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AIR QUALITY ASSESSMENT MODEL FOR AIR FORCE OPERATIONS -- SOURCE--ETC(U)
APR 77 D J BINGAMAN, L E WANGEN

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(6) # AIR QUALITY ASSESSMENT MODEL FOR AIR FORCE OPERATIONS — SOURCE EMISSIONS INVENTORY COMPUTER CODE DOCUMENTATION.

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The Air Force contracted with Argonne National Laboratory to develop a series of computer programs to assess the air quality impact of Air Force operations. These programs are called the Air Quality Assessment Model (AQAM). The AQAM contains three computer codes: A source emission inventory to quantify the hundreds of sources typically found on an airbase; a short term emission/dispersion model to make hourly air quality predictions; and a long term emission/dispersion model to make monthly or annual predictions. This report documents only the source emissions inventory computer code. While aircraft

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are emphasized, ground vehicles, space heating, and industrial sources can also be handled.

Flow charts, listings, and brief descriptions of each subroutine are presented in this report. It is intended for readers with a computer programming background who wish to examine or alter the computer codes.

PREFACE

This report documents work performed during the period 1 July 1975 through December 1976 by Argonne National Laboratory. The technical work for this effort was performed under the auspices of the Air Force Civil Engineering Center (AFSC) which on 8 April 1977, reorganized into Detachment 1 (CEEDO) HQ ADTC, Tyndall Air Force Base, Florida, 32403. Captain Dennis F. Naugle, CEEDO/ECA, managed the program.

This report has been reviewed by the Information Officer and is releasable to the National Technical Information Service (NTIS). At NTIS it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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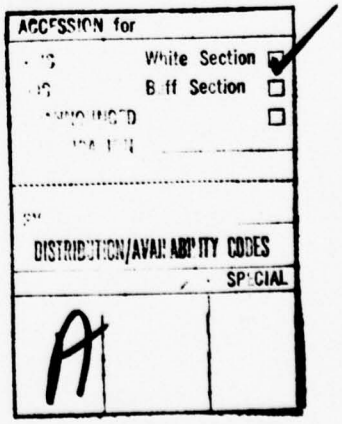

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INTRODUCTION

Argonne National Laboratory (ANL) has developed an "Air Quality Assessment Model" (AQAM) for airbase operations under contract to the U.S. Air Force Civil Engineering Center (AFCEC) designed to simulate the emission of pollutants from sources on an airbase and the dispersion of these emissions in the atmosphere so as to enable calculation of pollutant concentrations over a grid of ground level receptors. These models are comprised of four physically separate computer codes, of which three must be operated by the user. The fourth code prepares a magnetic tape containing long term stability-time-wind roses for use by the long term climatological type air pollution model. This code is operated on request by the USAF Environmental Technical Applications Center in Washington, D.C. and the resultant magnetic tapes containing the climatological information is shipped to the user. The other three codes, developed by ANL, consist of the

- Source Inventory Model (SRCINV)
- Short Term Emission/Dispersion Model
- Long Term Emission/Dispersion Model

This report constitutes the computer code documentation for the first of these – the Source Inventory Model. Separate computer code documentation manuals are being prepared for each of the other two model programs. A companion document to these reports – "Operator's Guide (Reference 1) to the Air Quality Assessment Model" for airbase operations – consists of a detailed discussion of the various functional parts of the computer programs and the input/output requirements. A second companion report (Reference 2) discusses the technical and theoretical basis underlying AQAM and presents and describes equations and algorithms used in the various AQAM submodels.

The intended purpose of the present document is to provide a computer programmer with sufficient information so that he can study the code and make changes or modifications to it where required.

Table 1 contains a list of all routines contained in SRCINV in alphabetical order together with a brief description. More detailed descriptions of each routine, together with flow charts and computer code listings with

comments that are intended to link listings to flow charts, are given on subsequent pages. It is hoped that this information, when combined with that given in References 1 and 2, will enable a programmer to understand and make changes to the codes.

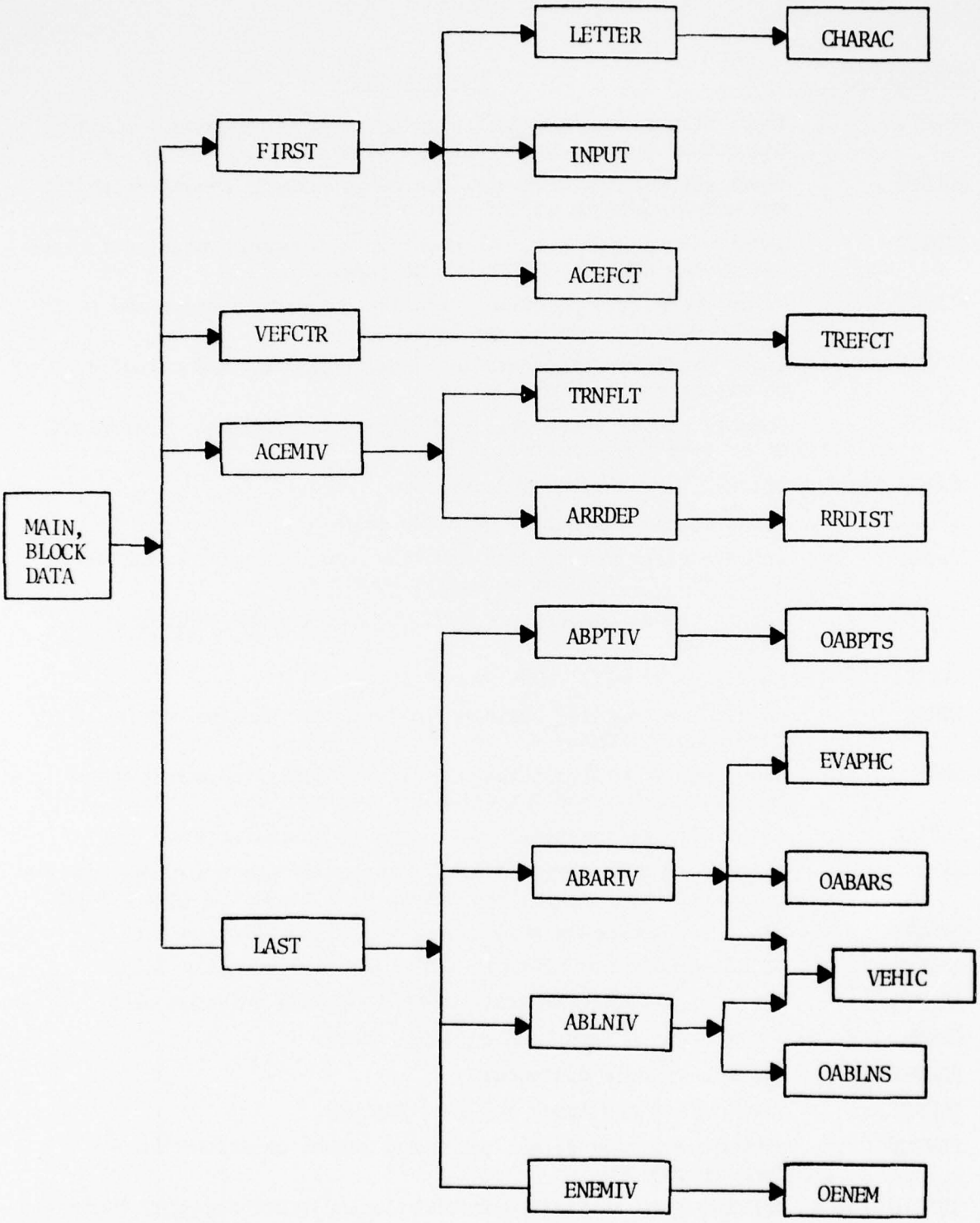


Figure 1. Schematic Flow Diagram of Source Inventory Program

Table 1. LIST OF ALL PROGRAMS AND SUB-PROGRAMS IN THE SOURCE INVENTORY MODEL

SUBROUTINE	DESCRIPTION
ABARIV	Input airbase non-aircraft area data, compute annual emissions and output data to master source tape.
ABLNIV	Input airbase non-aircraft line data, compute annual emissions and output data to master source tape.
ABPTIV	Input airbase non-aircraft point data, compute annual emissions and output data to master source tape.
ACEFCT	Print the engine pollutant emission data and compute and print engine pollutant emission rates.
ACEMIV	Input aircraft data, compute annual emissions and output data to master source tape.
ARRDEP	Compute annual emissions due directly to movement of aircraft on or over the airbase.
BLOCK DATA	Initialize variables and arrays.
CHARAC	Print single characters on title page.
ENEMIV	Input environ point, area and line data, compute annual emissions and output data to master source tape.
EVAPHC	Input airbase evaporative hydrocarbon data and compute annual emissions.
FIRST	Subdriver to call INPUT and ACEFCT.
INPUT	Initialize temporal distribution arrays. Changes may be input thru namelist data.
LAST	Subdriver to call all the non-aircraft emission subroutines and summarize annual emissions.
LETTER	Print a four line title page using large characters.
MAIN	Primary program driver. Read, initialize and print certain parameters and arrays, and output data to master source tape.
OABARS	Print airbase non-aircraft area input and emission data.
OABLNS	Print airbase non-aircraft line input and emission data.
OABPTS	Print airbase non-aircraft point input and emission data.
OENEM	Print environ input and emission data.
RRDIST	Compute takeoff distances.
TREFCT	Compute car and truck emission factors.
TRNFLT	Compute training flight paths and annual emissions due to such operations.
VEFCTR	Subdriver to initialize automobile and truck emission factors.
VEHIC	Input airbase vehicle data and compute annual emissions.

SUBROUTINE ABARIV

Purpose:

1. To input airbase non-aircraft area geometric data and activity data with the exception of the evaporative hydrocarbons.

2. To calculate annual emissions from space heating, off-road vehicles, military vehicles and civilian vehicles.

3. Tc output to the master source tape all data needed to define air base non-aircraft area sources.

Input:

Airbase non-aircraft area geometric data and activity data relating to space heating, off-road vehicles, military and civilian vehicles.

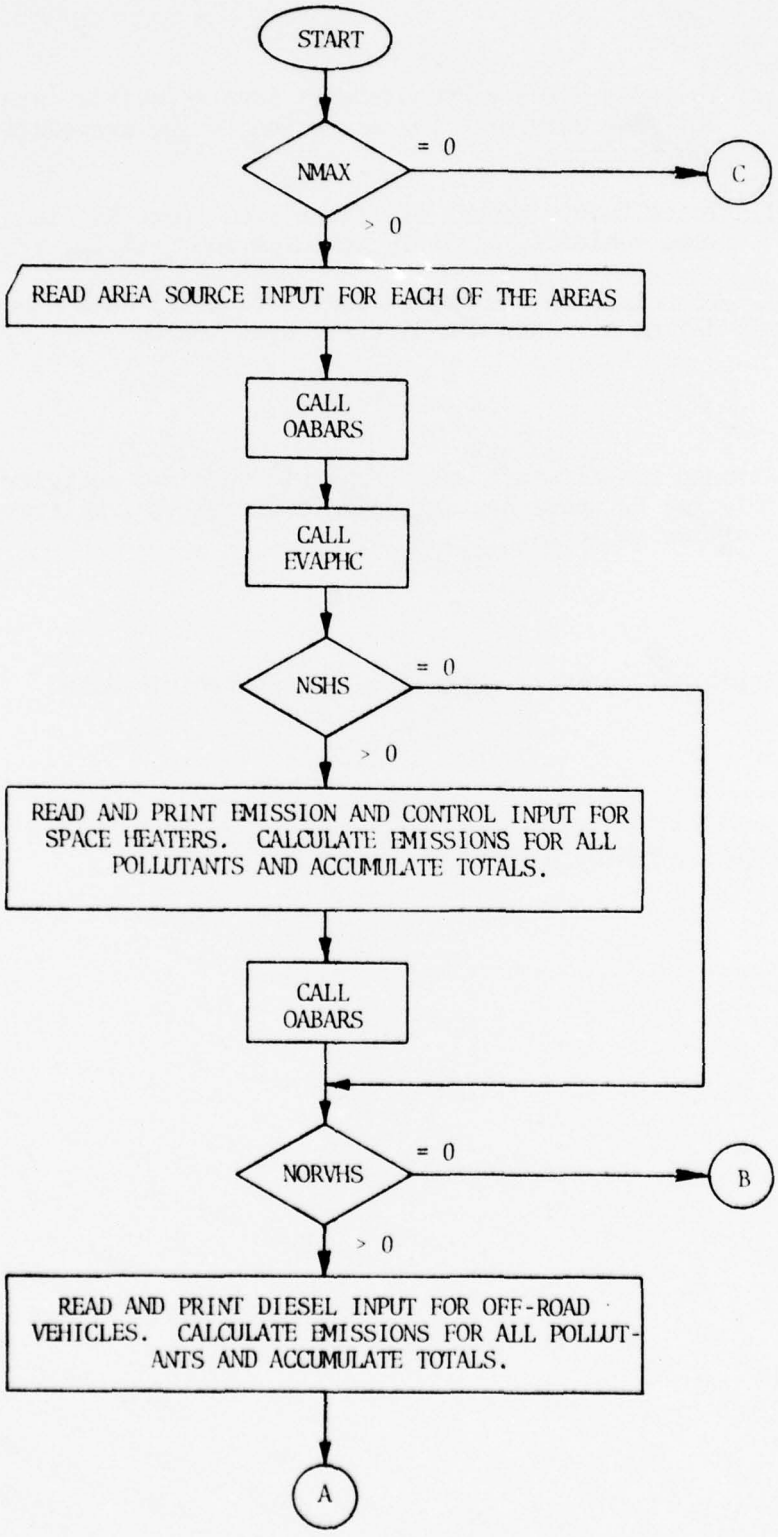
Output:

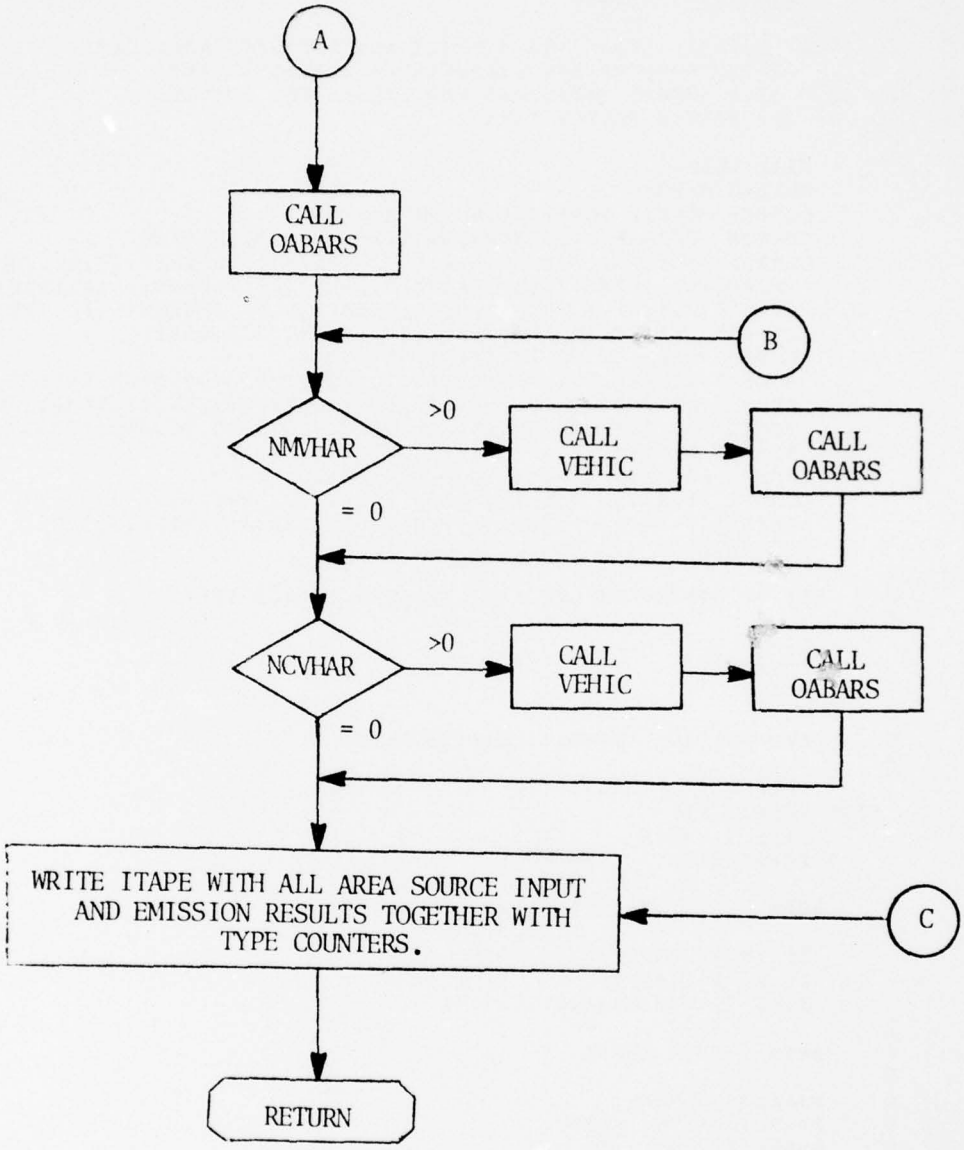
Print all activity input data except vehicle data.

