```
 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  23/11/22  PAGE   1

#SFLOA    MODULE
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```
ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  23/11/22  PAGE   2

    0000                         1 #SFLOA 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 *       @WKA  EXP-N
                              795+        PRINT ON
                              796 *       @SPF  EXP-N
                             1259+        PRINT ON
                             1260 *       @VMD  EXP-N
                             1381+        PRINT ON
                             1382 *       $I$E  EXP-N
                             1536+        PRINT ON
```

```
                              1538 *         HDR   #SFLOA
                              1539 **********************************************************************
                              1540 * 5703-XM1  COPYRIGHT IBM CORP. 1970                                 *
                              1541 *              REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083    *
                              1542 *                                                                     *
                              1543 **********************************************************************
                              1544 *STATUS                                                              *
                              1545 *    VERSION 1 MODIFICATION 0                                         *
                              1546 *                                                                     *
                              1547 *FUNCTION                                                             *
                              1548 *    * SFLOAD IS A MULTIPLE SECTOR TRANSFER OPERATION. FOR DISK OUTPUT *
                              1549 *    FROM A BASIC PROGRAM, THE OUTPUT IS TRANSFERED IN BLOCKS FROM VM  *
                              1550 *    TO THE FILE LIBRARY AREA OF THE DISK.  FOR DISK INPUT, BLOCKS ARE *
                              1551 *    TRANSFERED FROM THE 'SAVED' FILE TO THE VM BUFFER FOR THAT FILE.  *
                              1552 *    * UPON ENTRY, THE FILE PHYSICAL ADDRESS IS MOVED FROM THE D2      *
                              1553 *    ENTRY TO DL2RAD.  THE DISPLACEMENT TO THE CURRENT LOCATION IN THE *
                              1554 *    FILE LIBRARY IS MOVED TO THE DL2ICS DPL.   THE D2 ENTRY CURRENT   *
                              1555 *    POINTER IS SET TO ZERO AND A CHECK IS MADE FOR IMPENDING          *
                              1556 *    END-OF-FILE.                                                      *
                              1557 *    IF THE END OF THE FILE WOULD BE EXCEEDED BY THE FORTHCOMING DISK  *
                              1558 *    OPERATIONS, THE SECTOR COUNT IN THE DL2ICS DPL IS REDUCED TO      *
                              1559 *    MATCH THE NUMBER OF SECTORS REMAINING IN THE FILE AND THE EOF     *
                              1560 *    INDICATOR IS SET ON, OTHERWISE THE SIZE OF THE BUFFER IS MOVED    *
                              1561 *    TO THE DL2ICS DPL.  IN EITHER CASE, THE SECTOR COUNT IS ADDED TO  *
                              1562 *    THE FILE DISPLACEMENT IN THE D2 ENTRY.                            *
                              1563 *    * IF THE PUT INDICATOR IS OFF, DL2ICS IS UTILIZED TO READ DATA    *
                              1564 *    FROM THE SAVED FILE.  IF THE BUFFER SIZE IS GREATER THAN ONE,     *
                              1565 *    A DPL IS SET UP FOR DL4ICS AND DL4ICS IS USED TO PLACE THE SECOND *
                              1566 *    AND SUBSEQUENT READ SECTORS INTO THE VM BUFFER STARTING WITH THE  *
                              1567 *    SECOND PAGE.   THE FIRST SECTOR, IN EITHER CASE, IS MOVED TO THE  *
                              1568 *    CORE RESIDENT FIRST PAGE OF THE BUFFER BLOCK AND SFLOAD RETURNS   *
                              1569 *    TO THE USER.                                                      *
                              1570 *    * IF THE PUT INDICATOR IS ON, THE BUFFER SIZE IS CHECKED.  IF     *
                              1571 *    GREATER THAN ONE, A DPL IS SET UP AND DL4ICS IS CALLED TO READ IN *
                              1572 *    ALL BUT THE FIRST PAGE OF THE FILE BUFFER BLOCK.  THE FIRST PAGE  *
                              1573 *    IS CORE RESIDENT AND IS MOVED TO THE TOP SECTOR OF THE TRANSFER   *
                              1574 *    AREA. IF THE EOF INDICATOR IS NOT ON, AN EOF RECORD IS MOVED TO   *
                              1575 *    FOLLOW THE LAST SECTOR OF DATA AND THE DPL SECTOR COUNT IS        *
                              1576 *    INCREMENTED BY ONE.  DL2ICS IS THEN USED TO WRITE THE OUTPUT TO   *
                              1577 *    THE SAVED FILE AREA OF THE DISK.  SFLOAD THEN RETURNS TO THE      *
                              1578 *    USER                                                              *
                              1579 *                                                                     *
                              1580 *ENTRY POINT                                                          *
                              1581 *    ENTRY TO SFLOAD IS TO THE FIRST INSTRUCTION OF THE MODULE. IF     *
                              1582 *    SFLOAD IS ENTERED FROM SFPUTR, A PUT INDICATOR MUST BE TURNED ON. *
                              1583 *    IF THE INDICATOR IS NOT ON, ENTRY IS ASSUMED TO BE FROM SFGRTR.   *
                              1584 *                                                                     *
                              1585 *INPUT                                                                *
                              1586 *    INPUT TO SFLOAD IS EITHER THE DATA FILE FROM THE FILE LIBRARY OR  *
                              1587 *    THE OUTPUT DATA FROM VM.                                          *
                              1588 *                                                                     *
                              1589 *OUTPUT                                                               *
                              1590 *    OUTPUT FROM SFLOAD IS TO THE FILE INPUT BUFFER IN VM OR TO THE    *
                              1591 *    DATA FILE IN THE LIBRARY AREA.                                    *
                              1592 *                                                                     *
                              1593 *EXTERNAL REFERENCES                                                  *
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                            1594 *   DL2ICS - LOGICAL 2-TRACK IOCR MODULE.                            *
                            1595 *   DL4ICS - LOGICAL 4-TRACK IOCR MODULE.                            *
                            1596 *                                                                    *
                            1597 *EXITS, NORMAL                                                       *
                            1598 *   NORMAL EXIT FROM SFLOAD IS A RETURN TO THE USER FOLLOWING THE    *
                            1599 *   BRANCH TO THE ROUTINE.                                           *
                            1600 *                                                                    *
                            1601 *EXITS, ERROR                                                        *
                            1602 *   N/A                                                              *
                            1603 *                                                                    *
                            1604 *TABLES/WORK AREA                                                    *
                            1605 *   D2 - VM DIRECTORY 2 - CONTAINING CURRENT FILE USAGE INFORMATION  *
                            1606 *   FOR THE PROGRAM FILE.                                            *
                            1607 *                                                                    *
                            1608 *ATTRIBUTES                                                          *
                            1609 *   RELOCATABLE                                                      *
                            1610 *                                                                    *
                            1611 *CHARACTER, CODE DEPENDENCY                                          *
                            1612 *   CHARACTER CODE DEPENDENCY CLASS - A                              *
                            1613 *   THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR    *
                            1614 *   INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.            *
                            1615 *                                                                    *
                            1616 *NOTES                                                               *
                            1617 *   N/A                                                              *
                            1618 *                                                                    *
                            1619 *OTHER                                                               *
                            1620 *   N/A                                                              *
                            1621 ****************************************************************************
```

```
        #SFLOA - VM TO/FROM FILE LIBR. TRANSFER ROUTINE.

ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT          VER 15, MOD 00  23/11/22   PAGE    5

    0F00                        1623         ORG   $$KLD1+X'0900'          STARTING ADDR
                                1624 *       HDR   #SFLOA
                                1625 ********************************************************************
                                1626 *   PROGRAM HEADER FOR DISK LOAD
                                1627 ********************************************************************
                                1628 *#$SFLD EQU  X'1918'                  DISK ADDR OF #SFLOA
                                1629 *#$$SFL EQU  X'0F00'                  CORE LOAD ADDRESS OF #SFLOA
                                1630 *#$@SFL EQU  005                      SECTOR CNT OF #SFLOA
    0F00                        1631         ORG   #$$SFL                  CORE LOAD ADDRESS
                      0F00 1632 $$$$$$ EQU   *                      FIRST LOCATION IN PROGRAM
    0F00 7BE2C6D3D6C1  0F05 1633        DC    CL6'#SFLOA'            PROGRAM NAME
    0F06 4D            0F06 1634        DC    IL1'077'              PROGRAM NUMBER OF OSFLOA

                      0F07 1636 #SFLO  EQU   *                      ENTRY POINT TO PROGRAM
    0F07 35 02 03C7         1637         L     $XRSAV,@XR             PICK UP POINTER TO D2 ENTRY
                      10B1 1638         USING SFLBS1,@BR             ESTABLISH BASE REGISTER
    0F0B C2 01 10B1         1639         LA    SFLBS1,@BR             * USAGE & LOAD IT
    0F0F 4C 01 13 0571      1640         MVC   SFLARR(@CADDR,@BR),$LDRTN SAVE RETURN CADDR.
    0F14 1C 05 0449 11      1641         MVC   $DPLSV,SFLRDP(@DPLNG,@BR) SET UP RETURN DPL
    0F19 6C 00 14 03        1642         MVC   SFLBSZ(,@BR),@$D2BS(@$L2BS,@XR)  SAVE BUFFER SIZE
    0F1D 2C 01 116B 07      1643         MVC   DL2RAD,@$D2DA(@$L2DA,@XR) SET FILE DADDR TO DL2 BASE DADR
    0F22 6C 01 02 09        1644         MVC   SFL2DP+@DSAD(,@BR),@$D2DD(@$L2DD,@XR) SET DISP TO NEXT DB
    0F26 4C 00 00 0D58      1645         MVC   SFL2DP+@DCTRL(1,@BR),I$WRK1-1    SET DPL FUNCTION CODE
    0F2B 6C 01 16 0B        1646         MVC   SFLWK1(,@BR),@$D2FS(@$L2FS,@XR)  MOVE FILE SIZE TO WRKAREA
    0F2F 6F 01 16 09        1647         SLC   SFLWK1(@$L2FS,@BR),@$D2DD(,@XR)  SUB DISP FROM FILE SIZE
    0F33 6C 00 18 03        1648         MVC   SFLWK2(,@BR),@$D2BS(@$L2BS,@XR)  SET BUFFR SIZE TO 2 BYTES
    0F37 5D 01 16 18        1649         CLC   SFLWK1(,@BR),SFLWK2(@$L2FS,@BR)  FILE SPACE LEFT LT BFR SZ
    0F3B F2 84 0A           1650         JH    SFL045                 GT, GO SET FOR EXTRA PUT SCTR
    0F3E F2 81 0B           1651         JE    SFL050                 EQ, GO SET DPL-CT .BFR SZ
    0F41 5C 00 03 16        1652         MVC   SFL2DP+@DCNT(1,@BR),SFLWK1(,@BR) YES, DL2-CNT-NO SCTRS LEF
    0F45 F2 87 08           1653         J     SFL060                 GO SET UP DL4 DPL

    0F48 3C 80 0F81         1655 SFL045 MVI   SFL105+@Q,@NOP          SET INDR FOR PUT EXTRA SCTR
    0F4C 6C 00 03 03        1656 SFL050 MVC   SFL2DP+@DCNT(1,@BR),@$D2BS(,@XR)  DL2-CNT = BFR SIZE
    0F50 5C 00 18 03        1657 SFL060 MVC   SFLWK2(@$L2DD-1,@BR),SFL2DP+@DCNT(,@BR) ADD DL2-CNT
    0F54 9E 01 09 18        1658         ALC   @$D2DD(@$L2DD,@XR),SFLWK2(,@BR)        * DISP
    0F58 5F 01 02 21        1659 SFL065 SLC   SFL2DP+@DSAD(@$L2DD,@BR),SFLCYL(,@BR)  SUB 48 FROM DISP
    0F5C F2 82 08           1660         JL    SFL066                 IF NEG ADD 48
    0F5F 5E 00 1F 1C        1661         ALC   SFLCNT(1,@BR),SFLONE(,@BR)  ADD 1 TO CYL CNT
    0F63 C0 87 0F58         1662         B     SFL065                 CONTINUE

    0F67 5E 01 02 21        1664 SFL066 ALC   SFL2DP+@DSAD(@$L2DD,@BR),SFLCYL(,@BR)  SET SECTOR DISP
    0F6B 5C 00 01 1F        1665         MVC   SFL2DP+@DSAD-1(@$L2DD-1,@BR),SFLCNT(,@BR)  SET CYL DISP
    0F6F 9C 01 05 1B        1666 SFL070 MVC   @$D2CP(@$L2CP,@XR),SFLZRO(,@BR)  SET CURR-PT TO VM BFR Z
                                1667 *
                                1668 *           SET UP DL4 DPL FUNCTION CODE & BASE DADDR
                                1669 *
    0F73 6C 00 08 02        1670         MVC   SFL4DP+@DSAD(,@BR),@$D2VB(@$L2VB,@XR)  SET VM BFR BASE PGE
    0F77 7D 01 00           1671         CLI   SFL2DP+@DCTRL(,@BR),@DGET GET FROM SAVED FILE ?
    0F7A F2 81 CD           1672         JE    SFL400                 YES, GO SET FOR PUT TO VM
    0F7D 7C 01 06           1673         MVI   SFL4DP+@DCTRL(,@BR),@DGET NO, SET FOR GET FROM VM
                                1674 *
                                1675 *           A TRANSFER FROM VM TO THE SAVED FILE IS REQUIRED.
                                1676 *
                                1677 *           SET PARTIAL CONSTANT AND EOF CODE IN EXTRA
                                1678 *           BUFFER IF IT IS AVAILABLE.
```

