      * SCAMMA IS ACTIVE AND CHAR
  0DBC E2 02 01          2284+SCA300 LA     SCAINC(,@XR),@XR         INCREMENT POINTER TO NEXT CHAR
  0DBF BD 40 00          2285+       CLI    0(,@XR),@BLANK           IS THIS CHAR A BLANK ?
  0DC2 C0 81 0DBC        2286+       BE     SCA300                   YES, FETCH NEXT ONE
  0DC6 BD 1F 00          2287+       CLI    0(,@XR),@EOS+1           IS THIS EOS ?
  0DC9 F2 82 0A          2288+       JL     SCA500                   IF NOT, SKIP ERROR ROUTINE
  0DCC 34 02 0DDD        2289+SCA400 ST     SCACNT,@XR               SAVE NEW POINTER VALUE
```

```
     SCANIT - DELIMETER SCAN MODULE
```

```
     0DD0 0F 01 0DDD 0DDB      2290+      SLC    SCACNT(2),SCASVE           SET PSR TO EQUAL IF POINTER
                               2291+*                                      * NOT ADVANCED
     0DD6 C0 87 0000           2292+SCA500 B    *-*                        YES, RETURN
                          0DBA 2293+SCAMMA EQU  SCA250+@Q                   TO SET SCAN COMMA INDICATOR
                               2294+*
                               2295+*                   SAVE AREA
                               2296+*
                          0DDA 2297+SCASV1 EQU  *                          FIRST BYTE OF SCASVE
     0DDA                 0DDB 2298+SCASVE DS   CL2                        ORIGINAL POINTER VALUE SAVE
     0DDC                 0DDD 2299+SCACNT DS   CL2                        SAVE AREA FOR TOTAL CHAR SCAN
                               2300+***                      END OF SCANIT                         ***
```

```
     SCANIT - DELIMETER SCAN MODULE

ERR LOC  OBJECT CODE     ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  30/05/22  PAGE  16

                         2302 *      PATCH
                         2303 *****************************************************************************
                         2304 *      PATCH AREA 1                                                        *
                         2305 *****************************************************************************
                         2306 *
                         2307 *   CALCULATE AREA LEFT IN THIS SECTOR
                         2308 *
              0DDE 2309 $$$$L1 EQU   *                       START OF PATCH AREA 1
   0E00                  2310        ORG   *,256,0           SET LOC CNTR TO NEXT SECTOR
              0E00 2311 $$$$T1 EQU   *                       DEFINE ADDR OF SCTR BNDRY
   0DDE                  2312        ORG   $$$$L1            SET LOC CNTR TO START OF
                         2313 *                             * PATCH AREA
   0DDE       0DFF 2314 $$$$$1 DS    CL($$$$T1-$$$$L1)       PATCH AREA
                         2315 *****************************************************************************
                         2316 *** END OF EXPANSION ***
              0E00 2317 KWIBUF EQU   *
                         2318        PRINT ON
              FFFF 2319        END

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =      0
```

```
$$$$$$   001  0C00 1918
$$$$$1   034  0DFF 2314
$$$$L1   001  0DDE 2309   2312  2314
$$$$T1   001  0E00 2311   2314
$$$CMD   001  0020 0659
$$$DAT   001  0040 0658
$$$EPL   001  0091 0655
$$$ERN   001  0080 0709
$$$FUN   001  0010 0660
$$$NLN   001  00A0 0705
$$$STD   001  0081 0654
$$BNLN   001  0605 0635   0637
$$CDBS   001  08C0 0685
$$CDND   001  0666 0644
$$CDRD   001  0890 0683   0685
$$CKEY   001  0603 0633
$$CKFF   001  0B3D 0665
$$COFF   001  0B44 0664
$$CSNS   001  209C 0694
$$DATB   001  0BBF 0666
$$EOSA   001  0AFE 0663
$$ERSK   001  1C00 0704
$$FITS   001  1D00 0712
$$FLIB   001  06FF 0711
$$ILEN   001  0601 0629   0631  0635
$$ILHD   001  0600 0627   0629
$$INLN   001  0607 0642   0644  0646
$$INND   001  06FA 0646
$$KBDT   001  09E1 0653   0657
$$KBSN   001  09E2 0657   0662
$$KLD1   001  0600 0717
$$KLD2   001  0700 0719
$$KLD3   001  0C00 0721   1812
$$LPOS   001  09EB 0662
$$PCNT   001  07E9 0678
$$PLYN   001  2004 0692
$$PRES   001  0890 0651   0653  0663  0664  0665  0666  0683
$$PRFL   001  2143 0696
$$PRNT   001  0707 0672   0673  0677  0678  2009  2016  2019
$$PRTN   001  0782 0673
$$PSIO   001  07CE 0677
$$PYCD   001  2200 0698
$$PYMP   001  2000 0690   0692  0694  0696  0698
$$SLIB   001  1C00 0707
$$TPCD   001  0606 0637   0642
$$UPAR   001  0602 0631   0633
$$WSPB   001  1E00 0710
$$XIND   001  06FF 0708   0711
$$ZERO   001  0000 0223   0224  0226  0227  0228  0232  0690
$ABORT   001  0010 0336
$BASIC   001  0080 0394
$BIGCD   001  0080 0470
$BLDPL   001  0579 0603   0605
$BLNOE   001  0569 0593
$BLOAD   001  0522 0584   0586  0589  0602  0603
$BLRTN   001  0550 0592   0593
```

```
                                    CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                         VER 15, MOD 00  30/05/22  PAGE  18

$BRSAV  001 03C5 0281   0282
$BSADR  001 0587 0608   0610
$BUFPT  001 03E3 0489   0490
$CABLD  001 04B4 0562   0563
$CAERK  001 0469 0539   0542  2048
$CAERR  001 03CD 0287   0289  2047* 2093* 2276*
$CAIPL  001 049D 0558   0560
$CALLI  001 0008 0479
$CARDI  001 0001 0250
$CARPL  001 04A1 0560   0562  2022
$CIENT  001 0483 0549   0550
$CIEXT  001 0480 0548   0549
$CIMSK  001 0476 0545   0548
$CISUS  001 0496 0553   0558
$CLBFR  001 0010 0437
$CMDKY  001 0008 0349
$CMODE  001 0002 0399
$CONFG  001 03DD 0462   0472  1990
$CRPOS  001 03E2 0488   0489
$CRTAD  001 044D 0527   0528
$CRTAV  001 0002 0343
$CRTDN  001 0002 0367
$CRTIN  001 03D3 0364   0371
$CRTNO  001 0004 0346
$CRTPU  001 0004 0368
$CRTSP  001 0008 0369
$CRTUP  001 0001 0366
$CRUSH  001 0080 0475
$CSDPL  001 050E 0574   0575
$C0001  001 0464 0531   0537
$DATE   001 043A 0512   0513
$DBGUF  001 03E0 0474   0483
$DBLOK  001 0001 0424
$DFDET  001 03E8 0495   0496
$DISKN  001 0025 0226
$DKERR  001 0008 0405
$DKSIZ  001 03D7 0449   0457  0498
$DK100  001 0001 0451
$DK200  001 0002 0452
$DK400  001 0004 0453
$DK600  001 0008 0454
$DK800  001 0010 0455
$DPLSV  001 0449 0523   0525
$DTNMB  001 0040 0270
$DTRDR  001 0040 0358
$ENDNU  001 0600 0617   0627  0651  0672  0708  0717  0719  0721
$ERDPL  001 046F 0542   0544
$ERFIL  001 0040 0297
$ERHRD  001 0004 0429
$ERKEY  001 0080 0301
$ERLOG  001 0345 0231
$ERMAD  001 0472 0544   0545
$ERPND  001 0004 0402
$ERRCT  001 03CF 0303
$ERRPG  001 03CE 0291
$ERSFL  001 0035 0296
```

```
$ERSTK  001  0030 0294
$ER050  001  0363 0232
$ER1N2  001  0050 0299
$EXADR  001  0517 0577    0579
$EXCMD  001  0001 0331
$EXFTR  001  043B 0513    0518
$FCIND  001  0010 0409
$FDIND  001  0040 0416
$FEARR  001  0004 0224
$FEMAP  001  0588 0610    0611
$FILIB  001  03DA 0460    0461
$FITIN  001  0010 0385
$FUIND  001  0020 0414
$GUFIO  001  0583 0607    0608
$GUFIR  001  0008 0259
$HISTE  001  042E 0510    0511
$HIST1  001  0435 0511    0512
$HRDER  001  0020 0355
$INDR1  001  03D4 0371    0397
$INDR2  001  03D5 0397    0422
$INDR3  001  03D6 0422    0449
$INLNO  001  03CF 0289    0291  0303  0310
$INRPT  001  0020 0267
$IOIND  001  03D2 0338    0364
$IOPGS  001  0010 0478
$IOYES  001  0002 0253    2018
$IPLDV  001  05FF 0614    0617
$IRKEY  001  0020 0477
$KEYBD  001  03E1 0483    0488
$KEYCD  001  03C3 0247    0281  2018*
$KEYDT  001  0040 0391
$KE090  001  00DE 0227
$KE130  001  01D5 0228
$KYBSY  001  0010 0264
$LDRTN  001  0571 0602
$LEVEL  001  03DF 0472    0474
$LIST   001  0002 0426
$LMRGN  001  03C1 0242    0244  1929  2014*
$LNPTR  001  0080 0361
$LOADB  001  054A 0586
$LOADR  001  051A 0579    0582
$LPRIO  001  03EA 0496
$LPROS  001  03E5 0491    0493
$LPRP3  001  03E4 0490    0491
$MOUNT  001  0020 0440
$MPDWN  001  0001 0340
$NEXTB  001  03E6 0493    0494
$NEXTL  001  03E7 0494    0495
$NOENB  001  0008 0432
$NOLST  001  0004 0256
$NUCBS  001  03C0 0239    0240
$NWRKF  001  0080 0445
$NWRKR  001  0040 0442
$PASWD  001  042D 0509    0510
$PAUSD  001  04BA 0563    0565
$PAUSE  001  0002 0333
```

```
$PGMDT  001  0020 0388
$PGMST  001  0010 0352
$PKERT  001  0419 0507   0509
$PLST1  001  0454 0528   0529
$PLST2  001  045B 0529   0530
$PLST3  001  0462 0530   0531
$PRDEV  001  044B 0525   0527
$PRESN  001  0002 0376
$PROCI  001  0001 0373
$PRPOS  001  03C2 0244   0247  2001  2005
$PSDBR  001  04FA 0568
$PSDXR  001  04F2 0567   0568
$PSTEP  001  0004 0334
$PSTMT  001  0008 0335
$PTCH1  001  03F5 0498   0502
$READY  001  0080 0418
$REORD  001  0040 0476
$RLOAD  001  051E 0582   0584
$RMRGN  001  03C0 0240   0242  2008* 2021*
$RSTR   001  04D6 0565   0567  0569  0574
$RUNIT  001  0001 0312
$SFAID  001  050D 0570
$SPRNT  001  0465 0537   0539
$SRTRN  001  04FE 0569   0570
$STEPT  001  0002 0313
$SWPCR  001  0511 0575   0577
$TABLN  001  03CB 0284   0287
$TFLOW  001  0008 0319
$TRACE  001  0004 0314
$TRALL  001  0010 0320
$TROVR  001  054E 0589   0592
$TRUNK  001  0080 0272
$TRVAR  001  0020 0321
$UNMSK  001  048D 0550   0553
$USRDR  001  03DC 0461   0462
$VMDEF  001  0080 0325
$VOLF1  001  03FE 0504   0505
$VOLF2  001  040E 0506
$VOLID  001  03F6 0502   0503  0507
$VOLR1  001  03F6 0503   0504
$VOLR2  001  0406 0505   0506
$WAITF  001  057F 0605   0607  2020
$WFDEF  001  0040 0519
$WFLOK  001  0008 0382
$WFNME  001  0443 0518   0523
$WSIND  001  0004 0379
$XIND1  001  03D0 0310   0329
$XIND2  001  03D1 0329   0338
$XIND3  001  03D8 0457   0460
$XPREC  001  0040 0322
$XRSAV  001  03C7 0282   0284  1931
$ZTRAD  001  05A2 0611
$12K    001  0004 0466
$16CKY  001  0008 0468
$16K    001  0002 0465
$22IMP  001  0001 0463   1990
```

```
#$$#BL   001  0000 1672
#$$#CK   001  0000 1800
#$$#CN   001  0000 1768
#$$#CO   001  0000 1560
#$$#CS   001  0000 1620
#$$#DR   001  0000 1364
#$$#ER   001  0000 1564
#$$#FS   001  0000 1660
#$$#IN   001  0000 1804
#$$#PW   001  0000 1808
#$$#RS   001  0000 1640
#$$#SA   001  0000 1628
#$$#SS   001  0000 1624
#$$#VU   001  0600 1584
#$$#0T   001  0700 1356
#$$#1T   001  0000 1360
#$$BCO   001  0600 1372
#$$BOV   001  0800 1644
#$$DPR   001  0700 1380
#$$DRE   001  0889 1396
#$$DSP   001  2800 1416
#$$ECM   001  0C00 1676
#$$EFK   001  0C00 1696
#$$ERR   001  0C00 1668
#$$EXM   001  0C00 1556
#$$FIL   001  0E00 1636
#$$FIS   001  0E00 1632
#$$FML   001  0200 1764
#$$FMS   001  0200 1604
#$$GRA   001  0889 1528
#$$GUF   001  0C00 1664
#$$INL   001  0600 1744
#$$INS   001  0600 1368
#$$KAL   001  0C00 1532
#$$KCA   001  0C00 1748
#$$KCH   001  0C00 1500
#$$KCN   001  0C00 1616
#$$KCT   001  0C00 1468
#$$KDE   001  0C00 1464
#$$KDI   001  0D00 1544
#$$KDN   001  0C00 1452
#$$KDO   001  0E00 1548
#$$KED   001  0C00 1388
#$$KEN   001  0C00 1392
#$$KEX   001  0C00 1412
#$$KGO   001  0C00 1384
#$$KHE   001  0C00 1568
#$$KKE   001  0C00 1796
#$$KLI   001  0C00 1472
#$$KLL   001  0920 1772
#$$KLO   001  0C00 1476
#$$KME   001  0D00 1456
#$$KMO   001  0C00 1400
#$$KNA   001  0C00 1512
#$$KOV   001  0E00 1432
#$$KPA   001  0C00 1408
```

SYMBOL	LEN	VALUE	DEFN	REFERENCES
#$$KPO	001	0C00	1496	
#$$KPR	001	0C00	1520	
#$$KRE	001	0C00	1440	
#$$KRL	001	0700	1536	
#$$KRM	001	0C00	1404	
#$$KRN	001	0700	1424	
#$$KRO	001	0D00	1428	
#$$KRS	001	0C00	1752	
#$$KRU	001	0C00	1448	
#$$KRV	001	0800	1540	
#$$KSA	001	0C00	1484	
#$$KSE	001	0E00	1524	
#$$KSO	001	0C20	1576	
#$$KSS	001	0C00	1508	
#$$KSV	001	0980	1504	
#$$KSY	001	0C00	1516	
#$$KWI	001	0C00	1444	1917
#$$KWR	001	0C00	1436	
#$$LOA	001	0600	1376	
#$$MIP	001	0C00	1572	
#$$SDS	001	0C00	1684	
#$$SFF	001	0E00	1688	
#$$SFL	001	0F00	1680	
#$$SFO	001	1500	1652	
#$$SFS	001	0C00	1648	
#$$SPA	001	0C00	1488	
#$$SPO	001	0806	1492	
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#$@DRE   001  0001 1397
#$@DSP   001  0004 1417
#$@ECM   001  0006 1677
#$@EFK   001  0002 1697
#$@ERR   001  0003 1669
#$@EXM   001  0003 1557
#$@FIL   001  0009 1637
#$@FIS   001  0009 1633
#$@FML   001  0052 1765
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#$@GRA   001  0003 1529
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#$@KCN   001  0010 1617
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SYMBOL   LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  30/05/22  PAGE  24
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#$@KLI	001	0011	1473	
#$@KLL	001	0001	1773	
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#$@KMO	001	0004	1401	
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#$@KOV	001	0009	1433	
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#$@KRV	001	000D	1541	
#$@KSA	001	0011	1485	
#$@KSE	001	0004	1525	
#$@KSO	001	0005	1577	
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#$@KSV	001	0002	1505	
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#$@KWI	001	0002	1445	
#$@KWR	001	0002	1437	
#$@LOA	001	0013	1377	
#$@MIP	001	000D	1573	
#$@SDS	001	0004	1685	
#$@SFF	001	0008	1689	
#$@SFL	001	0005	1681	
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#$@SFS	001	0011	1649	
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#$@SPS	001	0001	1481	
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#$@TDC	001	0003	1461	
#$@TSY	001	0003	1421	
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#$@UAL	001	0011	1613	
#$@UAT	001	000C	1709	
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#$@UCP	001	000F	1705	
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SYMBOL   LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  30/05/22  PAGE  25

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#$@VXI   001  0002 1581
#$@ZDU   001  0008 1733
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#$ERRP   001  18C0 1667
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#$FMLN   001  1E00 1763
#$FMST   001  0D00 1603
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#$KCTL   001  03BC 1467
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#$KDNT   001  0300 1451
#$KDOV   001  0780 1547
#$KEDI   001  0188 1387
#$KENA   001  01C4 1391
#$KEXT   001  0234 1411
#$KGOS   001  0180 1383
#$KHEL   001  0A30 1567
#$KKEY   001  2100 1795
#$KLIS   001  0400 1471
#$KLLA   001  2004 1771
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#$KMER   001  030C 1455
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#$KPRT	001	063C	1519		
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#$KRMO	001	0214	1403		
#$KRNU	001	0280	1423		
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#$KRSU	001	1D24	1751		
#$KRUN	001	02CC	1447		
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#$KSET	001	0680	1523		
#$KSOV	001	0AC8	1575		
#$KSSP	001	0594	1507		
#$KSVL	001	058C	1503		
#$KSYM	001	0600	1515		
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#$LOAD	001	0100	1375		
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#$SDSY	001	192C	1683		
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#$SFLO	001	1918	1679		
#$SFOV	001	1844	1651		
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#$SPAC	001	04CC	1487		
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#$SPSY	001	0484	1479		
#$STRO	001	1850	1655		
#$TDCK	001	0350	1459		
#$TSYK	001	0250	1419		
#$TVKB	001	0BAC	1595		
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#$UATR	001	1A38	1707		
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SYMBOL  LEN VALUE DEFN   REFERENCES                           VER 15, MOD 00  30/05/22  PAGE  27

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SYMBOL   LEN VALUE DEFN   REFERENCES                    VER 15, MOD 00  30/05/22  PAGE  29

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@@E776  001  00E1 1181   1183
@@E777  001  00E2 1183   1185
@@E778  001  00E3 1185   1187
@@E779  001  00E4 1187   1189
@@E780  001  00E5 1189   1191
@@E781  001  00E6 1191   1193
@@E782  001  00E7 1193   1195
@@E783  001  00E8 1195   1197
@@E784  001  00E9 1197   1199
@@E785  001  00EA 1199   1201
@@E786  001  00EB 1201   1203
@@E790  001  00EC 1203   1205
@@E791  001  00ED 1205   1207
@@E792  001  00EE 1207   1209
@@E793  001  00EF 1209   1211
@@E794  001  00F0 1211   1213
@@E795  001  00F1 1213   1215
@@E796  001  00F2 1215   1217
@@E797  001  00F3 1217   1219
@@E798  001  00F4 1219   1221
@@E800  001  FFFF 1249
@@E801  001  FFFF 1251
@@E802  001  FFFF 1253
@@E803  001  FFFF 1255
@@E804  001  FFFF 1257
@@E900  001  00F5 1221   1223
@@E901  001  00F6 1223   1225
@@E902  001  00F7 1225   1227
@@E903  001  00F8 1227   1229
@@E905  001  00F9 1229   1231
@@E906  001  00FA 1231   1233
@@E910  001  00FB 1233
@ARR    001  0008 0016   2090  2274
@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   1926  2126  2279  2285
@BM     001  0082 0054
@BNE    001  0001 0046   2270
@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
```