Subroutines Called:

EVAPHC, VEHIC, OABARS

SUBROUTINE ABARIV




A
CALL OABARS
B
NMVHAR
>0
CALL VEHIC
CALL OABARS
= 0
NCVHAR
>0
CALL VEHIC
CALL OABARS
= 0
WRITE ITAPE WITH ALL AREA SOURCE INPUT AND EMISSION RESULTS TOGETHER WITH TYPE COUNTERS.
C
RETURN

```
      SUBROUTINE ABARIV                                                 ABARV000
C                                                                       ABARV001
C   THIS ROUTINE READS THE AIRBASE NON-AIRCRAFT AREA DATA,              ABARV002
C   INCLUDING EVAPORATIVE HYDROCARBON ACTIVITY DATA,                    ABARV003
C   COMPUTES ANNUAL EMISSIONS AND STORES THE RESULTS                    ABARV004
C   ON THE MASTER SOURCE TAPE                                           ABARV005
C                                                                       ABARV006
      REAL LUEMFC                                                       ABARV007
      REAL*8 MINUS                                                      ABARV008
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                              ABARV009
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                   ABARV010
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),ABARV011
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      ABARV012
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      ABARV013
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               ABARV014
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                             ABARV015
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,  ABARV016
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,   ABARV017
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,  ABARV018
     . TDDFLT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                        ABARV019
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                           ABARV020
      COMMON /ARRAYS/ HCWRK(10,50),HCBRTH(5,100),HCEVP(3,50)            ABARV021
      DIMENSION FCTR(6),IDPL(6),CNTR(6),TEMP(6),ABARS(7,300)            ABARV022
      EQUIVALENCE (ABARS(1),SORCE(1))                                   ABARV023
C                                                                       ABARV024
C     SET UP DIMENSIONS OF AIRBASE AREA SOURCE ARRAYS                   ABARV025
C                                                                       ABARV026
      I1=7                                                              ABARV027
      I2=300                                                            ABARV028
      M=12                                                              ABARV029
C                                                                       ABARV030
C     DATA SET 20  AIRBASE AREA SOURCES                                 ABARV031
C                                                                       ABARV032
      READ 8676, AB1234                                                 ABARV033
 8676 FORMAT(A1)                                                        ABARV034
      READ 1, NMAX                                                      ABARV035
    1 FORMAT(I4)                                                        ABARV036
C                                                                       ABARV037
C     NMAX = NO. OF AIRBASE AREAS                                       ABARV038
C                                                                       ABARV039
      IF (NMAX.EQ.0) GO TO 500                                          ABARV040
      DO 20 N=1,NMAX                                                    ABARV041
      READ 2, (ABARS(I,N),I=1,7)                                        ABARV042
C                                                                       ABARV043
C     AREA SOURCE INPUT                                                 ABARV044
C                                                                       ABARV045
C     ABARS(1,N)=ID                                                     ABARV046
C     ABARS(3,N)=X   (KM)                                               ABARV047
C     ABARS(4,N)=Y   (KM)                                               ABARV048
C     ABARS(5,N)=Z   (KM)                                               ABARV049
C     ABARS(6,N)=L   (M)                                                ABARV050
C     ABARS(7,N)=DZ  (M)                                                ABARV051
C                                                                       ABARV052
    2 FORMAT(2F4.0,9F8.2)                                               ABARV053
      IF (ABARS(7,N).LE.0.0) ABARS(7,N)=ARDSDZ                          ABARV054
   20 CONTINUE                                                          ABARV055
C                                                                       ABARV056
      IO=1                                                              ABARV057
      CALL CABARS(IO)                                                   ABARV058
      CALL EVAPHC(NWRK,NBRT,NXEVP)                                      ABARV059
C                                                                       ABARV060
C     DATA SET 26  SPACE HEATERS                                        ABARV061
```

```
C                                                                       ABARV062
  100 READ 8676, A31234                                                 ABARV063
      READ 1, NSHS                                                      ABARV064
C                                                                       ABARV065
C     NSHS = NO. OF SPACE HEATING SOURCES                               ABARV066
C     THESE USE THE SAME BASIC EMISSION FACTORS AS THOSE USED           ABARV067
C     FOR THE POWER PLANTS BUT INVOLVE SMALLER BOILERS                  ABARV068
C                                                                       ABARV069
      IF (NSHS.EQ.0) GO TO 200                                          ABARV070
      LSRCES=NSRCES+1                                                   ABARV071
      NSRCES=NSRCES+NSHS                                                ABARV072
      PRINT 101, (PLNAME(I),I=1,NPLTS)                                  ABARV073
  101 FORMAT(1H1,53X,30HII. C.7  AIRBASE SPACE HEATING/1H-,             ABARV074
     . 56X,22HFUEL AND FURNACE INPUT,/1HO,                              ABARV075
     . 7X,6HSOURCE,5X,8HEMISSION,6X,7HPERCENT,5X,7HPERCENT,5X,          ABARV076
     . 10HFUEL USAGE,6X,7HCONTROL,13X,25HPERCENT EMISSION CONTROLS/1H , ABARV077
     . 9X,2HID,6X,9HFACTOR ID,6X,6HSULFUR,8X,3HASH,6X,12HAPPROP UNITS,  ABARV078
     . 6X,4HFLAG,5X,6(4X,A4))                                           ABARV079
C                                                                       ABARV080
      IO=2                                                              ABARV081
      DO 160 N=LSRCES,NSRCES                                            ABARV082
      READ 3, SID,IDEMFC,S,A,ANNUSE,ICNTRL                              ABARV083
    3 FORMAT(F4.0,I4,3F8.2,I4)                                          ABARV084
      A1=1.0                                                            ABARV085
      S1=1.0                                                            ABARV086
      IF(IDEMFC.EQ.9) A1=.056                                           ABARV087
      IF(IDEMFC.EQ.10) A1=.042                                          ABARV088
      IF(IDEMFC.EQ.11) A1=.014                                          ABARV089
      IF(IDEMFC.EQ.12) A1=.001                                          ABARV090
      IF(IDEMFC.EQ.13) S1=.00056                                        ABARV091
      IF(IDEMFC.EQ.14) S1=.00056                                        ABARV092
      IF(IDEMFC.EQ.15) S1=.00056                                        ABARV093
      IF(IDEMFC.EQ.16) S1=.00056                                        ABARV094
      IF(S.EQ.0.0) S=S1                                                 ABARV095
      IF(A.EQ.0.0) A=A1                                                 ABARV096
      PRINT 102, SID,IDEMFC,S,A,ANNUSE,ICNTRL                           ABARV097
  102 FORMAT(1H ,F3.0,I9,F15.3,F12.3,F15.2,I12)                         ABARV098
      DO 110 J=1,NMAX                                                   ABARV099
      IF (SID.EQ.ABARS(1,J)) GO TO 120                                  ABARV100
  110 CONTINUE                                                          ABARV101
      GO TO 9000                                                        ABARV102
  120 SOREM(1,N)=SID                                                    ABARV103
      SOREM(2,N)=J                                                      ABARV104
      DO 130 J=1,NPLTS                                                  ABARV105
      TEMP(J)=0.0                                                       ABARV106
  130 FCTR(J)=1.0                                                       ABARV107
      FCTR(4)=A                                                         ABARV108
      FCTR(5)=S                                                         ABARV109
      IF (ICNTRL.EQ.0) GO TO 150                                        ABARV110
      READ 131,SID,NPLTCT,(IDPL(K),CNTR(K),K=1,NPLTCT)                  ABARV111
  131 FORMAT(F4.0,I4,9(I4,F4.3))                                        ABARV112
      IF (SID.NE.SOREM(1,N)) GO TO 9100                                 ABARV113
      DO 140 K=1,NPLTCT                                                 ABARV114
      KK=IDPL(K)                                                        ABARV115
      TEMP(KK)=CNTR(K)                                                  ABARV116
  140 FCTR(KK)=FCTR(KK)*(1.-CNTR(K))                                    ABARV117
  150 CONTINUE                                                          ABARV118
      PRINT 312, (TEMP(K),K=1,NPLTS)                                    ABARV119
  312 FORMAT(1H+,85X,6(F4.3,4X))                                        ABARV120
      DO 160 I=1,NPLTS                                                  ABARV121
      SOREM(2+I,N)=(PPEMFC(IDEMFC,I)*ANNUSE*FCTR(I))                    ABARV122
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ABARV123
```

```
  160 CONTINUE                                                          ABARV124
      CALL CABARS(IO)                                                   ABARV125
C                                                                       ABARV126
C     DATA SET 27  OFF ROAD VEHICLES                                    ABARV127
C                                                                       ABARV128
  200 READ 8676, AB1234                                                 ABARV129
      READ 1, NORVHS                                                    ABARV130
C                                                                       ABARV131
C     NORVHS = NO. OF OFF ROAD VEHICLE SOURCES                          ABARV132
C                                                                       ABARV133
      IF (NORVHS.EQ.0) GO TO 300                                        ABARV134
      LSRCES=NSRCES+1                                                   ABARV135
      NSRCES=NSRCES+NORVHS                                              ABARV136
C                                                                       ABARV137
      IO=3                                                              ABARV138
      PRINT 202                                                         ABARV139
  202 FORMAT(1H1,53X,34HII. C.8  AIRBASE OFF ROAD VEHICLES/1H-          ABARV140
     . 62X,12HDIESEL INPUT/1H0,                                         ABARV141
     . 25X,6HSOURCE,15X,25HANNUAL DIESEL CONSUMPTION,16X,               ABARV142
     . 23HDIESEL CONSUMPTION RATE/1H ,                                  ABARV143
     . 27X,2HID,19X,21HIN AREA (KILOGALLONS),17X,                       ABARV144
     . 26HPER VEHICLE (MILES/GALLON))                                   ABARV145
      DO 230 N=LSRCES,NSRCES                                            ABARV146
      READ 201,SID,ANNGAL,XMIGAL                                        ABARV147
  201 FORMAT(F4.0,4X,2F8.2)                                             ABARV148
      DO 210 J=1,NMAX                                                   ABARV149
      IF (SID.EQ.ABARS(1,J)) GO TO 220                                  ABARV150
  210 CONTINUE                                                          ABARV151
      GO TO 9000                                                        ABARV152
  220 SOREM(1,N)=SID                                                    ABARV153
      SOREM(2,N)=J                                                      ABARV154
      IF (XMIGAL.LE.0.0) XMIGAL=3.0                                     ABARV155
      PRINT 203, SID,ANNGAL,XMIGAL                                      ABARV156
  203 FORMAT(1H ,F31.0,F30.2,F41.2)                                     ABARV157
      DO 230 I=1,NPLTS                                                  ABARV158
      SOREM(2+I,N)=AFEMFC(1,6,I)*ANNGAL*XMIGAL*1000.                    ABARV159
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ABARV160
  230 CONTINUE                                                          ABARV161
      CALL CABARS(IO)                                                   ABARV162
C                                                                       ABARV163
C     DATA SET 28  MILITARY VEHICLE AREAS                               ABARV164
C                                                                       ABARV165
  300 READ 8676, AB1234                                                 ABARV166
      READ 1, NMVHAR                                                    ABARV167
C                                                                       ABARV168
C     NMVHAR = NO. OF MILITARY VEHICLE AREA SOURCES                     ABARV169
C                                                                       ABARV170
      IF (NMVHAR.EQ.0) GO TO 400                                        ABARV171
      LSRCES=NSRCES+1                                                   ABARV172
      NSRCES=NSRCES+NMVHAR                                              ABARV173
C                                                                       ABARV174
      IO=4                                                              ABARV175
      PRINT 301                                                         ABARV176
  301 FORMAT(1H1,45X,46HII. C.9  AIRBASE MILITARY VEHICLE AREA SOURCES) ABARV177
      CALL VEHIC (ABARS,IO,SOREM,AFEMFC,AFCSEM,I1,I2,AFSOAK)            ABARV178
      CALL CABARS(IO)                                                   ABARV179
C                                                                       ABARV180
C     DATA SET 29  CIVILIAN VEHICLE AREAS                               ABARV181
C                                                                       ABARV182
  400 READ 8676, AB1234                                                 ABARV183
      READ 1, NCVHAR                                                    ABARV184
C                                                                       ABARV185
```

```
C     NCVHAR = NO. OF CIVILIAN VEHICLE AREA SOURCES                          ABARV186
C                                                                            ABARV187
      IF (NCVHAR.EQ.0) GO TO 500                                             ABARV188
      LSRCES=NSRCES+1                                                        ABARV189
      NSRCES=NSRCES+NCVHAR                                                   ABARV190
C                                                                            ABARV191
      IC=5                                                                   ABARV192
      PRINT 401                                                              ABARV193
  401 FORMAT(1H1,45X,47HII. C.10  AIRBASE CIVILIAN VEHICLE AREA SOURCES)     ABARV194
      CALL VEHIC (ABARS,IO,SOREM,ATEMFC,CSEMFC,I1,I2,ATSOAK)                 ABARV195
      CALL CABARS(IO)                                                        ABARV196
      GO TO 500                                                              ABARV197
C                                                                            ABARV198
 9000 PRINT 9001, SID                                                        ABARV199
 9001 FORMAT(3H0ID,F5.0,65H DOES NOT CORRESPOND TO ANY OF THE AIRBASE ARABARV200
     .EA SOURCE ID NUMBERS)                                                  ABARV201
      STOP                                                                   ABARV202
 9100 PRINT 9101, SOREM(1,N),SID                                             ABARV203
 9101 FORMAT(26H0SPACE HEATING SOURCE ID =,F5.0,                             ABARV204
     . 19H, CONTINUATION ID =,F5.0)                                          ABARV205
      STOP                                                                   ABARV206
C                                                                            ABARV207
  500 NTOT=NPLTS+2                                                           ABARV208
      WRITE(ITAPE) NMAX,NTOT,NWRK,NBRT,NXEVP,NSHS,NORVHS,                    ABARV209
     .   NMVHAR,NCVHAR,NSRCES,((ABARS(I,N),I=1,7),N=1,NMAX),                 ABARV210
     .   ((HCWRK(I,N),I=1,10),N=1,NWRK),                                     ABARV211
     .   ((HCBRTH(I,N),I=1,5),N=1,NBRT),                                     ABARV212
     .   ((HCEVP(I,N),I=1,3),N=1,NXEVP),                                     ABARV213
     .   ((SOREM(I,N),I=1,NTOT),N=1,NSRCES)                                  ABARV214
      RETURN                                                                 ABARV215
      END                                                                    ABARV216
```

SUBROUTINE ABLNIV

Purpose:

1. To input air base non-aircraft line geometric data and activity data.
2. To calculate annual emissions from military and civilian vehicles and other line sources.
3. To output to the master source tape all data needed to define air base non-aircraft line sources.

Input:

Airbase non-aircraft line geometric data and activity data.

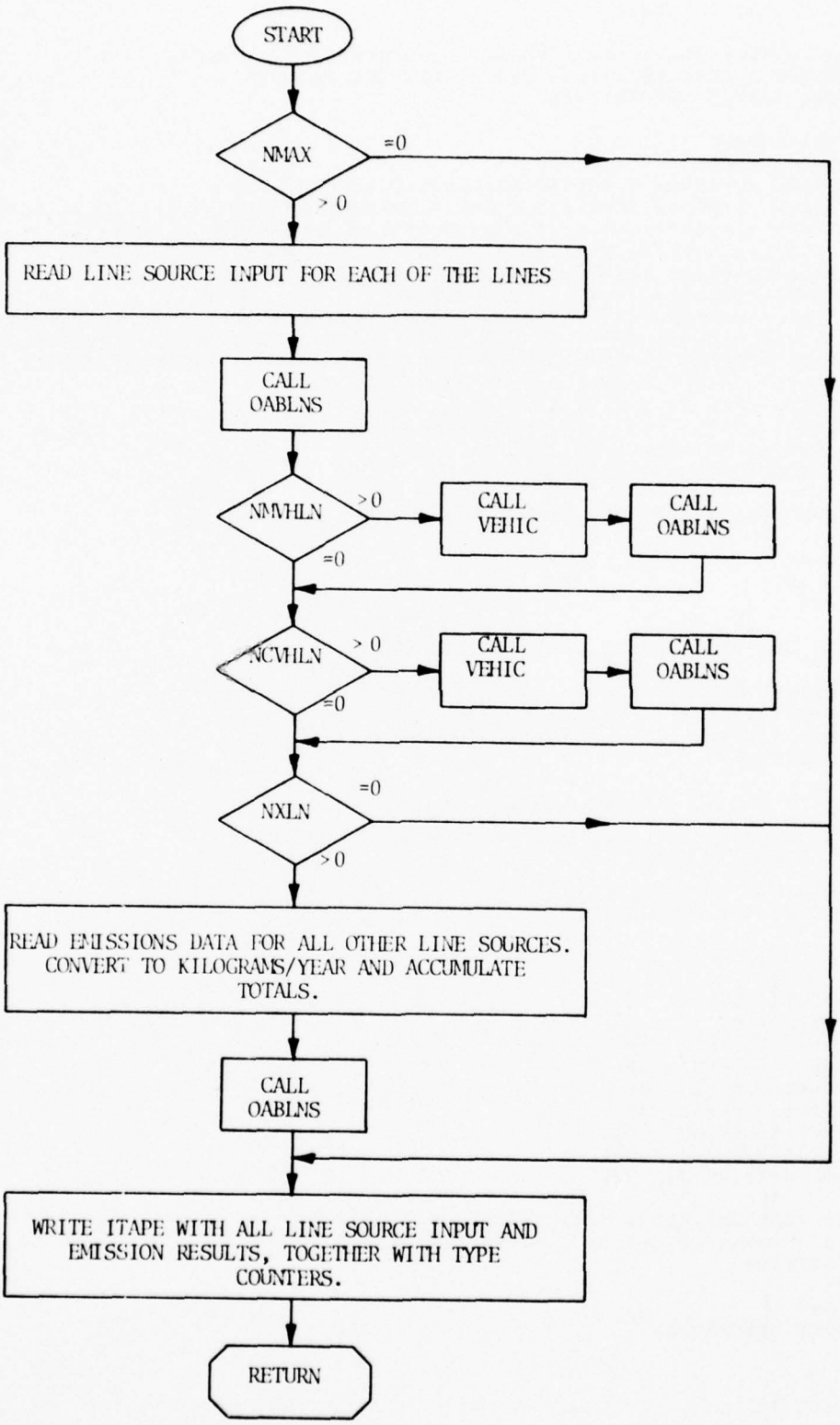
Output:

Print activity data from other line sources.