#SFLOA - VM TO/FROM FILE LIBR. TRANSFER ROUTINE.

```
                              1679 *
    0F80 F2 87 4C            1680 SFL105 JC    SFL150,@UCB               BYPASS EOF SET-UP IF FILE FULL
    0F83 B8 02 01            1681        TBN   @$D2IO(,@XR),@$M2EF       END OF FILE INDR ON ?
    0F86 F2 10 46            1682        JT    SFL150                    YES, BYPASS EOF SET UP
    0F89 5E 00 03 1C         1683        ALC   SFL2DP+@DCNT(1,@BR),SFLONE(,@BR)   ADD 1 TO DL2-CNT
    0F8D 1C 01 0FBD 0B       1684        MVC   SFL120+@OP1,SFL4DP+@DBFR2(@CADDR,@BR)   SET CORE BFR BASE
    0F92 2E 00 0FBC 03       1685        ALC   SFL120+@OP1-1,@$D2BS(@$L2BS,@XR) INCR BY BFR SIZE
    0F97 3D 00 0D59          1686        CLI   I$WRK1,@ZERO              PART OF CON TO PUT IN EXTRA BFR
    0F9B F2 81 27            1687        JE    SFL130                    NO, BYPASS PART-CON MOVE
    0F9E 3C FF 0FBB          1688        MVI   SFL120+@Q,SFLMS1          SET UP LENGTH OF PARTIAL
    0FA2 0E 00 0FBB 0D59     1689        ALC   SFL120+@Q,I$WRK1(1)        * CONSTANT TO BE MOVED
    0FA8 0C 00 0FBF 0FBB     1690        MVC   SFL120+@OP2,SFL120+@Q(1)  SET UP MOVE-FROM CADDR OF
    0FAE 0E 01 0FBF 0D5B     1691        ALC   SFL120+@OP2,I$WRK2(@CADDR)  * THE PARTIAL CONSTANT
    0FB4 0E 00 0FBD 0FBB     1692        ALC   SFL120+@OP1,SFL120+@Q(1)  INCR MOVE-TO CADDR BY CON LNG
    0FBA 0C 00 0000 0000     1693 SFL120 MVC   *-*(@VQ),*-*              MOVE PARTL CON FROM 8TK TO BFR
    0FC0 1E 00 0FBD 1C       1694        ALC   SFL120+@OP1,SFLONE(1,@BR) INCR TO NEXT BFR LOCATION
    0FC5 0C 01 0FCE 0FBD     1695 SFL130 MVC   SFL140+@OP1,SFL120+@OP1(@CADDR)   SET NXT BFR LOC FOR MOVE
    0FCB 3C 1C 0000          1696 SFL140 MVI   *-*,@EOF                  MOVE AN EOF CODE TO THE BUFFER
                              1697 *
                              1698 *          SEARCH THE PAGE TABLE, AND GATHER ALL VM BUFFER
                              1699 *          PAGES TO SFLOAD'S BUFFER.  SET USAGE TO ZERO
                              1700 *          AND SET OFF WRITE BACK INDICATOR
                              1701 *
                         0001 1702        DROP  @BR                       DROP BASE REGISTER USE
    0FCF C2 01 14CA          1703 SFL150 LA    I$PGTB,@BR                POINT @BR TO ?AGE TABLE
    0FD3 2C 00 0FDA 02       1704 SFL160 MVC   SFL170+@D1,@$D2VB(@$L2VB,@XR)   INCR @BR TO VM BUFFER
    0FD8 D2 01 00            1705 SFL170 LA    0(,@BR),@BR                * BASE PAGE ENTRY
    0FDB 7D 00 00            1706 SFL180 CLI   0(,@BR),@ZERO             IS REFERENCED PAGE IN CORE ?
    0FDE F2 01 1A            1707        JNE   SFL200                    YES, GO GET IT
    0FE1 0E 00 10BA 10CD     1708        ALC   SFL4DP+@DCNT,SFLONE(1)    ADD 1 TO READ DPL SCTR COUNT
    0FE7 0F 00 10C5 10CD     1709 SFL190 SLC   SFLBSZ,SFLONE(1)          DECR PAGE COUNT
    0FED F2 81 07            1710        JZ    SFL195                    GET OUT IF ZERO
    0FF0 D2 01 01            1711        LA    1(,@BR),@BR               INCR TO NEXT PAGE ENTRY
    0FF3 C0 87 0FDB          1712        B     SFL180                    GO CHECK NEXT PAGE
    0FF7 3C 87 1019          1713 SFL195 MVI   SFL210+@Q,@UCB            SET BR OUT AFTER CNT CHECK
    0FFB 3D 00 10BA          1714 SFL200 CLI   SFL4DP+@DCNT,@ZERO        ANY SECTORS TO BRING INTO CORE
    0FFF F2 81 16            1715        JE    SFL210                    NO, BYPASS DISK READ & DPI REST
    1002 C0 87 116C          1716        B     DL4ICS                    GO TO 4 TRACK LOGICAL RTN-READ
    1006 10B7           1007 1717        DC    AL(@CADDR)(SFL4DP)         * IN VM BUFFER PAGE(S)
                              1718 *
    1008 0E 00 10BB 10BA     1719        ALC   SFL4DP+@DBFR1,SFL4DP+@DCNT(1)   INCR CADDR TO NEXT BFR SLOT
    100E 0E 00 10B9 10BA     1720        ALC   SFL4DP+@DSAD,SFL4DP+@DCNT(1)   INCR DADDR TO NEXT BFR PAGE
    1014 3C 00 10BA          1721        MVI   SFL4DP+@DCNT,@ZERO        RESET SECTOR COUNT TO ZERO
    1018 F2 80 26            1722 SFL210 JC    SFL250,@NOP               RESET TO BR WHEN VM BFR TRANS'D
    101B 0C 00 102D 10BB     1723        MVC   SFL230+@OP1-1,SFL4DP+@DBFR1(1) SET BFR RECEIVING CADDR
    1021 C0 87 109A          1724        B     SFL700                    GO RESET STATUS & USAGE TABLES
    1025 0C 00 102F 10CA     1725        MVC   SFL230+@OP2-1,SFLCPS(1)   SET CORE PAGE MOVE FROM CADDR
    102B 0C FF 0000 0000     1726 SFL230 MVC   *-*,*-*(SFLSCT)           MOVE SECTOR TO TRANSFER BUFFER
    102B                     1727        ORG   SFL230                    * INITIALIZE BOTH CADDRS TO
    102B 0C FF 00FF 00FF     1728        MVC   SFLRES,SFLRES(SFLSCT)     * RIGHT-MOST END OF A SECTOR
    1031 0E 00 10BB 10CD     1729        ALC   SFL4DP+@DBFR1,SFLONE(1)   INCR CORE ADDRESS IN DPL
    1037 0E 00 10B9 10CD     1730        ALC   SFL4DP+@DSAD,SFLONE(1)    INCR DADDR TO NEXT BFR PAGE
    103D C0 87 0FE7          1731        B     SFL190                    GO DECR PAGE COUNT
                              1732 *
                              1733 *          ALL VM BUFFER PAGES HAVE BEEN GATHERED INTO SFLOADS
                              1734 *          BUFFER, WRITE THEM TO THE FILE LIBRARY AREA AND
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      #SFLOA - VM TO/FROM FILE LIBR. TRANSFER ROUTINE.


ERR LOC   OBJECT CODE     ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  23/11/22  PAGE   7

                               1735 *                   RETURN TO SFPUTR.
                               1736 *
    1041 C0 87 10D3            1737 SFL250 B    DL2ICS                    WRITE BUFFER TO
    1045 10B1          1046    1738        DC   AL(@CADDR)(SFL2DP)        * FILE LIBRARY
    1047 F2 87 48             1739        J    SFL500                    GO TO RETURN TO SF VM ROUTINE
                               1740 *
                               1741 *                   A TRANSFER FROM THE SAVED FILE LIBRARY TO VM
                               1742 *                   IS REQUIRED
                               1743 *
                       10B1    1744        USING SFLBS1,@BR              RE-ESTAILISH BASE REGISTER USE
    104A C0 87 10D3            1745 SFL400 B    DL2ICS                    READ DIA FROM SAVED
    104E 10B1          104F    1746        DC   AL(@CADDR)(SFL2DP)        * FILE LIBRARY AREA
                               1747 *
    1050 7C 02 06             1748        MVI  SFL4DP+@DCTRL(,@BR),@DPUT  SET FOR WRITE TO VM BUFFER
    1053 5C 00 09 03          1749        MVC  SFL4DP+@DCNT(1,@BR),SFL2DP+@DCNT(,@BR) SET CNT FOR WRITE
                       0001    1750        DROP @BR                      DROP BASE REGISTER USE
                               1751 *
                               1752 *                   WRITE NEW DATA TO VM BUFFER AND PLACE IN CORE IF
                               1753 *                   ANY BUFFER PAGES ARE CORE RESIDENT
                               1754 *
    1057 C0 87 116C            1755        B    DL4ICS                    GO TO 4 TRACK LOGICAL DISK
    105B 10B7          105C    1756        DC   AL(@CADDR)(SFL4DP)        * RTN TO WRITE TO VM BUFFER
                               1757 *
    105D C2 01 14CA            1758        LA   I$PGTB,@BR                POINT @BR AT PAGE TABLE
    1061 2C 00 1068 02         1759        MVC  SFL420+@D1,@$D2VB(@$L2VB,@XR)  INCR @BR TO ENTRY OF FIRST
    1066 D2 01 00             1760 SFL420 LA   0(,@BR),@BR               * PAGE OF VM BUFFER
                               1761 *
    1069 7D 00 00             1762 SFL430 CLI  @ZERO(,@BR),@ZERO         THIS BUFFER PAGE IN CORE ?
    106C F2 81 10             1763        JE   SFL460                    NO, BYPASS MOVE
    106F C0 87 109A            1764        B    SFL700                    GO RESOLVE CORE ADDR. OF PAGE
    1073 0C 00 107B 10CA       1765        MVC  SFL440+@OP1-1,SFLCPS(1)   SET PAGE CADDR FOR MOVE
    1079 0C FF 0000 0000       1766 SFL440 MVC  *-*(SFLSCT),*-*           MOVE DATA TO PAGE CORE LOCATION
    1079                       1767        ORG  SFL440                    * INITIALIZE MOVE FOR RIGHT END
    1079 0C FF 00FF 06FF       1768        MVC  SFLRES,$$KLD1+SFLRES(SFLSCT)  * OF PAGE & 1ST BFR SECTOR
                               1769 *
    107F 0E 00 107D 10CD       1770 SFL460 ALC  SFL440+@OP2-1,SFLONE(1)   INCR BUFFER CORE ADDR IN MOVE
    1085 D2 01 01             1771        LA   @B1(,@BR),@BR             INCR @BR TO NEXT PAGE ENTRY
    1088 0F 00 10B4 10CD       1772        SLC  SFL2DP+@DCNT,SFLONE(1)    DECR BUFFER COUNT
    108E C0 01 1069            1773        BNZ  SFL430                    GO CHK IF IN CORE IF NOT ZERO
                               1774 *
                               1775 *                   RETURN TO VM SF ROUTINE
                               1776 *
    1092 35 08 10C4            1777 SFL500 L    SFLARR,@ARR               POINT OMR TO RETURN DPL
    1096 35 10 10CF            1778        L    SFLDSK,@IAR               GO RELOAD *INTRP & RETURN TO SF
                               1779 *
                               1780 *                   THE FOLLOWING INTERNAL SUBROUTINE WILL CLEAR THE
                               1781 *                   STATUS INDICATORS AND ZERO THE USAGE OF THE CORE
                               1782 *                   PAGE REFERENCED BY MR.
                               1783 *
    109A 34 08 10B0            1784 SFL700 ST   SFL799+@OP1,@ARR          SAVE RETURN ADDRESS
    109E 3C 20 10CA            1785        MVI  SFLCPS,@PGCSZ             SET BASE OK NO. OF CONE PAGES
    10A2 0E 00 10CA 043B       1786        ALC  SFLCPS,$EXFTR(1)          ADD IN CORE EXPANSION FACTOR
    10A8 1F 00 10CA 00         1787        SLC  SFLCPS,@ZERO(1,@BR)       SUB THIS PAGE NO. TO GET CADDR
                               1788 *
                               1789 *                   RETURN TO CALLING LOCATION
                               1790 *
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#SFLOA - VM TO/FROM FILE LIBR. TRANSFER ROUTINE.

ERR LOC   OBJECT CODE   ADDR STMT SOURCE STATEMENT   VER 15, MOD 00 23/11/22 PAGE   8

     10AD C0 87 0000   1791 SFL799 B   *-*   RETURN