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                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                          VER 15, MOD 00  30/05/22  PAGE  33

@BP     001  0084 0053
@BR     001  0001 0013   1907  1924* 1929  1944  1967  1969  1969  1985  1985  1988  1988  1993
                         1993  1998  1998  2001  2004  2004  2005  2006  2008  2014  2021  2027
                         2030  2033  2038  2041  2044  2085  2087  2088* 2090  2092  2094  2094
                         2104  2104  2109  2109  2110  2110  2111  2111  2112  2112  2113  2113
                         2117  2118  2118  2121  2127  2128  2133  2134  2134  2136*
@BT     001  0010 0051
@BZ     001  0081 0055
@B1     001  0001 0063   2120  2125
@CADDR  001  0002 0142
@CARDL  001  0060 0087   0644
@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   2281
@CPLUS  001  004E 0079
@DADDR  001  0002 0140
@DBFR1  001  0004 0129
@DBFR2  001  0005 0130
@DCALK  001  0001 0081
@DCBCY  001  0009 0115
@DCBT1  001  0050 0117
@DCNT   001  0003 0128
@DCST1  001  0040 0116
@DCTRL  001  0000 0125
@DCYL   001  0001 0126
@DD2    001  0003 0030
@DGET   001  0001 0134
@DOLAR  001  005B 0068
@DOP2   001  0004 0028
@DPLNG  001  0006 0132
@DPOS   001  0000 0133
@DPUT   001  0002 0135
@DSAD   001  0002 0127
@DSBCY  001  0004 0106
@DSCS1  001  0000 0107
@DSIVF  001  0003 0138
@DSPIN  001  0002 0131
@DTRSZ  001  0018 0085
@DVBCY  001  0007 0108
@DVRFY  001  0031 0136
@DWAIT  001  00FF 0137
@DWBCY  001  0005 0103
@DWSIZ  001  00C0 0105
@DWTB1  001  0003 0104
@DZERO  001  00F0 0064
@D1     001  0002 0026   2104
@EOF    001  001C 0077
@EOFTC  001  0075 0162
@EOS    001  001E 0076   1936  1951  1976  1978  2287
@FDDBC  001  0000 0195
@FDE1   001  000C 0200
@FDFNA  001  000B 0198
```

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                               CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  30/05/22  PAGE  34

@FDHLN  001  0002 0208
@FDLNC  001  0002 0193
@FDNSC  001  0003 0210
@FDSD   001  0000 0206
@FLACE  001  0009 0197
@FLDBC  001  0001 0196
@FLENT  001  0004 0201
@FLFNA  001  0002 0199
@FLHLN  001  0002 0209
@FLLNC  001  0002 0194
@FLNSC  001  0001 0211
@FLSD   001  0001 0207
@HDRLN  001  0007 0092   0672
@IAR    001  0010 0017
@INDEX  001  0001 0156   0157
@INST3  001  0003 0032
@INST4  001  0004 0033
@INST5  001  0005 0034
@INST6  001  0006 0035
@I1IAR  001  00C0 0020
@LINSZ  001  00F4 0084   0646
@MAPEN  001  0005 0089
@MINCR  001  2000 0083
@MINUS  001  0060 0080
@NOP    001  0080 0040   2099   2173
@NUMBR  001  007B 0070
@OPD2   001  0004 0029
@OP1    001  0003 0027   2087*  2090*  2274*
@OP2    001  0005 0031
@PCTRL  001  0000 0149
@PDATA  001  0003 0151
@PGCSZ  001  0020 0082   0083
@PPLNG  001  0004 0148
@PRCNT  001  0001 0150
@PRETR  001  00C0 0154
@PRINT  001  0040 0152   0154   2072
@PSR    001  0004 0015
@PWAIT  001  00FF 0158
@P1IAR  001  0020 0018
@P2IAR  001  0040 0019
@Q      001  0001 0024   2027*  2030*  2033*  2038*  2041*  2044*  2167   2171   2293
@REGL   001  0002 0012
@RETRN  001  0080 0153   0154   2076
@RLDWN  001  004F 0159
@RTRNC  001  0080 0161
@SBLN   001  0005 0170
@SBLNL  001  0002 0184
@SCTSZ  001  0100 0100
@SDFLN  001  0007 0090
@SDF0   001  0000 0166
@SDF1   001  0001 0167
@SDF2   001  0002 0168
@SDF3   001  0003 0169
@SECCY  001  0030 0086
@SIST   001  0001 0181
@SLASH  001  0061 0067
```

```
@SLAST   001  0002 0183
@SMIDL   001  0003 0182
@SNULL   001  0080 0173
@SONLY   001  0000 0180
@STEXT   001  0007 0172
@STYPE   001  0006 0171
@TBCNT   001  0000 0160
@TBLEF   001  0010 0155   0157
@TBLIX   001  0011 0157
@UCB     001  0087 0039   2169   2271   2282
@UPARW   001  005A 0078
@VADDR   001  0002 0141
@VENTA   001  0056 0113
@VMDDV   001  00FE 0114
@VMFD1   001  0000 0109
@VMFD2   001  0001 0110
@VMRS3   001  0002 0112
@VMTRL   001  0001 0111
@VOLID   001  0006 0091
@VQ      001  0001 0025
@WSFIT   001  0500 0101
@WSTBL   001  0503 0102
@XR      001  0002 0014   1931*  1932   1936   1951   1964*  1976   1978   2035*  2046*  2092   2101   2117
                          2120   2120*  2125   2125*  2126   2133   2275   2278   2278*  2279   2281   2284
                          2284*  2285   2287   2289
@ZERO    001  0000 0062   1936   1951   1954   1976   1978
C4BCHC   001  0004 2161
C4BCHR   001  0D99 2149   2117*  2118
C4BINI   001  0D98 2147   2094
C4BIN2   001  0D2D 2084   1939   1960   2085   2088
C4BLEN   002  0D95 2159   2133*  2134*
C4BLNK   003  0D48 2167
C4BLOW   001  00F0 2163   2101
C4BLVL   002  0002 2165   2094   2109   2110   2111   2112   2113   2118
C4BNMC   004  0D44 2171
C4BNOP   001  0080 2173
C4BSAV   002  0D9B 2153   1964   2035   2092*  2134
C4BSPC   001  0087 2169
C4BVAL   002  0D97 2145   1944   1967   2094*  2109   2109*  2110   2111   2111*  2112   2112*  2113*  2118*
                          2165
C4BWRK   002  0D95 2142   2110*  2113   2159   2165
C4BYT1   001  0D96 2144
C4B100   004  0D43 2095   2171
C4B200   003  0D47 2099   2121   2167
C4B300   003  0D4A 2101   2127
C4B590   003  0D79 2125   2104   2128
C4B600   003  0D7C 2126   2099
C4B700   003  0D85 2133   2102
C4B800   004  0D8C 2136   2087*  2105
C4B850   004  0D90 2138   2090*
C4B900   001  0D9C 2155   2095*  2104*
C4END    001  0D9D 2174
KWIBL1   001  0001 2056   1929   1969   2001   2004   2005   2006   2008   2014   2021
KWIBL2   001  0002 2055   1944   1967   1985   1988   1993   1998
KWIBNK   001  0D26 2072   2006*  2010
KWIBUF   001  0E00 2317   1926*  1927   1927*  2074
```

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                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN    REFERENCES                      VER 15, MOD 00  30/05/22  PAGE  36


KWIDSH  001  0060 2059    1932
KWIDTH  001  0C00 1908    2046
KWIEOS  001  0D2A 2075    2017
KWIHLD  001  0D2C 2078    2004* 2005* 2006
KWILBF  001  00C9 2058    1926* 1927  1927  1927*
KWILEN  002  0D1C 2061    1944* 1985  1988* 1993  1998  2021
KWILFM  002  0D1E 2063    1929* 1967* 1969* 1988  2001  2004  2014  2066
KWIMIN  002  0D20 2068    1985
KWIMR1  002  0D24 2070    1998
KWIMR2  002  0D22 2069    1993  2008
KWIONE  001  0D25 2071    1969
KWI000  001  0000 2053
KWI001  001  0001 2054
KWI100  004  0C55 1960
KWI130  004  0C5F 1964    1940
KWI150  005  0C66 1967    1962
KWI200  003  0C82 1978    1974
KWI500  004  0C88 1985    1907  1924  1952
KWI600  004  0CA4 1998    1991
KWI650  005  0CAB 2001    1996
KWI700  005  0CCC 2014    2002
KWI800  003  0CEA 2027    1933
KWI900  003  0CF0 2030    1937
KWI910  003  0CF6 2033    1941  1955  1961  1970  1977
KWI915  004  0CF9 2035
KWI920  003  0D00 2038    1979
KWI930  003  0D06 2041    1986
KWI940  003  0D0C 2044    1994  1999
KWI945  004  0D0F 2046    2042
KWI950  004  0D13 2047    2027* 2028  2030* 2031  2033* 2036  2038* 2039  2041* 2044*
KWI960  004  0D17 2048    1949  1965  1973
SCACNT  002  0DDD 2299    1954  2289* 2290*
SCACOF  001  0087 2271
SCACOM  001  0001 2270    1947
SCAINC  001  0001 2269    2278  2284
SCAMMA  003  0DBA 2293    1947*
SCANIT  001  0D9D 2273    1934  1948  1972
SCASVE  002  0DDB 2298    2275* 2290
SCASV1  001  0DDA 2297
SCA100  003  0DAC 2278    2280
SCA200  003  0DAF 2279    2277
SCA250  003  0DB9 2282    2293
SCA300  003  0DBC 2284    2286
SCA400  004  0DCC 2289    2282
SCA500  004  0DD6 2292    2274* 2288


TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =      0


OL105 I  THE CODE LENGTH OF #KWIDT IS  3584 DECIMAL.
OL103 I  TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS     4
         NAME-#KWIDT,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000
```

```
      OVERLAY LINKAGE EDITOR CORE USAGE MAP     30/05/22


 START      CATEGORY   NAME AND       CODE LENGTH
ADDRESS                  ENTRY      HEXADECIMAL DECIMAL

 0C00          0      #KWIDT          0E00    3584


OL100 I  THE TOTAL CORE USED BY #KWIDT IS  3584 DECIMAL.
OL101 I  THE START CONTROL ADDRESS OF THIS MODULE IS 0C00.
OL104 I  TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS   15
         NAME-#KWIDT,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
*
                                 2671 *TABLES/WORKAREAS                                 *
                                 2672 *   SLLIST CREARES A BUFFER, SLLINE, WHICH HAS A MAXIMUM LENGTH OF   *
                                 2673 *   210 BYTES, IS DEFINED BY THE USER, AND CONTAINS THE BINARY       *
                                 2674 *   REPRESENTATION OF THE NUMBERS IN THE LINE-NUMBER LIST.  SINGLE   *
                                 2675 *   LINE NUMBERS REQUIRE A TWO-BYTE ENTRY AND LINE NUMBER RANGES     *
                                 2676 *   EACH REQUIRE FIVE BYTES (TWO BYTES FOR THE LOW LIMIT LINE NUMBER, *
                                 2677 *   ONE BYTE FOR THE EBCDIC CODE FOR A DASH, AND TWO BYTES FOR THE   *
                                 2678 *   HIGH LIMIT LINE NUMBER).  AN EOS CODE TERMINATES SLLINE          *
                                 2679 *                                                                    *
```