Subroutines Called:

OABLNS

SUBROUTINE ABLNIV



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      SUBROUTINE  ABLNIV                                                ABLNV000
C                                                                       ABLNV001
C   THIS ROUTINE READS THE AIRBASE NON-AIRCRAFT LINE DATA,              ABLNV002
C   COMPUTES ANNUAL EMISSIONS AND STORES THE RESULTS                    ABLNV003
C   ON THE MASTER SOURCE TAPE                                           ABLNV004
C                                                                       ABLNV005
      REAL LUEMFC                                                       ABLNV006
      REAL*8 MINUS                                                      ABLNV007
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                   ABLNV008
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),RMFCIN(5,6),ABLNV009
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      ABLNV010
     . AFEMFC(2,6,6),ATEMFC(2,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,        ABLNV011
     . ATSOAK,AFBRTH,ATBRTH,GRFCT(7),FIXFCT(7),WRKFCT(7)                ABLNV012
      COMMON /DEFALT/ NPLTS,IAGE,MINUS(6),                              ABLNV013
     . ACLNDY,ACLNDZ,TCVSDF,THBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,   ABLNV014
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,   ABLNV015
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,  ABLNV016
     . TDDFLT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                       ABLNV017
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                           ABLNV018
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                              ABLNV019
      DIMENSION EM(6),ABLNS(10,100)                                     ABLNV020
      EQUIVALENCE (ABLNS(1),SORCE(1))                                   ABLNV021
C                                                                       ABLNV022
C     SET UP DIMENSIONS OF AIRBASE LINE SOURCE ARRAYS                   ABLNV023
C                                                                       ABLNV024
      I1=10                                                             ABLNV025
      I2=100                                                            ABLNV026
      M=16                                                              ABLNV027
C                                                                       ABLNV028
C     DATA SET 30  AIRBASE LINE SOURCES                                 ABLNV029
C                                                                       ABLNV030
      READ 8676, AB1234                                                 ABLNV031
 8676 FORMAT(A1)                                                        ABLNV032
      READ 1,NMAX                                                       ABLNV033
    1 FORMAT(I4)                                                        ABLNV034
C                                                                       ABLNV035
C     NMAX = NO. OF AIRBASE LINES                                       ABLNV036
C                                                                       ABLNV037
      IF (NMAX.EQ.0) GO TO 400                                          ABLNV038
      DO 20 N=1,NMAX                                                    ABLNV039
      READ 2, (ABLNS(I,N),I=1,10)                                       ABLNV040
    2 FORMAT(2F4.0,9F8.2)                                               ABLNV041
C                                                                       ABLNV042
C     LINE SOURCE INPUT                                                 ABLNV043
C                                                                       ABLNV044
C     ABLNS(1,N)=ID                                                     ABLNV045
C     ABLNS(3,N)=X1   (KM)                                              ABLNV046
C     ABLNS(4,N)=Y1   (KM)                                              ABLNV047
C     ABLNS(5,N)=Z1   (M)                                               ABLNV048
C     ABLNS(6,N)=W    (M)                                               ABLNV049
C     ABLNS(7,N)=DZ   (M)                                               ABLNV050
C     ABLNS(8,N)=X2   (KM)                                              ABLNV051
C     ABLNS(9,N)=Y2   (KM)                                              ABLNV052
C     ABLNS(10,N)=Z2   (M)                                              ABLNV053
C                                                                       ABLNV054
      IF (ABLNS(6,N).LE.0.0) ABLNS(6,N)=ATDSDY                          ABLNV055
      IF (ABLNS(7,N).LE.0.0) ABLNS(7,N)=ATDSDZ                          ABLNV056
   20 CONTINUE                                                          ABLNV057
C                                                                       ABLNV058
      IO=1                                                              ABLNV059
      CALL OABLNS(IO)                                                   ABLNV060
C                                                                       ABLNV061
```

```
C     DATA SET 31  MILITARY VEHICLE LINES                                ABLNV062
C                                                                        ABLNV063
  100 READ 8676, AB1234                                                  ABLNV064
      READ 1, NMVHLN                                                     ABLNV065
C                                                                        ABLNV066
C     NMVHLN = NO. OF MILITARY VEHICLE AIRBASE LINE SOURCES              ABLNV067
C                                                                        ABLNV068
      IF (NMVHLN.EQ.0) GO TO 200                                         ABLNV069
      LSRCES=NSRCES+1                                                    ABLNV070
      NSRCES=NSRCES+NMVHLN                                               ABLNV071
C                                                                        ABLNV072
      IC=2                                                               ABLNV073
      PRINT 101                                                          ABLNV074
  101 FORMAT(1H1,49X,39HII. D.2  AIRBASE MILITARY VEHICLE LINES)         ABLNV075
      CALL VEHIC(ABLNS,IC,SOREM,AFEMFC,AFCSEM,I1,I2,DUM)                 ABLNV076
      CALL CABLNS(IC)                                                    ABLNV077
C                                                                        ABLNV078
C     DATA SET 32  CIVILIAN VEHICLE LINES                                ABLNV079
C                                                                        ABLNV080
  200 READ 8676, AB1234                                                  ABLNV081
      READ 1, NCVHLN                                                     ABLNV082
C                                                                        ABLNV083
C     NCVHLN = NO. OF CIVILIAN VEHICLE AIRBASE LINE SOURCES              ABLNV084
C                                                                        ABLNV085
      IF (NCVHLN.EQ.0) GO TO 300                                         ABLNV086
      LSRCES=NSRCES+1                                                    ABLNV087
      NSRCES=NSRCES+NCVHLN                                               ABLNV088
C                                                                        ABLNV089
      IC=3                                                               ABLNV090
      PRINT 201                                                          ABLNV091
  201 FORMAT(1H1,49X,39HII. D.2  AIRBASE CIVILIAN VEHICLE LINES)         ABLNV092
      CALL VEHIC(ABLNS,IC,SOREM,ATEMFC,CSEMFC,I1,I2,DUM)                 ABLNV093
      CALL CABLNS(IC)                                                    ABLNV094
C                                                                        ABLNV095
C     DATA SET 33  OTHER NON-AIRCRAFT LINE SOURCES                       ABLNV096
C                                                                        ABLNV097
  300 READ 8676, AB1234                                                  ABLNV098
      READ 1, NXLN                                                       ABLNV099
C                                                                        ABLNV100
C     NXLN = NO. OF OTHER AIRBASE NON-AIRCRAFT LINE SOURCES              ABLNV101
C                                                                        ABLNV102
      IF (NXLN.EQ.0) GO TO 400                                           ABLNV103
      LSRCES=NSRCES+1                                                    ABLNV104
      NSRCES=NSRCES+NXLN                                                 ABLNV105
C                                                                        ABLNV106
      IC=4                                                               ABLNV107
      PRINT 302, (PLNAME(J),J=1,NPLTS)                                   ABLNV108
  302 FORMAT(1H1,43X,41HII. D.4  AIRBASE OTHER NON-AIRCRAFT LINE/        ABLNV109
     . 1H-,53X,33HEMISSION INPUT (METRIC TONS/YEAR)/                     ABLNV110
     . 1H0,10X,9HSOURCE ID,A15,5A19)                                     ABLNV111
      DO 330 N=LSRCES,NSRCES                                             ABLNV112
      READ 301, SID,(EM(J),J=1,NPLTS)                                    ABLNV113
  301 FORMAT(F4.0,4X,9F8.2)                                              ABLNV114
      PRINT 303, SID,(EM(J),J=1,NPLTS)                                   ABLNV115
  303 FORMAT(1H ,12X,F5.0,1P6E19.4)                                      ABLNV116
      DO 310 J=1,NMAX                                                    ABLNV117
      IF (SID.EQ.ABLNS(1,J)) GO TO 320                                   ABLNV118
  310 CONTINUE                                                           ABLNV119
      GO TO 9000                                                         ABLNV120
  320 SOREM(1,N)=SID                                                     ABLNV121
      SOREM(2,N)=J                                                       ABLNV122
      DO 330 J=1,NPLTS                                                   ABLNV123
```

```
      TOTEM(IO+M,J)=TOTEM(IO+M,J)+EM(J)                                  ABLNV124
        REM(2+J,N)=EM(J)*1000.                                           ABLNV125
  330 CONTINUE                                                           ABLNV126
      CALL OABLNS(IO)                                                    ABLNV127
      GO TO 400                                                          ABLNV128
C                                                                        ABLNV129
 9000 PRINT 9001, SID                                                    ABLNV130
 9001 FORMAT(3H0ID,F5.0,65H DOES NOT CORRESPOND TO ANY OF THE AIRBASE LIABLNV131
     .NE SOURCE ID NUMBERS)                                              ABLNV132
      STOP                                                               ABLNV133
C                                                                        ABLNV134
  400 CONTINUE                                                           ABLNV135
      NTOT=NPLTS+2                                                       ABLNV136
      WRITE(ITAPE) NMAX,NTOT,NMVHLN,NCVHLN,NXLN,NSRCES,                  ABLNV137
     .   ((ABLNS(I,N),I=1,10),N=1,NMAX),                                 ABLNV138
     .   ((SOREM(I,N),I=1,NTOT),N=1,NSRCES)                             ABLNV139
      RETURN                                                             ABLNV140
      END                                                                ABLNV141
```

SUBROUTINE ABPTIV

Purpose:

1. To input airbase non-aircraft point source activity and geometric data.
2. To calculate annual emissions from training fires, test calls, runup stands, power plants, incinerators, storage tanks and other points.
3. To output to the master source tape all data needed to define airbase non-aircraft point sources.

Input:

Airbase non-aircraft point source activity and geometric data.

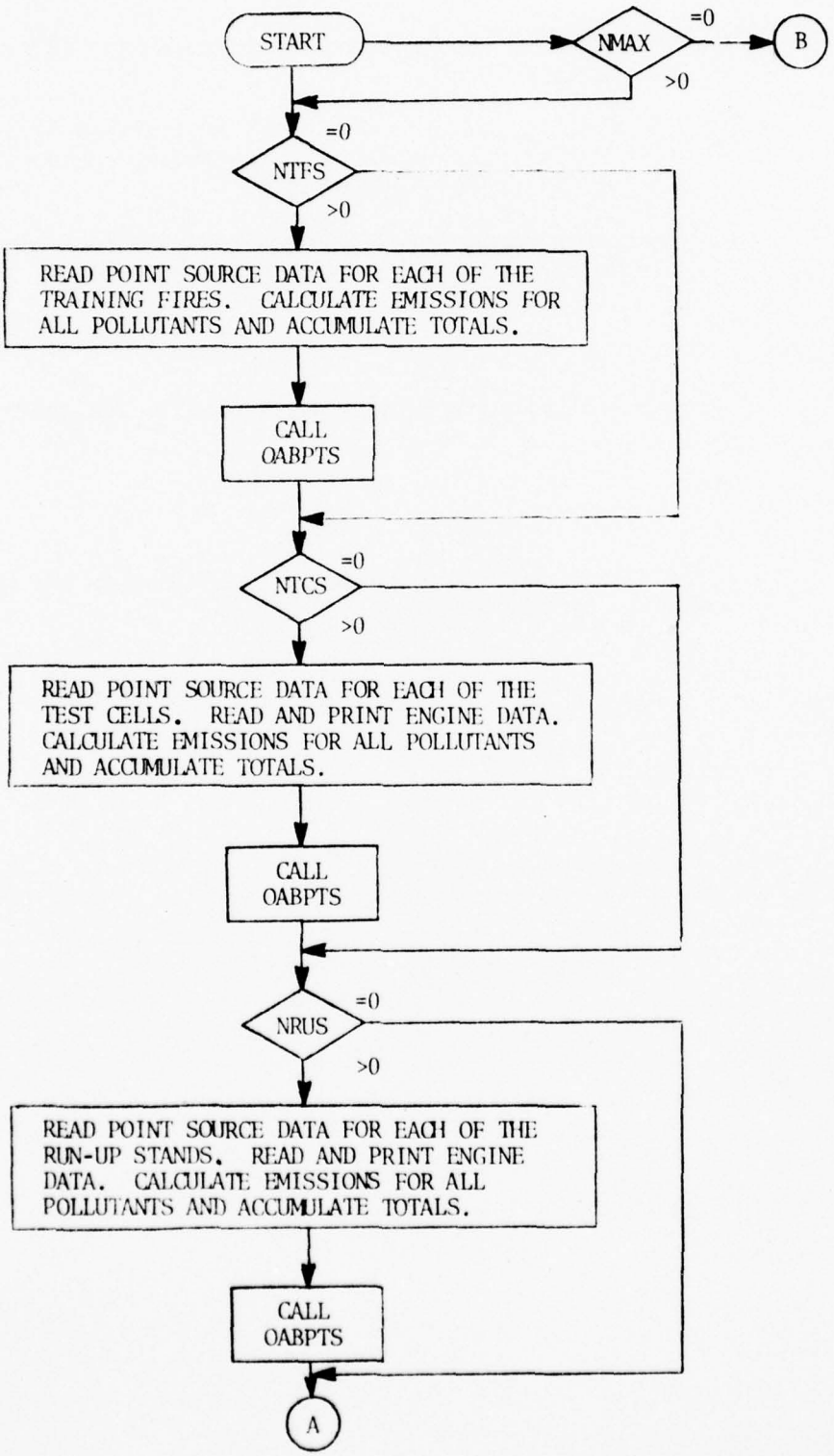
Output:

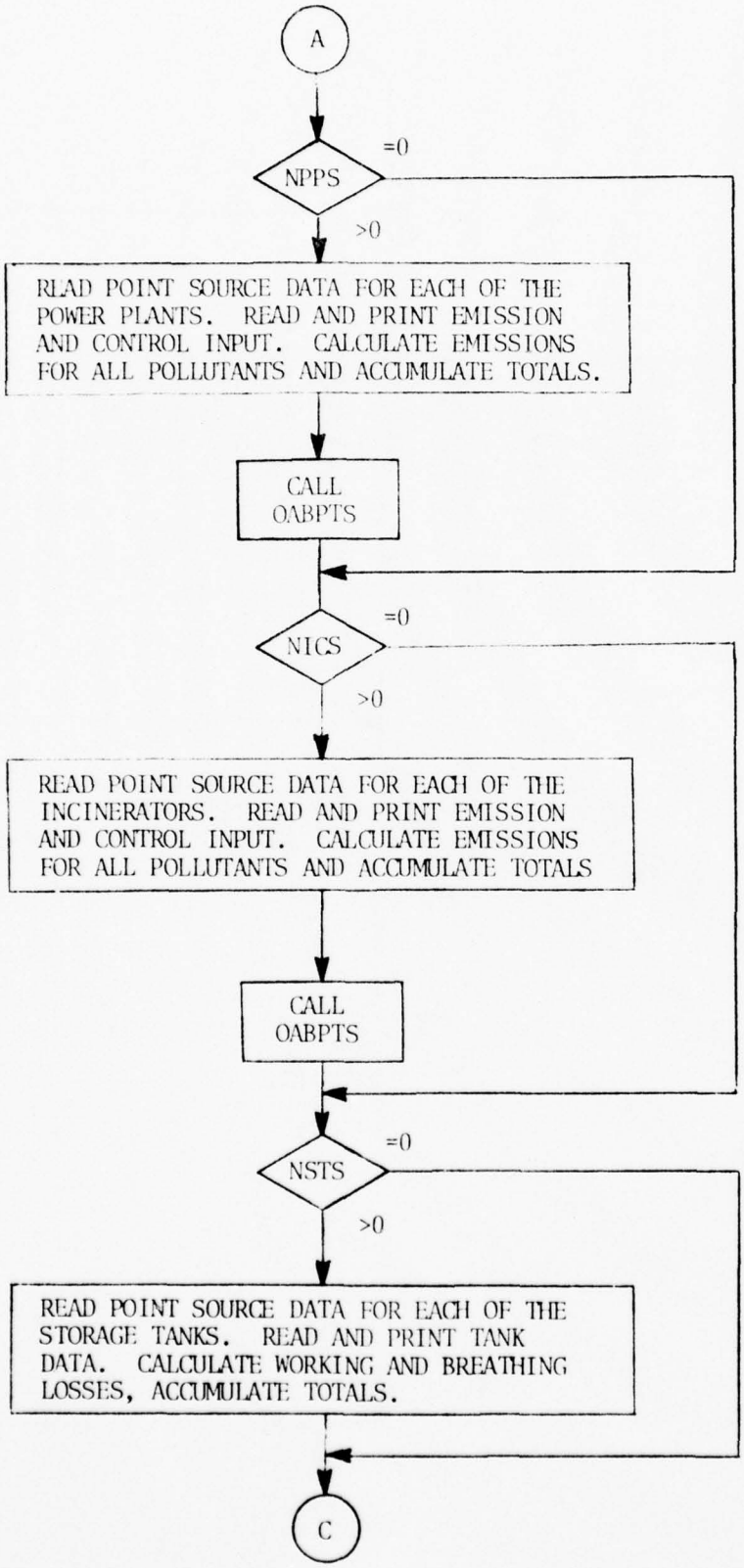
Print all input data which does not conform to the basic format point source data.

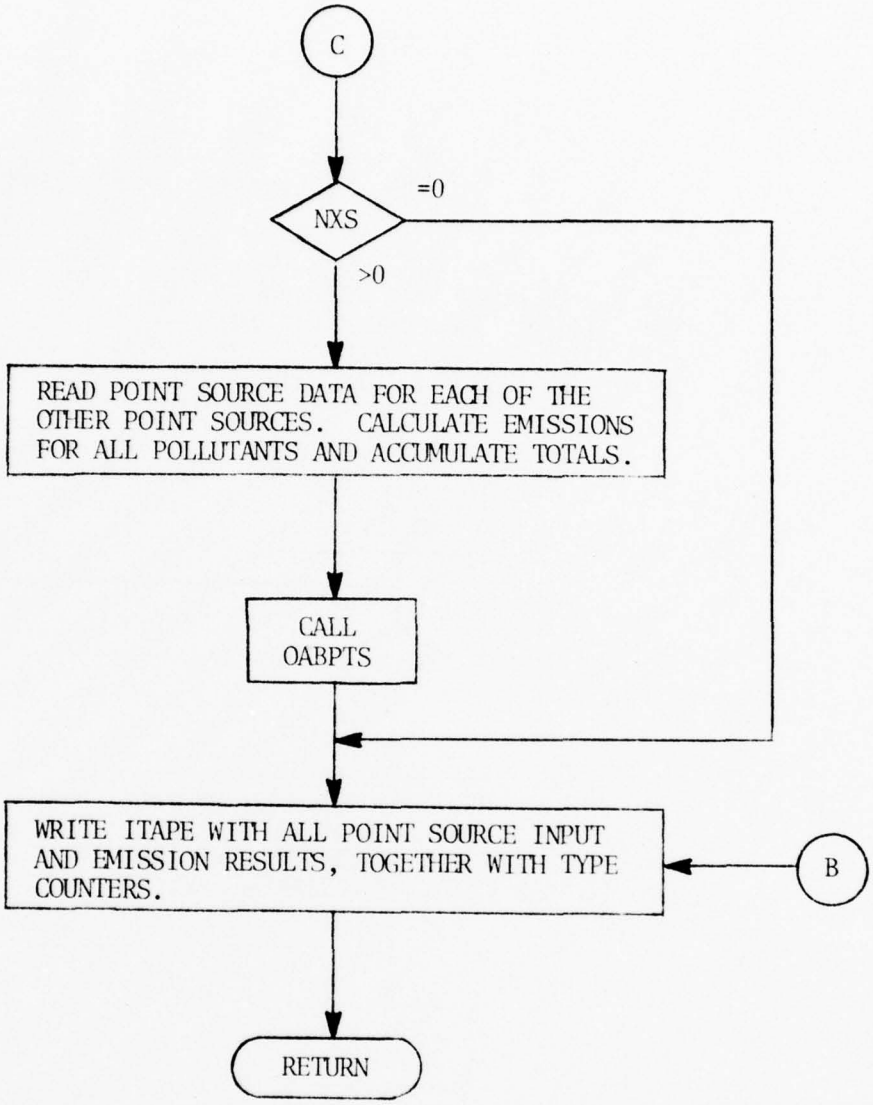
Subroutines Called:

OABPTS

SUBROUTINE ABPTIV




A
NPPS
=0
>0
READ POINT SOURCE DATA FOR EACH OF THE POWER PLANTS. READ AND PRINT EMISSION AND CONTROL INPUT. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS.
CALL OABPTS
NICS
=0
>0
READ POINT SOURCE DATA FOR EACH OF THE INCINERATORS. READ AND PRINT EMISSION AND CONTROL INPUT. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS
CALL OABPTS
NSTS
=0
>0
READ POINT SOURCE DATA FOR EACH OF THE STORAGE TANKS. READ AND PRINT TANK DATA. CALCULATE WORKING AND BREATHING LOSSES, ACCUMULATE TOTALS.
C


C
NXS
=0
>0
READ POINT SOURCE DATA FOR EACH OF THE OTHER POINT SOURCES. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS.
CALL OABPTS
WRITE ITAPE WITH ALL POINT SOURCE INPUT AND EMISSION RESULTS, TOGETHER WITH TYPE COUNTERS.
B
RETURN