```
                            1793 *
                            1794 *               DPL'S, CONSTANTS, WORK AREAS AND EQUATES.
                            1795 *
                            1796 *SFL2DP DPL    CADDR=#$$INS
                   10B1 1797 SFL2DP EQU   *                        DISK PARAMETER LIST
    10B1 00        10B1 1798        DC    AL1(*-*)                 REQUESTED FUNCTION
    10B2 00        10B2 1799        DC    AL1(*-*)                 CYLINDER ADDRESS
    10B3 00        10B3 1800        DC    AL1(*-*)                 HEAD/SECTOR/DRIVE/DISK SPEC
    10B4 00        10B4 1801        DC    AL1(*-*)                 SECTOR COUNT
    10B5 0600      10B6 1802        DC    AL2(#$$INS)              BUFFER ADDRESS
                            1803 *** END OF EXPANSION ***

                            1805 *SFL4DP DPL    DADDR=#@#VFP,CADDR=#$$INS
                   10B7 1806 SFL4DP EQU   *                        DISK PARAMETER LIST
    10B7 00        10B7 1807        DC    AL1(*-*)                 REQUESTED FUNCTION
    10B8 0700      10B9 1808        DC    AL2(#@#VFP)              DISK ADDRESS
    10BA 00        10BA 1809        DC    AL1(*-*)                 SECTOR COUNT
    10BB 0600      10BC 1810        DC    AL2(#$$INS)              BUFFER ADDRESS
                            1811 *** END OF EXPANSION ***

                            1813 *SFLDPR DPL    FUNC=@DGET,DADDR=#@VSFI,CNT=#@@VSL,CADDR=#$$INS
                   10BD 1814 SFLDPR EQU   *                        DISK PARAMETER LIST
    10BD 01        10BD 1815        DC    AL1(@DGET)               REQUESTED FUNCTION
    10BE 09A1      10BF 1816        DC    AL2(#@VSFI)              DISK ADDRESS
    10C0 0F        10C0 1817        DC    AL1(#@@VSL)              SECTOR COUNT
    10C1 0600      10C2 1818        DC    AL2(#$$INS)              BUFFER ADDRESS
                            1819 *** END OF EXPANSION ***

                   10C2 1821 SFLRDP EQU   SFLDPR+@DBFR2            RIGHT END OF DPL
                            1822 *
    10C3           10C4 1823 SFLARR DS    CL(@CADDR)               SAVE FIELD FOR @ARR
    10C5           10C5 1824 SFLBSZ DS    CL1                      BUFFER SIZE IN PAGES
    10C6           10C7 1825 SFLWK1 DS    CL(@$L2FS)               FILE SIZE WORK AREA
    10C8           10C9 1826 SFLWK2 DS    CL(@$L2FS)               FILE DISPLACEMENT WORK-AREA
    10C8                1827        ORG   SFLWK2-1                 * INITIALIZE
    10C8 0000      10C9 1828        DC    XL(@$L2FS)'0'            * TO ZERO
    10CA           10CA 1829 SFLCPS DS    CL1                      CORE PAGE SECTOR ADDRESS
                            1830 *
    10CB 0000      10CC 1831 SFLZRO DC    XL(@$L2CP)'0'            ZERO
    10CD 01        10CD 1832 SFLONE DC    XL1'01'                  ONE
    10CE 0025      10CF 1833 SFLDSK DC    AL(@CADDR)($DISKN)       CADDR OF DISK I/O ROUTINE
    10D0           10D0 1834 SFLCNT DS    CL1                      CYLINDER DISP COUNTER
    10D0                1835        ORG   *-1
    10D0 00        10D0 1836        DC    XL1'00'
    10D1 0030      10D2 1837 SFLCYL DC    XL2'0030'                NUMBER OF SECTORS/CYLINDER(48)
                            1838 *
    0100 1839 SFLSCT EQU   256                      SECTOR SIZE IN BYTES
    00FF 1840 SFLRES EQU   SFLSCT-1                 DISP, TO RIGHT END OF A SECTOR
    10B1 1841 SFLBS1 EQU   SFL2DP                   RASE ADDRESS REFERENCE
    00FF 1842 SFLMS1 EQU   X'FF'                    MINUS 1
    0030 1843 SFLC48 EQU   48                       NUMBER OF SECTORS/CYLINDER(48)
                            1844 *
                            1845 *      $DL2P
```

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          DL2ICS - TWO TRACK LOGICAL IOCR
```