```
2680 *ATTRIBUTES                                                        *
2681 *    SLLIST IS RELOCATABLE                                         *
2682 *                                                                  *
2683 *CHARACTER CODE DEPENDENCY                                         *
2684 *    THE OPERATION OF THIS MODULE DOES NOT DEPEND ON ANY PARTICULAR *
2685 *    INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.        *
2686 *                                                                  *
2687 *NOTES                                                             *
2688 *    ERROR PROCEDURES                                              *
2689 *       SLLIST RETURNS TO THE CALLING ROUTINE WITH THE @PSR SET TO *
2690 *       'BRANCH LOW' IF AN ERROR CONDITION IS ENCOUNTERED.         *
2691 *       THE APPROPRIATE ERROR CODE WILL BE SET IN $CAERR.          *
2692 *                                                                  *
2693 *    REGISTER USAGE                                                *
2694 *      * UPON ENTRY TO SLLIST, RESISTER 2 (@XR) MUST BE POINTING TO *
2695 *         THE 1ST LINE NUMBER TO BE CHECKED.  UPON RETURN FROM SLLIST *
2696 *         @XR WILL BE POINTING TO THE INVALID CHARACTER IF AN ERROR IS *
2697 *         DETECTED.  TO THE CARRIAGE RETURN CHARACTER IF THE LIST IS *
2698 *         GOOD, OR TO THE NEXT CHARACTER FOLLOWING A VALID LIST IF *
2699 *         SLLIND IS SET TO RETURN (SLLRET MOVED TO SLLIND).        *
2700 *      * REGISTER 1 (@BR) IS SAVED UPON ENTRY TO SLLIST AND IS USED *
2701 *         BY SLLIST TO CONTAIN THE CURRENT ADDRESS BEING REFERENCED IN *
2702 *         SLLINE.                                                  *
2703 *      * UPON ENTRY TO SLLIST, REGISTER 8 (@ARR) IS STORED AS THE  *
2704 *         RETURN ADDRESS TO THE CALLING ROUTING AFTER CHECKING IS  *
2705 *         COMPLETED.                                               *
2706 *                                                                  *
2707 *    SAVE RESTORED AREAS                                           *
2708 *       NONE                                                       *
2709 *                                                                  *
2710 *    MODIFICATION CONSIDERATIONS                                   *
2711 *       NONE                                                       *
2712 *                                                                  *
2713 *    REQUIRED MODULES                                              *
2714 *      * THE FOLLOWTNG EQUATE MODULES ARE USED IN SLLIST:          *
2715 *         * @SYSEQ - COMMON S(STEM ELVES                           *
2716 *          * @FXDEQ - NUCLEUS FIXED ADDRESS EQUATES                *
2717 *          * @ERMEQ - ERROR MESSAGE EQUATES (SELECTED ERROR CODES) *
2718 *      * THE FOLLOWING SOURCE MODULES ARE ALSO USED IN SLLIST:     *
2719 *          * SCANIT - DELIMITER SCAN ROUTINE                       *
2720 *          * C4BIN2 - ROUTINE TO CONVERT DECIMAL TO BINARY         *
2721 *                                                                  *
2722 *    OTHER                                                         *
2723 *    IF THE CALLING ROUTINE DESIRES THAT A LINE-NUMBER LIST BE     *
2724 *    CONSIDERED VALID IF IT IS FOLLOWED BY ANOTHER PARAMETER,      *
2725 *    SLLRET SHOULD BE MOVED TO SLLRET BEFORE CALLING SLLIST.       *
2726 *                                                                  *
2727 ******************************************************************************
```

```
                           0FF6 2729 SLLIST EQU  *                         ENTRY POINT TO THIS SUBROUTINE
                                2730 *
    0FF6 34 01 10DE              2731        ST   SLL220+@OP1,@BR           SAVE BASE REGISTER
    0FFA 34 08 10E2              2732        ST   SLL230+@OP1,@ARR          SAVE RETURN ADDRESS
    0FFE C2 01 13FE              2733        LA   SLLINE-SLLLN2,@BR         INITIALIZE SLLINE POINTER
                                2734 *
    1002 C0 87 0F86              2735 SLL100 B    C4BIN2                    CONVERT LINE NO. TO BINARY
    1006 F2 82 CA                2736        JL   SLL210                    IF ERROR IN C4BIN2,
                                2737 *                                     * CALL ERROR PROG.
    1009 F2 81 AC                2738        JZ   SLL180                    CHECK FOR EOS IF NO NUMBER FOUND
                                2739 *
                                2740 *               INTEGER WAS FOUND
                                2741 *
    100C 4C 01 03 0FF0          2742        MVC  SLL003(,@BR),C4BVAL(SLLLN2)  MOVE INTEGER TO BFR
    1011 F2 80 07                2743 SLL110 JC   SLL115,@NOP+*-*           UCB EXCEPT FOR FIRST LINE NO.
    1014 3C 87 1012              2744        MVI  SLL110+@Q,@UCB            SET OFF 'FIRST' INDR
    1018 F2 87 11                2745        J    SLL120                    GO CHECK FOR DELIMITERS
    101B 5D 01 01 03            2746 SLL115 CLC  SLL001(,@BR),SLL003(SLLLN2,@BR)  THIS INTG > LAST INTG ?
    101F F2 82 0A                2747        JL   SLL120                    YES, GO CHECK FOR DELIMITERS
    1022 3C 87 10B2              2748        MVI  SLL165+@Q,@UCB            SET SW TO TAKE ERR IF VALID INTG
    1026 0C 01 10CB 0FF4        2749        MVC  SLL200+@OP1(SLLLN2),C4BSAV  SET PTR TO THIS NUMBER
    102C D2 01 02                2750 SLL120 LA   SLL002(,@BR),@BR          POINT BR PTR TO THIS ENTRY
    102F C0 87 10E5              2751        B    SCANIT                    BYPASS BLANKS
    1033 BD 60 00                2752        CLI  0(,@XR),SLLDSH            CHAR AFTER INTG = '-' ?
    1036 F2 01 55                2753        JNE  SLL150                    NO, CHECK FOR COMMA
                                2754 *
                                2755 *                LINE NUMBER FOLLOWED BY A DASH
                                2756 *
    1039 E2 02 01                2757        LA   1(,@XR),@XR               POINT XR PAST DASH
    103C 0C 01 105F 0FF4        2758        MVC  SLL125+@OP1,C4BSAV(@REGL) SAVE PTR TO FIRST NO. IN RANGE
    1042 C0 87 10E5              2759        B    SCANIT                    BYPASS BLANKS
    1046 C0 87 0F86              2760        B    C4BIN2                    CONVERT NO. TO BINARY
    104A F2 82 86                2761        JL   SLL210                    ERR IF MORE THAN 4 DIGITS FOUND
    104D F2 01 17                2762        JNZ  SLL130                    JUMP IF INTG FOUND AFTER DASH
                                2763 *
    1050 BD 1E 00                2764        CLI  0(,@XR),@EOS             IS THIS AN OPEN RANGE ?
    1053 F2 81 06                2765        JE   SLL125                    YES, SET OPEN RANGE ERR CODE
    1056 BD 6B 00                2766        CLI  0(,@XR),@COMMA           IS THIS AN OPEN RANGE ?
    1059 F2 01 65                2767        JNE  SLL195                    NO, INV CHAR IN LINE NO. ERROR
                                2768 *
    105C C2 02 0000              2769 SLL125 LA   *-*,@XR                   RESTORE XR TO FIRST NO. IN RANGE
    1060 3C 0D 03CD              2770        MVI  $CAERR,@@E123             ERR, UNBALANCED LINE NO. SERIES
    1064 F2 87 70                2771        J    SLL215                    ERROR EXIT
                                2772 *
                                2773 *                MOVE DASH AND HIGH LIMIT TO SLLINE
                                2774 *
    1067 7C 60 02                2775 SLL130 MVI  SLL002(,@BR),SLLDSH       SET DASH IN SLLINE
    106A 4C 01 04 0FF0          2776        MVC  SLL003+1(,@BR),C4BVAL(SLLLN2)  MOVE IN HIGH LIMIT OF RANGE
    106F 5D 01 01 04            2777        CLC  SLL001(,@BR),SLL003+1(SLLLN2,@BR) HIGH LIMIT > LOW LIMIT ?
    1073 F2 82 11                2778        JL   SLL140                    YES, GO INCR POINTER
    1076 3D 87 10B2              2779        CLI  SLL165+@Q,@UCB            OUT OF ORDER PAIR FOUND ALRDY ?
    107A F2 81 0A                2780        JE   SLL140                    YES, DON'T SET SWITCH AGAIN
    107D 3C 87 10B2              2781        MVI  SLL165+@Q,@UCB            ELSE, SET SW TO TAKE ERR EXIT
    1081 0C 01 10CB 0FF4        2782        MVC  SLL200+@OP1(SLLLN2),C4BSAV  SET PTR TO SECOND NO. IN RANGE
    1087 D2 01 03                2783 SLL140 LA   SLL003(,@BR),@BR          INCR PTR TO NEXT ENTRY
    108A C0 87 10E5              2784        B    SCANIT                    BYPASS BLANKS
```

```
      SLLIST - MODULE PROLOGUE
```

```
     108E BD 6B 00          2785 SLL150 CLI  0(,@XR),@COMMA          INTG FOLLOWED BY COMMA ?
     1091 F2 01 10          2786        JNE  SLL160                  NO, TEST FOR A BLANK
                            2787 *
                            2788 *              LINE NUMBER FOLLOWED BY COMMA
                            2789 *
     1094 E2 02 01          2790        LA   1(,@XR),@XR            PT XR PAST COMMA
     1097 C0 87 10E5        2791        B    SCANIT                  BYPASS BLANKS
     109B BD 1E 00          2792        CLI  0(,@XR),@EOS            COMMA FOLLOWED BY EOS ?
     109E F2 81 36          2793        JE   SLL215                  YES ERR - DANGLING COMMA
     10A1 F2 87 0D          2794        J    SLL165                  ELSE, GO CHECK INTG ASCENDING
                            2795 *
     10A4 3D 00 1125        2796 SLL160 CLI  SCACNT,@ZERO            WERE ANY DELIMITERS FOUND ?
     10A8 F2 01 06          2797        JNZ  SLL165                  YES, GO CHECK FOR PROPER ORDER
     10AB BD 1E 00          2798        CLI  0(,@XR),@EOS            ELSE, IS XR REF AN EOS
     10AE F2 01 10          2799        JNE  SLL195                  NO, ERR - INV CHAR IN LINE NO.
     10B1 F2 80 14          2800 SLL165 JC   SLL200,@NOP+*-*         UCB IF THIS INTG < LAST INTG
     10B4 C0 87 1002        2801        B    SLL100                  CHECK NEXT INTG
                            2802 *
                            2803 *              INTEGER NOT FOUND BY C4BIN2
                            2804 *
     10B8 7C FF 02          2805 SLL180 MVI  SLL002(,@BR),@SCTSZ-1   MOVE AN 'EOS' TO SLLINE
     10BB BD 1E 00          2806        CLI  SLL000(,@XR),@EOS       IS NEXT CHAR IN INP LINE EOS ?
     10BE F2 81 1A          2807 SLL190 JC   SLL220,@BE+*-*          IF YES OR SLLIND IS ON, RETURN
                            2808 *
     10C1 3C 0B 03CD        2809 SLL195 MVI  $CAERR,@@E120           SET ERR CODE FOR 'NON-NUMERIC
                            2810 *                                   * CHAR IN LINE NO. OR INTG'
     10C5 F2 87 0B          2811        J    SLL210                  RESTORE XR, SET PSR AND RETURN
                            2812 *
                            2813 *                   ERROR EXIT
                            2814 *
     10C8 C2 02 0000        2815 SLL200 LA   *-*,@XR                 PT XR TO CORRECT LINE NUMBER
     10CC 3C 0E 03CD        2816        MVI  $CAERR,@@E124           SET ERROR CODE FOR PARAMS NOT
     10D0 F2 87 04          2817        J    SLL215                  * IN ASCENDING ORDER
     10D3 35 02 0FF4        2818 SLL210 L    C4BSAV,@XR              RETURN POINTER TO FIRST OF NO
     10D7 35 04 10E4        2819 SLL215 L    SLLBLW,@PSR             SET PSR TO BRANCH LOW
                            2820 *
                            2821 *              RETURN TO CALLING PROGRAM
                            2822 *
     10DB C2 01 0000        2823 SLL220 LA   *-*,@BR                 RESTORE CALLERS BASE REGISTER
     10DF C0 87 0000        2824 SLL230 B    *-*                     RETLRN
```

```
      SLLIST - MODULE PROLOGUE


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  31/05/22  PAGE  27

                          0000 2826 SLL000 EQU   0                         DISP OF '0' FOR XR OR PTR
                          0001 2827 SLL001 EQU   1                         DISP OF '1' FOR XR OR PTR
                          0002 2828 SLL002 EQU   2                         DISP OF '2' FOR XR OR PTR
                          0003 2829 SLL003 EQU   3                         DISP OF '3' FOR PTR TO SLLINE
                          0002 2830 SLLLN2 EQU   2                         BINARY LENGTH OF TWO BYTES
                          0060 2831 SLLDSH EQU   C'-'                      HYPHEN SEPARATING RANGES
                               2832 *
                          10BF 2833 SLLIND EQU   SLL190+@Q                 LOC FOR SETTING SLLRET
                          0087 2834 SLLRET EQU   X'87'                     CODE FOR RETURN IF NOT EOS
                               2835 *
                               2836 *                  CONSTANTS AND SAVE AREAS
                               2837 *
   10E3 0082              10E4 2838 SLLBLW DC    XL2'82'                   PSR CODE TO BRANCH LOW
                               2839 *
                               2840 *        $CANI
```

```
                          2842+*********************************************************************
                          2843+*  5703-XM1    COPYRIGHT IBM CORP. 1970                            *
                          2844+*              REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083  *
                          2845+*                                                                   *
                          2846+*********************************************************************
                          2847+*STATUS                                                             *
                          2848+*   VERSION 1 MODIFICATION 0                                        *
                          2849+*                                                                   *
                          2850+*FUNCTION                                                           *
                          2851+*   THE FUNCTION OF SCANIT IS TO SCAN PAST VALID DELIMITERS AND     *
                          2852+*   RETURN A POINTER TO THE FIRST CHARACTER THAT'S NOT A DELIMITER. *
                          2853+*                                                                   *
                          2854+*ENTRY POINTS                                                       *
                          2855+*   * THE ENTRY POINT IS SCANIT.                                    *
                          2856+*   * THE CALLING SEQUENCE IS AS FOLLOWS:                           *
                          2857+*            B     SCANIT                                           *
                          2858+*      WITH REGISTER 2 (@XR) POINTING TO THE FIRST CHARACTER TO BE  *
                          2859+*      EXAMINED.                                                    *
                          2860+*                                                                   *
                          2861+*INPUT                                                              *
                          2862+*   NONE                                                            *
                          2863+*                                                                   *
                          2864+*OUTPUT                                                             *
                          2865+*   NONE                                                            *
                          2866+*                                                                   *
                          2867+*EXTERNAL REFERENCES                                                *
                          2868+*   $CAERR - ERROR CODE SAVE AREA                                   *
                          2869+*                                                                   *
                          2870+*EXITS, NORMAL                                                      *
                          2871+*   NORMAL EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO  *
                          2872+*   SCANIT IN THE CALLING ROUTINE. THE PSR (REGISTER 4) WILL CONTAIN *
                          2873+*   A ZERO IF NO DELIMITERS WERE FOUND OR A HIGH CONDITION IF ONE OR *
                          2874+*   MORE DELIMITERS WERE SCANNED.                                   *
                          2875+*                                                                   *
                          2876+*EXITS, ERROR                                                       *
                          2877+*   ERROR EXIT FROM SCANIT IS TO THE BYTE FOLLOWING THE BRANCH TO   *
                          2878+*   SCANIT IN THE CALLING ROUTINE. THE PSR WILL CONTAIN A LOW       *
                          2879+*   CONDITION.                                                      *
                          2880+*                                                                   *
                          2881+*TABLES/WORKAREAS                                                   *
                          2882+*   * SCACNT - AREA CONTAINING NUMBERS OF DELIMITERS SCANNED        *
                          2883+*   * SCAMMA - LOC WHERE SCACOM MAY BE MOVED IF ONE COMMA IS ALSO   *
                          2884+*     TO BE CONSIDERED A DELIMITER. MOVING SCACOF BACK INTO SCAMMA  *
                          2885+*     INDICATES THAT ONLY BLANKS SHOULD BE CONSIDERED DELIMITERS.   *
                          2886+*                                                                   *
                          2887+*ATTRIBUTES                                                         *
                          2888+*   RELOCATABLE AND RE-USABLE                                       *
                          2889+*                                                                   *
                          2890+*CHARACTER CODE DEPENDENCY                                          *
                          2891+*   THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR  *
                          2892+*   INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.          *
                          2893+*                                                                   *
                          2894+*NOTES                                                              *
                          2895+*   ERROR PROCEDURES                                                *
                          2896+*       THE ONLY ERROR CONDITION DETECTED BY SCANIT IS THE CASE WHERE *
                          2897+*       A CARRIAGE-RETURN CODE FOLLOWS A COMMA.  UPON RETURN TO THE  *
```