```
      SUBROUTINE  ABPTIV                                                    ABPTV000
C                                                                           ABPTV001
C   THIS ROUTINE READS THE AIRBASE NON-AIRCRAFT POINT DATA,                 ABPTV002
C   COMPUTES ANNUAL EMISSIONS AND STORES THE RESULTS                        ABPTV003
C   ON THE MASTER SOURCE TAPE                                               ABPTV004
C                                                                           ABPTV005
      REAL*8 MINUS                                                          ABPTV006
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                      ABPTV007
      COMMON /EMFD21/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),    ABPTV008
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),          ABPTV009
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,          ABPTV010
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)                   ABPTV011
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                                 ABPTV012
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,      ABPTV013
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,       ABPTV014
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,      ABPTV015
     . TDLFLT,RFDFLT,SFDFLT,PFDFIT,TFDFLT,TFDYDF                           ABPTV016
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                       ABPTV017
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                               ABPTV018
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                                  ABPTV019
      DIMENSION ABPTS(11,150)                                               ABPTV020
      EQUIVALENCE (ABPTS(1),SORCE(1))                                       ABPTV021
      DIMENSION TIME(4),IDPI(6),CNTRL(6),FCTR(6),TEMP(6),TVP(7)             ABPTV022
C                                                                           ABPTV023
      DIMENSION IFUNTP(5,22),IFULTP(3,22),IHTIN(3,22),IFULUS(2,22)          ABPTV024
      DATA IFUNTP /4H UTI,4HLITY,4H, IN,4HDUST,4HRY  ,4HCOMM,4HERCI,        ABPTV025
     .      4HAL I,4HNDUS,4HTRY ,4H  SP,4HREAD,4HER S,4HTOKE,4HR   ,       ABPTV026
     .      4H    ,4H HAN,4HD FI,4HRED ,4H    ,4HPULV,4HERIZ,4HE DR,       ABPTV027
     .      4HY BO,4HTTOM,4H  OV,4HERFE,4HED S,4HTOKE,4HRS  ,4H  OV,       ABPTV028
     .      4HERFE,4HED S,4HTOKE,4HRS  ,4H    ,4H HAN,4HD-FI,4HRED ,       ABPTV029
     .      4H    ,4H    ,4HPOWE,4HR PL,4HANT ,4H    ,4H    ,4H  RE,       ABPTV030
     .      4HSIDU,4HAL  ,4H    ,4H    ,4H DIS,4HTILL,4HATE ,4H    ,       ABPTV031
     .      4H    ,4H  DO,4HMEST,4HIC  ,4H    ,4H    ,4HPOWE,4HR PL,       ABPTV032
     .      4HANT ,4H    ,4H    ,4H IND,4HUSTR,4HIAL ,4H    ,4H    ,       ABPTV033
     .      4H COM,4HMERC,4HIAL ,4H    ,4H    ,4H  DO,4HMEST,4HIC  ,       ABPTV034
     .      4H    ,4HINDU,4HS PR,4HOC (,4HBUTA,4HNE) ,4HINDU,4HS PR,       ABPTV035
     .      4HOC (,4HPROP,4HANE),4H COM,4HM BO,4HIL (,4HBUTA,4HNE) ,       ABPTV036
     .      4HDOME,4HS BO,4HIL (,4HBUTA,4HNE) ,4H COM,4HM BO,4HIL (,       ABPTV037
     .      4HPROP,4HANE),4HDOME,4HS BO,4HIL (,4HPROP,4HANE)/              ABPTV038
      DATA IFULTP /4HBITU,4HM CO,4HAL  ,4HBITU,4HM CO,4HAL  ,               ABPTV039
     .             4HBITU,4HM CO,4HAL  ,4HBITU,4HM CO,4HAL  ,               ABPTV040
     .             4HANTH,4HR   ,4H    ,4HANTH,4HR   ,4H    ,               ABPTV041
     .             4HANTH,4HR   ,4H    ,4HANTH,4HR   ,4H    ,               ABPTV042
     .             4H FUE,4HL OI,4HL   ,4H FUE,4HL OI,4HL   ,               ABPTV043
     .             4H FUE,4HL OI,4HL   ,4H FUE,4HL OI,4HL   ,               ABPTV044
     .             4H NAT,4H GAS,4H    ,4H NAT,4H GAS,4H    ,               ABPTV045
     .             4H NAT,4H GAS,4H    ,4H NAT,4H GAS,4H    ,               ABPTV046
     .             4H  L ,4HP G ,4H    ,4H  L ,4HP G ,4H    ,               ABPTV047
     .             4H  L ,4HP G ,4H    ,4H  L ,4HP G ,4H    ,               ABPTV048
     .             4H  L ,4HP G ,4H    ,4H  L ,4HP G ,4H   /                ABPTV049
      DATA IHTIN  /4H OVE,4HR 10,4HO   ,4H10 T,4HO 10,4HO   ,               ABPTV050
     .             4H BEL,4HOW10,4H    ,4HBELO,4HW 10,4HO   ,               ABPTV051
     .             4HUNDE,4HFINE,4HD   ,4H OVE,4HR 10,4H    ,               ABPTV052
     .             4HBELO,4HW 10,4H    ,4HUNDE,4HFINE,4HD   ,               ABPTV053
     .             4H OVE,4HR 10,4HO   ,4H10 T,4HO 10,4HO   ,               ABPTV054
     .             4H10 T,4HO 10,4HO   ,4HBELO,4HW 10,4H    ,               ABPTV055
     .             4H OVE,4HR 10,4HO   ,4HUNDE,4HFINE,4HD   ,               ABPTV056
     .             4HUNDE,4HFINE,4HD   ,4HUNDE,4HFINE,4HD   ,               ABPTV057
     .             4HUNDE,4HFINE,4HD   ,4HUNDE,4HFINE,4HD   ,               ABPTV058
     .             4HUNDE,4HFINE,4HD   ,4HUNDE,4HFINE,4HD   ,               ABPTV059
     .             4HUNDE,4HFINE,4HD   ,4HUNDE,4HFINE,4HD   /               ABPTV060
      DATA IFULUS /4HMET ,4HTONS,4HMET ,4HTONS,4HMET ,4HTONS,               ABPTV061
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     .              4HMET ,4HTONS,4HMET ,4HTONS,4HMET ,4HTONS,          ABPTV062
     .              4HMET ,4HTONS,4HMET ,4HTONS,4HCUB ,4HMET ,          ABPTV063
     .              4HCUB ,4HMET ,4HCUB ,4HMET ,4HCUB ,4HMET ,          ABPTV064
     .              4HM CU,4H MET,4HM CU,4H MET,4HM CU,4H MET,          ABPTV065
     .              4HM CU,4H MET,4HCUB ,4HMET ,4HCUB ,4HMET ,          ABPTV066
     .              4HCUB ,4HMET ,4HCUB ,4HMET ,4HCUB ,4HMET ,          ABPTV067
     .              4HCUB ,4HMET /                                      ABPTV068
      REAL*8 ABVE,BLOW,ITKTYP                                           ABPTV069
      DATA ABVE,BLOW /8HABOVE   ,8HBELOW   /                            ABPTV070
C                                                                       ABPTV071
      M=7                                                               ABPTV072
      NTOT=NPLTS+11                                                     ABPTV073
C                                                                       ABPTV074
C     DATA SET 12  AIRBASE POINT SOURCES                                ABPTV075
C                                                                       ABPTV076
      READ 8676, AB1234                                                 ABPTV077
 8676 FORMAT(A1)                                                        ABPTV078
      READ 1, NMAX                                                      ABPTV079
C                                                                       ABPTV080
C     NMAX = NO. OF AIRBASE POINT SOURCES                               ABPTV081
C                                                                       ABPTV082
    1 FORMAT(I4)                                                        ABPTV083
      IF (NMAX.EQ.0) GO TO 900                                          ABPTV084
      PRINT 3                                                           ABPTV085
    3 FORMAT(1H1,42X,51HI I.  B.  A I R B A S E   P O I N T   S O U R C ABPTV086
     .E S)                                                              ABPTV087
C                                                                       ABPTV088
C     DATA SET 13  TRAINING FIRE POINT SOURCES                          ABPTV089
C                                                                       ABPTV090
      READ 8676, AB1234                                                 ABPTV091
      READ 1, NTFS                                                      ABPTV092
C                                                                       ABPTV093
C     NTFS = NO. OF TRAINING FIRE SITES                                 ABPTV094
C                                                                       ABPTV095
      IF (NTFS.EQ.0) GO TO 100                                          ABPTV096
      PRINT 4                                                           ABPTV097
    4 FORMAT(1H-,49X,36HII. B.1  AIRBASE TRAINING FIRE SITES)           ABPTV098
      LSRCES=NSRCES+1                                                   ABPTV099
      NSRCES=NSRCES+NTFS                                                ABPTV100
C                                                                       ABPTV101
      IO=1                                                              ABPTV102
      DO 40 N=LSRCES,NSRCES                                             ABPTV103
      READ 2,(ABPTS(I,N),I=1,10)                                        ABPTV104
    2 FORMAT(2F4.0,9F8.2)                                               ABPTV105
C                                                                       ABPTV106
C     POINT SOURCE INPUT                                                ABPTV107
C                                                                       ABPTV108
C     ABPTS(1,N)=ID                                                     ABPTV109
C     ABPTS(3,N)=X   (KM)                                               ABPTV110
C     ABPTS(4,N)=Y   (KM)                                               ABPTV111
C     ABPTS(5,N)=H0   (M)                                               ABPTV112
C     ABPTS(6,N)=DY                                                     ABPTV113
C     ABPTS(7,N)=DZ   (M)                                               ABPTV114
C     ABPTS(8,N)=TS   (DEG F); FOR TRAINING FIRES THIS IS Q (KCAL/SEC)  ABPTV115
C     ABPTS(9,N)=VS   (M/S)                                             ABPTV116
C     ABPTS(10,N)=DS   (M)                                              ABPTV117
C     ABPTS(11,N)=HB   (M)                                              ABPTV118
C                                                                       ABPTV119
      IF (ABPTS(2,N).LE.0.) ABPTS(2,N)=3.                               ABPTV120
      IF (ABPTS(5,N).LE.0.) ABPTS(5,N)=TFHODF                           ABPTV121
      IF (ABPTS(6,N).LE.0.) ABPTS(6,N)=TFDYDF                           ABPTV122
      IF (ABPTS(7,N).LE.0.) ABPTS(7,N)=TFDZDF                           ABPTV123
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      IF (ABPTS(8,N).LE.0.)  ABPTS(8,N)=TFQDF                          ABPTV124
      ANFIRE=ABPTS(9,N)                                                ABPTV125
      GALPF=ABPTS(10,N)                                                ABPTV126
      SCREM(1,N)=ABPTS(1,N)                                            ABPTV127
      DO 30 I=1,NPLTS                                                  ABPTV128
      SCREM(I+2,N)=GALPF*ANFIRE*TFEMFC(I)*3.785*FLDENS(2)/1000.        ABPTV129
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                         ABPTV130
   30 CONTINUE                                                         ABPTV131
   40 CONTINUE                                                         ABPTV132
      CALL CABPTS(IO)                                                  ABPTV133
      DO 41 N=LSRCES,NSRCES                                            ABPTV134
      DO 41 I=9,11                                                     ABPTV135
   41 AEPTS(I,N)=0.0                                                   ABPTV136
C                                                                      ABPTV137
C     DATA SET 14  TEST CELL POINT SOURCES                             ABPTV138
C                                                                      ABPTV139
  100 READ 8676, AB1234                                                ABPTV140
      READ 1, NTCS                                                     ABPTV141
C                                                                      ABPTV142
C     NTCS = NO. OF TEST CELL SITES                                    ABPTV143
C                                                                      ABPTV144
      IF (NTCS.EQ.0) GO TO 200                                         ABPTV145
      PRINT 104                                                        ABPTV146
  104 FORMAT(1H1,54X,27HII. B.2  AIRBASE TEST CELLS/1H-,               ABPTV147
     . 49X,38HENGINE INPUTS (TIMES TAKEN IN MINUTES))                  ABPTV148
      LSRCES=NSRCES+1                                                  ABPTV149
      NSRCES=NSRCES+NTCS                                               ABPTV150
C                                                                      ABPTV151
      IC=2                                                             ABPTV152
      PRINT 106                                                        ABPTV153
  106 FORMAT(1H0,17X,6HSOURCE,11X,6HENGINE,8X,6HANNUAL,10X,4HIDLE,10X, ABPTV154
     . 6HNORMAL,8X,8HMILITARY,6X,11HAFTERBURNER/1H ,19X,2HID,15X,2HID, ABPTV155
     . 10X,5HTESTS,11X,4HTIME,11X,4HTIME,11X,4HTIME,11X,4HTIME)        ABPTV156
      DO 130 N=LSRCES,NSRCES                                           ABPTV157
      DO 105 I=1,NPLTS                                                 ABPTV158
      SOREM(I+2,N)=0.                                                  ABPTV159
  105 CONTINUE                                                         ABPTV160
      READ 2,(ABPTS(I,N),I=1,11)                                       ABPTV161
      NENG=ABPTS(2,N)                                                  ABPTV162
      ABPTS(2,N)=1.                                                    ABPTV163
      IF (AEPTS(5,N).LE.0.)  ABPTS(5,N)=TCHODF                         ABPTV164
      IF (AEPTS(6,N).LE.0.)  ABPTS(6,N)=TCDYDF                         ABPTV165
      IF (ABPTS(7,N).LE.0.)  ABPTS(7,N)=TCDZDF                         ABPTV166
      IF (AEPTS(8,N).LE.0.)  ABPTS(8,N)=TCTSDF                         ABPTV167
      IF (ABPTS(9,N).LE.0.)  ABPTS(9,N)=TCVSDF                         ABPTV168
      IF (ABPTS(10,N).LE.0.) ABPTS(10,N)=TCDSDF                        ABPTV169
      IF (AEPTS(11,N).LE.0.) ABPTS(11,N)=TCHBDF                        ABPTV170
      DO 120 K=1,NENG                                                  ABPTV171
      READ 101,SID,IDENG,TESTS,(TIME(I),I=1,4)                         ABPTV172
  101 FORMAT(F4.0,I4,5F8.4)                                            ABPTV173
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                ABPTV174
      PRINT 107,SID,IDENG,TESTS,(TIME(I),I=1,4)                        ABPTV175
  107 FORMAT(1H ,F23.0,I15,6F15.1)                                     ABPTV176
      DO 120 I=1,NPLTS                                                 ABPTV177
      A=0.                                                             ABPTV178
      DO 110 J=1,4                                                     ABPTV179
  110 A=A+(TIME(J)*EGEMFC(I,J,IDENG))                                  ABPTV180
      SOREM(I+2,N)=SOREM(I+2,N)+A*TESTS/60.                            ABPTV181
  120 CONTINUE                                                         ABPTV182
      DO 125 I=1,NPLTS                                                 ABPTV183
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                         ABPTV184
  125 CONTINUE                                                         ABPTV185
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      SOREM(1,N)=SID                                                    ABPTV186
  130 CONTINUE                                                          ABPTV187
      CALL CABPTS(IO)                                                   ABPTV188
C                                                                       ABPTV189
C     DATA SET 15  RUN-UP STAND POINT SOURCES                           ABPTV190
C                                                                       ABPTV191
  200 READ 8676, AB1234                                                 ABPTV192
      READ 1, NRUS                                                      ABPTV193
C                                                                       ABPTV194
C     NRUS = NO. OF RUN-UP STAND SITES                                  ABPTV195
C                                                                       ABPTV196
      IF (NRUS.EQ.0) GO TO 300                                          ABPTV197
      PRINT 204                                                         ABPTV198
  204 FORMAT(1H1,53X,29HII. B.3  AIRBASE RUNUP STANDS/1H-,              ABPTV199
     . 49X,38HENGINE INPUTS (TIMES TAKEN IN MINUTES))                   ABPTV200
      LSRCES=NSRCES+1                                                   ABPTV201
      NSRCES=NSRCES+NRUS                                                ABPTV202
C                                                                       ABPTV203
      IC=3                                                              ABPTV204
      WRITE(6,106)                                                      ABPTV205
      DO 230 N=LSRCES,NSRCES                                            ABPTV206
      DO 205 I=1,NPLTS                                                  ABPTV207
      SOREM(I+2,N)=0.                                                   ABPTV208
  205 CONTINUE                                                          ABPTV209
      READ 2,(ABPTS(I,N),I=1,11)                                        ABPTV210
      NENG=ABPTS(2,N)                                                   ABPTV211
      ABPTS(2,N)=0.                                                     ABPTV212
      IF (ABPTS(5,N).LE.0.)  ABPTS(5,N)=RUHODF                          ABPTV213
      IF (ABPTS(6,N).LE.0.)  ABPTS(6,N)=RUDYDF                          ABPTV214
      IF (ABPTS(7,N).LE.0.)  ABPTS(7,N)=RUDZDF                          ABPTV215
      IF (ABPTS(8,N).LE.0.)  ABPTS(8,N)=RUTSDF                          ABPTV216
      IF (ABPTS(9,N).LE.0.)  ABPTS(9,N)=RUVSDF                          ABPTV217
      IF (ABPTS(10,N).LE.0.) ABPTS(10,N)=RUDSDF                         ABPTV218
      IF (ABPTS(11,N).LE.0.) ABPTS(11,N)=RUHBDF                         ABPTV219
      DO 220 K=1,NENG                                                   ABPTV220
      READ 101,SID,IDENG,TESTS,(TIME(I),I=1,4)                          ABPTV221
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                 ABPTV222
      PRINT 107,SID,IDENG,TESTS,(TIME(I),I=1,4)                         ABPTV223
      DO 220 I=1,NPLTS                                                  ABPTV224
      A=0.                                                              ABPTV225
      DO 210 J=1,4                                                      ABPTV226
  210 A=A+(TIME(J)*EGEMFC(I,J,IDENG))                                   ABPTV227
      SOREM(I+2,N)=SOREM(I+2,N)+A*TESTS/60.                             ABPTV228
  220 CONTINUE                                                          ABPTV229
      DO 225 I=1,NPLTS                                                  ABPTV230
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ABPTV231
  225 CONTINUE                                                          ABPTV232
      SOREM(1,N)=SID                                                    ABPTV233
  230 CONTINUE                                                          ABPTV234
      CALL CABPTS(IO)                                                   ABPTV235
C                                                                       ABPTV236
C     DATA SET 16  POWER PLANT POINT SOURCES                            ABPTV237
C                                                                       ABPTV238
  300 READ 8676, AB1234                                                 ABPTV239
      READ 1, NPPS                                                      ABPTV240
C                                                                       ABPTV241
C     NPPS = NO. OF POWER PLANT SITES                                   ABPTV242
C                                                                       ABPTV243
      IF (NPPS.EQ.0) GO TO 400                                          ABPTV244
      PRINT 304                                                         ABPTV245
  304 FORMAT(1H1,53X,29HII. B.4  AIRBASE POWER PLANTS)                  ABPTV246
      LSRCES=NSRCES+1                                                   ABPTV247
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      NSRCES=NSRCES+NPPS                                                ABPTV248
C                                                                       ABPTV249
      IC=4                                                              ABPTV250
      PRINT 301, (PLNAME(I),I=1,NPLTS)                                  ABPTV251
  301 FORMAT(1H-,6HSOURCE,7X,7HFURNACE,11X,4HFUEL,                      ABPTV252
     . 4X,10HHEAT INPUT,2X,7HPERCENT,2X,7HPERCENT,5X,6HANNUAL,4X,       ABPTV253
     . 7HCONTROL,7X,26HFRACTION EMISSION CONTROLS/1H ,2X,2HID,10X,      ABPTV254
     . 4HTYPE,12X,6HBURNED,4X,9H(MIL BTU),2X,6HSULFUR,5X,3HASH,6X,8HFUELABPTV255
     . USE,5X,4HFLAG,3X,A4,5(4X,A4))                                   ABPTV256
      DO 340 N=LSRCES,NSRCES                                            ABPTV257
      READ 2,(ABPTS(I,N),I=1,11)                                        ABPTV258
      IF (ABPTS(2,N).LE.0.) ABPTS(2,N)=2.                               ABPTV259
      READ 302,SID,MFCID,S,A,ANNUSE,MCFLG                               ABPTV260
  302 FORMAT(F4.0,I4,3F8.2,I4)                                          ABPTV261
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                 ABPTV262
      A1=1.0                                                            ABPTV263
      S1=1.0                                                            ABPTV264
      IF(MFCID.EQ.9) A1=.056                                            ABPTV265
      IF(MFCID.EQ.10) A1=.042                                           ABPTV266
      IF(MFCID.EQ.11) A1=.014                                           ABPTV267
      IF(MFCID.EQ.12) A1=.001                                           ABPTV268
      IF(MFCID.EQ.13) S1=.00056                                         ABPTV269
      IF(MFCID.EQ.14) S1=.00056                                         ABPTV270
      IF(MFCID.EQ.15) S1=.00056                                         ABPTV271
      IF(MFCID.EQ.16) S1=.00056                                         ABPTV272
      IF(S.EQ.0.0) S=S1                                                 ABPTV273
      IF(A.EQ.0.0) A=A1                                                 ABPTV274
      PRINT 303, SID,(IFUNTP(JJ1,MFCID),JJ1=1,5),(IFULTP(JJ1,MFCID),    ABPTV275
     . JJ1=1,3),(IHTIN(JJ1,MFCID),JJ1=1,3),S,A,ANNUSE,                  ABPTV276
     . (IFULUS(JJ1,MFCID),JJ1=1,2),MCFLG                               ABPTV277
  303 FORMAT(1H,F6.0,1X,5A4,2(1X,2A4,A2),F8.3,F9.3,F8.1,1X,2A4,1X,I4)    ABPTV278
      DO 310 K=1,NPLTS                                                  ABPTV279
      TEMP(K)=0.0                                                       ABPTV280
  310 FCTR(K)=1.0                                                       ABPTV281
      FCTR(4)=A                                                         ABPTV282
      FCTR(5)=S                                                         ABPTV283
      IF (MCFLG.EQ.0) GO TO 330                                         ABPTV284
      READ 311,SID,NPLTCT,(IDPL(K),CNTRL(K),K=1,NPLTCT)                 ABPTV285
  311 FORMAT(F4.0,I4,9(I4,F4.3))                                        ABPTV286
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                 ABPTV287
      DO 320 K=1,NPLTCT                                                 ABPTV288
      KK=IDPL(K)                                                        ABPTV289
      TEMP(KK)=CNTRL(I)                                                 ABPTV290
  320 FCTR(KK)=FCTR(KK)*(1.-CNTRL(K))                                   ABPTV291
  330 CONTINUE                                                          ABPTV292
  312 FORMAT(1H+,90X,5(F5.3,3X),F5.3)                                   ABPTV293
      WRITE(6,312) (TEMP(K),K=1,NPLTS)                                  ABPTV294
      SOREM(1,N)=SID                                                    ABPTV295
      DO 340 I=1,NPLTS                                                  ABPTV296
      SOREM(I+2,N)=(PPEMFC(MFCID,I)*ANNUSE*FCTR(I))                     ABPTV297
      TOTEM(IC+M,I)=TOTEM(IC+M,I)+SOREM(I+2,N)                          ABPTV298
  340 CONTINUE                                                          ABPTV299
      CALL CABPTS(IC)                                                   ABPTV300
C                                                                       ABPTV301
C     DATA SET 17  INCINERATOR POINT SOURCES                            ABPTV302
C                                                                       ABPTV303
  400 READ 8676, A81234                                                 ABPTV304
      READ 1, NICS                                                      ABPTV305
C                                                                       ABPTV306
C     NICS = NO. OF INCINERATOR SITES                                   ABPTV307
C                                                                       ABPTV308
      IF (NICS.EQ.0) GO TO 500                                          ABPTV309
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      PRINT 404                                                          ABPTV310
  404 FORMAT(1H1,53X,29HII. B.5  AIRBASE INCINERATORS)                   ABPTV311
      LSRCES=NSRCES+1                                                    ABPTV312
      NSRCES=NSRCES+NICS                                                 ABPTV313
C                                                                        ABPTV314
      IO=5                                                               ABPTV315
      PRINT 401, (PLNAME(I),I=1,NPLTS)                                   ABPTV316
  401 FORMAT(1H-,61X,14HEMISSION INPUT/1HO,42X,5HWASTE/1H ,11X,          AEPTV317
     . 6HSOURCE,7X,8HEMISSION,5X,15HMATERIAL BURNED,5X,7HCONTROL,16X,    ABPTV318
     . 25HPERCENT EMISSION CONTROLS / 1H ,13X,2HID,8X,9HFACTOR ID,8X,    ABPTV319
     . 10H(MET TONS),8X,4HFLAG,11X,6(A4,5X))                             ABPTV320
      DO 420 N=LSRCES,NSRCES                                             ABPTV321
      READ 2,(ABPTS(I,N),I=1,11)                                         ABPTV322
      IF (ABPTS(2,N).LE.0.) ABPTS(2,N)=2.                                ABPTV323
      READ 402,SID,MFCID,ANNUSE,MCFLG                                    ABPTV324
  402 FORMAT(F4.0,I4,F8.2,I4)                                            ABPTV325
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                  ABPTV326
      PRINT 403,SID,MFCID,ANNUSE,MCFLG                                   ABPTV327
  403 FORMAT(1H ,F17.0,I11,F20.2,I13)                                    ABPTV328
      SOREM(1,N)=SID                                                     ABPTV329
      DO 410 K=1,NPLTS                                                   ABPTV330
  410 TEMP(K)=0.0                                                        ABPTV331
      IF (MCFLG.EQ.0) GO TO 415                                          ABPTV332
      READ 311,SID,NPLTCT,(IDPL(K),CNTRL(K),K=1,NPLTCT)                  ABPTV333
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                  ABPTV334
      DO 412 K=1,NPLTCT                                                  ABPTV335
      KK=IDPL(K)                                                         ABPTV336
  412 TEMP(KK)=CNTRL(KK)                                                 ABPTV337
  415 CONTINUE                                                           ABPTV338
      PRINT 411, (TEMP(K),K=1,NPLTS)                                     ABPTV339
  411 FORMAT(1H+,72X,6(F4.3,5X))                                         ABPTV340
      DO 420 I=1,NPLTS                                                   ABPTV341
      SOREM(I+2,N)=(EMFCIN(MFCID,I)*ANNUSE*(1.-TEMP(I)))                 ABPTV342
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                           ABPTV343
  420 CONTINUE                                                           ABPTV344
      CALL CABPTS(IO)                                                    ABPTV345
C                                                                        ABPTV346
C     DATA SET 18  PETROLEUM STORAGE TANK POINT SOURCES                  ABPTV347
C                                                                        ABPTV348
  500 READ 8676, AB1234                                                  ABPTV349
      READ 1, NSTS                                                       ABPTV350
C                                                                        ABPTV351
C     NSTS = NO. OF STORAGE TANK SITES                                   ABPTV352
C                                                                        ABPTV353
      IF (NSTS.EQ.0) GO TO 600                                           ABPTV354
      PRINT 504                                                          ABPTV355
  504 FORMAT(1H1,53X,30HII. B.6  AIRBASE STORAGE TANKS)                  ABPTV356
      WRKTOT=0.0                                                         ABPTV357
      BRTOT1=0.0                                                         ABPTV358
      BRTOT2=0.0                                                         ABPTV359
      LSRCES=NSRCES+1                                                    ABPTV360
      NSRCES=NSRCES+NSTS                                                 ABPTV361
C                                                                        ABPTV362
      IO=6                                                               ABPTV363
      PRINT 502                                                          ABPTV364
  502 FORMAT(1H-,61X,14HEMISSION INPUT/                                  ABPTV365
     . 1HO,22X,6HANNUAL,25X,9HAVG DAILY,4X,4HTANK,5X,9HTANK TYPE,3X,     ABPTV366
     . 6HNUMBER,3X,5HVAPOR/7H SOURCE,2X,4HFUEL,2X,4HROOF,3X,8HFUEL USE,  ABPTV367
     . 3X,8HTANK CAP,2X,9HTANK TEMP,2X,8HTEMP VAR,3X,8HDIAMETER,         ABPTV368
     . 2X,11H(ABOVE, BE-,4X,2HOF,5X,6HHEIGHT,2X,10HTHROUGHPUT,           ABPTV369
     . 2X,5HPAINT,3X,8HDIAMETER/1H ,2X,2HID,5X,2HID,4X,2HID,4X,,         ABPTV370
     . 9H(KILCLIT),2X,9H(KILOLIT),2X,7H(DEG F),4X,7H(DEG F),3X,          ABPTV371
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     . 8H(METERS),2X,11HLOW GROUND),3X5HTANKS,2X,8H(METERS),3X,          ABPTV372
     . 6HFACTOR,4X,6HFACTOR,3X,6HFACTOR)                                ABPTV373
      DO 550 N=LSRCES,NSRCES                                            ABPTV374
      READ 2,(ABPTS(I,N),I=1,7)                                         ABPTV375
      READ 501,SID,IDFUEL,IROOF,ANNUSE,CAP,TTMP,TMPDIF,DIAM             ABPTV376
  501 FORMAT(F4.0,4X,2I4,5F8.4)                                         ABPTV377
      IF (TMPDIF.EQ.0.) TMPDIF=DTBAR                                    ABPTV378
      IF (ABPTS(2,N).LE.0.) ABPTS(2,N)=0.                               ABPTV379
      IF (TTMP.EQ.0.) TTMP=TBAR                                         ABPTV380
      PRINT 503,SID,IDFUEL,IROOF,ANNUSE,CAP,TTMP,TMPDIF,DIAM            ABPTV381
  503 FORMAT(1H ,F6.0,I5,I6,F13.3,F10.3,F9.2,2F11.2)                    ABPTV382
      TP=(5./9.)*(TTMP-32.)+273.                                        ABPTV383
      DO 505 J=1,7                                                      ABPTV384
      TVP(J)=EXP(ALPHA(J)-BETA(J)/TP)                                   ABPTV385
  505 CONTINUE                                                          ABPTV386
      GO TO (510,530),IROOF                                             ABPTV387
  510 READ(5,511) SID,NTANKS,HVS,C1,C2,C3,IUNGRT                        ABPTV388
  511 FORMAT(F4.0,I4,4F8.4,I4)                                          ABPTV389
      IF (IUNGRT.GE.1) TMPDIF=0.                                        ABPTV390
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                 ABPTV391
      IF (HVS.EQ.0.) HVS=(2.0*CAP)/((DIAM**2)*3.14159)                  ABPTV392
      IF (C1.EQ.0.) C1=TFDFLT                                           ABPTV393
      IF (C2.EQ.0.) C2=FPDFLT                                           ABPTV394
      IF (C3.EQ.0.) C3=TDDFLT                                           ABPTV395
      ITKTYP=ABVE                                                       ABPTV396
      IF (IUNGRT.GE.1) ITKTYP=BLOW                                      ABPTV397
      PRINT 512, ITKTYP,NTANKS,HVS,C1,C2,C3                             ABPTV398
  512 FORMAT(1H+,77X,A5,I9,3F10.2,F9.2)                                 ABPTV399
      HVS=HVS*3.281                                                     ABPTV400
      WRKLOS=(NTANKS * WRKFCT(IDFUEL)*C1*TVP(IDFUEL)*FLDENS(IDFUEL)*    ABPTV401
     . ANNUSE)                                                          ABPTV402
      WRKTOT=WRKTOT+WRKLOS                                              ABPTV403
      IF (NTANKS.NE.0) GO TO 520                                        ABPTV404
      BRLOSS=0.                                                         ABPTV405
      GO TO 540                                                         ABPTV406
  520 BRLOSS=(NTANKS*FIXFCT(IDFUEL) *42.0*3.785*FLDENS(IDFUEL)*         ABPTV407
     .    ((TVP(IDFUEL)/(14.7-TVP(IDFUEL)))**0.68)*                     ABPTV408
     .    ((DIAM*3.281)**1.73)*(HVS**0.51)*(TMPDIF**.5)*C2*C3)          ABPTV409
      BRTOT1=BRTOT1+BRLOSS                                              ABPTV410
      GO TO 540                                                         ABPTV411
  530 WRKLOS=0.                                                         ABPTV412
      READ 511,SID,NTANKS,C1,C2,C3                                      ABPTV413
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                 ABPTV414
      IF (C1.EQ.0.) C1=RFDFLT                                           ABPTV415
      IF (C2.EQ.0.) C2=SFDFLT                                           ABPTV416
      IF (C3.EQ.0.) C3=PFDFLT                                           ABPTV417
      ITKTYP=ABVE                                                       ABPTV418
      WRITE(6,512) ITKTYP,NTANKS,C1,C2,C3                               ABPTV419
      BRLOSS=(NTANKS*((TVP(IDFUEL)/(14.7-TVP(IDFUEL)))**0.7)*           ABPTV420
     .    ((WSBAR*2.237)**0.7)* FLTFCT(IDFUEL)*                         ABPTV421
     .    ((DIAM*3.281)**1.5)*C1*C2*C3*42.0*3.785*FLDENS(IDFUEL))       ABPTV422
      BRTOT2=BRTOT2+BRLOSS                                              ABPTV423
  540 CONTINUE                                                          ABPTV424
      SCREM(1,N)=SID                                                    ABPTV425
      SCREM(3,N)=WRKLOS                                                 ABPTV426
      SCREM(4,N)=BRLOSS                                                 ABPTV427
      SCREM(5,N)=IDFUEL                                                 ABPTV428
      SCREM(6,N)=IROOF                                                  ABPTV429
      DO 550 I=8,11                                                     ABPTV430
      ABPTS(I,N)=0.0                                                    ABPTV431
  550 CONTINUE                                                          ABPTV432
      PRINT 551                                                         ABPTV433
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  551 FORMAT(1H-/1H0,63X,11HSOURCE DATA /1H0,                                ABPTV434
     . 14X,6HSOURCE,10X,5HPLUME,17X,11HCOORDINATES,16X,8HSTACK HT,           ABPTV435
     . 10X,7HDELTA Y,10X,7HDELTA Z /1H ,                                     ABPTV436
     . 16X,2HID,13X,4HFLAG,12X,3H(X),14X,3H(Y),2X,2(10X,8H(METERS)),         ABPTV437
     . 9X,8H(METERS))                                                        ABPTV438
      DO 560 N=LSRCES,NSRCES                                                 ABPTV439
      PRINT 552,(ABPTS(I,N),I=1,7)                                           ABPTV440
  552 FORMAT(1H ,F20.0,F14.0,F18.3,F17.3,F17.3,F18.3,F17.3)                  ABPTV441
  560 CONTINUE                                                               ABPTV442
      PRINT 561                                                              ABPTV443
  561 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR) /1H0,      ABPTV444
     . 14X,6HSOURCE,54X,10HFIXED ROOF,22X,14HFLOATING  ROOF/1H ,             ABPTV445
     . 16X,2HID,22X,12HWORKING LOSS,2(20X,14HBREATHING LOSS))                ABPTV446
      DO 580 N=LSRCES,NSRCES                                                 ABPTV447
      IROOF=SOREM(6,N)                                                       ABPTV448
      GO TO (570,575),IROOF                                                  ABPTV449
  570 PRINT 571,SOREM(1,N),(SOREM(I,N),I=3,4)                                ABPTV450
  571 FORMAT(1H ,F20.0,F30.3,F32.3)                                          ABPTV451
      GO TO 580                                                              ABPTV452
  575 PRINT 576,SOREM(1,N),(SOREM(I,N),I=3,4)                                ABPTV453
  576 FORMAT(1H ,F20.0,F30.3,F67.3)                                          ABPTV454
  580 CONTINUE                                                               ABPTV455
      PRINT 82, (MINUS(JK),JK=1,3)                                           ABPTV456
   82 FORMAT(1H ,42X,A8,24X,A8,27X,A8)                                       ABPTV457
      PRINT 581, WRKTOT,BRTOT1,BRTOT2                                        ABPTV458
  581 FORMAT(1H ,11X,12HTOTAL ANNUAL,F27.3,F32.3,F35.3)                      ABPTV459
      WRKTOT=WRKTOT/1000.                                                    ABPTV460
      BRTOT1=BRTOT1/1000.                                                    ABPTV461
      BRTOT2=BRTOT2/1000.                                                    ABPTV462
      DO 590 N=LSRCES,NSRCES                                                 ABPTV463
      J=SOREM(5,N)                                                           ABPTV464
      SOREM(3,N)=SOREM(3,N)/TVP(J)                                           ABPTV465
      SOREM(4,N)=SOREM(4,N)/(TVP(J)/(14.7-TVP(J)))**0.69                     ABPTV466
  590 CONTINUE                                                               ABPTV467
      TOTEVP(1)=WRKTOT                                                       ABPTV468
      TOTEVP(2)=BRTOT1                                                       ABPTV469
      TOTEVP(3)=BRTOT2                                                       ABPTV470
C                                                                            ABPTV471
C     DATA SET 19  OTHER AIRBASE POINT SOURCES                               ABPTV472
C                                                                            ABPTV473
  600 READ 8676, AB1234                                                      ABPTV474
      READ 1, NXS                                                            ABPTV475
C                                                                            ABPTV476
C     NXS = NO. OF OTHER POINT SOURCES                                       ABPTV477
C                                                                            ABPTV478
      IF (NXS.EQ.0) GO TO 900                                                ABPTV479
      PRINT 604                                                              ABPTV480
  604 FORMAT(1H1,53X,29HII. B.7  AIRBASE OTHER POINTS)                       ABPTV481
      LSRCES=NSRCES+1                                                        ABPTV482
      NSRCES=NSRCES+NXS                                                      ABPTV483
C                                                                            ABPTV484
      IC=7                                                                   ABPTV485
      DO 620 N=LSRCES,NSRCES                                                 ABPTV486
      READ 2,(ABPTS(I,N),I=1,11)                                             ABPTV487
      READ 612,SID,(SOREM(I+2,N),I=1,NPLTS)                                  ABPTV488
  612 FORMAT(F4.0,4X,9F8.2)                                                  ABPTV489
      IF (SID.NE.ABPTS(1,N)) GO TO 9000                                      ABPTV490
      SOREM(1,N)=SID                                                         ABPTV491
      DO 620 I=1,NPLTS                                                       ABPTV492
      SOREM(I+2,N)=SOREM(I+2,N)*1000.                                        ABPTV493
      TOTEM(IC+M,I)=TOTEM(IC+M,I)+SOREM(I+2,N)                               ABPTV494
  620 CONTINUE                                                               ABPTV495
```