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                              1847+************************************************************************
                              1848+*  5703-XM1   COPYRIGHT IBM CORP 1970                                 *
                              1849+*             REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE. 120-2083      *
                              1850+*                                                                     *
                              1851+************************************************************************
                              1852+*STATUS -                                                             *
                              1853+*    VERSION 1 MODIFICATION 0                                          *
                              1854+*                                                                     *
                              1855+*FUNCTION                                                             *
                              1856+*    * DL2ICS CONVERTS A RELATIVE DISK ADDRESS TO A PHYSICAL DISK     *
                              1857+*      ADDRESS AND COMBINES IT WITH A BASE ADDRESS PLACED IN DL2RAD   *
                              1858+*      BY THE CALLER.                                                 *
                              1859+*    * THE RELATIVE DISK ADDRESS IS A TWO BYTE CYLINDER SECTOR COUNT  *
                              1860+*      IN THE CALLERS DISK PARAMETER LIST (DPL).                      *
                              1861+*    * THE COUNT IS A CYLINDER SECTOR DISPLACEMENT FROM THE BASE      *
                              1862+*      ADDRESS PLACED IN DL2RAD                                       *
                              1863+*    * DL2ICS IS USED TO PROCESS DATA ON THE FIXED OR REMOVABLE DISK  *
                              1864+*      ON EITHER DRIVE AND PROVIDES THE INTERFACE TO $DISKN.          *
                              1865+*    * THE PHYSICAL DISK ADDRESS IS PLACED IN A COPY OF THE USERS DPL *
                              1866+*      IN DL2ICS AND A CALL IS MADE TO $DISKN TO PERFORM THE REQUESTED *
                              1867+*      OPERATION.                                                     *
                              1868+*                                                                     *
                              1869+*ENTRY POINTS                                                         *
                              1870+*    * THE ENTRY IS DL2ICS. THE BASE REGISTER IS SAVED AND RESTORED   *
                              1871+*      ON RETURN. THE INDEX REGISTER IS NOT USED.                     *
                              1872+*    * THE FORMAT OF THE CALLING SEQUENCE IS AS FOLLOWS:              *
                              1873+*        B   DL2ICS                                                   *
                              1874+*        DC  AL2(PARMLT)                                              *
                              1875+*      WHERE PARMLT IS THE ADDR OF THE PARAMETER LIST TO BE PROCESSED. *
                              1876+*                                                                     *
                              1877+*INPUT                                                                *
                              1878+*    * THE INPUT IS A TWO BYTE BASE DISK ADDRESS PLACED IN            *
                              1879+*      DL2RAD AND A SIX BYTE DPL. THE SAME FORMAT AS THE DPL FOR      *
                              1880+*      $DISKN EXCEPT FOR THE DISK ADDRESS WHICH IS A RELATIVE CYLINDER *
                              1881+*      AND SECTOR DISPLACEMENT FROM THE BASE ADDRESS IN DL2RAD.       *
                              1882+*                                                                     *
                              1883+*OUTPUT                                                               *
                              1884+*    NONE.                                                            *
                              1885+*                                                                     *
                              1886+*EXTERNAL REFERENCES                                                  *
                              1887+*    $DISKN - ENTRY TO PHYSICAL DISK ROUTINE IS THE SYSTEM NUCLEUS.   *
                              1888+*                                                                     *
                              1889+*EXITS, NORMAL                                                        *
                              1890+*    NORMAL - EXIT IS TO THE FIRST INSTRUCTION FOLLOWING THE POINTER  *
                              1891+*    TO THE DPL. THE BASE REGISTER IS RESTORED. THE RETURN ADDRESS    *
                              1892+*    IS THE ADDRESS RECALL REGISTER (ARR) +2.                         *
                              1893+*                                                                     *
                              1894+*EXITS, ERROR                                                         *
                              1895+*    NONE                                                             *
                              1896+*                                                                     *
                              1897+*TABLES/WORK AREAS                                                    *
                              1898+*    * THE CONSTANTS AND WORK AREAS RESIDE AT THE END OF THE EXECUTABLE*
                              1899+*      CODE AND ARE REFERENCED BY A DISPLACEMENT RELATIVE TO THE VALUE *
                              1900+*      IN INDEX REGISTER 1 (@BR).                                     *
                              1901+*    * DL2SEC AND DL2SAD ARE EQUATED TO OPERAND LOCATIONS IN THE      *
                              1902+*      EXECUTABLE CODE TO ELIMINATE EXCESS WORKING STORAGE.           *
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```
                                 1903+*                                                          *
                                 1904+*ATTRIBUTES                                                *
                                 1905+*    * DL2ICS IS REUSABLE                                   *
                                 1906+*                                                          *
                                 1907+*CHARACTER CODE DEPENDENCY                                 *
                                 1908+*     THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR  *
                                 1909+*      INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.        *
                                 1910+*                                                          *
                                 1911+*NOTES                                                     *
                                 1912+*    ERROR PROCEDURES                                      *
                                 1913+*       NONE                                               *
                                 1914+*                                                          *
                                 1915+*    REGISTER USAGE                                        *
                                 1916+*     INDEX REGISTER 1 (@BR) IS SAVED AND RESTORED. THIS REGISTER IS *
                                 1917+*     USED DURING EXECUTION. REGISTER 2 (@BR) IS NOT USED.           *
                                 1918+*                                                          *
                                 1919+*    SAVED/RESTORED AREAS                                  *
                                 1920+*       NONE                                               *
                                 1921+*                                                          *
                                 1922+*    MODIFICATION CONSIDERATIONS                           *
                                 1923+*       NONE                                               *
                                 1924+*                                                          *
                                 1925+*    REQUIRED MODULES                                      *
                                 1926+*      @SYSEQ - COMMON SYSTEM EQUATES.                      *
                                 1927+*      @FXDEQ - SYSTEM NUCLEUS ADDRESSES AND INDICATORS VALUES EQUATES *
                                 1928+*                                                          *
                                 1929+*    OTHER                                                 *
                                 1930+*     DL2ICS MAY BE USED TO CONVERT THE DISK ADDRESS ONLY AND NOT TO *
                                 1931+*     CALL $DISKN IF THE USER MOVES A UCB CODE TO DL2SWH.            *
                                 1932+*     THIS OPTION IS NOT STANDARD USAGE.                             *
                                 1933+***************************************************************************
                            10D7 1934+        USING DL2000,@BR              ESTABLISH ADDRESSABILITY
                                 1935+*
                            0001 1936+DL2E01 EQU   X'01'                    FIELD LENGTH OF 1
                            0002 1937+DL2E02 EQU   X'02'                    FIELD LENGTH OF 2
                            0018 1938+DL2E18 EQU   X'18'                    HEX TRACK SECTOR COUNT
                            0060 1939+DL2E60 EQU   X'60'                    PHYSICAL SECTOR COUNT
                            0083 1940+DL2TSD EQU   X'83'                    MASK OFF TRACK SPINDLE DISK
                            007C 1941+DL2E7C EQU   X'7C'                    MASK OUT SECTOR COUNT
                            10D3 1942+DL2ICS EQU   *                        ENTRY POINT
     10D3 34 01 1154             1943+        ST    DL2900+@OP1,@BR          SAVE OLD BASE
                            10D7 1944+DL2000 EQU   *                        START PROCESSING
     10D7 C2 01 10D7             1945+        LA    DL2000,@BR               SET BASE ADORESS
     10DB 76 08 8A               1946+        A     DL2C01(,@BR),@ARR        BUMP TO RIGHT BYTE OF ADDR
     10DE 74 08 14               1947+        ST    DL2001+@DOP2(,@BR),@ARR  ADDR OF PARAM
     10E1 76 08 8A               1948+        A     DL2C01(,@BR),@ARR        BUMP TO RETURN ADDR
     10E4 74 08 81               1949+        ST    DL2910+@OP1(,@BR),@ARR   SAVE RETURN ADDR
                                 1950+*
     10E7 4C 01 1D 0000          1951+DL2001 MVC   DL2002+@DOP2(@DADDR,@BR),*-* SETUP ADDR OF DPL
     10EC 5E 01 1D 8C            1952+        ALC   DL2002+@DOP2(@CADDR,@BR),DL2C05(,@BR) DUMP TO RIGHT END
     10F0 4C 05 92 0000          1953+DL2002 MVC   DL2DPL(@DPLNG,@BR),*-*   MOVE USER DPL TO WORK AREA
     10F5 5F 00 8F 86            1954+DL2005 SLC   DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR) ADJUST SCTR/CYL
     10F9 F2 82 07               1955+        JM    DL2006                   GO TO RESTORE TO CONTINUE
     10FC 5E 00 8E 8A            1956+        ALC   DL2LST+@DCYL(DL2E01,@BR),DL2C01(,@BR) BUMP CYLINDER COUNT
     1100 D0 87 1E               1957+        B     DL2005(,@BR)             BACK FOR NEXT CYLINDER
     1103 5E 00 8F 86            1958+DL2006 ALC   DL2LST+@DSAD(DL2E01,@BR),DL2C48(,@BR) RESTORE POSITIVE
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                              1959+*
                              1960+*       GET THE LOGICAL SECTOR FROM THE DPL. THE NUMBER IS LEFT ADJUSTED
                              1961+*       TO COMAE IT MTN THE POINTER ESTABLISHED PRIOR TO AN ENTRY.
   1107 5C 00 1D 8F          1962+       MVC   DL2SEC(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR NUMBER
   110B 7C 00 8F             1963+       MVI   DL2LST+@DSAD(,@BR),@ZERO  CLEAR SECTOR BYTE
                              1964+*
                              1965+*       MOVE THE RELATIVE START TO THE DFL
                              1966+*
   110E 5E 01 8F 94          1967+       ALC   DL2LST+@DSAD(DL2E02,@BR),DL2RAD(,@BR) DL2RAD TO DPL
   1112 7D 18 1D             1968+       CLI   DL2SEC(,@BR),DL2E18        IS COUNT OVER A TRACK
   1115 F2 82 08             1969+       JL    DL2008                     NO GO CHANGE A PHYSICAL ADOR
   1118 5E 01 8F 85          1970+       ALC   DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR) BUMP TRACK VALUE
   111C 5F 00 1D 88          1971+       SLC   DL2SEC(1,@BR),DL2K18(,@BR) DECR BY TRACK VALUE
   1120 5E 00 1D 1D          1972+DL2008 ALC   DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT 1
   1124 5E 00 1D 1D          1973+       ALC   DL2SEC(1,@BR),DL2SEC(,@BR) SHIFT LEFT
   1128 5C 00 14 8F          1974+       MVC   DL2SAD(DL2E01,@BR),DL2LST+@DSAD(,@BR) GET SECTOR ADDRESS
                              1975+*
                              1976+*       ZERO OUT THE SECTOR COUNT AND LEAVE THE DISK. SPINDLE AND
                              1977+*       TRACK BITS AS IS TO BE RE INSERTED AFTER THE SECTOR HAS BEEN
                              1978+*       LOCATES.
                              1979+*
   112C 7B 7C 8F             1980+       SBF   DL2LST+@DSAD(,@BR),DL2E7C TURN OFF
   112F 7B 83 14             1981+       SBF   DL2SAD(,@BR),DL2TSD        OFF TRACK SPINDLE DISK
   1132 5E 00 14 1D          1982+       ALC   DL2SAD(DL2E01,@BR),DL2SEC(,@BR) COMBINE SECTOR COUNTS
   1136 7D 60 14             1983+DL2010 CLI   DL2SAD(,@BR),DL2E60        TEST IF TRACK CROSSED
   1139 F2 82 08             1984+       JL    DL2100
                              1985+*
                              1986+*       INCREMENT TRACK BIT. OVERFLOW INTO THE CYLINDER COUNT.
                              1987+*
   113C 5E 01 8F 85          1988+       ALC   DL2LST+@DSAD(DL2E02,@BR),DL2K80(,@BR)
   1140 5F 00 14 83          1989+       SLC   DL2SAD(1,@BR),DL2K60(,@BR) DECR BY TRACK VALUE
                              1990+*
   1144 5E 00 8F 14          1991+DL2100 ALC   DL2LST+@DSAD(1,@BR),DL2SAD(,@BR) INSERT SECTOR COUNT
                              1992+*
   1148 F2 80 06             1993+DL2110 JC    DL2900,@NOP                CONVERSION SWITCH
        1149                  1994+DL2SWH EQU   DL2110+@Q                 ADDR OF Q CODE FOR SWITCH
   114B C0 87 0025           1995+       B     $DISKN                     GO PROCESS I/O
   114F 1164       1150       1996+       DC    AL2(DL2LST)                ADDRESS OF DPL
   1151 C2 01 0000           1997+DL2900 LA    *-*,@BR                    RESTORE CALLERS BASE
   1155 C0 87 0000           1998+DL2910 B     *-* ***************************************************************
                              1999+***************************************************************
                              2000+*       CONSTANTS
                              2001+***************************************************************
   1159 0060        115A      2002+DL2K60 DC    XL2'0060'                  SECTOR COUNT OF 24 LEFT ADJUSTD
   115B 0080        115C      2003+DL2K80 DC    XL2'0080'                  BIT FOR INCREMENTING TRACK
   115D 30          115D      2004+DL2C48 DC    IL1'48'                    CYLINDER VALUE FOR 1 DISK
   115E 0018        115F      2005+DL2K18 DC    XL2'18'                    HEX SECTORS PER TRACK
   1160 0001        1161      2006+DL2C01 DC    IL2'1'                     CONSTANT FOR REGISTER MODE
   1162 0005        1163      2007+DL2C05 DC    IL2'5'                     DISP TO RIGHT END OF DPL
                              2008+***************************************************************
                              2009+*       WORK AREA
                              2010+***************************************************************
                   1164       2011+DL2LST EQU   *                          LIST HIGH END
   1164             1169       2012+DL2DPL DS    CL(@DPLNG)                 WORKING DPL
                   1166       2013+DL2PHY EQU   DL2LST+@DSAD               POINTER TO PHYSICAL DADDR
                   10EB       2014+DL2SAD EQU   DL2001+@DOP2               SAVE SECTOR BYTE FROM DPI
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     DL2ICS - TWO TRACK LOGICAL IOCR

ERR LOC  OBJECT CODE     ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  23/11/22  PAGE  13