```
                               2898+*      CALLING ROUTINE, @PSR WILL BE SET TO A LOW CONDITION, THE        *
                               2899+*      ERROR CODE IS SET IN $CAERR, AND MG WILU BE POINTING TO THE      *
                               2900+*      CARRIAGE-RETURN CHARACTER.                                       *
                               2901+*                                                                       *
                               2902+*   REGISTER USAGE                                                      *
                               2903+*      REGISTER 2 (@XR) IS USED AS A POINTER ACROSS THE AREA BEING       *
                               2904+*      SCANNED FOR DELIMETERS.                                          *
                               2905+*                                                                       *
                               2906+*   SAVED/RESTORED AREAS                                                *
                               2907+*      UPON ENTRY TO SCANIT, REGISTER 8 (@ARR) IS SAVED AND USED AS      *
                               2908+*      THE RETURN ADDRESS.                                              *
                               2909+*                                                                       *
                               2910+*   MODIFICATION CONSIDERATIONS                                         *
                               2911+*      NONE                                                             *
                               2912+*                                                                       *
                               2913+*   REQUIRED MODULES                                                    *
                               2914+*      * @SYSEQ - COMMON SYSTEM EQUATES                                 *
                               2915+*      * @FXDEQ - FIXED NUCLEUS ADDRESSES EQUATES                       *
                               2916+*                                                                       *
                               2917+*   OTHER                                                               *
                               2918+*      SCANIT IS INITIALIZED TO BYPASS BLANKS ONLY. IF SCACOM IS        *
                               2919+*      MOVED TO SCAMMA, ONE COMMA WILL BE SCANNED ALONG WITH BLANKS.    *
                               2920+*      THE INSTRUCTION TO DO THIS IS AS FOLLOWS:                        *
                               2921+*            MVI   SCAMMA,SCACOM                                        *
                               2922+*                                                                       *
                               2923+*      TO DROP THE COMMA FROM ITS DELIMITER STATUS, SCACOF SHOULD BE    *
                               2924+*      MOVED TO SCAMMA, USING THE FOLLOWING INSTRUCTION:                *
                               2925+*            MVI   SCAMMA,SCACOF                                        *
                               2926+*                                                                       *
                               2927+************************************************************************


                               2929+*
                               2930+*                    EQUATES USED IN THIS SUBROUTINE
                               2931+*
                          0001 2932+SCAINC EQU   1                      TO INCREMENT POINTER
                          0001 2933+SCACOM EQU   @BNE                   SWITCH TO ALLOW SCANNING COMMA
                          0087 2934+SCACOF EQU   @UCB                   SWITCH TO SET OFF THE INDICATON
                               2935+*                                   * FOR SCANNING A COMMA
                          10E5 2936+SCANIT EQU   *                      ENTRY POINT TO THIS SUBROUTINE
   10E5 34 08 1121             2937+       ST    SCA500+@OP1,@ARR       SAVE RETURN ADDRESS
   10E9 34 02 1123             2938+       ST    SCASVE,@XR             SAVE POINTER VALUE
   10ED 3C 04 03CD             2939+       MVI   $CAERR,@@E110          SET ERROR CODE
   10F1 F2 87 03               2940+       J     SCA200                 GO TO PROCESS
   10F4 E2 02 01               2941+SCA100 LA    SCAINC(,@XR),@XR       INCREMENT POINTER TO NEXT CHAR
   10F7 BD 40 00               2942+SCA200 CLI   0(,@XR),@BLANK         IS THIS CHAR BLANK ?
   10FA C0 81 10F4             2943+       BE    SCA100                 YES, FETCH NEXT ONE
   10FE BD 6B 00               2944+       CLI   0(,@XR),@COMMA         IS IT A COMMA ?
   1101 F2 87 10               2945+SCA250 JC    SCA400,@UCB            UCS TO RETURN -- OR NOP IF
                               2946+*                                   * SCAMMA IS ACTIVE AND CHAR
   1104 E2 02 01               2947+SCA300 LA    SCAINC(,@XR),@XR       INCREMENT POINTER TO NEXT CHAR
   1107 BD 40 00               2948+       CLI   0(,@XR),@BLANK         IS THIS CHAR A BLANK ?
   110A C0 81 1104             2949+       BE    SCA300                 YES, FETCH NEXT ONE
   110E BD 1F 00               2950+       CLI   0(,@XR),@EOS+1         IS THIS EOS ?
   1111 F2 82 0A               2951+       JL    SCA500                 IF NOT, SKIP ERROR ROUTINE
   1114 34 02 1125             2952+SCA400 ST    SCACNT,@XR             SAVE NEW POINTER VALUE
```

```
      SCANIT - DELIMETER SCAN MODULE


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT            VER 15, MOD 00  31/05/22  PAGE  30

    1118 0F 01 1125 1123      2953+      SLC   SCACNT(2),SCASVE            SET PSR TO EQUAL IF POINTER
                              2954+*                                      * NOT ADVANCED
    111E C0 87 0000           2955+SCA500 B    *-*                        YES, RETURN
                         1102 2956+SCAMMA EQU  SCA250+@Q                  TO SET SCAN COMMA INDICATOR
                              2957+*
                              2958+*               SAVE AREA
                              2959+*
                         1122 2960+SCASV1 EQU   *                         FIRST BYTE OF SCASVE
    1122                 1123 2961+SCASVE DS    CL2                       ORIGINAL POINTER VALUE SAVE
    1124                 1125 2962+SCACNT DS    CL2                       SAVE AREA FOR TOTAL CHAR SCAN
                              2963+***                        END OF SCANIT                     ***
```

```
                         2965 ***********************************************************************
                         2966 * 5703-XM1      COPYRIGHT IBM CORP. 1970                         *
                         2967 *                  REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083  *
                         2968 *                                                              *
                         2969 ***********************************************************************
                         2970 *STATUS                                                        *
                         2971 *    VERSION 1 MODIFICATION 0                                   *
                         2972 *                                                              *
                         2973 *FUNCTION                                                       *
                         2974 *    GFINDN IS DESIGNED FOR USE WITH GRABIT IN ACCESSING A GIVEN LINE *
                         2975 *    IN THE WORK FILE.  THE LINE NUMBER SUPPLIED TO GFILNO IS SEARCHED *
                         2976 *    ON THROUGH THE FIT.  THE DB CONTAINING THIS NUMBER ALONG WITH    *
                         2977 *    THE NEXT LOGICAL DB ARE READ INTO CORE, AND GRABIT IS INITIALIZED *
                         2978 *    AND CALLED.  CONTROL IS THEN RETURNED TO THE CALLING PROGRAM.     *
                         2979 *                                                              *
                         2980 *ENTRY POINTS                                                   *
                         2981 *    GFINDN - ENTERED VIA A BRANCH.  GFILNO MUST BE PRIMED WITH THE   *
                         2982 *    LINE NUMBER TO BE SEARCHED FOR.                            *
                         2983 *                                                              *
                         2984 *INPUT                                                          *
                         2985 *    INPUT TO GFINDN IS THE LINE NUMBER SUPPLIED INTO GFILNO FOR THE  *
                         2986 *    SEARCH TO BE MADE.                                         *
                         2987 *                                                              *
                         2988 *OUTPUT                                                         *
                         2989 *    OUTPUT IS THE PRIMED BUFFERS FOR GRABIT, WHICH CONTAIN THE DB    *
                         2990 *    WHICH CONTAINS THE SPECIFIED LINE NUMBER AND THE NEXT LOGICAL    *
                         2991 *    DB. (DATA BLOCK)                                           *
                         2992 *                                                              *
                         2993 *EXTERNAL REFERENCES                                            *
                         2994 *        $$FITS - CORE ADDRESS OF THE FILE INDEX TABLE (FIT)    *
                         2995 *        DL4ICS - FOUR TRACK LOGICAL DISK IOCS                  *
                         2996 *        GRABIT - DISK FILE LINE RETRIEVER                      *
                         2997 *        GRSRDA - DADDR SAVE AREA PRIMED FOR GRABIT             *
                         2998 *        GRWHAT - GRABIT INDR                                   *
                         2999 *        GRAFRA - BUFFER ADDR FOR GRABIT                        *
                         3000 *                                                              *
                         3001 *EXITS, NORMAL                                                  *
                         3002 *    NEXT SEQUENTIAL INSTRUCTION AFTER CALL FROM USING PROGRAM. *
                         3003 *                                                              *
                         3004 *EXITS, ERROR                                                   *
                         3005 *    N/A                                                        *
                         3006 *                                                              *
                         3007 *TABLES/WORK AREAS                                              *
                         3008 *    WORK AREAS AND DPL'S ARE LOCATED AT END OF MODULE.         *
                         3009 *                                                              *
                         3010 *ATTRIBUTES                                                     *
                         3011 *    REUSABLE                                                   *
                         3012 *                                                              *
                         3013 *CHARACTER CODE DEPMENCY                                        *
                         3014 *    CHARACTER CODE DEPENDENCY CLASS - A                        *
                         3015 *    THE OPERATION OF THIS MOMLE DOES NOT DEPEND UPON A PAATICULAO    *
                         3016 *    INTERNAL REPRESENTATION OR THE EXTERNAL CNANATTEN SET.     *
                         3017 *                                                              *
                         3018 *NOTES                                                          *
                         3019 *    ERROR PROCEDURES                                           *
                         3020 *        N/A                                                    *
```

```
                          3021 *                                                        *
                          3022 *    REGISTER USAGE                                      *
                          3023 *       INDEX REGISTER 1 (@BR) IS SAVED AND RESTORED AND USED AS A  *
                          3024 *       BASE REGISTER DURING EXECUTION.   INDEX REGISTER 2 (@XR) IS  *
                          3025 *       NOT SAVED OR RESTORED BUT IT IS USED TO INDEX THROUGH FIT  *
                          3026 *       IT SEARCHING FOR LINE NUMBER.                    *
                          3027 *                                                        *
                          3028 *    SAVED/RESTORED AREAS                                *
                          3029 *       N/A                                              *
                          3030 *                                                        *
                          3031 *    MODIFICATION CONSIDERATIONS                         *
                          3032 *       $FINDN IS INTERDEPENDENT WITH GRABIT (IE. WHEN PRIMING  *
                          3033 *       SPECIFIC FIELDS IN GRABIT).  ALSO, NOTE 'OTHER'.  *
                          3034 *                                                        *
                          3035 *    REQUIRED MODULES                                    *
                          3036 *       @SYSEQ - COMMON SYSTEM SOFTWARE EQUATES          *
                          3037 *       @CANEQ - COMMON CORE LOCATION EQUATES OUTSIDE NUCLEUS  *
                          3038 *       DL4ICS - FOUR TRACK LOGICAL DISK IOCS            *
                          3039 *       GRABIT - FILE LINE RETRIEVER                     *
                          3040 *                                                        *
                          3041 *    OTHER                                               *
                          3042 *       GFINDN CAN BE FORCED TO DETECT THAT FIT DB'S ARE NEVER CON-  *
                          3043 *       TIGUOUS BY MOVING A @NOP TO LABEL GFI200 PLUS @Q.  *
                          3044 *                                                        *
                          3045 ***********************************************************************
```

GFINON - GRABBIT BUFFER PRIMER

```
                              3047 ************************************************************************
                              3048 *                                                                      *
                              3049 *                   GFINON MODULE EQUATES                               *
                              3050 *                                                                      *
                              3051 ************************************************************************

                    0001 3053 GFICT1 EQU    1                          COUNT CODE 1
                    0002 3054 GFICT2 EQU    2                          COUNT CODE 2
                         3055 *
                    0000 3056 GFIDS0 EQU    0                          DISPLACEMENT OF 0
                    0001 3057 GFIDS1 EQU    1                          DISPLACEMENT OF 1
                    0002 3058 GFIDS2 EQU    2                          DISPLACEMENT OF 2
                    0003 3059 GFIDS3 EQU    3                          DISPLACEMENT OF 3
                    0004 3060 GFIDS4 EQU    4                          DISPLACEMENT OF 4
                    0005 3061 GFIDS5 EQU    5                          DISPLACEMENT OF 5
                    0008 3062 GFIDS8 EQU    8                          DISPLACEMENT OF 8
                         3063 *
                    0001 3064 GFILN1 EQU    1                          LENGTH CODE 1
                    0002 3065 GFILN2 EQU    2                          LENGTH OF 2
                         3066 *
                    1200 3067 GRBFR1 EQU    GFIBF1                     ADDR OF FIRST CORE BUFFER
                         3068 *
                    1D00 3069 GFITAD EQU    $$FITS                     ADDR OF FIT IN CORE
                         3070 *
                    1D08 3071 GFINTY EQU    GFITAD+GFIDS8              ADDR FIRST ENTRY IN FIT
                         3072 *
                    0003 3073 GFIDTA EQU    3                          ADDR FIRST FIT DATA SECTOR
                         3074 *
                         3075 ************************************************************************
```

```
                              3077 ********************************************************************
                              3078 *                                                                  *
                              3079 *              INIT REGS FOR GCLEAR AND SAVE REGS FOR CALLING ROUTINE   *
                              3080 *                                                                  *
                              3081 ********************************************************************
                              3082 *
                              3083 *GFINDN ENTER BASE=GFIBSE,EXIT=GFIND,@BR,,@ARR
                    1131 3084        USING GFIBSE,@BR                 BASE ADDRESS SPECIFICATION
                    1126 3085 GFINDN EQU   *                          MODULE ENTRY POINT
    1126 34 01 1187           3086        ST    GFIND0+@OP1,@BR        SAVE @BR
    112A C2 01 1131           3087        LA    GFIBSE,@BR            LOAD BASE REGISTER
    112E 74 08 5A             3088        ST    GFIND2+@OP1(,@BR),@ARR  SAVE RETURN ADDRESS

                              3090 *
                              3091 *              SEARCH FILE INDEX TABLE FOR NUMBER IN GFLINO
                              3092 *
                    1131 3093 GFIBSE EQU   *
    1131 C2 02 1D08           3094        LA    GFINTY,@XR            LOAD XR WITH ADDR OF FIRST
                              3095 *                                  * ENTRY IN FIT
    1135 E2 02 04             3096 GFI100 LA    GFIDS4(,@XR),@XR       INDEX TO NEXT FIT ENTRY
                              3097 *
    1138 9D 01 02 5C          3098 GFI150 CLC   GFIDS2(GFILN2,@XR),GFILNO(,@BR)  THIS DB CONTAIN NUMBER
                              3099 *                                  * IN GFILNO ?
    113C D0 82 04             3100        BL    GFI100(,@BR)          NO, CHECK NEXT FIT ENTRY

                              3102 ********************************************************************
                              3103 *                                                                  *
                              3104 *              READ DATA BLOCKS INTO CORE BUFFERS                  *
                              3105 *                                                                  *
                              3106 ********************************************************************
                              3107 *
    113F 7C 03 60             3108        MVI   GFIRED+@DSAD(,@BR),GFIDTA  INIT DPL FOR 1ST DATA SECTOR
    1142 6E 00 60 00          3109        ALC   GFIRED+@DSAD(GFILN1,@BR),@ZERO(,@XR)  DISP FROM 1ST SECTOR
    1146 7C 02 61             3110        MVI   GFIRED+@DCNT(,@BR),GFICT2  INIT DPL SECTOR COUNT
                              3111 *
                              3112 *              CHECK IF DB'S ARE CONTINUOUS
                              3113 *
    1149 6C 00 5D 04          3114        MVC   GFIWRK(GFILN1,@BR),GFIDS4(,@XR)  COMPUTE IF DB'S ARE
    114D 6F 00 5D 00          3115        SLC   GFIWRK(GFILN1,@BR),@ZERO(,@XR)   * CONTIGUOUS ON DISK
    1151 7D 01 5D             3116        CLI   GFIWRK(,@BR),GFICT1      ARE DB'S CONTIGUOUS FOR READ ?
    1154 F2 81 10             3117 GFI200 JC    GFI500,@BE              YES, DB'S ARE CONTIGUOUS
                              3118 *
                              3119 ********************************************************************
```

```
                              3121 ***************************************************************************
                              3122 *                                                                         *
                              3123 *              PROCESSING OF NON-CONTIGUOUS DATA BLOCKS                    *
                              3124 *                                                                         *
                              3125 ***************************************************************************
                              3126 *
     1157 7C 03 66            3127        MVI   GFIRAD+@DSAD(,@BR),GFIDTA  MODIFY SECTOR ADDR
     115A 6E 00 66 04         3128        ALC   GFIRAD+@DSAD(GFILN1,@BR),GFIDS4(,@XR)