```
      CALL OABPTS(IO)                                                    ABPTV496
      GO TO 900                                                          ABPTV497
C                                                                        ABPTV498
 9000 PRINT 9001, ABPTS(1,N),SID                                         ABPTV499
 9001 FORMAT(26H0AIRBASE POINT SOURCE ID =,F5.0,                         ABPTV500
     . 19H, CONTINUATION ID =,F5.0)                                      ABPTV501
      STOP                                                               ABPTV502
C                                                                        ABPTV503
  900 WRITE(ITAPE) NSRCES,NTOT,NTPS,NTOS,NRUS,NPPS,NICS,NSTS,NXS,        ABPTV504
     .   ((ABPTS(I,N),I=1,11),(SOREM(I+2,N),I=1,NPLTS),N=1,NSRCES)       ABPTV505
      RETURN                                                             ABPTV506
      END                                                                ABPTV507
```

SUBROUTINE ACEFCT

Purpose:

To calculate the aircraft emission factors by aircraft type according to operational mode.

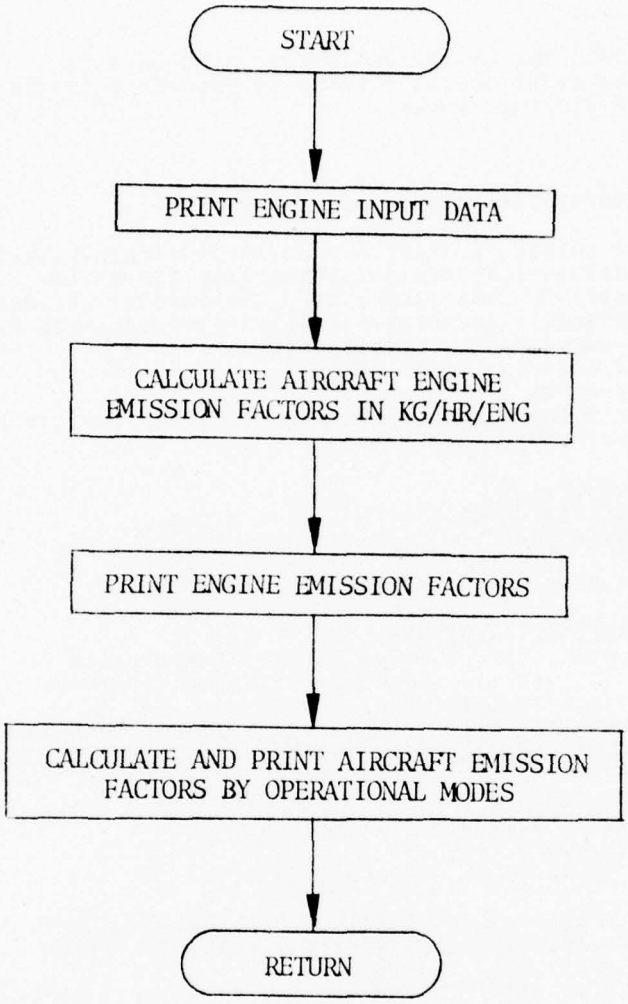
Input:

Engine fuel flow rates and emission factors, aircraft engine identification, after-burner data.

Output:

Engine-dependent and aircraft-dependent emission factors by thrust setting or operational mode.

SUBROUTINE ACEFCT