                         10F4 2015+DL2SEC EQU   DL2002+@DOP2            WORKING SECTOR ADDRESS FIELD
      116A               116B 2016+DL2RAD DS    CL(@DADDR)             USER RELATIVE STARTING ADDR.
                         116C 2017+DL2END EQU   *                      END OF DL2ICS
                              2018+***                          END OF DL2ICS                          ***
                              2019 *       $DL4P
```

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                        2021+*************************************************************************
                        2022+* 5703-XM1  COPYRIGHT IBM CORP. 1970                              *
                        2023+*            REFER TO INSTRUCTIONS ON COPYRIGHT NOTICE, 120-2083   *
                        2024+*                                                                 *
                        2025+*************************************************************************
                        2026+*STATUS                                                           *
                        2027+*   VERSION 1 MODIFICATION 0                                      *
                        2028+*                                                                 *
                        2029+*FUNCTION                                                         *
                        2030+*   * DL4ICS WILL CONVERT A RELATIVE DISK ADDRESS TO A PHYSICAL   *
                        2031+*     DISK ADDRESS AND CALL $DISKN TO PERFORM THE SPECIFIED FUNCTION *
                        2032+*   * THE DISK ADDRESS IS A ONE BYTE CYLINDER ADDRESS AND A ONE BYTE *
                        2033+*     SECTOR DISPLACEMENT RELATIVE TO SECTOR 0 ON A CYLINDER       *
                        2034+*     BOUNDARY                                                    *
                        2035+*   * WHEN MORE THAN 1 SECTOR IS PROCESSED, DL4ICS WILL MAKE MULTIPLE *
                        2036+*     CALLS TO $DISKN TO CROSS CYLINDER BOUNDARIES IF REQUIRED.    *
                        2037+*   * IF 1 SECTOR ONLY IS TO BE PROCESSED, THE USER MAY OVERLAY THE *
                        2038+*     UNUSED CODE BY ORGING HIS NEXT MODULE AT DL4SPT             *
                        2039+*                                                                 *
                        2040+*ENTRY POINTS                                                     *
                        2041+*     DL4ICS - ENTRY TO PROCESS A 4 SURFACE FILE. THE CALLING      *
                        2042+*               SEQUENCE IS AS FOLLOWS                            *
                        2043+*                  DSKL4  DPL                                      *
                        2044+*               WHERE DPL IS THE LABEL OF A SIX BYTE DISK PARAMETER *
                        2045+*               LIST AS DESCRIBED FOR $DISKN EXCEPT FOR THE SECTOR *
                        2046+*               ADDRESS BYTE.                                     *
                        2047+*                                                                 *
                        2048+*INPUT                                                            *
                        2049+*   * INPUT TO DL4ICS IS THE ADDRESS OF THE DPL TO BE PROCESSED.   *
                        2050+*                                                                 *
                        2051+*OUTPUT                                                           *
                        2052+*   * N/A                                                         *
                        2053+*                                                                 *
                        2054+*EXTERNAL REFENECES                                               *
                        2055+*     $DISKN - ENTRY TO SYSTEM DISK ROUTINE                        *
                        2056+*                                                                 *
                        2057+*EXITS, NORMAL                                                    *
                        2058+*   * NORMAL RETURN IS TO THE 1ST INSTRUCTION FOLLOWING THE TWO BYTE *
                        2059+*     ADDRESS POINTING TO THE DPL.                                *
                        2060+*                                                                 *
                        2061+*EXITS, ERROR                                                     *
                        2062+*   * N/A                                                         *
                        2063+*                                                                 *
                        2064+*TABLES/WORK AREAS                                                *
                        2065+*   * N/A                                                         *
                        2066+*                                                                 *
                        2067+*ATTRIBUTES                                                       *
                        2068+*   * RELOCATABLE                                                 *
                        2069+*   * REUSABLE                                                    *
                        2070+*                                                                 *
                        2071+*CHARACTER CODE DEPENDENCY                                         *
                        2072+*   * THE OPERATION OF THIS MODULE DOES NOT DEPEND UPON A PARTICULAR *
                        2073+*     INTERNAL REPRESENTATION OF THE EXTERNAL CHARACTER SET.       *
                        2074+*                                                                 *
                        2075+*NOTES                                                            *
                        2076+*   ERROR PROCEDURES                                              *
```

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                              2077+*      N/A                                               *
                              2078+*                                                        *
                              2079+*   REGISTER USAGE                                       *
                              2080+*      @BR IS SAVED AND RESTORED ON EXIT, @XR IS NOT USED.  @ARR IS  *
                              2081+*      USED TO PROVIDE THE ADDRESS OF THE PARAMETER.  THE @ARR IS    *
                              2082+*      INCREMENTED BT TWO AND SAVED AS THE RETURN ADDRESS.          *
                              2083+*                                                        *
                              2084+*   SAVED/RESTORED AREAS                                 *
                              2085+*      N/A                                               *
                              2086+*                                                        *
                              2087+*   MODIFICATION CONSIDERATIONS                          *
                              2088+*      N/A                                               *
                              2089+*                                                        *
                              2090+*   REQUIRED MODULES                                     *
                              2091+*      @SYSEQ - SYSTEM SOFTWARE EQUATES                   *
                              2092+*      @FXDEQ - SYSTEM NUCLEUS EQUATES                    *
                              2093+*                                                        *
                              2094+*   OTHER                                                *
                              2095+*      NONE                                              *
                              2096+************************************************************************
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     DL4ICS - FOUR TRACK LOGICAL IOCR


ERR LOC   OBJECT CODE      ADDR STMT SOURCE STATEMENT              VER 15, MOD 00  23/11/22  PAGE  16

                           116C 2098+DL4ICS EQU   *                         ENTRY TO DL4ICS
                           1170 2099+        USING DL4010,@BR               ESTABLISH BASE REGISTER USAGE
     116C 34 01 11DC            2100+        ST    DL4900+@OP1,@BR          SAVE BASE REGISTER FOR EXIT
                           1170 2101+DL4010 EQU   *                         BASE ADDRESSABILITY
     1170 C2 01 1170            2102+        LA    DL4010,@BR              ESTABLISH BASE
     1174 76 08 78              2103+        A     DL4C01(,@BR),@ARR       BUMP TO HIGH END OF ADDR
     1177 74 08 14              2104+        ST    DL4020+@DOP2(,@BR),@ARR SET UP MOVE INSTRUCTION
     117A 76 08 78              2105+        A     DL4C01(,@BR),@ARR       BUMP TO RETURN ADDR
     117D 74 08 70              2106+        ST    DL4920+@OP1(,@BR),@ARR  SAVE RETURN ADDR
                               2107+*
     1180 4C 01 1D 0000         2108+DL4020 MVC   DL4030+@DOP2(@DADDR,@BR),*-* MOVE DPL ADDR INTO MOVE
     1185 5E 01 1D 7A           2109+        ALC   DL4030+@DOP2(@CADDR,@BR),DL4C05(,@BR) BUMP TO RIGHT END
     1189 4C 05 76 0000         2110+DL4030 MVC   DL4DPL(@DPLNG,@BR),*-*    MOVE USER DPL TO WORK AREA
                               2111+*
     118E 7C 00 5E              2112+DL4035 MVI   DL4100+@Q(,@BR),@ZERO    CLEAR TRACK, DISK SET INST
     1191 7C 80 67              2113+        MVI   DL4200+@Q(,@BR),@NOP     TURN OFF TWICE INDICATOR
                               2114+*
     1194 7D 60 73              2115+DL4040 CLI   DL4SCD(,@BR),DL4E96      TEST IF DISPLACEMENT OVER 95 ?
     1197 F2 82 0B              2116+        JL    DL4050                   JUMP IF NOT OVER 95
     119A 5E 00 72 78           2117+        ALC   DL4CYL(1,@BR),DL4C01(,@BR) INCREMENT CYLINDER COUNT
     119E 5F 00 73 25           2118+        SLC   DL4SCD(1,@BR),DL4C96(,@BR) DECREMENT DISP BY 96
     11A2 D0 87 24              2119+        B     DL4040(,@BR)            GO BACK CHECK FOR NEXT CYLINDER
                               2120+*
     11A5 7D 30 73              2121+DL4050 CLI   DL4SCD(,@BR),DL4E48      TEST IF DISP ON NEXT DISK ?
     11A8 F2 82 07              2122+        JL    DL4060                   JUMP IF NOT OVER 48
     11AB 7A 01 5E              2123+        SBN   DL4100+@Q(,@BR),DL4EFD  TURN ON BIT FOR FIXED DISK
     11AE 5F 00 73 36           2124+        SLC   DL4SCD(1,@BR),DL4C48(,@BR) DECREMENT DISP 1 DISK
     11B2 7D 01 74              2125+DL4060 CLI   DL4SCT(,@BR),DL4E01      IS SECTOR COUNT GREATER THEN 1 ?
     11B5 F2 84 33              2126+        JH    DL4SPT                   GO TO SPLIT CALL
     11B8 7D 18 73              2127+DL4070 CLI   DL4SCD(,@BR),DL4E24      DISPLACEMENT OVER 23 ?
     11BB F2 82 07              2128+        JL    DL4080                   JUMP NOT OVER 24
     11BE 7A 80 5E              2129+        SBN   DL4100+@Q(,@BR),DL4ETB  SET TRACK BIT ON
     11C1 5F 00 73 49           2130+        SLC   DL4SCD(1,@BR),DL4C24(,@BR) DECR DISP TO NEXT TRACK
     11C5 5E 00 73 73           2131+DL4080 ALC   DL4SCD(1,@BR),DL4SCD(,@BR) SHIFT LEFT 1 PLACE
     11C9 5E 00 73 73           2132+        ALC   DL4SCD(1,@BR),DL4SCD(,@BR) SHIFT LEFT 1 PLACE
     11CD 7A 00 73              2133+DL4100 SBN   DL4SCD(,@BR),*-*         SET TRACK, DISK BIT
                               2134+*
     11D0 C0 87 0025            2135+        B     $DISKN                   GO PERFORM DISK I/O
     11D4 11E1            11D5  2136+        DC    AL2(DL4LST)             ADDR OF DISK PARAM LIST
                               2137+*
     11D6 F2 00 3C              2138+DL4200 JC    DL4600,*-*              BRANCH OR NOP IF TWICE SET
                               2139+*
     11D9 C2 01 0000            2140+DL4900 LA    *-*,@BR                 RESTORE OLD BASE TO RETURN
     11DD C0 87 0000            2141+DL4920 B     *-*                     RETURN TO CALLER

                           11E1 2143+DL4LST EQU   *                         LEFT END OF DPL
     11E1                  11E6 2144+DL4DPL DS    CL(@DPLNG)              DPL SAVE AREA
                           11E2 2145+DL4CYL EQU   DL4LST+@DCYL            CYLINDER COUNT BYTE
                           11E3 2146+DL4SCD EQU   DL4LST+@DSAD            DISPLACEMENT SECTOR COUNT
                           0060 2147+DL4E96 EQU   96                      TWO DISK SECTOR COUNT PER CYL
                           0030 2148+DL4E48 EQU   48                      ONE DISK SECTOR COUNT PER CYL
                           0018 2149+DL4E24 EQU   24                      TRACK SECTOR COUNT
                           0001 2150+DL4E01 EQU   01                      VALUE TO TEST SECTOR COUNT
                           0001 2151+DL4EFD EQU   01                      VALUE TO SET FIXED DISK BIT
                           0080 2152+DL4ETB EQU   X'80'                   VALUE TO SET TRACK BIT
     11E7 0001             11E8 2153+DL4C01 DC    IL2'1'                  VALUE TO INCR TO CYLINDER
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         DL4ICS - FOUR TRACK LOGICAL IOCR


ERR LOC   OBJECT CODE       ADDR STMT SOURCE STATEMENT           VER 15, MOD 00  23/11/22  PAGE  17

    11E9 0005               11EA 2154+DL4C05 DC    IL2'5'                    DISP TO RIGHT END OF DPL
                            1195 2155+DL4C96 EQU   DL4040+@Q                 VALUE TO DECR DISPLACEMENT
                            11B9 2156+DL4C24 EQU   DL4070+@Q                 VALUE OF 1 TRACK
                            11E4 2157+DL4SCT EQU   DL4LST+@DCNT              POINTER TO DPL SECTOR COUNT
                            11A6 2158+DL4C48 EQU   DL4050+@Q                 VALUE TO DECR DISP BY 1 DISK

