```
    1    000000I          SUBROUTINE WALLFN(IE,YP,YP1,CK1,DE1,DEN1,SINX1,SINY1,      1701
    2                1        SINZ1,F1,AN1,SU1,SP1,                                   1702
    3                2        TAUN1,YPLN1,GEN1,VISE1,                                 1703
    4                3        U1,V1,W1,UC,VO,                                         1704
    5                4        WO,U2,V2,W2,                                            1705
    6                5        SUK1,SPK1,ANV2,ANW2,TJ01)                               1706
    7    000004I          COMMON                                                     1707
    8                1/PRCP/ VISE(21,18,10),CEN(21,18,10),VISC,DENIN,FLOWIN          1708
    9                1/TUR/ SIGK,SIGE,CMU,C1,C2,CMU1,CMU2,E,CK,HINUM,SMNUM,ANV1(800), 1709
   10                2 YN(800),YN1(800),SINX(800),SINY(800),SINZ(800),ANW1(800),     1710
   11                3 YPLN(800),TAUN(800),ISC(800),JBC(800),KSC(800),IITY(800),     1711
   12                4 TALW(800),GEN(21,18,10),MC(21,18,10),IJLO(21,18,10),IITO      1712
   13          C-----WALL FUNCTIONS USING LOGARITHMIC WALL LAW                       1713
   14    000004I          GO TO (1,2,3,4,5,6,7), IE                                  1714    1
   15    00003EI     1    CONTINUE                                                   1715    2
   16          C-----U                                                               1716
   17    00003EI          SQRTK=SQRT(CK1)                                            1717    3
   18    00005AI          YPLN1=DEN1*SQRTK*CMU1*YP/VISC                              1718    4
   19    00007EI          IF(YPLN1 .LE. 11.63) GO TO 111                             1719    5
   20    000096I          TMULT=DEN1*CMU1*SQRTK*CK/ALOG(E*YPLN1)                     1720    7
   21    0000E0I          GO TO 112                                                  1721    8
   22    0000E6I     111  TMULT=VISC/YP                                              1722    9
   23    0000F8I     112  TAUN1=-TMULT                                              1723   10
   24    000104I          PTA=TJO1*SINX1*TMULT/YP1                                   1724   11
   25    000123I          SP1=SP1-PTA                                                1725   12
   26    00013AI          SU1=SU1+PTA*F1                                             1726   13
   27    000152I          P1=SQRT(1.-SINX1**2)                                       1727   14
   28    00016AI          ANV2=AN1*SQRT(1.-SINY1**2)                                 1728   15
   29    0001C8I          ANW2=AN1*SQRT(1.-SINZ1**2)                                 1729   16
   30    000208I          AN1=P1*AN1                                                 1730   17
   31    00021AI          RETURN                                                     1731   18
   32    000220I     2    CONTINUE                                                   1732   19
   33          C-----V                                                               1733
   34    000220I          TMULT=-TAUN1                                              1734   20
   35    000232I          PTA=TJO1*SINY1*TMULT/YP1                                   1735   21
   36    000250I          SP1=SP1-PTA                                                1736   22
   37    000262I          SU1=SU1+PTA*F1                                             1737   23
   38    00027AI          AN1=ANV2                                                   1738   24
   39    000286I          RETURN                                                     1739   25
   40    00028CI     3    CONTINUE                                                   1740   26
   41          C-----W                                                               1741
   42    00028CI          TMULT=-TAUN1                                              1742   27
   43    00029EI          PTA=TJO1*SINZ1*TMULT/YP1                                   1743   28
   44    0002BCI          SP1=SP1-PTA                                                1744   29
   45    0002CEI          SU1=SU1+PTA*F1                                             1745   30
   46    0002E6I          AN1=ANW2                                                   1746   31
   47    0002F2I          RETURN                                                     1747   32
   48    0002F8I     4    CONTINUE                                                   1748   33
   49          C-----TM                                                              1749
   50    0002F8I          RETURN                                                     1750   34
   51    0002FEI     5    CONTINUE                                                   1751   35
   52          C-----K                                                               1752
   53    0002FEI          SQRTK=SQRT(CK1)                                            1753   36
   54    00031AI          IF(YPLN1 .LE. 11.63) GO TO 511                             1754   37
   55    000332I          DITM=DEN1*CMU2*SQRTK*ALOG(E*YPLN1)/(CK*YP)                 1755   39
   56    000332I          GO TO 512                                                  1756   40
   57    000388I     511  DITM=DEN1*CMU2*SQRTK*YPLN1/YP                              1757   41
```