                              3130 *     DSKL4 GFIRAD                         READ SECOND DB
     115E C0 87 0D16          3131        B     DL4ICS                       PERFORM RELATIVE DISK OP
     1162 1195        1163    3132        DC    AL2(GFIRAD)                  DPL ADDRESS
                              3133 *** END OF EXPANSION ***
                              3134 *
     1164 7C 01 61            3135        MVI   GFIRED+@DCNT(,@BR),GFICT1  MODIFY DPL SECTOR COUNT

                              3137 *GFI500 DSKL4 WIRED                       READ DB(S)
     1167 C0 87 0D16          3138 GFI500 B     DL4ICS                       PERFORM RELATIVE DISK OP
     116B 118F        116C    3139        DC    AL2(GFIRED)                  DPL ADDRESS
                              3140 *** END OF EXPANSION ***


                              3142 ***************************************************************************
                              3143 *                                                                         *
                              3144 *                INITIALIZATION FOR GRABIT                                 *
                              3145 *                                                                         *
                              3146 ***************************************************************************
                              3147 *
     116D 1C 01 0F63 60       3148        MVC   GRSRDA(@CADDR),GFIRED+@DSAD(,@BR)  PRIME GRABIT DISK ADDR
     1172 3C 00 0F6D          3149        MVI   GRWHAT,@ZERO                 PRIME GRWHAT FOR GRABIT
     1176 0C 01 0F66 1194     3150        MVC   GRBFRA(@CADDR),GFIBR1        PRIME GRABIT
                              3151 *
     117C C0 87 0DD2          3152        B     GRABIT                       GET NEXT STATEMENT
                              3153 *
     1180 3C 01 0F6D          3154        MVI   GRWHAT,GFICT1                SET GRABIT FUNCTION CODE

                              3156 ***************************************************************************
                              3157 *                                                                         *
                              3158 *                END OF ROUTINE PROCESSING                                *
                              3159 *                                                                         *
                              3160 ***************************************************************************
                              3161 *
                              3162 *GFIND  EXIT  @BR,,RETURN
     1184 C2 01 0000          3163 GFIND0 LA    *-*,@BR                      RESTORE @BR
     1188 C0 87 0000          3164 GFIND2 B     *-*                          RETURN TO CALING PROGRAM
                              3165 *** END OF EXPANSION ***
```

```
                           3167 *********************************************************************
                           3168 *                                                                   *
                           3169 *              DATA CONSTANTS, BUFFERS, AND WORK AREAS               *
                           3170 *                                                                   *
                           3171 *********************************************************************
                           3172 *
     118C             118D 3173 GFILNO DS    CL2                        INPUT AREA FOR LINE NUMPER TO
                           3174 *                                      * BE SEARCHED FOR
     118E             118E 3175 GFIWRK DS    CL1                        USED TO COMPUTE IF DB'S ARE
                           3176 *                                      * CONTIGUOUS IN CORE
                           3177 *            DPL MODIFIED FOR READING OF DATA BLOCKS
                           3178 *
                           3179 *GFIRED DPL   FUNC=@DGET,DADDR=@WSFIT,CADDR=GFIBF1
                      118F 3180 GFIRED EQU   *                          DISK PARAMETER LIST
     118F 01          118F 3181        DC    AL1(@DGET)                 REQUESTED FUNCTION
     1190 0500        1191 3182        DC    AL2(@WSFIT)                DISK ADDRESS
     1192 00          1192 3183        DC    AL1(*-*)                   SECTOR COUNT
     1193 1200        1194 3184        DC    AL2(GFIBF1)                BUFFER ADDRESS
                           3185 *** END OF EXPANSION ***

                      1194 3187 GFIBR1 EQU   GFIRED+@DBFR2              ADDR OF FIRST BUFFER
                           3188 *
                           3189 *GFIRAD  DPL  FUNC=@DGET,DADDR=@WSFIT,CNT=@B1,CADDR=GFIBF2
                      1195 3190 GFIRAD EQU   *                          DISK PARAMETER LIST
     1195 01          1195 3191        DC    AL1(@DGET)                 REQUESTED FUNCTION
     1196 0500        1197 3192        DC    AL2(@WSFIT)                DISK ADDRESS
     1198 01          1198 3193        DC    AL1(@B1)                   SECTOR COUNT
     1199 1300        119A 3194        DC    AL2(GFIBF2)                BUFFER ADDRESS
                           3195 *** END OF EXPANSION ***

                      119A 3197 GFIBR2 EQU   GFIRAD+@DBFR2              ADDR OF SECOND BUFFER
                           3198 *
```

```
     GFINON - GRABBIT BUFFER PRIMER

ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  31/05/22  PAGE  37

                           3200 *       PATCH
                           3201 ***********************************************************************
                           3202 *       PATCH AREA 1                                                 *
                           3203 ***********************************************************************
                           3204 *
                           3205 *   CALCULATE AREA LEFT IN THIS SECTOR
                           3206 *
          119B 3207 $$$$L1 EQU    *                         START OF PATCH AREA 1
     1200                  3208        ORG    *,256,0               SET LOC CNTR TO NEXT SECTOR
          1200 3209 $$$$T1 EQU    *                         DEFINE ADDR OF SCTR BNDRY
     119B                  3210        ORG    $$$$L1                SET LOC CNTR TO START OF
                           3211 *                                  * PATCH AREA
     119B       11FF 3212 $$$$$1 DS    CL($$$$T1-$$$$L1)      PATCH AREA
                           3213 ***********************************************************************
                           3214 *** END OF EXPANSION ***
                           3215        PRINT ON
          FFFF 3216        END

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =      0
```

```
$$$$$$  001  0C00 1918
$$$$$1  101  11FF 3212
$$$$L1  001  119B 3207   3210  3212
$$$$T1  001  1200 3209   3212
$$$CMD  001  0020 0659
$$$DAT  001  0040 0658
$$$EPL  001  0091 0655
$$$ERN  001  0080 0709
$$$FUN  001  0010 0660
$$$NLN  001  00A0 0705
$$$STD  001  0081 0654
$$BNLN  001  0605 0635   0637
$$CDBS  001  08C0 0685
$$CDND  001  0666 0644
$$CDRD  001  0890 0683   0685
$$CKEY  001  0603 0633
$$CKFF  001  0B3D 0665
$$COFF  001  0B44 0664
$$CSNS  001  209C 0694
$$DATB  001  0BBF 0666
$$EOSA  001  0AFE 0663
$$ERSK  001  1C00 0704
$$FITS  001  1D00 0712   3069
$$FLIB  001  06FF 0711
$$ILEN  001  0601 0629   0631  0635
$$ILHD  001  0600 0627   0629
$$INLN  001  0607 0642   0644  0646
$$INND  001  06FA 0646
$$KBDT  001  09E1 0653   0657
$$KBSN  001  09E2 0657   0662
$$KLD1  001  0600 0717
$$KLD2  001  0700 0719
$$KLD3  001  0C00 0721
$$LPOS  001  09EB 0662
$$PCNT  001  07E9 0678
$$PLYN  001  2004 0692
$$PRES  001  0890 0651   0653  0663  0664  0665  0666  0683
$$PRFL  001  2143 0696
$$PRNT  001  0707 0672   0673  0677  0678
$$PRTN  001  0782 0673
$$PSIO  001  07CE 0677
$$PYCD  001  2200 0698
$$PYMP  001  2000 0690   0692  0694  0696  0698
$$SLIB  001  1C00 0707
$$TPCD  001  0606 0637   0642
$$UPAR  001  0602 0631   0633
$$WSPB  001  1E00 0710
$$XIND  001  06FF 0708   0711
$$ZERO  001  0000 0223   0224  0226  0227  0228  0232  0690
$ABORT  001  0010 0336
$BASIC  001  0080 0394   2408
$BIGCD  001  0080 0470
$BLDPL  001  0579 0603   0605
$BLNOE  001  0569 0593
$BLOAD  001  0522 0584   0586  0589  0602  0603
$BLRTN  001  0550 0592   0593
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                         CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  31/05/22  PAGE  39

$BRSAV  001  03C5 0281   0282
$BSADR  001  0587 0608   0610
$BUFPT  001  03E3 0489   0490
$CABLD  001  04B4 0562   0563
$CAERK  001  0469 0539   0542  2065  2525
$CAERR  001  03CD 0287   0289  2059* 2063* 2521* 2540* 2770* 2809* 2816* 2939*
$CAIPL  001  049D 0558   0560
$CALLI  001  0008 0479
$CARDI  001  0001 0250
$CARPL  001  04A1 0560   0562  2008
$CIENT  001  0483 0549   0550
$CIEXT  001  0480 0548   0549
$CIMSK  001  0476 0545   0548  2016*
$CISUS  001  0496 0553   0558
$CLBFR  001  0010 0437
$CMDKY  001  0008 0349
$CMODE  001  0002 0399
$CONFG  001  03DD 0462   0472
$CRPOS  001  03E2 0488   0489
$CRTAD  001  044D 0527   0528
$CRTAV  001  0002 0343
$CRTDN  001  0002 0367
$CRTIN  001  03D3 0364   0371
$CRTNO  001  0004 0346
$CRTPU  001  0004 0368
$CRTSP  001  0008 0369
$CRTUP  001  0001 0366
$CRUSH  001  0080 0475
$CSDPL  001  050E 0574   0575
$C0001  001  0464 0531   0537
$DATE   001  043A 0512   0513
$DBGUF  001  03E0 0474   0483
$DBLOK  001  0001 0424
$DFDET  001  03E8 0495   0496
$DISKN  001  0025 0226   2230  2334  2431
$DKERR  001  0008 0405
$DKSIZ  001  03D7 0449   0457  0498
$DK100  001  0001 0451
$DK200  001  0002 0452
$DK400  001  0004 0453
$DK600  001  0008 0454
$DK800  001  0010 0455
$DPLSV  001  0449 0523   0525
$DTNMB  001  0040 0270
$DTRDR  001  0040 0358
$ENDNU  001  0600 0617   0627  0651  0672  0708  0717  0719  0721
$ERDPL  001  046F 0542   0544
$ERFIL  001  0040 0297
$ERHRD  001  0004 0429   2524
$ERKEY  001  0080 0301
$ERLOG  001  0345 0231
$ERMAD  001  0472 0544   0545
$ERPND  001  0004 0402
$ERRCT  001  03CF 0303
$ERRPG  001  03CE 0291
$ERSFL  001  0035 0296
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                              CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                    VER 15, MOD 00  31/05/22  PAGE  40

$ERSTK   001  0030 0294
$ER050   001  0363 0232
$ER1N2   001  0050 0299
$EXADR   001  0517 0577   0579
$EXCMD   001  0001 0331
$EXFTR   001  043B 0513   0518
$FCIND   001  0010 0409
$FDIND   001  0040 0416
$FEARR   001  0004 0224
$FEMAP   001  0588 0610   0611
$FILIB   001  03DA 0460   0461
$FITIN   001  0010 0385
$FUIND   001  0020 0414
$GUFIO   001  0583 0607   0608
$GUFIR   001  0008 0259
$HISTE   001  042E 0510   0511
$HIST1   001  0435 0511   0512
$HRDER   001  0020 0355
$INDR1   001  03D4 0371   0397  2408
$INDR2   001  03D5 0397   0422
$INDR3   001  03D6 0422   0449  2524*
$INLNO   001  03CF 0289   0291  0303  0310
$INRPT   001  0020 0267
$IOIND   001  03D2 0338   0364
$IOPGS   001  0010 0478
$IOYES   001  0002 0253
$IPLDV   001  05FF 0614   0617
$IRKEY   001  0020 0477
$KEYBD   001  03E1 0483   0488
$KEYCD   001  03C3 0247   0281
$KEYDT   001  0040 0391
$KE090   001  00DE 0227
$KE130   001  01D5 0228
$KYBSY   001  0010 0264
$LDRTN   001  0571 0602
$LEVEL   001  03DF 0472   0474
$LIST    001  0002 0426
$LMRGN   001  03C1 0242   0244
$LNPTR   001  0080 0361
$LOADB   001  054A 0586
$LOADR   001  051A 0579   0582
$LPRIO   001  03EA 0496
$LPROS   001  03E5 0491   0493
$LPRP3   001  03E4 0490   0491
$MOUNT   001  0020 0440
$MPDWN   001  0001 0340
$NEXTB   001  03E6 0493   0494
$NEXTL   001  03E7 0494   0495
$NOENB   001  0008 0432
$NOLST   001  0004 0256
$NUCBS   001  03C0 0239   0240
$NWRKF   001  0080 0445
$NWRKR   001  0040 0442
$PASWD   001  042D 0509   0510
$PAUSD   001  04BA 0563   0565
$PAUSE   001  0002 0333
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$PGMDT  001  0020 0388
$PGMST  001  0010 0352
$PKERT  001  0419 0507   0509
$PLST1  001  0454 0528   0529
$PLST2  001  045B 0529   0530
$PLST3  001  0462 0530   0531
$PRDEV  001  044B 0525   0527
$PRESN  001  0002 0376
$PROCI  001  0001 0373
$PRPOS  001  03C2 0244   0247
$PSDBR  001  04FA 0568
$PSDXR  001  04F2 0567   0568
$PSTEP  001  0004 0334
$PSTMT  001  0008 0335
$PTCH1  001  03F5 0498   0502
$READY  001  0080 0418
$REORD  001  0040 0476
$RLOAD  001  051E 0582   0584
$RMRGN  001  03C0 0240   0242
$RSTR   001  04D6 0565   0567  0569  0574
$RUNIT  001  0001 0312
$SFAID  001  050D 0570
$SPRNT  001  0465 0537   0539
$SRTRN  001  04FE 0569   0570
$STEPT  001  0002 0313
$SWPCR  001  0511 0575   0577
$TABLN  001  03CB 0284   0287
$TFLOW  001  0008 0319
$TRACE  001  0004 0314
$TRALL  001  0010 0320
$TROVR  001  054E 0589   0592
$TRUNK  001  0080 0272
$TRVAR  001  0020 0321
$UNMSK  001  048D 0550   0553  2053
$USRDR  001  03DC 0461   0462
$VMDEF  001  0080 0325
$VOLF1  001  03FE 0504   0505
$VOLF2  001  040E 0506
$VOLID  001  03F6 0502   0503  0507
$VOLR1  001  03F6 0503   0504
$VOLR2  001  0406 0505   0506
$WAITF  001  057F 0605   0607  2335  2432
$WFDEF  001  0040 0519
$WFLOK  001  0008 0382
$WFNME  001  0443 0518   0523
$WSIND  001  0004 0379
$XIND1  001  03D0 0310   0329
$XIND2  001  03D1 0329   0338
$XIND3  001  03D8 0457   0460
$XPREC  001  0040 0322
$XRSAV  001  03C7 0282   0284  1926
$ZTRAD  001  05A2 0611
$12K    001  0004 0466
$16CKY  001  0008 0468
$16K    001  0002 0465
$22IMP  001  0001 0463
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#$$#CK  001  0000 1800
#$$#CN  001  0000 1768
#$$#CO  001  0000 1560
#$$#CS  001  0000 1620
#$$#DR  001  0000 1364
#$$#ER  001  0000 1564
#$$#FS  001  0000 1660
#$$#IN  001  0000 1804
#$$#PW  001  0000 1808
#$$#RS  001  0000 1640
#$$#SA  001  0000 1628
#$$#SS  001  0000 1624
#$$#VU  001  0600 1584
#$$#0T  001  0700 1356
#$$#1T  001  0000 1360
#$$BCO  001  0600 1372
#$$BOV  001  0800 1644
#$$DPR  001  0700 1380
#$$DRE  001  0889 1396
#$$DSP  001  2800 1416
#$$ECM  001  0C00 1676
#$$EFK  001  0C00 1696
#$$ERR  001  0C00 1668
#$$EXM  001  0C00 1556
#$$FIL  001  0E00 1636
#$$FIS  001  0E00 1632
#$$FML  001  0200 1764
#$$FMS  001  0200 1604
#$$GRA  001  0889 1528
#$$GUF  001  0C00 1664
#$$INL  001  0600 1744
#$$INS  001  0600 1368
#$$KAL  001  0C00 1532
#$$KCA  001  0C00 1748
#$$KCH  001  0C00 1500
#$$KCN  001  0C00 1616
#$$KCT  001  0C00 1468
#$$KDE  001  0C00 1464
#$$KDI  001  0D00 1544
#$$KDN  001  0C00 1452
#$$KDO  001  0E00 1548
#$$KED  001  0C00 1388
#$$KEN  001  0C00 1392  1917
#$$KEX  001  0C00 1412
#$$KGO  001  0C00 1384
#$$KHE  001  0C00 1568
#$$KKE  001  0C00 1796
#$$KLI  001  0C00 1472
#$$KLL  001  0920 1772
#$$KLO  001  0C00 1476
#$$KME  001  0D00 1456
#$$KMO  001  0C00 1400
#$$KNA  001  0C00 1512
#$$KOV  001  0E00 1432
#$$KPA  001  0C00 1408
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SYMBOL	LEN	VALUE	DEFN	REFERENCES
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#$$KRE	001	0C00	1440	
#$$KRL	001	0700	1536	
#$$KRM	001	0C00	1404	
#$$KRN	001	0700	1424	
#$$KRO	001	0D00	1428	
#$$KRS	001	0C00	1752	
#$$KRU	001	0C00	1448	
#$$KRV	001	0800	1540	
#$$KSA	001	0C00	1484	
#$$KSE	001	0E00	1524	
#$$KSO	001	0C20	1576	
#$$KSS	001	0C00	1508	
#$$KSV	001	0980	1504	
#$$KSY	001	0C00	1516	
#$$KWI	001	0C00	1444	
#$$KWR	001	0C00	1436	
#$$LOA	001	0600	1376	
#$$MIP	001	0C00	1572	
#$$SDS	001	0C00	1684	
#$$SFF	001	0E00	1688	
#$$SFL	001	0F00	1680	
#$$SFO	001	1500	1652	
#$$SFS	001	0C00	1648	
#$$SPA	001	0C00	1488	
#$$SPO	001	0806	1492	
#$$SPS	001	0C00	1480	
#$$STR	001	1600	1656	
#$$TDC	001	1000	1460	
#$$TSY	001	1000	1420	
#$$TVK	001	0FC0	1596	
#$$UAL	001	0C00	1612	
#$$UAT	001	0900	1708	
#$$UCD	001	0900	1716	
#$$UCN	001	0C00	1700	
#$$UCP	001	0700	1704	
#$$UDE	001	0C00	1720	
#$$UDI	001	0C00	1724	
#$$UEX	001	0C00	1608	
#$$UIN	001	0C00	1712	
#$$UPA	001	0C00	1692	
#$$UPO	001	0C00	1760	
#$$UPT	001	0C00	1756	
#$$VCR	001	2000	1552	
#$$VLO	001	0600	1588	
#$$VOD	001	0600	1592	
#$$VVM	001	0000	1600	
#$$VXI	001	0600	1580	
#$$ZDU	001	1100	1732	
#$$ZLB	001	1100	1776	
#$$ZLO	001	1100	1736	
#$$ZLV	001	0F00	1792	
#$$ZL1	001	0F00	1780	
#$$ZL2	001	0F00	1784	
#$$ZL3	001	0C00	1788	