```
      SUBROUTINE  ACEFCT                                                ACEFT000
C                                                                       ACEFT001
C     THIS ROUTINE PRINTS THE ENGINE POLLUTANT EMISSION DATA,           ACEFT002
C     COMPUTES AND PRINTS THE EMISSION RATES AND STORES THEM FOR        ACEFT003
C     EACH OF THE NINE AIRCRAFT MODES                                   ACEFT004
C                                                                       ACEFT005
      INTEGER ENGNO                                                     ACEFT006
      REAL LNDSPD                                                       ACEFT007
      REAL*8 ACNAME,MONAM1,THNAME,ENTEST,EGNAME                         ACEFT008
C                                                                       ACEFT009
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),ACEFT010
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),CORT1(50),ACEFT011
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),ACEFT012
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBLT,TOWT(50)ACEFT013
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                           ACEFT014
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6)                          ACEFT015
      COMMON /DEFALT/ NPLTS                                             ACEFT016
      COMMON /EGEDB1/ MONAM1(10),THNAME(4),MONAM2(10),IDACEG(50),       ACEFT017
     . IACABF(50),EGFF(4,50),IEGABF(50)                                 ACEFT018
C                                                                       ACEFT019
      DIMENSION ACEMHR(50,4,6)                                          ACEFT020
      EQUIVALENCE (SORCE(1),ACEMHR(1))                                  ACEFT021
      DATA ENTEST /8HUNASSGND/                                          ACEFT022
C                                                                       ACEFT023
C     PRINT ENGINE POLLUTANT EMISSION DATA                              ACEFT024
C                                                                       ACEFT025
      PRINT 215,(PLNAME(I),I=1,NPLTS)                                   ACEFT026
  215 FORMAT(1H1,44X,45HI.  A.  D E F A U L T   I N F O R M A T I O N/  ACEFT027
     . 1H-,48X,38HI. A.1  ENGINE POLLUTANT EMISSION DATA/1H-,           ACEFT028
     . 27X,6HTHRUST,11X,9HFUEL RATE,11X,                                ACEFT029
     . 53HPOLLUTANT EMISSION DATA (POUNDS PER 1000 LBS OF FUEL)/1H ,    ACEFT030
     . 2X,4HNAME,11X,2HID,8X,7HSETTING,9X,11H1000 LBS/HR,2X,6(8X,A4))   ACEFT031
      DO 10 I=1,50                                                      ACEFT032
      IF (EGNAME(I).EQ.ENTEST) GO TO 10                                 ACEFT033
      PRINT 201,EGNAME(I),I,THNAME(1),EGFF(1,I),                        ACEFT034
     .   (EGEMFC(K,1,I),K=1,NPLTS)                                      ACEFT035
  201 FORMAT(1H-,A8,I11,8X,A8,9X,1PE9.3,4X,6E12.2)                      ACEFT036
      DO 11 J=2,3                                                       ACEFT037
      IF (EGEMFC(1,J,I).LE.0.0.AND.EGEMFC(2,J,I).LE.0.0) GO TO 10       ACEFT038
   11 PRINT 202,THNAME(J),EGFF(J,I),(EGEMFC(K,J,I),K=1,NPLTS)           ACEFT039
  202 FORMAT(1H ,27X,A8,9X,1PE9.3,4X,6E12.2)                            ACEFT040
      IF (IEGABF(I).EQ.1) PRINT 202,THNAME(4),EGFF(4,I),(EGEMFC(K,4,I), ACEFT041
     .   K=1,NPLTS)                                                     ACEFT042
   10 CONTINUE                                                          ACEFT043
C                                                                       ACEFT044
C     CALCULATE EMISSION RATE, CONVERT TO KG/HR AND                     ACEFT045
C     PRINT FOR EACH ENGINE                                             ACEFT046
C                                                                       ACEFT047
      DO 1 K=1,NPLTS                                                    ACEFT048
      DO 1 J=1,4                                                        ACEFT049
      DO 1 I=1,50                                                       ACEFT050
    1 EGEMFC(K,J,I)=EGEMFC(K,J,I)*EGFF(J,I)/2.20462                     ACEFT051
      PRINT 200, (PLNAME(I),I=1,NPLTS)                                  ACEFT052
  200 FORMAT(1H1,48X,39HI. A.2  ENGINE POLLUTANT EMISSION RATES/1H-,    ACEFT053
     . 27X,6HTHRUST,11X,9HFUEL RATE,15X,                                ACEFT054
     . 44HPOLLUTANT EMISSION RATE (KILOGRAMS PER HOUR)/1H ,             ACEFT055
     . 2X,4HNAME,11X,2HID,8X,7HSETTING,9X,11H1000 LBS/HR,2X,6(8X,A4))   ACEFT056
      DO 2 I=1,50                                                       ACEFT057
      IF (EGNAME(I).EQ.ENTEST) GO TO 2                                  ACEFT058
      PRINT 201, EGNAME(I),I,THNAME(1),EGFF(1,I),(EGEMFC(K,1,I),        ACEFT059
     . K=1,NPLTS)                                                       ACEFT060
      DO 20 J=2,3                                                       ACEFT061
```