    11EB 5C 00 14 74             2160+DL4500 MVC   DL4WRK(1,@BR),DL4SCT(,@BR) PICKUP SECTOR COUNT
                            11EB 2161+DL4SPT EQU   DL4500                    POSSIBLE OVERLAY REFERENCE
    11EF 5E 00 14 73             2162+       ALC   DL4WRK(1,@BR),DL4SCD(,@BR) BUMP BY DISPLACEMENT
    11F3 7D 30 14                2163+       CLI   DL4WRK(,@BR),DL4E48        TEST FOR CYLINDER OVERLAP
    11F6 D0 04 48                2164+       BNH   DL4070(,@BR)              BRANCH BACK IF NO OVERLAY
    11F9 5F 00 14 36             2165+       SLC   DL4WRK(1,@BR),DL4C48(,@BR) DECREMENT WORK BY 48
    11FD 5F 00 74 14             2166+       SLC   DL4SCT(1,@BR),DL4WRK(,@BR) SUBTRACT WORK FROM COUNT
    1201 7C 87 67                2167+       MVI   DL4200+@Q(,@BR),@UCB      SET TWICE SWITCH
    1204 5C 00 13 73             2168+       MVC   DL4SAV(1,@BR),DL4SCD(,@BR) SAVE SECTOR DISP IN WORK AREA
    1208 78 01 5E                2169+       TBN   DL4100+@Q(,@BR),DL4EFD    DISK BIT ON IN Q CODE ?
    120B D0 90 48                2170+       BF    DL4070(,@BR)              BRANCH NOT ON
    120E 5E 00 13 36             2171+       ALC   DL4SAV(1,@BR),DL4C48(,@BR) BUMP TO NEXT DISK
    1212 D0 87 48                2172+       B     DL4070(,@BR)              RETURN TO CALL I/O
                                 2173+*
    1215 5C 00 73 13             2174+DL4600 MVC   DL4SCD(1,@BR),DL4SAV(,@BR) PICKUP NEXT HALF OF I/O
    1219 5E 00 75 74             2175+       ALC   DL4LST+@DBFR1(1,@BR),DL4SCT(,@BR) BUMP CORE ADDRESS
    121D 5E 00 73 74             2176+       ALC   DL4SCD(1,@BR),DL4SCT(,@BR)
    1221 5C 00 74 14             2177+       MVC   DL4SCT(1,@BR),DL4WRK(,@BR) MOVE IN NEW SECTOR COUNT
    1225 D0 87 1E                2178+       B     DL4035(,@BR)              RETURN FOR SECOND PASS
                                 2179+*
                            1184 2180+DL4WRK EQU   DL4020+@DOP2              1 BYTE WORK AREA FOR SPLIT CALL
                            1183 2181+DL4SAV EQU   DL4020+@DOP2-1            1 BYTE WORK AREA FOR SPLIT CALL
                            1228 2182+DL4END EQU   *                         DEFINE END OF CODE
                                 2183+***                         END OF DL4ICS                          ***
                                 2184 *****************************************************************************
                            FFFF 2185       END


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

```
                              CROSS REFERENCE

SYMBOL  LEN VALUE DEFN  REFERENCES                        VER 15, MOD 00  23/11/22  PAGE  18

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$$$DAT  001  0040 0658
$$$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  1623  1768
$$KLD2  001  0700 0719
$$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
$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
$BRSAV  001  03C5 0281  0282
$BSADR  001  0587 0608  0610
$BUFPT  001  03E3 0489  0490
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$CAERK  001  0469 0539   0542
$CAERR  001  03CD 0287   0289
$CAIPL  001  049D 0558   0560
$CALLI  001  0008 0479
$CARDI  001  0001 0250
$CARPL  001  04A1 0560   0562
$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
$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   1833  1995  2135
$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  1641*
$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
$ER1N2  001  0050 0299
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$EXADR   001  0517 0577   0579
$EXCMD   001  0001 0331
$EXFTR   001  043B 0513   0518   1786
$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
$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   1640
$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
$PGMDT   001  0020 0388
$PGMST   001  0010 0352
$PKERT   001  0419 0507   0509
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$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
$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
$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  1637
$ZTRAD   001  05A2 0611
$12K     001  0004 0466
$16CKY   001  0008 0468
$16K     001  0002 0465
$22IMP   001  0001 0463
#$$#BL   001  0000 1120
#$$#CK   001  0000 1248
#$$#CN   001  0000 1216
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```
                                   CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                              VER 15, MOD 00  23/11/22  PAGE  22

#$$#CO   001  0000 1008
#$$#CS   001  0000 1068
#$$#DR   001  0000 0812
#$$#ER   001  0000 1012
#$$#FS   001  0000 1108
#$$#IN   001  0000 1252
#$$#PW   001  0000 1256
#$$#RS   001  0000 1088
#$$#SA   001  0000 1076
#$$#SS   001  0000 1072
#$$#VU   001  0600 1032
#$$#0T   001  0700 0804
#$$#1T   001  0000 0808
#$$BCO   001  0600 0820
#$$BOV   001  0800 1092
#$$DPR   001  0700 0828
#$$DRE   001  0889 0844
#$$DSP   001  2800 0864
#$$ECM   001  0C00 1124
#$$EFK   001  0C00 1144
#$$ERR   001  0C00 1116
#$$EXM   001  0C00 1004
#$$FIL   001  0E00 1084
#$$FIS   001  0E00 1080
#$$FML   001  0200 1212
#$$FMS   001  0200 1052
#$$GRA   001  0889 0976
#$$GUF   001  0C00 1112
#$$INL   001  0600 1192
#$$INS   001  0600 0816   1802  1810  1818
#$$KAL   001  0C00 0980
#$$KCA   001  0C00 1196
#$$KCH   001  0C00 0948
#$$KCN   001  0C00 1064
#$$KCT   001  0C00 0916
#$$KDE   001  0C00 0912
#$$KDI   001  0D00 0992
#$$KDN   001  0C00 0900
#$$KDO   001  0E00 0996
#$$KED   001  0C00 0836
#$$KEN   001  0C00 0840
#$$KEX   001  0C00 0860
#$$KGO   001  0C00 0832
#$$KHE   001  0C00 1016
#$$KKE   001  0C00 1244
#$$KLI   001  0C00 0920
#$$KLL   001  0920 1220
#$$KLO   001  0C00 0924
#$$KME   001  0D00 0904
#$$KMO   001  0C00 0848
#$$KNA   001  0C00 0960
#$$KOV   001  0E00 0880
#$$KPA   001  0C00 0856
#$$KPO   001  0C00 0944
#$$KPR   001  0C00 0968
#$$KRE   001  0C00 0888
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SYMBOL	LEN	VALUE	DEFN	REFERENCES
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#$$KRM	001	0C00	0852	
#$$KRN	001	0700	0872	
#$$KRO	001	0D00	0876	
#$$KRS	001	0C00	1200	
#$$KRU	001	0C00	0896	
#$$KRV	001	0800	0988	
#$$KSA	001	0C00	0932	
#$$KSE	001	0E00	0972	
#$$KSO	001	0C20	1024	
#$$KSS	001	0C00	0956	
#$$KSV	001	0980	0952	
#$$KSY	001	0C00	0964	
#$$KWI	001	0C00	0892	
#$$KWR	001	0C00	0884	
#$$LOA	001	0600	0824	
#$$MIP	001	0C00	1020	
#$$SDS	001	0C00	1132	
#$$SFF	001	0E00	1136	
#$$SFL	001	0F00	1128	1631
#$$SFO	001	1500	1100	
#$$SFS	001	0C00	1096	
#$$SPA	001	0C00	0936	
#$$SPO	001	0806	0940	
#$$SPS	001	0C00	0928	
#$$STR	001	1600	1104	
#$$TDC	001	1000	0908	
#$$TSY	001	1000	0868	
#$$TVK	001	0FC0	1044	
#$$UAL	001	0C00	1060	
#$$UAT	001	0900	1156	
#$$UCD	001	0900	1164	
#$$UCN	001	0C00	1148	
#$$UCP	001	0700	1152	
#$$UDE	001	0C00	1168	
#$$UDI	001	0C00	1172	
#$$UEX	001	0C00	1056	
#$$UIN	001	0C00	1160	
#$$UPA	001	0C00	1140	
#$$UPO	001	0C00	1208	
#$$UPT	001	0C00	1204	
#$$VCR	001	2000	1000	
#$$VLO	001	0600	1036	
#$$VOD	001	0600	1040	
#$$VVM	001	0000	1048	
#$$VXI	001	0600	1028	
#$$ZDU	001	1100	1180	
#$$ZLB	001	1100	1224	
#$$ZLO	001	1100	1184	
#$$ZLV	001	0F00	1240	
#$$ZL1	001	0F00	1228	
#$$ZL2	001	0F00	1232	
#$$ZL3	001	0C00	1236	
#$$ZTR	001	1000	1176	
#$$ZUT	001	0C00	1188	
#$#BLN	001	18D4	1119	

```
#$#CKT  001  2118 1247
#$#CNF  001  2000 1215
#$#COR  001  0800 1007
#$#CSA  001  1000 1067
#$#DRT  001  0000 0811
#$#ERM  001  0928 1011
#$#FSP  001  1880 1107
#$#INV  001  212C 1251
#$#PWR  001  2300 1255
#$#RSP  001  1780 1087
#$#SAV  001  1180 1075
#$#SSA  001  1128 1071
#$#VUF  001  0B08 1031
#$#0TR  001  0000 0803
#$#1TR  001  0080 0807
#$@#BL  001  0001 1121
#$@#CK  001  0004 1249
#$@#CN  001  0001 1217
#$@#CO  001  003A 1009
#$@#CS  001  003A 1069
#$@#DR  001  0008 0813
#$@#ER  001  0032 1013
#$@#FS  001  0030 1109
#$@#IN  001  003A 1253
#$@#PW  001  00C0 1257
#$@#RS  001  0030 1089
#$@#SA  001  0108 1077
#$@#SS  001  0001 1073
#$@#VU  001  0002 1033
#$@#0T  001  0018 0805
#$@#1T  001  0018 0809
#$@BCO  001  0018 0821
#$@BOV  001  0018 1093
#$@DPR  001  0005 0829
#$@DRE  001  0001 0845
#$@DSP  001  0004 0865
#$@ECM  001  0006 1125
#$@EFK  001  0002 1145
#$@ERR  001  0003 1117
#$@EXM  001  0003 1005
#$@FIL  001  0009 1085
#$@FIS  001  0009 1081
#$@FML  001  0052 1213
#$@FMS  001  0052 1053
#$@GRA  001  0003 0977
#$@GUF  001  0010 1113
#$@INL  001  0010 1193
#$@INS  001  0010 0817
#$@KAL  001  000F 0981
#$@KCA  001  000C 1197
#$@KCH  001  000C 0949
#$@KCN  001  0010 1065
#$@KCT  001  0009 0917
#$@KDE  001  0010 0913
#$@KDI  001  0005 0993
#$@KDN  001  0010 0901
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SYMBOL	LEN	VALUE	DEFN	REFERENCES	VER 15, MOD 00 23/11/22 PAGE 25
#$@KDO	001	000C	0997		
#$@KED	001	000E	0837		
#$@KEN	001	0006	0841		
#$@KEX	001	0003	0861		
#$@KGO	001	0002	0833		
#$@KHE	001	000C	1017		
#$@KKE	001	0006	1245		
#$@KLI	001	0011	0921		
#$@KLL	001	0001	1221		
#$@KLO	001	0008	0925		
#$@KME	001	0003	0905		
#$@KMO	001	0004	0849		
#$@KNA	001	0008	0961		
#$@KOV	001	0009	0881		
#$@KPA	001	0005	0857		
#$@KPO	001	000D	0945		
#$@KPR	001	0009	0969		
#$@KRE	001	0002	0889		
#$@KRL	001	0004	0985		
#$@KRM	001	0003	0853		
#$@KRN	001	0003	0873		
#$@KRO	001	000A	0877		
#$@KRS	001	000A	1201		
#$@KRU	001	0003	0897		
#$@KRV	001	000D	0989		
#$@KSA	001	0011	0933		
#$@KSE	001	0004	0973		
#$@KSO	001	0005	1025		
#$@KSS	001	000B	0957		
#$@KSV	001	0002	0953		
#$@KSY	001	000F	0965		
#$@KWI	001	0002	0893		
#$@KWR	001	0002	0885		
#$@LOA	001	0013	0825		
#$@MIP	001	000D	1021		
#$@SDS	001	0004	1133		
#$@SFF	001	0008	1137		
#$@SFL	001	0005	1129		
#$@SFO	001	0003	1101		
#$@SFS	001	0011	1097		
#$@SPA	001	0004	0937		
#$@SPO	001	0003	0941		
#$@SPS	001	0001	0929		
#$@STR	001	0002	1105		
#$@TDC	001	0003	0909		
#$@TSY	001	0003	0869		
#$@TVK	001	0001	1045		
#$@UAL	001	0011	1061		
#$@UAT	001	000C	1157		
#$@UCD	001	000B	1165		
#$@UCN	001	0009	1149		
#$@UCP	001	000F	1153		
#$@UDE	001	000E	1169		
#$@UDI	001	0008	1173		
#$@UEX	001	000E	1057		
#$@UIN	001	000F	1161		