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                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                      VER 15, MOD 00  31/05/22  PAGE  44

#$$ZTR  001  1000 1728
#$$ZUT  001  0C00 1740
#$#BLN  001  18D4 1671
#$#CKT  001  2118 1799
#$#CNF  001  2000 1767
#$#COR  001  0800 1559
#$#CSA  001  1000 1619
#$#DRT  001  0000 1363
#$#ERM  001  0928 1563
#$#FSP  001  1880 1659
#$#INV  001  212C 1803
#$#PWR  001  2300 1807
#$#RSP  001  1780 1639
#$#SAV  001  1180 1627
#$#SSA  001  1128 1623
#$#VUF  001  0B08 1583
#$#0TR  001  0000 1355
#$#1TR  001  0080 1359
#$@#BL  001  0001 1673
#$@#CK  001  0004 1801
#$@#CN  001  0001 1769
#$@#CO  001  003A 1561
#$@#CS  001  003A 1621
#$@#DR  001  0008 1365
#$@#ER  001  0032 1565
#$@#FS  001  0030 1661
#$@#IN  001  003A 1805
#$@#PW  001  00C0 1809
#$@#RS  001  0030 1641
#$@#SA  001  0108 1629
#$@#SS  001  0001 1625
#$@#VU  001  0002 1585
#$@#0T  001  0018 1357
#$@#1T  001  0018 1361
#$@BCO  001  0018 1373
#$@BOV  001  0018 1645
#$@DPR  001  0005 1381
#$@DRE  001  0001 1397
#$@DSP  001  0004 1417
#$@ECM  001  0006 1677
#$@EFK  001  0002 1697
#$@ERR  001  0003 1669
#$@EXM  001  0003 1557
#$@FIL  001  0009 1637
#$@FIS  001  0009 1633
#$@FML  001  0052 1765
#$@FMS  001  0052 1605
#$@GRA  001  0003 1529
#$@GUF  001  0010 1665
#$@INL  001  0010 1745
#$@INS  001  0010 1369
#$@KAL  001  000F 1533
#$@KCA  001  000C 1749
#$@KCH  001  000C 1501
#$@KCN  001  0010 1617
#$@KCT  001  0009 1469
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                                  CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  31/05/22  PAGE  45

#$@KDE   001  0010 1465
#$@KDI   001  0005 1545
#$@KDN   001  0010 1453
#$@KDO   001  000C 1549
#$@KED   001  000E 1389
#$@KEN   001  0006 1393
#$@KEX   001  0003 1413
#$@KGO   001  0002 1385
#$@KHE   001  000C 1569
#$@KKE   001  0006 1797
#$@KLI   001  0011 1473
#$@KLL   001  0001 1773
#$@KLO   001  0008 1477
#$@KME   001  0003 1457
#$@KMO   001  0004 1401
#$@KNA   001  0008 1513
#$@KOV   001  0009 1433
#$@KPA   001  0005 1409
#$@KPO   001  000D 1497
#$@KPR   001  0009 1521
#$@KRE   001  0002 1441
#$@KRL   001  0004 1537
#$@KRM   001  0003 1405
#$@KRN   001  0003 1425
#$@KRO   001  000A 1429
#$@KRS   001  000A 1753
#$@KRU   001  0003 1449
#$@KRV   001  000D 1541
#$@KSA   001  0011 1485
#$@KSE   001  0004 1525
#$@KSO   001  0005 1577
#$@KSS   001  000B 1509
#$@KSV   001  0002 1505
#$@KSY   001  000F 1517
#$@KWI   001  0002 1445
#$@KWR   001  0002 1437
#$@LOA   001  0013 1377
#$@MIP   001  000D 1573
#$@SDS   001  0004 1685
#$@SFF   001  0008 1689
#$@SFL   001  0005 1681
#$@SFO   001  0003 1653
#$@SFS   001  0011 1649
#$@SPA   001  0004 1489
#$@SPO   001  0003 1493
#$@SPS   001  0001 1481
#$@STR   001  0002 1657
#$@TDC   001  0003 1461
#$@TSY   001  0003 1421
#$@TVK   001  0001 1597
#$@UAL   001  0011 1613
#$@UAT   001  000C 1709
#$@UCD   001  000B 1717
#$@UCN   001  0009 1701
#$@UCP   001  000F 1705
#$@UDE   001  000E 1721
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SYMBOL	LEN	VALUE	DEFN	REFERENCES
#$@UDI	001	0008	1725	
#$@UEX	001	000E	1609	
#$@UIN	001	000F	1713	
#$@UPA	001	0004	1693	
#$@UPO	001	0005	1761	
#$@UPT	001	0012	1757	
#$@VCR	001	0008	1553	
#$@VLO	001	0002	1589	
#$@VOD	001	0016	1593	
#$@VVM	001	0030	1601	
#$@VXI	001	0002	1581	
#$@ZDU	001	0008	1733	
#$@ZLB	001	0002	1777	
#$@ZLO	001	000C	1737	
#$@ZLV	001	0006	1793	
#$@ZL1	001	0007	1781	
#$@ZL2	001	000D	1785	
#$@ZL3	001	000A	1789	
#$@ZTR	001	0001	1729	
#$@ZUT	001	0014	1741	
#$BCOM	001	0080	1371	
#$BOLV	001	1780	1643	
#$DPRI	001	014C	1379	
#$DREA	001	0200	1395	
#$DSPL	001	0240	1415	
#$ECMA	001	1900	1675	
#$EFKE	001	1990	1695	
#$ERRP	001	18C0	1667	
#$EXMS	001	07D4	1555	
#$FILN	001	1724	1635	
#$FIST	001	1700	1631	
#$FMLN	001	1E00	1763	
#$FMST	001	0D00	1603	
#$GRAP	001	0690	1527	
#$GUFU	001	1880	1663	
#$INLN	001	1C84	1743	
#$INST	001	0020	1367	
#$KALL	001	06A4	1531	
#$KCAL	001	1CC4	1747	
#$KCHA	001	053C	1499	
#$KCND	001	0F80	1615	
#$KCTL	001	03BC	1467	
#$KDEL	001	035C	1463	
#$KDIS	001	0744	1543	
#$KDNT	001	0300	1451	
#$KDOV	001	0780	1547	
#$KEDI	001	0188	1387	
#$KENA	001	01C4	1391	
#$KEXT	001	0234	1411	
#$KGOS	001	0180	1383	
#$KHEL	001	0A30	1567	
#$KKEY	001	2100	1795	
#$KLIS	001	0400	1471	
#$KLLA	001	2004	1771	
#$KLOG	001	0444	1475	
#$KMER	001	030C	1455	

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#$KMOU  001  0204 1399
#$KNAM  001  05C0 1511
#$KOVM  001  0290 1431
#$KPAS  001  0220 1407
#$KPOO  001  0508 1495
#$KPRT  001  063C 1519
#$KREA  001  02BC 1439
#$KRLA  001  0700 1535
#$KRMO  001  0214 1403
#$KRNU  001  0280 1423
#$KROV  001  028C 1427
#$KRSU  001  1D24 1751
#$KRUN  001  02CC 1447
#$KRVL  001  0710 1539
#$KSAV  001  0488 1483
#$KSET  001  0680 1523
#$KSOV  001  0AC8 1575
#$KSSP  001  0594 1507
#$KSVL  001  058C 1503
#$KSYM  001  0600 1515
#$KWID  001  02C4 1443
#$KWRI  001  02B4 1435
#$LOAD  001  0100 1375
#$MIPP  001  0A80 1571
#$SDSY  001  192C 1683
#$SFFI  001  193C 1687
#$SFLO  001  1918 1679
#$SFOV  001  1844 1651
#$SFSY  001  1800 1647
#$SPAC  001  04CC 1487
#$SPOV  001  04DC 1491
#$SPSY  001  0484 1479
#$STRO  001  1850 1655
#$TDCK  001  0350 1459
#$TSYK  001  0250 1419
#$TVKB  001  0BAC 1595
#$UALL  001  0F00 1611
#$UATR  001  1A38 1707
#$UCDI  001  1AD8 1715
#$UCNF  001  19B8 1699
#$UCPL  001  19DC 1703
#$UDEL  001  1B24 1719
#$UDIS  001  1B5C 1723
#$UEXL  001  0EA8 1607
#$UINI  001  1A88 1711
#$UPAC  001  1980 1691
#$UPOV  001  1D24 1759
#$UPTF  001  1D5C 1755
#$VCRT  001  07B4 1551
#$VLOA  001  0B80 1587
#$VODK  001  0B88 1591
#$VVMR  001  0C00 1599
#$VXIT  001  0B00 1579
#$ZDUM  001  1BA4 1731
#$ZLBM  001  2008 1775
#$ZLOA  001  1BC4 1735
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#$ZLVR  001  20B0 1791
#$ZL1M  001  2010 1779
#$ZL2M  001  2030 1783
#$ZL3M  001  2088 1787
#$ZTRA  001  1B9C 1727
#$ZUTM  001  1C14 1739
#ENAB   001  0C07 1921
#KENAB  001  0000 0001
@@E001  001  0000 1259   1261
@@E003  001  0001 1261   1263
@@E004  001  0002 1263   1265
@@E005  001  0003 1265   1267
@@E006  001  0004 1267   1269
@@E007  001  0005 1269   1271
@@E008  001  0006 1271   1273
@@E009  001  0007 1273   1275
@@E010  001  0008 1275   1277
@@E011  001  0009 1277   1279
@@E012  001  000A 1279   1281
@@E013  001  000B 1281   1283
@@E014  001  000C 1283   1285
@@E015  001  000D 1285   1287
@@E016  001  000E 1287   1289
@@E017  001  000F 1289   1291
@@E018  001  0010 1291   1293
@@E019  001  0011 1293   1295
@@E020  001  0012 1295   1297
@@E021  001  0013 1297   1299
@@E023  001  0014 1299   1301
@@E024  001  0015 1301   1303
@@E025  001  0016 1303   1305
@@E026  001  0017 1305   1307
@@E027  001  0018 1307   1309
@@E028  001  0019 1309   1311
@@E029  001  001A 1311   1313
@@E030  001  001B 1313   1315
@@E031  001  001C 1315   1317
@@E032  001  001D 1317   1319
@@E035  001  001E 1319   1321
@@E036  001  001F 1321   1323
@@E037  001  0020 1323   1325
@@E038  001  0021 1325   1327
@@E039  001  0022 1327   1329
@@E040  001  0023 1329   1331
@@E041  001  0024 1331   1333
@@E042  001  0025 1333   1335
@@E043  001  0026 1335   1337
@@E044  001  0027 1337   1339
@@E045  001  0028 1339   1341
@@E046  001  0029 1341   1343
@@E060  001  002A 1343   1345
@@E080  001  002B 1345
@@E100  001  0000 0731   0733
@@E101  001  0001 0733   0735
@@E102  001  0002 0735   0737
@@E103  001  0003 0737   0739
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@@E110   001  0004 0739    0741  2939
@@E112   001  0005 0741    0743
@@E113   001  0006 0743    0745
@@E114   001  0007 0745    0747
@@E115   001  0008 0747    0749
@@E116   001  0009 0749    0751
@@E117   001  000A 0751    0753
@@E120   001  000B 0753    0755  2809
@@E122   001  000C 0755    0757  2540
@@E123   001  000D 0757    0759  2770
@@E124   001  000E 0759    0761  2816
@@E129   001  000F 0761    0763
@@E130   001  0010 0763    0765
@@E131   001  0011 0765    0767
@@E133   001  0012 0767    0769
@@E134   001  0013 0769    0771
@@E135   001  0014 0771    0773
@@E136   001  0015 0773    0775
@@E137   001  0016 0775    0777  2063
@@E138   001  0017 0777    0779
@@E139   001  0018 0779    0781  2059
@@E142   001  0019 0781    0783
@@E143   001  001A 0783    0785
@@E150   001  001B 0785    0787
@@E151   001  001C 0787    0789
@@E160   001  001D 0789    0791
@@E162   001  001E 0791    0793
@@E163   001  001F 0793    0795
@@E164   001  0020 0795    0797
@@E200   001  0021 0797    0799
@@E205   001  0022 0799    0801
@@E210   001  0023 0801    0803
@@E211   001  0024 0803    0805
@@E212   001  0025 0805    0807
@@E213   001  0026 0807    0809
@@E215   001  0027 0809    0811
@@E216   001  0028 0811    0813
@@E217   001  0029 0813    0815
@@E220   001  002A 0815    0817
@@E221   001  002B 0817    0819
@@E222   001  002C 0819    0821
@@E223   001  002D 0821    0823
@@E225   001  002E 0823    0825
@@E226   001  002F 0825    0827
@@E227   001  0030 0827    0829
@@E228   001  0031 0829    0831
@@E229   001  0032 0831    0833
@@E230   001  0033 0833    0835
@@E232   001  0034 0835    0837
@@E234   001  0035 0837    0839
@@E237   001  0036 0839    0841
@@E240   001  0037 0841    0843
@@E241   001  0038 0843    0845
@@E242   001  0039 0845    0847
@@E248   001  003A 0847    0849
@@E249   001  003B 0849    0851
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                                  CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                    VER 15, MOD 00  31/05/22  PAGE  50