```
      IF (EGEMFC(1,J,I).LE.0.0.AND.EGEMFC(2,J,I).LE.0.0) GO TO 2          ACEFT062
   20 PRINT 202, THNAME(J),EGFF(J,I),(EGEMFC(K,J,I),K=1,NPLTS)            ACEFT063
      IF (ILGABF(I).EQ.1) PRINT 202, THNAME(4),EGFF(4,I),(EGEMFC(K,4,I),ACEFT064
     . K=1,NPLTS)                                                         ACEFT065
    2 CONTINUE                                                            ACEFT066
C                                                                         ACEFT067
C     FIND EMISSION RATE FOR EACH AIRCRAFT FOR EACH THRUST SETTING        ACEFT068
C                                                                         ACEFT069
      DO 3 I=1,50                                                         ACEFT070
      II=IDACEG(I)                                                        ACEFT071
      DO 3 J=1,4                                                          ACEFT072
      DO 3 K=1,NPLTS                                                      ACEFT073
      ACEMHR(I,J,K)=EGEMFC(K,J,II)                                        ACEFT074
      IF (IACABF(I).EQ.0) ACEMHR(I,4,K)=ACEMHR(I,3,K)                     ACEFT075
    3 CONTINUE                                                            ACEFT076
C                                                                         ACEFT077
C     STORE EMISSION RATES FOR EACH AIRCRAFT FOR EACH OF THE NINE         ACEFT078
C     AIRCRAFT MODES                                                      ACEFT079
C                                                                         ACEFT080
      DO 6 I=1,50                                                         ACEFT081
      DO 6 K=1,NPLTS                                                      ACEFT082
      ACEMFC(I,1,K)=ACEMHR(I,1,K)                                         ACEFT083
      ACEMFC(I,2,K)=ACEMHR(I,1,K)                                         ACEFT084
      ACEMFC(I,3,K)=ACEMHR(I,3,K)                                         ACEFT085
      ACEMFC(I,4,K)=ACEMHR(I,4,K)                                         ACEFT086
      ACEMFC(I,5,K)=ACEMHR(I,4,K)                                         ACEFT087
      ACEMFC(I,6,K)=ACEMHR(I,3,K)                                         ACEFT088
      ACEMFC(I,7,K)=ACEMHR(I,2,K)                                         ACEFT089
      ACEMFC(I,8,K)=ACEMHR(I,1,K)*.4+ACEMHR(I,2,K)*.6                     ACEFT090
      ACEMFC(I,9,K)=ACEMHR(I,1,K)                                         ACEFT091
    6 ACEMFC(I,10,K)=0.0                                                  ACEFT092
      RETURN                                                              ACEFT093
      END                                                                 ACEFT094
```

SUBROUTINE ACEMIV

Purpose:

1. To input aircraft and runway activity and geometric data.
2. To establish wind vector - runway - taxiway - parking area links.
3. To output to the master source tape all data needed to spatially and temporally define aircraft sources.
4. To calculate annual aircraft emissions based on annual average meteorological conditions.

Input:

Aircraft and runway activity and geometric data.

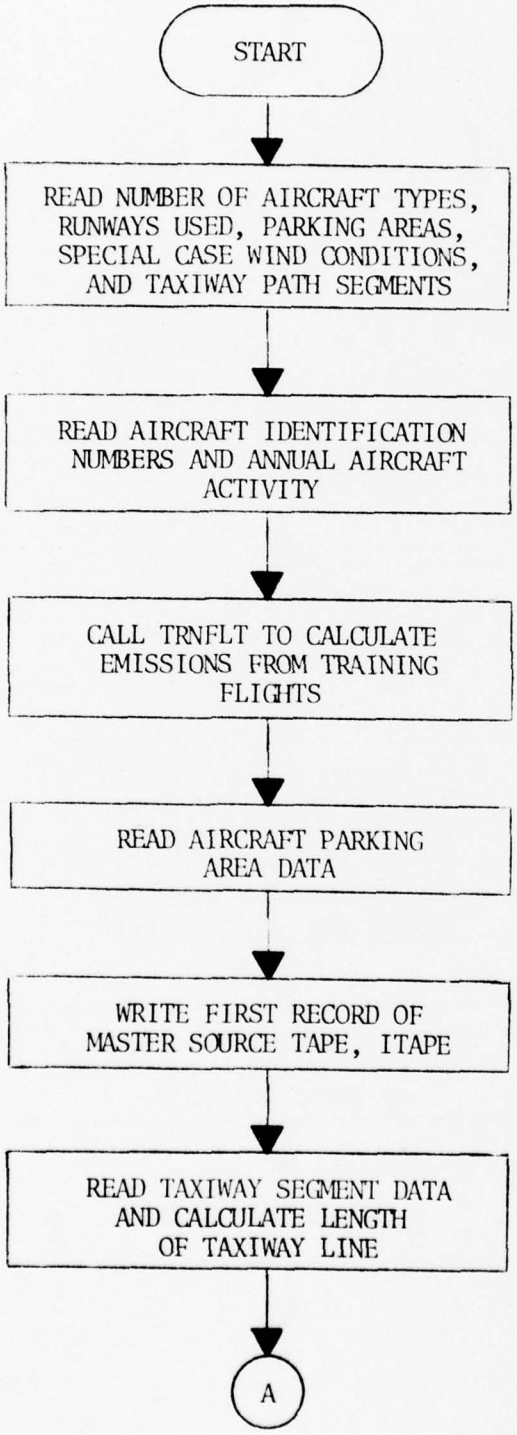
Output:

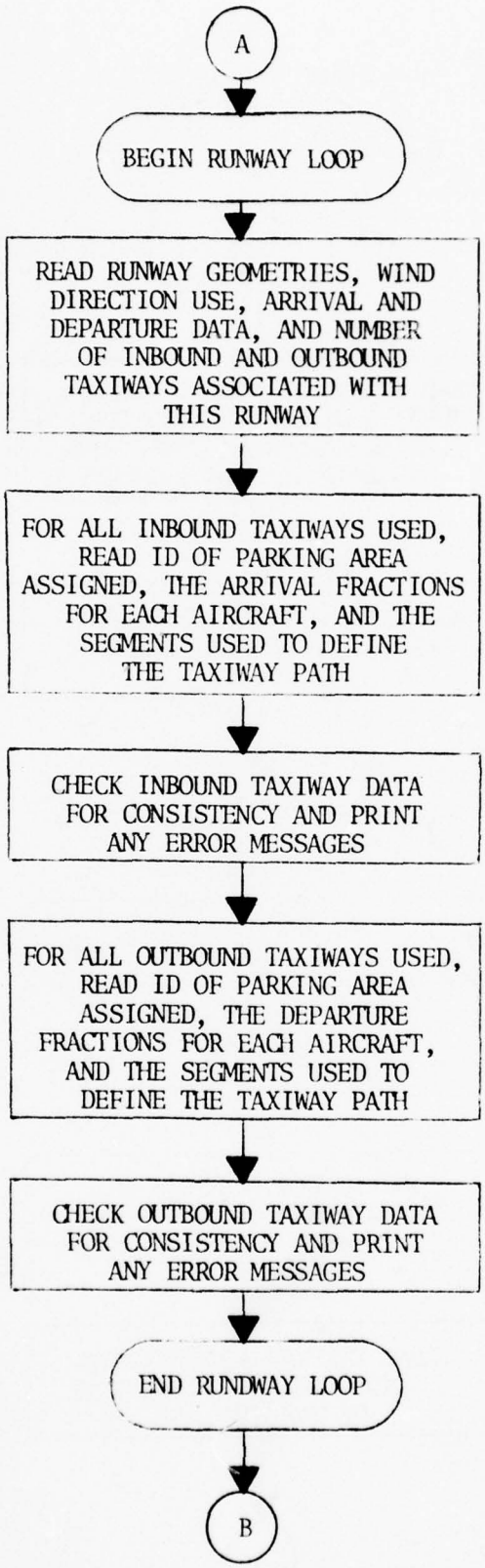
1. Print input data.
2. Print annual emissions due to various categories of aircraft or aircraft-related activities.
3. Write data on master source tape.

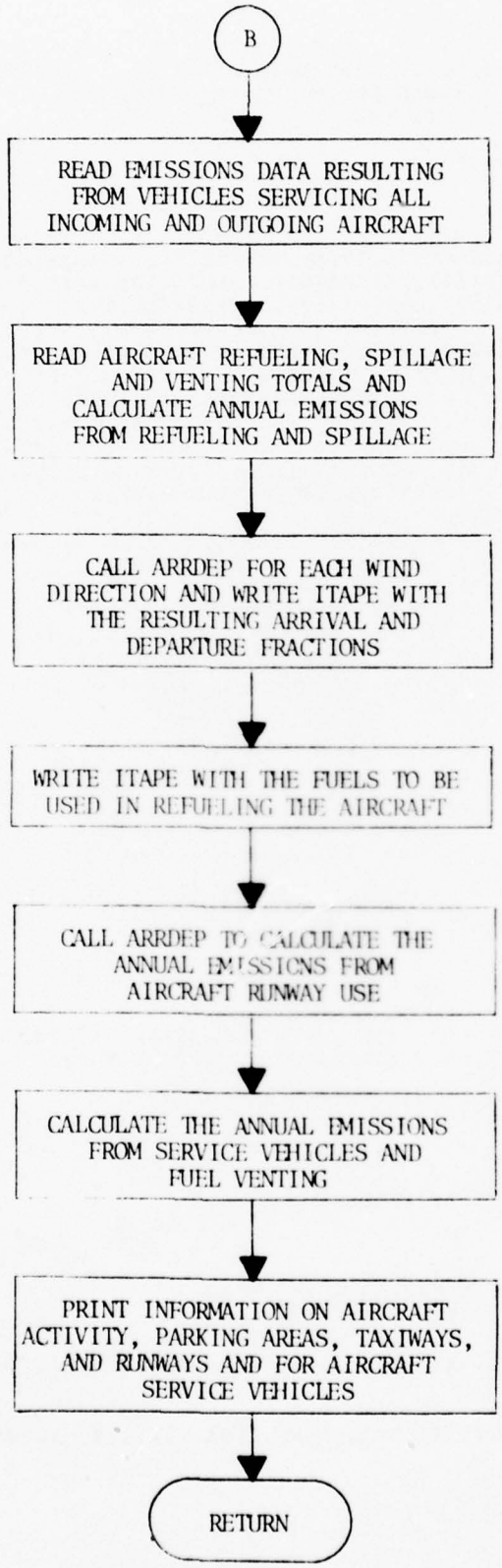
Subroutine Called:

TRNFLT, ARRDEP

SUBROUTINE ACEMIV




A
BEGIN RUNWAY LOOP
READ RUNWAY GEOMETRIES, WIND DIRECTION USE, ARRIVAL AND DEPARTURE DATA, AND NUMBER OF INBOUND AND OUTBOUND TAXIWAYS ASSOCIATED WITH THIS RUNWAY
FOR ALL INBOUND TAXIWAYS USED, READ ID OF PARKING AREA ASSIGNED, THE ARRIVAL FRACTIONS FOR EACH AIRCRAFT, AND THE SEGMENTS USED TO DEFINE THE TAXIWAY PATH
CHECK INBOUND TAXIWAY DATA FOR CONSISTENCY AND PRINT ANY ERROR MESSAGES
FOR ALL OUTBOUND TAXIWAYS USED, READ ID OF PARKING AREA ASSIGNED, THE DEPARTURE FRACTIONS FOR EACH AIRCRAFT, AND THE SEGMENTS USED TO DEFINE THE TAXIWAY PATH
CHECK OUTBOUND TAXIWAY DATA FOR CONSISTENCY AND PRINT ANY ERROR MESSAGES
END RUNDWAY LOOP
B


B
READ EMISSIONS DATA RESULTING FROM VEHICLES SERVICING ALL INCOMING AND OUTGOING AIRCRAFT
READ AIRCRAFT REFUELING, SPILLAGE AND VENTING TOTALS AND CALCULATE ANNUAL EMISSIONS FROM REFUELING AND SPILLAGE
CALL ARRDEP FOR EACH WIND DIRECTION AND WRITE ITAPE WITH THE RESULTING ARRIVAL AND DEPARTURE FRACTIONS
WRITE ITAPE WITH THE FUELS TO BE USED IN REFUELING THE AIRCRAFT
CALL ARRDEP TO CALCULATE THE ANNUAL EMISSIONS FROM AIRCRAFT RUNWAY USE
CALCULATE THE ANNUAL EMISSIONS FROM SERVICE VEHICLES AND FUEL VENTING
PRINT INFORMATION ON AIRCRAFT ACTIVITY, PARKING AREAS, TAXIWAYS, AND RUNWAYS AND FOR AIRCRAFT SERVICE VEHICLES
RETURN

```
      SUBROUTINE ACEMIV                                                 ACEMV000
C                                                                       ACEMV001
C   THIS ROUTINE READS AIRCRAFT AND RUNWAY DATA,                        ACEMV002
C   COMPUTES AND PRINTS ANNUAL EMISSIONS AND STORES                     ACEMV003
C   DATA ON THE MASTER SOURCE TAPE                                      ACEMV004
C                                                                       ACEMV005
      REAL*8 ACNAME,EGNAME,MINUS                                        ACEMV006
      REAL LNDSPD,LUEMFC                                                ACEMV007
      INTEGER ENGNO                                                     ACEMV008
C                                                                       ACEMV009
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),ACEMV010
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),ACEMV011
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),ACEMV012
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)ACEMV013
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),   ACEMV014
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),    ACEMV015
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8)ACEMV016
     .,ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),       ACEMV017
     . NIBTT(6),NIBSEG(8,6),IIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),   ACEMV018
     . NOBTT(6),NOBSEG(8,6),IOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),   ACEMV019
     . NPASQ(6),IDPRKA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),         ACEMV020
     . NLSEGS,ACLNSG(12,25)                                             ACEMV021
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),ACEMV022
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      ACEMV023
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      ACEMV024
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               ACEMV025
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),ACLNDY,ACLNDZ                ACEMV026
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                  ACEMV027
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10),EMISS(8,15,6),ACEM(8,6)      ACEMV028
      DIMENSION XX(8),YY(8),IRNWY(2,6),JES1(8)                          ACEMV029
C                                                                       ACEMV030
      ANNTMP=TBAR                                                       ACEMV031
      DO  2 I=1,8                                                       ACEMV032
      DO  2 J=1,NPLTS                                                   ACEMV033
      ACEM(I,J)=0.0                                                     ACEMV034
      DO 2 II=1,15                                                      ACEMV035
    2 EMISS(I,II,J)=0.0                                                 ACEMV036
C                                                                       ACEMV037
C     DATA SET 4  AIRBASE AIRCRAFT AND RUNWAY TOTALS                    ACEMV038
C                                                                       ACEMV039
      READ 8676, AB1234                                                 ACEMV040
 8676 FORMAT(A1)                                                        ACEMV041
C                                                                       ACEMV042
C     READ NUMBER OF AIRCRAFT TYPES, RUNWAYS USED, PARKING AREAS,       ACEMV043
C     SPECIAL WIND CONDITIONS, AND TAXIWAY PATH SEGMENTS                ACEMV044
C                                                                       ACEMV045
      READ 5, NACTYP,NRNWYS,NPKAR,NSCASE,NLSEGS                         ACEMV046
    5 FORMAT(18I4)                                                      ACEMV047
      NWD=17+NSCASE                                                     ACEMV048
C                                                                       ACEMV049
C     DATA SET 5  AIRCRAFT ACTIVITY                                     ACEMV050
C                                                                       ACEMV051
      READ 8676, AB1234                                                 ACEMV052
C                                                                       ACEMV053
C     READ AIRCRAFT IDENTIFICATION NUMBERS AND                          ACEMV054
C     ANNUAL AIRCRAFT ACTIVITY                                          ACEMV055
C                                                                       ACEMV056
      READ 1, (IACTYP(I),ANNARR(I),ANNDEP(I),ANNTGO(I),I=1,NACTYP)      ACEMV057
    1 FORMAT(I8,3F8.0)                                                  ACEMV058
C                                                                       ACEMV059
C     CALL TRNFLT TO CALCULATE EMISSIONS FROM TRAINING FLIGHTS          ACEMV060
C                                                                       ACEMV061
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```
      CALL TENEIT                                                       ACEMV062
C                                                                       ACEMV063
C     DATA SET 6  AIRCRAFT PARKING AREAS                                ACEMV064
C                                                                       ACEMV065
      READ 8676, AB1234                                                 ACEMV066
C                                                                       ACEMV067
C     READ AIRCRAFT PARKING AREA DATA                                   ACEMV068
C                                                                       ACEMV069
      DO 3 I=1,NPKAR                                                    ACEMV070
      READ 4, IDPRKA(I),NPASA,((PAREA(I,J,K),K=1,3),J=1,3)              ACEMV071
    4 FORMAT(2I4,9F8.3)                                                 ACEMV072
    3 NPASQ(I)=NPASA                                                    ACEMV073
C                                                                       ACEMV074
C     WRITE FIRST RECORD OF MASTER SOURCE TAPE, ITAPE                   ACEMV075
C                                                                       ACEMV076
      WRITE (ITAPE) NPLTS,NPKAR,NRNWYS,NACTYP,NWD,APPHT,CLMBHT,IEGFLG,  ACEMV077
     .  NLSEGS                                                          ACEMV078
C                                                                       ACEMV079
C     DATA SET 7  AIRCRAFT TAXIWAY PATH SEGMENTS                        ACEMV080
C                                                                       ACEMV081
      READ 8676, AB1234                                                 ACEMV082
C                                                                       ACEMV083
C     READ TAXIWAY SEGMENT DATA AND CALCULATE LENGTH OF TAXIWAY LINE    ACEMV084
C                                                                       ACEMV085
      DO 8 N=1,NLSEGS                                                   ACEMV086
      READ 7, NC,(ACLNSG(K,N),K=1,8)                                    ACEMV087
    7 FORMAT(I4,4X,8F8.3)                                               ACEMV088
      IF (NC.EQ.N) GO TO 9                                              ACEMV089
      PRINT 801, NC                                                     ACEMV090
  801 FORMAT(44HOTAXIWAY SEGMENT DATA OUT OF SEQUENCE AT NC=,I4)        ACEMV091
      GO TO 100                                                         ACEMV092
    9 IF (ACLNSG(3,N).LE.0.0) ACLNSG(3,N)=ACLNDZ/2.                     ACEMV093
      IF (ACLNSG(4,N).LE.0.0) ACLNSG(4,N)=ACLNDY                        ACEMV094
      IF (ACLNSG(5,N).LE.0.0) ACLNSG(5,N)=ACLNDZ                        ACEMV095
      IF (ACLNSG(8,N).LE.0.0) ACLNSG(8,N)=ACLNDZ/2.                     ACEMV096
      ACLNSG(9,N)=1.                                                    ACEMV097
      ACLNSG(10,N)=1.                                                   ACEMV098
      ACLNSG(11,N)=SQRT((ACLNSG(6,N)-ACLNSG(1,N))**2+                   ACEMV099
     .  (ACLNSG(7,N)-ACLNSG(2,N))**2)                                   ACEMV100
      ACLNSG(12,N)=1.                                                   ACEMV101
    8 CONTINUE                                                          ACEMV102
C                                                                       ACEMV103
C     DATA SET 8  AIRCRAFT RUNWAY INFORMATION                           ACEMV104
C                                                                       ACEMV105
      READ 8676, AB1234                                                 ACEMV106
C                                                                       ACEMV107
C     BEGIN RUNWAY LOOP                                                 ACEMV108
C                                                                       ACEMV109
  101 DO 10 NN=1,NRNWYS                                                 ACEMV110
C                                                                       ACEMV111
C     READ RUNWAY GEOMETRIES, WIND DIRECTION USE, ARRIVAL AND           ACEMV112
C     DEPARTURE DATA, AND NUMBER OF INBOUND AND OUTBOUND TAXIWAYS       ACEMV113
C     ASSOCIATED WITH THIS RUNWAY                                       ACEMV114
C                                                                       ACEMV115
      READ 11,IDNWY(1,NN),(RNWY(I,NN),I=2,7),DISRNW(NN)                 ACEMV116
   11 FORMAT(I4,4X,8F8.3)                                               ACEMV117
      RNWY(7,NN)=RNWY(7,NN)*0.0174533                                   ACEMV118
      IF (RNWY(4,NN).LE.0.0) RNWY(4,NN)=ACLNDZ/2.                       ACEMV119
      IF (RNWY(5,NN).LE.0.) RNWY(5,NN)=ACLNDY                           ACEMV120
      IF (RNWY(6,NN).LE.0.) RNWY(6,NN)=ACLNDZ                           ACEMV121
C                                                                       ACEMV122
      READ 12,ID,(IUSWD(I,NN),I=1,NWD)                                  ACEMV123
```