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#$@UPO  001  0005 1209
#$@UPT  001  0012 1205
#$@VCR  001  0008 1001
#$@VLO  001  0002 1037
#$@VOD  001  0016 1041
#$@VVM  001  0030 1049
#$@VXI  001  0002 1029
#$@ZDU  001  0008 1181
#$@ZLB  001  0002 1225
#$@ZLO  001  000C 1185
#$@ZLV  001  0006 1241
#$@ZL1  001  0007 1229
#$@ZL2  001  000D 1233
#$@ZL3  001  000A 1237
#$@ZTR  001  0001 1177
#$@ZUT  001  0014 1189
#$BCOM  001  0080 0819
#$BOLV  001  1780 1091
#$DPRI  001  014C 0827
#$DREA  001  0200 0843
#$DSPL  001  0240 0863
#$ECMA  001  1900 1123
#$EFKE  001  1990 1143
#$ERRP  001  18C0 1115
#$EXMS  001  07D4 1003
#$FILN  001  1724 1083
#$FIST  001  1700 1079
#$FMLN  001  1E00 1211
#$FMST  001  0D00 1051
#$GRAP  001  0690 0975
#$GUFU  001  1880 1111
#$INLN  001  1C84 1191
#$INST  001  0020 0815
#$KALL  001  06A4 0979
#$KCAL  001  1CC4 1195
#$KCHA  001  053C 0947
#$KCND  001  0F80 1063
#$KCTL  001  03BC 0915
#$KDEL  001  035C 0911
#$KDIS  001  0744 0991
#$KDNT  001  0300 0899
#$KDOV  001  0780 0995
#$KEDI  001  0188 0835
#$KENA  001  01C4 0839
#$KEXT  001  0234 0859
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#$KHEL  001  0A30 1015
#$KKEY  001  2100 1243
#$KLIS  001  0400 0919
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#$KLOG  001  0444 0923
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#$KRLA	001	0700	0983	
#$KRMO	001	0214	0851	
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#$KROV	001	028C	0875	
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#$KRUN	001	02CC	0895	
#$KRVL	001	0710	0987	
#$KSAV	001	0488	0931	
#$KSET	001	0680	0971	
#$KSOV	001	0AC8	1023	
#$KSSP	001	0594	0955	
#$KSVL	001	058C	0951	
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#$KWID	001	02C4	0891	
#$KWRI	001	02B4	0883	
#$LOAD	001	0100	0823	
#$MIPP	001	0A80	1019	
#$SDSY	001	192C	1131	
#$SFFI	001	193C	1135	
#$SFLO	001	1918	1127	
#$SFOV	001	1844	1099	
#$SFSY	001	1800	1095	
#$SPAC	001	04CC	0935	
#$SPOV	001	04DC	0939	
#$SPSY	001	0484	0927	
#$STRO	001	1850	1103	
#$TDCK	001	0350	0907	
#$TSYK	001	0250	0867	
#$TVKB	001	0BAC	1043	
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#$UCNF	001	19B8	1147	
#$UCPL	001	19DC	1151	
#$UDEL	001	1B24	1167	
#$UDIS	001	1B5C	1171	
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#$UPAC	001	1980	1139	
#$UPOV	001	1D24	1207	
#$UPTF	001	1D5C	1203	
#$VCRT	001	07B4	0999	
#$VLOA	001	0B80	1035	
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#$VVMR	001	0C00	1047	
#$VXIT	001	0B00	1027	
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#$ZLOA	001	1BC4	1183	
#$ZLVR	001	20B0	1239	
#$ZL1M	001	2010	1227	
#$ZL2M	001	2030	1231	

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#@#IO1	001	0459	0757	
#@#IO2	001	045D	0758	
#@#TAT	001	0941	0785	
#@#TBA	001	09A1	0789	
#@#TFS	001	0941	0783	
#@#TSY	001	0941	0787	
#@#VFP	001	0700	0775	1808
#@#VLP	001	093D	0778	
#@#WDB	001	050C	0770	
#@#WFT	001	0500	0768	
#@@#BA	001	0001	0750	
#@@#IO	001	0001	0762	
#@@#SC	001	0002	0759	
#@@#TA	001	0010	0786	
#@@#TB	001	0010	0790	
#@@#TS	001	0005	0788	
#@@#TW	001	0020	0784	
#@@#VM	001	0100	0779	
#@@#WD	001	00BD	0771	
#@@#WF	001	0003	0769	
#@@#04	001	0004	0761	
#@@#08	001	0008	0760	
#@@BOV	001	0018	0738	
#@@ECM	001	0006	0752	
#@@ERR	001	0003	0746	
#@@GUF	001	0010	0742	
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#@@SDS	001	0004	0744	
#@@SFF	001	0008	0756	
#@@SFL	001	0005	0754	
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#@@SFS	001	0011	0740	
#@@VSF	001	0010	0792	
#@@VSL	001	000F	0793	1817
#@@VTR	001	0001	0777	
#@BOVL	001	0400	0737	
#@ECMA	001	0481	0751	
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#@GUFU	001	0401	0741	
#@LDSV	001	044D	0747	
#@SDSY	001	04AD	0743	
#@SFFI	001	04BD	0755	
#@SFLO	001	0499	0753	
#@SFOV	001	04C4	0763	
#@SFSY	001	0480	0739	
#@VSFI	001	09A1	0791	1816
#@VTRL	001	0708	0776	
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#@WAR1	001	0400	0735	
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#SFLOA	001	0000	0001	
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SYMBOL   LEN VALUE DEFN   REFERENCES                      VER 15, MOD 00  23/11/22  PAGE  29

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@$D1DP   001  0016 1293
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@$D1E1   001  0000 1283
@$D1FS   001  000A 1291
@$D1SW   001  001F 1296
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@$D2BS   001  0003 1308   1642  1648  1656  1685
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@$D2CP   001  0005 1309   1666*
@$D2CS   001  0004 1310
@$D2CY   001  0006 1312
@$D2DA   001  0007 1313   1643
@$D2DC   001  0000 1305
@$D2DD   001  0009 1314   1644  1647  1658*
@$D2EE   001  000F 1317
@$D2E1   001  0040 1304
@$D2FS   001  000B 1315   1646
@$D2IO   001  0001 1306   1681
@$D2LC   001  000D 1316
@$D2PN   001  000A 1302
@$D2SF   001  000B 1303
@$D2VB   001  0002 1307   1670  1704  1759
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@$L1DF   001  0008 1325
@$L1DP   001  0008 1326
@$L1DV   001  0006 1327
@$L1E    001  0020 1321
@$L1FS   001  0002 1324
@$L2AS   001  0001 1333
@$L2BS   001  0001 1340   1642  1648  1685
@$L2CB   001  0001 1343
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@$L2CP   001  0002 1341   1666  1831
@$L2CS   001  0001 1342
@$L2DA   001  0002 1344   1643
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@$L2DD   001  0002 1345   1644  1657  1658  1659  1664  1665
@$L2E    001  0010 1336
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@$L2HD   001  0040 1331
@$L2IO   001  0001 1338
@$L2LC   001  0002 1347
@$L2PN   001  0008 1335
@$L2SF   001  0002 1334
@$L2VB   001  0001 1339   1670  1704  1759
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@$MBCR   001  0008 1363
@$MBEN   001  000C 1351
@$MBND   001  0000 1358
@$MBPD   001  0080 1359
@$MBPT   001  0010 1362
@$MBPU   001  0001 1354
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@$M2FO  001  0040 1368
@$M2FP  001  0020 1369
@$M2FT  001  0010 1372
@$M2NS  001  00FF 1352
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@BCRDL  001  0050 0088
@BE     001  0081 0043
@BF     001  0090 0052
@BH     001  0084 0041
@BL     001  0082 0042
@BLANK  001  0040 0065
@BM     001  0082 0054
@BNE    001  0001 0046
@BNH    001  0004 0044
@BNL    001  0002 0045
@BNM    001  0002 0057
@BNOL   001  0020 0050
@BNOZ   001  0008 0049
@BNP    001  0004 0056
@BNZ    001  0001 0058
@BOL    001  00A0 0048
@BOZ    001  0088 0047
@BP     001  0084 0053
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                         1652  1652  1656  1657  1657  1658  1659  1659  1661  1661  1664  1664
                         1665  1665  1666  1670  1671  1673  1683  1683  1684  1694  1702  1703*
                         1705  1705* 1706  1711  1711* 1744  1748  1749  1749  1750  1758* 1760
                         1760* 1762  1771  1771* 1787  1934  1943  1945* 1946  1947  1948  1949
                         1951  1952  1952  1953  1954  1954  1956  1956  1957  1958  1958  1962
                         1962  1963  1967  1967  1968  1970  1970  1971  1971  1972  1972  1973
                         1973  1974  1974  1980  1981  1982  1982  1983  1988  1988  1989  1989
                         1991  1991  1997* 2099  2100  2102* 2103  2104  2105  2106  2108  2109
                         2109  2110  2112  2113  2115  2117  2117  2118  2118  2119  2121  2123
                         2124  2124  2125  2127  2129  2130  2130  2131  2131  2132  2132  2133
                         2140* 2160  2160  2162  2162  2163  2164  2165  2165  2166  2166  2167
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                         2176  2177  2177  2178
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@CARDL  001  0060 0087   0644
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@CHARF  001  00C6 0073
@CHARR  001  00D9 0074
@CHARZ  001  00E9 0075
@CLOFF  001  0010 0094
@CLON   001  0011 0093
@COMMA  001  006B 0066
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@DADDR   001  0002 0140   1951  2016  2108
@DBFR1   001  0004 0129   1719* 1723  1729* 2175*
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@DCBCY   001  0009 0115
@DCBT1   001  0050 0117
@DCNT    001  0003 0128   1652* 1656* 1657  1683* 1708* 1714  1719  1720  1721* 1749  1749* 1772*
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@DCST1   001  0040 0116
@DCTRL   001  0000 0125   1645* 1671  1673* 1748*
@DCYL    001  0001 0126   1956* 2145
@DD2     001  0003 0030
@DGET    001  0001 0134   1671  1673  1815
@DOLAR   001  005B 0068
@DOP2    001  0004 0028   1947* 1951* 1952* 2014  2015  2104* 2108* 2109* 2180  2181
@DPLNG   001  0006 0132   1641  1953  2012  2110  2144
@DPOS    001  0000 0133
@DPUT    001  0002 0135   1748
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@DSCS1   001  0000 0107
@DSIVF   001  0003 0138
@DSPIN   001  0002 0131
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@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   1704* 1759*
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@EOS     001  001E 0076
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@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
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@IAR     001  0010 0017   1778*
@INDEX   001  0001 0156   0157
@INST3   001  0003 0032
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@INST5   001  0005 0034
@INST6   001  0006 0035
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@MAPEN   001  0005 0089
@MINCR   001  2000 0083
@MINUS   001  0060 0080
@NOP     001  0080 0040   1655   1722   1993   2113
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@PCTRL   001  0000 0149
@PDATA   001  0003 0151
@PGCSZ   001  0020 0082   0083   1785
@PPLNG   001  0004 0148
@PRCNT   001  0001 0150
@PRETR   001  00C0 0154
@PRINT   001  0040 0152   0154
@PSR     001  0004 0015
@PWAIT   001  00FF 0158
@P1IAR   001  0020 0018
@P2IAR   001  0040 0019
@Q       001  0001 0024   1655* 1688* 1689* 1690  1692  1713* 1994  2112* 2113* 2123* 2129* 2155
                          2156   2158   2167* 2169
@REGL    001  0002 0012
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@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   1680   1713   2167
@UPARW   001  005A 0078
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@VMDDV   001  00FE 0114
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                          CROSS REFERENCE