@@E250   001  003C 0851   0853
@@E251   001  003D 0853   0855
@@E252   001  003E 0855   0857
@@E253   001  003F 0857   0859
@@E254   001  0040 0859   0861
@@E255   001  0041 0861   0863
@@E256   001  0042 0863   0865
@@E300   001  0043 0865   0867
@@E301   001  0044 0867   0869
@@E302   001  0045 0869   0871
@@E303   001  0046 0871   0873
@@E304   001  0047 0873   0875
@@E305   001  0048 0875   0877
@@E308   001  0049 0877   0879
@@E310   001  004A 0879   0881
@@E315   001  004B 0881   0883
@@E316   001  004C 0883   0885
@@E320   001  004D 0885   0887
@@E325   001  004E 0887   0889
@@E330   001  004F 0889   0891
@@E335   001  0050 0891   0893
@@E338   001  0051 0893   0895
@@E340   001  0052 0895   0897
@@E350   001  0053 0897   0899
@@E351   001  0054 0899   0901
@@E352   001  0055 0901   0903
@@E360   001  0056 0903   0905
@@E361   001  0057 0905   0907
@@E362   001  0058 0907   0909
@@E371   001  0059 0909   0911
@@E380   001  005A 0911   0913
@@E390   001  005B 0913   0915
@@E400   001  005C 0915   0917
@@E410   001  005D 0917   0919
@@E415   001  005E 0919   0921
@@E417   001  005F 0921   0923
@@E420   001  0060 0923   0925
@@E430   001  0061 0925   0927
@@E432   001  0062 0927   0929
@@E433   001  0063 0929   0931
@@E450   001  0064 0931   0933
@@E451   001  0065 0933   0935
@@E460   001  0066 0935   0937
@@E461   001  0067 0937   0939
@@E464   001  0068 0939   0941
@@E465   001  0069 0941   0943
@@E466   001  006A 0943   0945
@@E467   001  006B 0945   0947
@@E469   001  006C 0947   0949
@@E470   001  006D 0949   0951
@@E471   001  006E 0951   0953
@@E473   001  006F 0953   0955
@@E474   001  0070 0955   0957
@@E475   001  0071 0957   0959
@@E476   001  0072 0959   0961
@@E477   001  0073 0961   0963
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                          CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                         VER 15, MOD 00  31/05/22  PAGE  51

@@E478   001  0074 0963   0965
@@E479   001  0075 0965   0967
@@E480   001  0076 0967   0969
@@E481   001  0077 0969   0971
@@E482   001  0078 0971   0973
@@E483   001  0079 0973   0975
@@E484   001  007A 0975   0977
@@E485   001  007B 0977   0979
@@E486   001  007C 0979   0981
@@E487   001  007D 0981   0983
@@E488   001  007E 0983   0985
@@E489   001  007F 0985   0987
@@E490   001  0080 0987   0989
@@E491   001  0081 0989   0991
@@E492   001  0082 0991   0993
@@E493   001  0083 0993   0995
@@E494   001  0084 0995   0997
@@E495   001  0085 0997   0999
@@E496   001  0086 0999   1001
@@E497   001  0087 1001   1003
@@E498   001  0088 1003   1005
@@E500   001  0089 1005   1007
@@E501   001  008A 1007   1009
@@E530   001  008B 1009   1011
@@E531   001  008C 1011   1013
@@E535   001  008D 1013   1015
@@E540   001  008E 1015   1017
@@E541   001  008F 1017   1019
@@E542   001  0090 1019   1021
@@E543   001  0091 1021   1023
@@E544   001  0092 1023   1025
@@E545   001  0093 1025   1027
@@E546   001  0094 1027   1029
@@E547   001  0095 1029   1031
@@E548   001  FFFF 1235
@@E549   001  0096 1031   1033
@@E550   001  0097 1033   1035   2336
@@E551   001  0098 1035   1037   2521
@@E552   001  0099 1037   1039
@@E553   001  009A 1039   1041
@@E554   001  009B 1041   1043
@@E555   001  009C 1043   1045
@@E556   001  009D 1045   1047
@@E558   001  009E 1047   1049
@@E570   001  009F 1049   1051
@@E571   001  00A0 1051   1053
@@E572   001  00A1 1053   1055
@@E573   001  00A2 1055   1057
@@E574   001  00A3 1057   1059
@@E575   001  FFFF 1237
@@E578   001  00A4 1059   1061
@@E579   001  FFFF 1239
@@E580   001  FFFF 1241
@@E585   001  00A5 1061   1063
@@E595   001  FFFF 1243
@@E597   001  FFFF 1245
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                               CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                         VER 15, MOD 00  31/05/22  PAGE  52

@@E598   001  FFFF 1247
@@E600   001  00A6 1063   1065
@@E601   001  00A7 1065   1067
@@E602   001  00A8 1067   1069
@@E603   001  00A9 1069   1071
@@E604   001  00AA 1071   1073
@@E606   001  00AB 1073   1075
@@E607   001  00AC 1075   1077
@@E608   001  00AD 1077   1079
@@E609   001  00AE 1079   1081
@@E610   001  00AF 1081   1083
@@E611   001  00B0 1083   1085
@@E612   001  00B1 1085   1087
@@E613   001  00B2 1087   1089
@@E614   001  00B3 1089   1091
@@E700   001  00B4 1091   1093
@@E701   001  00B5 1093   1095
@@E710   001  00B6 1095   1097
@@E712   001  00B7 1097   1099
@@E713   001  00B8 1099   1101
@@E714   001  00B9 1101   1103
@@E715   001  00BA 1103   1105
@@E716   001  00BB 1105   1107
@@E717   001  00BC 1107   1109
@@E718   001  00BD 1109   1111
@@E720   001  00BE 1111   1113
@@E721   001  00BF 1113   1115
@@E723   001  00C0 1115   1117
@@E724   001  00C1 1117   1119
@@E725   001  00C2 1119   1121
@@E726   001  00C3 1121   1123
@@E727   001  00C4 1123   1125
@@E728   001  00C5 1125   1127
@@E729   001  00C6 1127   1129
@@E730   001  00C7 1129   1131
@@E732   001  00C8 1131   1133
@@E752   001  00C9 1133   1135
@@E753   001  00CA 1135   1137
@@E754   001  00CB 1137   1139
@@E755   001  00CC 1139   1141
@@E756   001  00CD 1141   1143
@@E757   001  00CE 1143   1145
@@E758   001  00CF 1145   1147
@@E759   001  00D0 1147   1149
@@E760   001  00D1 1149   1151
@@E761   001  00D2 1151   1153
@@E762   001  00D3 1153   1155
@@E763   001  00D4 1155   1157
@@E764   001  00D5 1157   1159
@@E765   001  00D6 1159   1161
@@E766   001  00D7 1161   1163
@@E767   001  00D8 1163   1165
@@E768   001  00D9 1165   1167
@@E769   001  00DA 1167   1169
@@E770   001  00DB 1169   1171
@@E771   001  00DC 1171   1173
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@@E772   001   00DD 1173   1175
@@E773   001   00DE 1175   1177
@@E774   001   00DF 1177   1179
@@E775   001   00E0 1179   1181
@@E776   001   00E1 1181   1183
@@E777   001   00E2 1183   1185
@@E778   001   00E3 1185   1187
@@E779   001   00E4 1187   1189
@@E780   001   00E5 1189   1191
@@E781   001   00E6 1191   1193
@@E782   001   00E7 1193   1195
@@E783   001   00E8 1195   1197
@@E784   001   00E9 1197   1199
@@E785   001   00EA 1199   1201
@@E786   001   00EB 1201   1203
@@E790   001   00EC 1203   1205
@@E791   001   00ED 1205   1207
@@E792   001   00EE 1207   1209
@@E793   001   00EF 1209   1211
@@E794   001   00F0 1211   1213
@@E795   001   00F1 1213   1215
@@E796   001   00F2 1215   1217
@@E797   001   00F3 1217   1219
@@E798   001   00F4 1219   1221
@@E800   001   FFFF 1249
@@E801   001   FFFF 1251
@@E802   001   FFFF 1253
@@E803   001   FFFF 1255
@@E804   001   FFFF 1257
@@E900   001   00F5 1221   1223
@@E901   001   00F6 1223   1225
@@E902   001   00F7 1225   1227
@@E903   001   00F8 1227   1229
@@E905   001   00F9 1229   1231
@@E906   001   00FA 1231   1233
@@E910   001   00FB 1233
@ARR     001   0008 0016   2013  2198* 2199  2200* 2201  2313  2430  2537  2732  2937  3088
@ASIGN   001   007C 0071
@ASTER   001   005C 0069
@BCRDL   001   0050 0088
@BE      001   0081 0043   2807  3117
@BF      001   0090 0052
@BH      001   0084 0041
@BL      001   0082 0042
@BLANK   001   0040 0065   2573  2942  2948
@BM      001   0082 0054
@BNE     001   0001 0046   2933
@BNH     001   0004 0044
@BNL     001   0002 0045   2046
@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
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                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                    VER 15, MOD 00  31/05/22  PAGE  54

@BP     001 0084 0053
@BR     001 0001 0013    1924  1925* 1932  1937  1938  1958  1967  1984  1985  1989  1992  1997
                         2001  2013  2014  2015  2025  2036  2038  2042  2046  2048  2194  2195
                         2197* 2198  2199  2200  2201  2203  2204  2204  2205  2207  2208  2210
                         2212  2212  2213  2213  2214  2216  2218  2219  2219  2220  2222  2224
                         2225  2225  2226  2226  2227  2227  2228  2235* 2255  2255  2257  2257
                         2258  2259  2260  2260  2261  2261  2262  2263  2263  2264  2265  2266
                         2266  2267  2269  2269  2270  2270  2271  2271  2272  2272  2273  2309
                         2311  2312* 2314  2316  2317  2321  2323  2329  2330  2331  2331  2332
                         2333  2333  2336  2337  2337  2340  2341  2342  2342  2349  2351  2352
                         2358* 2362  2364  2367  2368  2369  2377  2383  2386  2387  2388  2389
                         2395  2396  2399  2400  2401  2402  2406  2406  2412  2412  2415  2417
                         2417  2419  2419  2420  2424  2424  2425  2426  2430  2443  2449  2450
                         2450  2451  2452  2455  2456  2457  2457  2460  2532  2534  2535* 2537
                         2539  2541  2541  2551  2551  2556  2556  2557  2557  2558  2558  2559
                         2559  2560  2560  2564  2565  2565  2568  2574  2575  2580  2581  2581
                         2583* 2731  2733* 2742  2746  2746  2750  2750* 2775  2776  2777  2777
                         2783  2783* 2805  2823* 3084  3086  3087* 3088  3098  3100  3108  3109
                         3110  3114  3115  3116  3127  3128  3135  3148  3163*
@BT     001 0010 0051
@BZ     001 0081 0055
@B1     001 0001 0063    2466  2567  2572  3193
@CADDR  001 0002 0142    2204  2337  2377  2406  2412  2417  2419  3148  3150
@CARDL  001 0060 0087    0644
@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    2766  2785  2944
@CPLUS  001 004E 0079
@DADDR  001 0002 0140    2203  2331
@DBFR1  001 0004 0129    2270*
@DBFR2  001 0005 0130    3187  3197
@DCALK  001 0001 0081
@DCBCY  001 0009 0115
@DCBT1  001 0050 0117
@DCNT   001 0003 0128    2252  3110* 3135*
@DCST1  001 0040 0116
@DCTRL  001 0000 0125
@DCYL   001 0001 0126    2240
@DD2    001 0003 0030
@DGET   001 0001 0134    2472  3181  3191
@DOLAR  001 005B 0068
@DOP2   001 0004 0028    2199* 2203* 2204* 2275  2276
@DPLNG  001 0006 0132    2205  2239
@DPOS   001 0000 0133
@DPUT   001 0002 0135    2464
@DSAD   001 0002 0127    2241  3108* 3109* 3127* 3128* 3148
@DSBCY  001 0004 0106
@DSCS1  001 0000 0107
@DSIVF  001 0003 0138
@DSPIN  001 0002 0131
@DTRSZ  001 0018 0085
@DVBCY  001 0007 0108
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                              CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                          VER 15, MOD 00  31/05/22  PAGE  55