SYMBOL   LEN VALUE DEFN   REFERENCES                              VER 15, MOD 00  23/11/22  PAGE  33

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@VOLID   001  0006 0091
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@WSFIT   001  0500 0101
@WSTBL   001  0503 0102
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                         1685  1704  1759
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DL2C05   002  1163 2007   1952
DL2C48   001  115D 2004   1954  1958
DL2DPL   006  1169 2012   1953*
DL2END   001  116C 2017
DL2E01   001  0001 1936   1954  1956  1958  1962  1974  1982
DL2E02   001  0002 1937   1967  1970  1988
DL2E18   001  0018 1938   1968
DL2E60   001  0060 1939   1983
DL2E7C   001  007C 1941   1980
DL2ICS   001  10D3 1942   1737  1745
DL2K18   002  115F 2005   1971
DL2K60   002  115A 2002   1989
DL2K80   002  115C 2003   1970  1988
DL2LST   001  1164 2011   1954* 1956* 1958* 1962  1963* 1967* 1970* 1974  1980* 1988* 1991* 1996
                         2013
DL2PHY   001  1166 2013
DL2RAD   002  116B 2016   1643* 1967
DL2SAD   005  10EB 2014   1974* 1981* 1982* 1983  1989* 1991
DL2SEC   005  10F4 2015   1962* 1968  1971* 1972  1972* 1973  1973* 1982
DL2SWH   003  1149 1994
DL2TSD   001  0083 1940   1981
DL2000   001  10D7 1944   1934  1945
DL2001   005  10E7 1951   1947* 2014
DL2002   005  10F0 1953   1951* 1952* 2015
DL2005   004  10F5 1954   1957
DL2006   004  1103 1958   1955
DL2008   004  1120 1972   1969
DL2010   003  1136 1983
DL2100   004  1144 1991   1984
DL2110   003  1148 1993   1994
DL2900   004  1151 1997   1943* 1993
DL2910   004  1155 1998   1949*
DL4CYL   001  11E2 2145   2117*
DL4C01   002  11E8 2153   2103  2105  2117
DL4C05   002  11EA 2154   2109
DL4C24   003  11B9 2156   2130
DL4C48   003  11A6 2158   2124  2165  2171
DL4C96   003  1195 2155   2118
DL4DPL   006  11E6 2144   2110*
DL4EFD   001  0001 2151   2123  2169
DL4END   001  1228 2182
DL4ETB   001  0080 2152   2129
DL4E01   001  0001 2150   2125
DL4E24   001  0018 2149   2127
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DL4E96  001  0060 2147   2115
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DL4LST  001  11E1 2143   2136   2145   2146   2157   2175*
DL4SAV  005  1183 2181   2168*  2171*  2174
DL4SCD  001  11E3 2146   2115   2118*  2121   2124*  2127   2130*  2131   2131*  2132   2132*  2133*  2162
                         2168   2174*  2176*
DL4SCT  001  11E4 2157   2125   2160   2166*  2175   2176   2177*
DL4SPT  004  11EB 2161   2126
DL4WRK  005  1184 2180   2160*  2162*  2163   2165*  2166   2177
DL4010  001  1170 2101   2099   2102
DL4020  005  1180 2108   2104*  2180   2181
DL4030  005  1189 2110   2108*  2109*
DL4035  003  118E 2112   2178
DL4040  003  1194 2115   2119   2155
DL4050  003  11A5 2121   2116   2158
DL4060  003  11B2 2125   2122
DL4070  003  11B8 2127   2156   2164   2170   2172
DL4080  004  11C5 2131   2128
DL4100  003  11CD 2133   2112*  2123*  2129*  2169
DL4200  003  11D6 2138   2113*  2167*
DL4500  004  11EB 2160   2161
DL4600  004  1215 2174   2138
DL4900  004  11D9 2140   2100*
DL4920  004  11DD 2141   2106*
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I$ADST  001  0C9D 1408
I$BASE  001  0C60 1410
I$BRCN  001  117B 1462
I$BSET  001  119D 1461
I$B1SW  001  0040 1518
I$B2SW  001  0020 1520
I$CADR  001  144C 1499
I$CALL  001  12B1 1493
I$CBM1  001  0D43 1429
I$CBN1  001  0D3E 1425
I$CBN2  001  0D3F 1426
I$CBN3  001  0D40 1427
I$CBN4  001  0D41 1428
I$CFBS  001  0AE3 1476
I$CLFA  001  0D4A 1435
I$CLVA  001  0D49 1434
I$CL1C  001  0D46 1432
I$CL1F  001  0D44 1430
I$CL2C  001  0D47 1433
I$CL2F  001  0D45 1431
I$CPG1  001  1600 1390
I$CPUF  001  0A27 1472
I$CSCT  001  0D5A 1448
I$CSSW  001  0010 1522
I$CSXA  001  2000 1389
I$CUPF  001  0A85 1474
I$CVAD  001  1358 1487
I$DATA  001  0D53 1416
I$DAT1  001  0D55 1417
I$DMSW  001  0BC1 1470
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I$ERRC   001  0CBC 1415
I$FACT   001  0DD1 1455
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I$FATE   001  0DE6 1456
I$FATP   001  0DE8 1457
I$FDVD   001  0919 1483
I$FMPY   001  082A 1481
I$FSUB   001  0751 1479
I$FWRK   001  0607 1399
I$IMC1   001  0DCE 1446
I$IMLN   001  0DC6 1442
I$IMPT   001  0DCC 1445
I$INDR   001  0DC5 1441
I$INIT   001  0607 1398
I$INTR   001  0C5C 1402
I$IRSW   001  0CDE 1422
I$I700   001  0E24 1484
I$LBFR   001  12B6 1494
I$LDBR   001  1329 1491
I$LDXR   001  1330 1492
I$LOCK   001  1354 1489
I$MDFY   001  1349 1488
I$MOD4   001  130B 1485
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I$NDSW   001  0002 1528
I$NISW   001  0080 1516
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I$PARM   001  0D57 1418
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I$PGNO   001  1449 1496
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I$PLRT   001  15E2 1501
I$PSTK   001  15CA 1502
I$PUB1   001  0DC8 1443
I$PUB2   001  0DCA 1444
I$RESW   001  0CE9 1423
I$RNMK   001  0001 1438
I$RNSW   001  0D5C 1437
I$RTRN   001  12D3 1495
I$SDCT   001  0D59 1450
I$SDPT   001  0DD0 1447
I$SFCT   001  0D5A 1451
I$SFFO   001  0D5D 1459
I$SICT   001  0D5B 1452
I$SLLC   001  0BA1 1466
I$SLNG   001  0BA2 1465
I$SNSW   001  0001 1530
I$SSCT   001  0D58 1449
I$STAK   001  0D4E 1411
I$STCK   001  0B50 1464
I$STHA   001  0D51 1421
I$STKB   001  0639 1400
I$STKI   001  0D4F 1412
I$STSW   001  0008 1524
I$TFSW   001  0D28 1424
```

```
I$ULNG   001  0C3A 1469
I$UNLK   001  1350 1490
I$USTK   001  0BB0 1468
I$VADR   001  144A 1498
I$WRK1   001  0D59 1419   1645   1686   1689
I$WRK2   001  0D5B 1420   1691
I$XAD1   001  0C89 1407
I$XAD2   001  0C82 1406
I$XAD3   001  0C7B 1405
I$XAD4   001  0C74 1404
I$XERR   001  0CAB 1409
I$XIAR   001  0D4C 1414
I$XPAG   001  0C61 1413
SFLARR   002  10C4 1823   1640*  1777
SFLBSZ   001  10C5 1824   1642*  1709*
SFLBS1   001  10B1 1841   1638   1639   1744
SFLCNT   001  10D0 1834   1661*  1665
SFLCPS   001  10CA 1829   1725   1765   1785*  1786*  1787*
SFLCYL   002  10D2 1837   1659   1664
SFLC48   001  0030 1843
SFLDPR   001  10BD 1814   1821
SFLDSK   002  10CF 1833   1778
SFLMS1   001  00FF 1842   1688
SFLONE   001  10CD 1832   1661   1683   1694   1708   1709   1729   1730   1770   1772
SFLRDP   001  10C2 1821   1641
SFLRES   001  00FF 1840   1728   1728*  1768   1768*
SFLSCT   001  0100 1839   1726   1728   1766   1768   1840
SFLWK1   002  10C7 1825   1646*  1647*  1649   1652
SFLWK2   002  10C9 1826   1648*  1649   1657*  1658   1827
SFLZRO   002  10CC 1831   1666
SFL045   004  0F48 1655   1650
SFL050   004  0F4C 1656   1651
SFL060   004  0F50 1657   1653
SFL065   004  0F58 1659   1662
SFL066   004  0F67 1664   1660
SFL070   004  0F6F 1666
SFL105   003  0F80 1680   1655*
SFL120   006  0FBA 1693   1684*  1685*  1688*  1689*  1690   1690*  1691*  1692   1692*  1694*  1695
SFL130   006  0FC5 1695   1687
SFL140   004  0FCB 1696   1695*
SFL150   004  0FCF 1703   1680   1682
SFL160   005  0FD3 1704
SFL170   003  0FD8 1705   1704*
SFL180   003  0FDB 1706   1712
SFL190   006  0FE7 1709   1731
SFL195   004  0FF7 1713   1710
SFL2DP   001  10B1 1797   1644*  1645*  1652*  1656*  1657   1659*  1664*  1665*  1671   1683*  1738   1746
                         1749   1772*  1841
SFL200   004  0FFB 1714   1707
SFL210   003  1018 1722   1713*  1715
SFL230   006  102B 1726   1723*  1725*  1727
SFL250   004  1041 1737   1722
SFL4DP   001  10B7 1806   1670*  1673*  1684   1708*  1714   1717   1719   1719*  1720   1720*  1721*  1723
                         1729*  1730*  1748*  1749*  1756
SFL400   004  104A 1745   1672
SFL420   003  1066 1760   1759*
```

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SFL430   003  1069 1762    1773
SFL440   006  1079 1766    1765* 1767   1770*
SFL460   006  107F 1770    1763
SFL500   004  1092 1777    1739
SFL700   004  109A 1784    1724   1764
SFL799   004  10AD 1791    1784*
```

TOTAL STATEMENTS IN ERROR IN THIS ASSEMBLY =   0

OL105 I   THE CODE LENGTH OF #SFLOA IS 4648 DECIMAL.
OL103 I   TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS   6
          NAME-#SFLOA,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-R,CATEGORY-000

```
         OVERLAY LINKAGE EDITOR CORE USAGE MAP      23/11/22


  START      CATEGORY   NAME AND       CODE LENGTH
 ADDRESS                  ENTRY     HEXADECIMAL DECIMAL

  0F00          0       #SFLOA          1228     4648


OL100 I   THE TOTAL CORE USED BY #SFLOA IS   4648 DECIMAL.
OL101 I   THE START CONTROL ADDRESS OF THIS MODULE IS 0F00.
OL104 I   TOTAL NUMBER OF LIBRARY SECTORS REQUIRED IS    19
          NAME-#SFLOA,PACK-R1R1R1,UNIT-R1,RETAIN-P,LIBRARY-O
```