@DVRFY   001  0031 0136
@DWAIT   001  00FF 0137
@DWBCY   001  0005 0103
@DWSIZ   001  00C0 0105
@DWTB1   001  0003 0104
@DZERO   001  00F0 0064
@D1      001  0002 0026   2551
@EOF     001  001C 0077   1963  2380
@EOFTC   001  0075 0162   2505
@EOS     001  001E 0076   1943  2764  2792  2798  2806  2950
@FDDBC   001  0000 0195
@FDE1    001  000C 0200
@FDFNA   001  000B 0198
@FDHLN   001  0002 0208
@FDLNC   001  0002 0193
@FDNSC   001  0003 0210
@FDSD    001  0000 0206
@FLACE   001  0009 0197
@FLDBC   001  0001 0196
@FLENT   001  0004 0201
@FLFNA   001  0002 0199
@FLHLN   001  0002 0209
@FLLNC   001  0002 0194
@FLNSC   001  0001 0211
@FLSD    001  0001 0207
@HDRLN   001  0007 0092   0672
@IAR     001  0010 0017
@INDEX   001  0001 0156   0157
@INST3   001  0003 0032
@INST4   001  0004 0033
@INST5   001  0005 0034
@INST6   001  0006 0035
@I1IAR   001  00C0 0020
@LINSZ   001  00F4 0084   0646
@MAPEN   001  0005 0089
@MINCR   001  2000 0083
@MINUS   001  0060 0080
@NOP     001  0080 0040   1953  2029  2087  2208  2386  2546  2620  2743  2800
@NUMBR   001  007B 0070
@OPD2    001  0004 0029
@OP1     001  0003 0027   2013* 2014* 2015* 2195* 2201* 2356* 2359  2361  2414  2422  2462  2534*
                         2537* 2731* 2732* 2749* 2758* 2782* 2937* 3086* 3088*
@OP2     001  0005 0031
@PCTRL   001  0000 0149
@PDATA   001  0003 0151
@PGCSZ   001  0020 0082   0083
@PPLNG   001  0004 0148
@PRCNT   001  0001 0150
@PRETR   001  00C0 0154
@PRINT   001  0040 0152   0154
@PSR     001  0004 0015   2819*
@PWAIT   001  00FF 0158
@P1IAR   001  0020 0018
@P2IAR   001  0040 0019
@Q       001  0001 0024   1937* 1938* 2207* 2208* 2218* 2224* 2250  2251  2253  2262* 2264  2336*
                         2383* 2386* 2399* 2405  2437  2614  2618  2744* 2748* 2779  2781* 2833
```

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                                     2956
@REGL    001  0002  0012   2758
@RETRN   001  0080  0153   0154
@RLDWN   001  004F  0159
@RTRNC   001  0080  0161
@SBLN    001  0005  0170   2502
@SBLNL   001  0002  0184
@SCTSZ   001  0100  0100   1950   1978   1994   2805
@SDFLN   001  0007  0090
@SDF0    001  0000  0166   2506
@SDF1    001  0001  0167   2507
@SDF2    001  0002  0168   2508
@SDF3    001  0003  0169
@SECCY   001  0030  0086
@SIST    001  0001  0181
@SLASH   001  0061  0067
@SLAST   001  0002  0183   2397
@SMIDL   001  0003  0182
@SNULL   001  0080  0173   2354   2363
@SONLY   001  0000  0180   2384
@STEXT   001  0007  0172
@STYPE   001  0006  0171   2503
@TBCNT   001  0000  0160
@TBLEF   001  0010  0155   0157
@TBLIX   001  0011  0157
@UCB     001  0087  0039   1937   1938   2262   2383   2394   2399   2616   2744   2748   2779   2781   2934
                                     2945
@UPARW   001  005A  0078
@VADDR   001  0002  0141
@VENTA   001  0056  0113
@VMDDV   001  00FE  0114
@VMFD1   001  0000  0109
@VMFD2   001  0001  0110
@VMRS3   001  0002  0112
@VMTRL   001  0001  0111
@VOLID   001  0006  0091
@VQ      001  0001  0025
@WSFIT   001  0500  0101   3182   3192
@WSTBL   001  0503  0102   2468
@XR      001  0002  0014   1926*  1932*  1934   1939   1939*  1943   1961   1963   1972*  1974   1974*  1975
                           1978   1981   1990   1990*  1994   2014   2015   2018   2031   2034   2045   2052*
                           2320*  2329*  2330   2338   2341   2347   2349   2350   2350*  2354   2356   2357
                           2357*  2363   2365   2375   2376   2378   2384   2387   2388   2389   2390   2390*
                           2395   2397   2400   2401   2402   2403   2403*  2404   2410   2413   2415   2421
                           2423   2423*  2449*  2451   2452*  2453   2456   2539   2548   2564   2567   2567*
                           2572   2572*  2573   2580   2752   2757   2757*  2764   2766   2769*  2785   2790
                           2790*  2792   2798   2806   2815*  2818*  2938   2941   2941*  2942   2944   2947
                           2947*  2948   2950   2952   3094*  3096   3096*  3098   3109   3114   3115   3128
@ZERO    001  0000  0062   2104   2105   2106   2107   2207   2351   2395   2404*  2413   2796   3109   3115
                           3149
C4BCHC   001  0004  2608
C4BCHR   001  0FF2  2596   2564*  2565
C4BINI   001  0FF1  2594   2541
C4BIN2   001  0F86  2531   2532   2535   2735   2760
C4BLEN   002  0FEE  2606   2580*  2581*
C4BLNK   003  0FA1  2614
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                                    CROSS REFERENCE

SYMBOL   LEN VALUE DEFN    REFERENCES                        VER 15, MOD 00  31/05/22  PAGE  57

C4BLOW   001  00F0 2610    2548
C4BLVL   002  0002 2612    2541   2556   2557   2558   2559   2560   2565
C4BNMC   004  0F9D 2618
C4BNOP   001  0080 2620
C4BSAV   002  0FF4 2600    2539*  2581   2749   2758   2782   2818
C4BSPC   001  0087 2616
C4BVAL   002  0FF0 2592    2541*  2556   2556*  2557   2558   2558*  2559   2559*  2560*  2565*  2612   2742
                           2776
C4BWRK   002  0FEE 2589    2557*  2560   2606   2612
C4BYT1   001  0FEF 2591
C4B100   004  0F9C 2542    2618
C4B200   003  0FA0 2546    2568   2614
C4B300   003  0FA3 2548    2574
C4B590   003  0FD2 2572    2551   2575
C4B600   003  0FD5 2573    2546
C4B700   003  0FDE 2580    2549
C4B800   004  0FE5 2583    2534*  2552
C4B850   004  0FE9 2585    2537*
C4B900   001  0FF5 2602    2542*  2551*
C4END    001  0FF6 2621
DL2ICS   001  0000 2107
DL4CYL   001  0D8C 2240    2212*
DL4C01   002  0D92 2248    2198   2200   2212
DL4C05   002  0D94 2249    2204
DL4C24   003  0D63 2251    2225
DL4C48   003  0D50 2253    2219   2260   2266
DL4C96   003  0D3F 2250    2213
DL4DPL   006  0D90 2239    2205*
DL4EFD   001  0001 2246    2218   2264
DL4END   001  0DD2 2277
DL4ETB   001  0080 2247    2224
DL4E01   001  0001 2245    2220
DL4E24   001  0018 2244    2222
DL4E48   001  0030 2243    2216   2258
DL4E96   001  0060 2242    2210
DL4ICS   001  0D16 2193    2441   2458   3131   3138
DL4LST   001  0D8B 2238    2231   2240   2241   2252   2270*
DL4SAV   005  0D2D 2276    2263*  2266*  2269
DL4SCD   001  0D8D 2241    2210   2213*  2216   2219*  2222   2225*  2226   2226*  2227   2227*  2228*  2257
                           2263   2269*  2271*
DL4SCT   001  0D8E 2252    2220   2255   2261*  2270   2271   2272*
DL4SPT   004  0D95 2256    2221
DL4WRK   005  0D2E 2275    2255*  2257*  2258   2260*  2261   2272
DL4010   001  0D1A 2196    2194   2197
DL4020   005  0D2A 2203    2199*  2275   2276
DL4030   005  0D33 2205    2203*  2204*
DL4035   003  0D38 2207    2273
DL4040   003  0D3E 2210    2214   2250
DL4050   003  0D4F 2216    2211   2253
DL4060   003  0D5C 2220    2217
DL4070   003  0D62 2222    2251   2259   2265   2267
DL4080   004  0D6F 2226    2223
DL4100   003  0D77 2228    2207*  2218*  2224*  2264
DL4200   003  0D80 2233    2208*  2262*
DL4500   004  0D95 2255    2256
DL4600   004  0DBF 2269    2233
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DL4900  004  0D83 2235   2195*
DL4920  004  0D87 2236   2201*
GFIBF1  001  1200 2110   2111  3067  3184
GFIBF2  001  1300 2111   2112  3194
GFIBR1  001  1194 3187   3150
GFIBR2  001  119A 3197
GFIBSE  001  1131 3093   3084  3087
GFICT1  001  0001 3053   3116  3135  3154
GFICT2  001  0002 3054   3110
GFIDS0  001  0000 3056
GFIDS1  001  0001 3057
GFIDS2  001  0002 3058   3098
GFIDS3  001  0003 3059
GFIDS4  001  0004 3060   3096  3114  3128
GFIDS5  001  0005 3061
GFIDS8  001  0008 3062   3071
GFIDTA  001  0003 3073   3108  3127
GFILNO  002  118D 3173   1958* 1975* 2018  3098
GFILN1  001  0001 3064   3109  3114  3115  3128
GFILN2  001  0002 3065   3098
GFINDN  001  1126 3085   1959  2017
GFIND0  004  1184 3163   3086*
GFIND2  004  1188 3164   3088*
GFINTY  001  1D08 3071   3094
GFIRAD  001  1195 3190   3127* 3128* 3132  3197
GFIRED  001  118F 3180   3108* 3109* 3110* 3135* 3139  3148  3187
GFITAD  001  1D00 3069   3071
GFIWRK  001  118E 3175   3114* 3115* 3116
GFI100  003  1135 3096   3100
GFI150  004  1138 3098
GFI200  003  1154 3117
GFI500  004  1167 3138   3117
GRABIT  001  0DD2 2310   1966  2006  2024  2051  3152
GRABOA  002  0F71 2489   2406  2419  2424
GRABSE  004  0EB6 2515   2309  2312
GRACCA  002  0F62 2466
GRACFN  001  0F61 2464
GRACPL  001  0F61 2463   2442
GRACSC  001  0F64 2469   2333*
GRAEBS  001  00FF 2497   2332  2460
GRAEDB  001  0002 2483   2340  2455
GRAEDC  001  0001 2514
GRAEDL  001  0006 2502   2357  2375
GRAEDS  001  0005 2516   2450
GRAEDT  001  0007 2503   2347  2376  2378
GRAEET  001  0075 2505   2347  2378
GRAEFG  001  0004 2496   2369
GRAEFI  001  0000 2492   2314
GRAEFR  001  0001 2494   2321  2367
GRAEFS  001  0002 2495   1960  2323
GRAEFW  001  0003 2493   2005  2050  2316  2443
GRAELK  001  0000 2499   2338  2341  2453  2456
GRAELL  001  0002 2504   2375
GRAELN  001  0000 2500   2338  2453
GRAELP  001  0007 2510   2390
GRAELS  001  0004 2511   2403
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                                        CROSS REFERENCE

SYMBOL   LEN VALUE DEFN    REFERENCES                              VER 15, MOD 00  31/05/22  PAGE  59

GRAEMR   001  001B 2512    2410
GRAENC   001  0001 2513    2410   2415* 2421   2423
GRAERR   004  0F7A 2521    2336* 2352   2364   2368
GRAESC   001  0001 2498
GRAES0   001  0001 2506    2354   2363
GRAES1   001  0002 2507    2349   2350   2387   2388* 2389   2400   2401* 2402
GRAES2   001  0003 2508    2365   2384   2397
GRAETP   001  0002 2509    2365
GRAEW2   001  0006 2517
GRAEXA   001  0001 2501    2502   2503   2506   2507   2508
GRANCA   002  0F6C 2477    2330* 2337* 2450   2451*
GRANDA   002  0F69 2473    2331* 2340* 2341* 2342* 2455* 2456* 2457*
GRANPB   002  0F71 2482    2342   2457   2488   2489   2490
GRANPL   001  0F67 2471    2459
GRANXC   002  0F71 2490
GRAONE   002  0F71 2488    2415
GRAPSG   002  0F76 2486    2388
GRASAR   004  0E59 2361    2313*
GRASBR   004  0E55 2359    2311*
GRASEG   001  0F79 2491    2389* 2402* 2424*
GRASIZ   001  0F72 2484    2332* 2349* 2351   2387* 2400* 2460*
GRASSG   002  0F78 2487    2401
GRASSZ   002  0F6F 2481    2337
GRASVC   003  0EDA 2405    2395*
GRATND   005  0EF4 2414    2412* 2417   2419*
GRATXT   002  0F74 2485    2377
GRA020   004  0DEA 2320    2356*
GRA100   003  0DFD 2329    2315
GRA140   003  0E1B 2338
GRA150   004  0E28 2342    2339
GRA200   003  0E2F 2347    2324
GRA210   004  0E35 2349    2325   2371
GRA220   003  0E3C 2351    2392   2394
GRA230   004  0E4B 2356    2348   2366   2370   2381
GRA240   004  0E52 2358    2359   2444
GRA245   004  0E56 2360    2361
GRA250   003  0E5A 2362    2353   2355
GRA260   003  0E5D 2363    2343
GRA300   005  0E7B 2375    2322
GRA303   003  0E98 2383    2379
GRA305   004  0EA4 2387    2385
GRA310   004  0EB6 2392    2383* 2386* 2393   2399* 2425   2515
GRA313   004  0ECA 2400    2398
GRA315   003  0ED9 2404    2405
GRA316   004  0EDC 2406    2426
GRA317   001  0EE0 2407    2391
GRA320   005  0EF1 2413    2414   2420
GRA330   004  0F04 2419    2416
GRA350   005  0F0B 2421    2409   2411   2422
GRA360   003  0F10 2423    2418
GRA5SA   004  0F60 2462    2430*
GRA500   003  0F1D 2430    2362   2396
GRA510   003  0F26 2436    2437
GRA520   004  0F29 2441    2317
GRA600   001  0F36 2445    2436
GRA620   004  0F50 2457    2454
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GRA640  004  0F54 2458
GRA660  003  0F5A 2460
GRA680  004  0F5D 2461   2462
GRBFRA  002  0F66 2470   2329  2449  2450* 2452  3150*
GRBFR1  001  1200 3067   2470
GRIDWR  003  0F27 2437   1928*
GRLINE  001  0000 2104   2375*
GRSCTR  001  0F6A 2474   2333
GRSRDA  002  0F63 2465   2331  2466  3148*
GRTEND  005  0F0E 2422   2377* 2406* 2412  2417*
GRTEXT  001  0000 2106   2380* 2485
GRTYPE  001  0000 2105   2376*
GRWHAT  001  0F6D 2478   1960* 2005* 2022* 2050* 2314  2316  2321  2323  2367  2369  2443  3149*
                         3154*
KENDIS  001  00E2 2093   1934
KENDSH  001  0060 2099   1981
KENEOF  001  2710 2094
KENIRM  001  0080 2098   2016
KENMIN  002  0D13 2078   1932
KENMSK  001  0080 2097   1961  2031  2034
KENOFF  001  0000 2096   2048
KENPLS  001  0005 2092   1939
KENRNG  001  0D0F 2070   1989* 2036  2042  2048*
KENSON  001  0001 2095   1989  2036  2042
KENTYP  001  0001 2101   1961* 2031* 2034*
KENWRK  002  0D11 2074
KENZER  002  0D15 2079   1958
KEN000  001  0000 2084   1975
KEN001  001  0001 2085   1978  1981  1994
KEN002  001  0002 2086   1958  1963  1974  1975  2018  2045
KEN003  001  0080 2087   1928
KEN004  001  0002 2088   2022
KEN005  001  0000 2089   1943  2018  2045
KEN006  001  0002 2090
KEN007  001  0003 2091   1990
KEN100  003  0C22 1939   1935
KEN110  004  0C32 1946   1941
KEN115  003  0C40 1953   1924  1925  1937*
KEN120  005  0C43 1958
KEN125  003  0C50 1961   1967
KEN130  004  0C60 1972   1951
KEN135  003  0C64 1974   1985  1997
KEN140  003  0C7E 1989   1982
KEN150  003  0C90 2001   1979
KEN155  004  0C93 2005   1964  1995
KEN170  003  0C9F 2013   1984  1992  2001
KEN180  005  0CB0 2018   2025
KEN182  004  0CBB 2022   2038
KEN185  003  0CC6 2029   1938* 2019  2046
KEN190  003  0CCF 2034   2029
KEN195  003  0CD2 2036   2032
KEN210  003  0CDB 2042   2020
KEN220  005  0CE1 2045   2015*
KEN250  003  0CE9 2048
KEN255  004  0CEC 2050   2037  2043
KEN257  004  0CF4 2052   2014*
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                          CROSS REFERENCE

SYMBOL  LEN VALUE DEFN   REFERENCES                        VER 15, MOD 00  31/05/22  PAGE  61

KEN260  004  0CFC 2054   2013*
KEN600  004  0D00 2059   1944
KEN610  004  0D07 2063   1953
KEN611  004  0D0B 2065   1948  2061
KEN700  001  0D0F 2069   2071
SCACNT  002  1125 2962   2796  2952* 2953*
SCACOF  001  0087 2934
SCACOM  001  0001 2933
SCAINC  001  0001 2932   2941  2947
SCAMMA  003  1102 2956
SCANIT  001  10E5 2936   1940  2751  2759  2784  2791
SCASVE  002  1123 2961   2938* 2953
SCASV1  001  1122 2960
SCA100  003  10F4 2941   2943
SCA200  003  10F7 2942   2940
SCA250  003  1101 2945   2956
SCA300  003  1104 2947   2949
SCA400  004  1114 2952   2945
SCA500  004  111E 2955   2937* 2951
SLLBLW  002  10E4 2838   2819
SLLDSH  001  0060 2831   2752  2775
SLLIND  003  10BF 2833
SLLINE  001  1400 2112   1950  1972  2733
SLLIST  001  0FF6 2729   1946
SLLLN2  001  0002 2830   2733  2742  2746  2749  2776  2777  2782
SLLRET  001  0087 2834
SLL000  001  0000 2826   2806
SLL001  001  0001 2827   2746  2777
SLL002  001  0002 2828   2750  2775* 2805*
SLL003  001  0003 2829   2742* 2746  2776* 2777  2783
SLL100  004  1002 2735   2801
SLL110  003  1011 2743   2744*
SLL115  004  101B 2746   2743
SLL120  003  102C 2750   2745  2747
SLL125  004  105C 2769   2758* 2765
SLL130  003  1067 2775   2762
SLL140  003  1087 2783   2778  2780
SLL150  003  108E 2785   2753
SLL160  004  10A4 2796   2786
SLL165  003  10B1 2800   2748* 2779  2781* 2794  2797
SLL180  003  10B8 2805   2738
SLL190  003  10BE 2807   2833
SLL195  004  10C1 2809   2767  2799
SLL200  004  10C8 2815   2749* 2782* 2800
SLL210  004  10D3 2818   2736  2761  2811
SLL215  004  10D7 2819   2771  2793  2817
SLL220  004  10DB 2823   2731* 2807
SLL230  004  10DF 2824   2732*

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =     0

OL105 I  THE CODE LENGTH OF #KENAB IS  4608 DECIMAL.
OL103 I  TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS   10
         NAME-#KENAB,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000
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          OVERLAY LINKAGE EDITOR CORE USAGE MAP     31/05/22


  START      CATEGORY   NAME AND        CODE LENGTH
 ADDRESS                 ENTRY     HEXADECIMAL DECIMAL

  0C00          0      #KENAB          1200     4608


OL100 I  THE TOTAL CORE USED BY #KENAB IS  4608 DECIMAL.
OL101 I  THE START CONTROL ADDRESS OF THIS MODULE IS 0C00.
OL104 I  TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS    19
        NAME-#KENAB,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
7
SLL150  003  10B0 2792    2760
SLL160  004  10C6 2803    2793
SLL165  003  10D3 2807    2755* 2786  2788* 2801  2804
SLL180  003  10DA 2812    2745
SLL190  003  10E0 2814    2840
SLL195  004  10E3 2816    2774  2806
SLL200  004  10EA 2822    2756* 2789* 2807
SLL210  004  10F5 2825    2743  2768  2818
SLL215  004  10F9 2826    2778  2800  2824
SLL220  004  10FD 2830    2738* 2814
SLL230  004  1101 2831    2739*
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TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =   1