```
   12 FORMAT(I4,4X,20I1)                                                ACEMV124
      NWDP1=NWD+1                                                       ACEMV125
      IF (NWDP1.GT.20) GO TO 125                                        ACEMV126
      DO 124 I=NWDP1,20                                                 ACEMV127
  124 IUSWD(I,NN)=0                                                     ACEMV128
  125 CONTINUE                                                          ACEMV129
      IF (ID.EQ.IRNWY(1,NN)) GO TO 14                                   ACEMV130
      PRINT 13,ID,IRNWY(1,NN)                                           ACEMV131
   13 FORMAT(38H0ERROR....RUNWAY ID'S ARE INCOMPATIBLE,2I14)            ACEMV132
      GO TO 100                                                         ACEMV133
C                                                                       ACEMV134
   14 READ 15, ID,(RNWYAR(I,NN),I=1,8)                                  ACEMV135
   15 FORMAT(I4,4X,8F8.0)                                               ACEMV136
      IF (ID.EQ.IRNWY(1,NN)) GO TO 16                                   ACEMV137
      PRINT 13,ID,IRNWY(1,NN)                                           ACEMV138
      PRINT 150                                                         ACEMV139
  150 FORMAT(1H+,T70,7HINBOUND)                                         ACEMV140
      GO TO 100                                                         ACEMV141
C                                                                       ACEMV142
   16 READ 15, ID,(RNWYDP(I,NN),I=1,8)                                  ACEMV143
      IF (ID.EQ.IRNWY(1,NN)) GO TO 17                                   ACEMV144
      PRINT 13, ID,IRNWY(1,NN)                                          ACEMV145
      PRINT 151                                                         ACEMV146
  151 FORMAT(1H+,T70,8HOUTBOUND)                                        ACEMV147
      GO TO 100                                                         ACEMV148
C                                                                       ACEMV149
   17 READ 5, ID,NIBTT(NN),NOBTT(NN)                                    ACEMV150
      IF (ID.EQ.IRNWY(1,NN)) GO TO 19                                   ACEMV151
      PRINT 13,ID,IRNWY(1,NN)                                           ACEMV152
      GO TO 100                                                         ACEMV153
   19 NT=NIBTT(NN)                                                      ACEMV154
      IF (NT.EQ.0) GO TO 2000                                           ACEMV155
C                                                                       ACEMV156
C     FOR ALL INBOUND TAXIWAYS USED, READ ID OF PARKING AREA            ACEMV157
C     ASSIGNED, THE ARRIVAL FRACTIONS FOR EACH AIRCRAFT, AND THE        ACEMV158
C     SEGMENTS USED TO DEFINE THE TAXIWAY PATH                          ACEMV159
C                                                                       ACEMV160
      DO 20 J=1,NT                                                      ACEMV161
      READ 21,IDRW,IDIBTW(J,NN),IDIBPA(J,NN),(TTARFR(J,I,NN),I=1,8)     ACEMV162
   21 FORMAT(3I2,2X,8F8.3)                                              ACEMV163
C                                                                       ACEMV164
C     CHECK INBOUND TAXIWAY DATA FOR CONSISTENCY AND                    ACEMV165
C     PRINT ANY ERROF MESSAGES                                          ACEMV166
C                                                                       ACEMV167
      IF (IDRW.EQ.IRNWY(1,NN)) GO TO 23                                 ACEMV168
      PRINT 22, IDRW,IDIBTW(J,NN),IRNWY(1,NN)                           ACEMV169
   22 FORMAT(12HORUNWAY ID =,I5,17HWITH TAXI TRAJ. =I4,5HNOT =I4)       ACEMV170
      PRINT 150                                                         ACEMV171
      GO TO 100                                                         ACEMV172
C                                                                       ACEMV173
   23 READ 24,IDRW,IDTW,IDPA,NSEGS,(IIBSEG(K,J,NN),K=1,16)              ACEMV174
   24 FORMAT(4I2,16I4)                                                  ACEMV175
      NIBSEG(J,NN)=NSEGS                                                ACEMV176
      DO 30 K=1,NSEGS                                                   ACEMV177
      IF (IIBSEG(K,J,NN).LE.NLSEGS) GO TO 30                            ACEMV178
      PRINT 301, IIBSEG(K,J,NN),IDTW,IDRW                               ACEMV179
  301 FORMAT(16HOTAXIWAY SEGMENT,I4,11H IN TAXIWAY,I4,10H OF RUNWAY,I4, ACEMV180
     . 13H IS UNDEFINED)                                                ACEMV181
      PRINT 150                                                         ACEMV182
      GO TO 100                                                         ACEMV183
   30 CONTINUE                                                          ACEMV184
C                                                                       ACEMV185
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      IF (IDTW.EQ.IDIBTW(J,NN)) GO TO 26                                ACEMV186
      PRINT 25, IDTW,IDIBTW(J,NN)                                       ACEMV187
   25 FORMAT(49HOID NUMBERS FOR TAXIWAY TRAJECTORIES NOT MATCHED ,2I4)  ACEMV188
      PRINT 150                                                         ACEMV189
      GO TO 100                                                         ACEMV190
C                                                                       ACEMV191
   26 IF (IDPA.EQ.IDIBPA(J,NN)) GO TO 20                                ACEMV192
      PRINT 27, IDTW,IDPA,IDIBPA(J,NN)                                  ACEMV193
   27 FORMAT(48HOID NUMBER FOR PARKING AREA NOT MATCHED, TAXIWAY,I4,    ACEMV194
     . 15H  PARKING AREAS,2I4)                                          ACEMV195
      PRINT 150                                                         ACEMV196
      GO TO 100                                                         ACEMV197
   20 CONTINUE                                                          ACEMV198
C                                                                       ACEMV199
 2000 CONTINUE                                                          ACEMV200
      NT=NOPTT(NN)                                                      ACEMV201
      IF (NT.EQ.0) GO TO 10                                             ACEMV202
C                                                                       ACEMV203
C     FOR ALL OUTBOUND TAXIWAYS USED, READ ID OF PARKING AREA ASSIGNED, ACEMV204
C     THE DEPARTURE FRACTIONS FOR EACH AIRCRAFT, AND THE SEGMENTS       ACEMV205
C     USED TO DEFINE THE TAXIWAY PATH                                   ACEMV206
C                                                                       ACEMV207
      DO 40 J=1,NT                                                      ACEMV208
      READ 21,IDRW,IDOBTW(J,NN),IDOBPA(J,NN),(TTDPER(J,I,NN),I=1,8)     ACEMV209
C                                                                       ACEMV210
C     CHECK OUTBOUND TAXIWAY DATA FOR CONSISTENCY AND                   ACEMV211
C     PRINT ANY ERROR MESSAGES                                          ACEMV212
C                                                                       ACEMV213
      IF (IDRW.EQ.IRNWY(1,NN)) GO TO 42                                 ACEMV214
      PRINT 22, IDRW,IDOBTW(J,NN),IRNWY(1,NN)                           ACEMV215
      PRINT 151                                                         ACEMV216
      GO TO 100                                                         ACEMV217
C                                                                       ACEMV218
   42 READ 24,IDRW,IDTW,IDPA,NSEGS,(IOBSEG(K,J,NN),K=1,16)              ACEMV219
      NOBSEG(J,NN)=NSEGS                                                ACEMV220
      DO 43 K=1,NSEGS                                                   ACEMV221
      IF (IOBSEG(K,J,NN).LE.NLSEGS) GO TO 43                            ACEMV222
      PRINT 301, IOBSEG(K,J,NN),IDTW,IDRW                               ACEMV223
      PRINT 151                                                         ACEMV224
      GO TO 100                                                         ACEMV225
C                                                                       ACEMV226
   43 CONTINUE                                                          ACEMV227
      IF (IDTW.EQ.IDOBTW(J,NN)) GO TO 39                                ACEMV228
      PRINT 25, IDTW,IDOBTW(J,NN)                                       ACEMV229
      PRINT 151                                                         ACEMV230
      GO TO 100                                                         ACEMV231
C                                                                       ACEMV232
   39 IF (IDPA.EQ.IDOBPA(J,NN)) GO TO 40                                ACEMV233
      PRINT 27, IDTW,IDPA,IDOBPA(J,NN)                                  ACEMV234
      PRINT 151                                                         ACEMV235
      GO TO 100                                                         ACEMV236
   40 CONTINUE                                                          ACEMV237
   10 CONTINUE                                                          ACEMV238
C                                                                       ACEMV239
C     END RUNWAY LOOP                                                   ACEMV240
C                                                                       ACEMV241
C     DATA SET 9  AEROSPACE GROUND EQUIPMENT EMISSIONS                  ACEMV242
C                                                                       ACEMV243
      READ 8676, AB1234                                                 ACEMV244
C                                                                       ACEMV245
C     READ EMISSIONS DATA RESULTING FROM VEHICLES SERVICING             ACEMV246
C     ALL INCOMING AND OUTGOING AIRCRAFT                                ACEMV247
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C                                                                       ACEMV248
      DO 44 J=1,5                                                       ACEMV249
      DO 44 I=1,NACTYP                                                  ACEMV250
   44 READ 41, (ARSVEM(K,I,J),K=1,NPLTS)                                ACEMV251
      DO 45 J=1,5                                                       ACEMV252
      DO 45 I=1,NACTYP                                                  ACEMV253
   45 READ 41, (DPSVEM(K,I,J),K=1,NPLTS)                                ACEMV254
   41 FORMAT( 9F8.3)                                                    ACEMV255
C                                                                       ACEMV256
C    DATA SET 10  AIRCRAFT REFUELING, SPILLAGE AND VENTING TOTALS       ACEMV257
C                                                                       ACEMV258
      READ 8676, AB1234                                                 ACEMV259
C                                                                       ACEMV260
C    READ AIRCRAFT REFUELING, SPILLAGE AND VENTING TOTALS               ACEMV261
C    AND CALCULATE ANNUAL EMISSIONS FROM REFUELING AND SPILLAGE         ACEMV262
C                                                                       ACEMV263
      READ 849, (JES1(I),I=1,NACTYP)                                    ACEMV264
  849 FORMAT(8X,8I8)                                                    ACEMV265
C                                                                       ACEMV266
      READ 11, INPUTS,(ACFUEL(I),I=1,8)                                 ACEMV267
      IF (INPUTS.GT.1) GO TO 51                                         ACEMV268
      DO 50 I=2,NACTYP                                                  ACEMV269
   50 ACFUEL(I)=ACFUEL(1)                                               ACEMV270
   51 CONTINUE                                                          ACEMV271
      DO 52 I=1,NACTYP                                                  ACEMV272
      TVP=EXP(ALPHA(JES1(I))-BETA(JES1(I))/(5.*(ANNTMP-32.)/9.+273.))   ACEMV273
   52 EMISS(I,14,2)=EMISS(I,14,2)+0.324*TVP*ACFUEL(I)*ANNARR(I)*0.5*    ACEMV274
     . FLDENS(JES1(I))/1000.0                                           ACEMV275
C                                                                       ACEMV276
      READ 11, INPUTS,(ACSPIL(I),I=1,8)                                 ACEMV277
      IF (INPUTS.GT.1) GO TO 91                                         ACEMV278
      DO 90 I=2,NACTYP                                                  ACEMV279
   90 ACSPIL(I)=ACSPIL(1)                                               ACEMV280
   91 DO 92 I=1,NACTYP                                                  ACEMV281
      EMISS(I,14,2)=EMISS(I,14,2)+ANNARR(I)*ACSPIL(I)*FLDENS(JES1(I))   ACEMV282
   92 ACEM(I,2)=ACEM(I,2)+EMISS(I,14,2)                                 ACEMV283
C                                                                       ACEMV284
      READ 11, INPUTS,(ARFLVT(I),I=1,8)                                 ACEMV285
      IF (INPUTS.GT.1) GO TO 54                                         ACEMV286
      DO 53 I=2,NACTYP                                                  ACEMV287
   53 ARFLVT(I)=ARFLVT(1)                                               ACEMV288
C                                                                       ACEMV289
   54 READ 11, INPUTS,(DPFLVT(I),I=1,8)                                ACEMV290
      IF (INPUTS.GT.1) GO TO 56                                         ACEMV291
      DO 55 I=2,NACTYP                                                  ACEMV292
   55 DPFLVT(I)=DPFLVT(1)                                               ACEMV293
   56 CONTINUE                                                          ACEMV294
C                                                                       ACEMV295
C    CALL ARRDEP FOR EACH WIND DIRECTION AND WRITE ITAPE WITH           ACEMV296
C    THE RESULTING ARRIVAL AND DEPARTURE FRACTIONS                      ACEMV297
C                                                                       ACEMV298
      DO 60 IWD=1,NWD                                                   ACEMV299
      CALL ARRDEP(IWD)                                                  ACEMV300
      DO 68 J=1,NACTYP                                                  ACEMV301
      WRITE(ITAPE) ((ARRFCN(I,J,K),DEPFCN(I,J,K),I=1,24),K=1,6)         ACEMV302
   68 CONTINUE                                                          ACEMV303
   60 CONTINUE                                                          ACEMV304
C                                                                       ACEMV305
C    WRITE ITAPE WITH THE FUELS TO BE USED IN REFUELING THE AIRCRAFT    ACEMV306
C                                                                       ACEMV307
      WRITE(ITAPE) (JES1(J),J=1,NACTYP)                                 ACEMV308
C                                                                       ACEMV309
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C     CALL ABBDEP TO CALCULATE THE ANNUAL EMISSIONS                    ACEMV310
C     FROM AIRCRAFT RUNWAY USE                                         ACEMV311
C                                                                      ACEMV312
      IWD=21                                                           ACEMV313
      CALL ABBDEP(IWD)                                                 ACEMV314
C                                                                      ACEMV315
C     CALCULATE THE ANNUAL EMISSIONS FROM SERVICE VEHICLES             ACEMV316
C     AND FUEL VENTING                                                 ACEMV317
C                                                                      ACEMV318
      DO 58 I=1,NACTYP                                                 ACEMV319
      EMISS(I,13,2)=EMISS(I,13,2) +                                    ACEMV320
     . (ABFLVT(I)*ANNARR(I)+DPFLVT(I)*ANNDEP(I))*FLDENS(JES1(I))       ACEMV321
      ACEM(I,2)=ACEM(I,2)+EMISS(I,13,2)                                ACEMV322
      DO 58 K=1,NPLTS                                                  ACEMV323
      EMISS(I,12,K)=EMISS(I,12,K)+((ARSVEM(K,I,1)+ARSVEM(K,I,2)+       ACEMV324
     . ARSVEM(K,I,3)+ARSVEM(K,I,4)+ARSVEM(K,I,5))*ANNARR(I))+          ACEMV325
     . ((DPSVEM(K,I,1)+DPSVEM(K,I,2)+DPSVEM(K,I,3)+DPSVEM(K,I,4)+      ACEMV326
     . DPSVEM(K,I,5))*ANNDEP(I))                                       ACEMV327
      ACEM(I,K)=ACEM(I,K)+EMISS(I,12,K)                                ACEMV328
   58 CONTINUE                                                         ACEMV329
C                                                                      ACEMV330
C     PRINT INFORMATION ON AIRCRAFT ACTIVITY, PARKING AREAS,           ACEMV331
C     TAXIWAYS, AND RUNWAYS AND FOR AIRCRAFT SERVICE VEHICLES          ACEMV332
C                                                                      ACEMV333
      PRINT 711                                                        ACEMV334
  711 FORMAT(1H1,48X,41HI.  B.  I N P U T   I N F O R M A T I O N/1H-,  ACEMV335
     . 29X,78HI. B.1  INFORMATION ON AIRCRAFT ACTIVITY, PARKING AREAS, TACEMV336
     .AXIWAYS, AND RUNWAYS)                                            ACEMV337
      PRINT 61, NACTYP,(ACNAME(IACTYP(I)),ANNARR(I),ANNDEP(I),ANNTGO(I),ACEMV338
     . I=1,NACTYP)                                                     ACEMV339
   61 FORMAT(1H-,60X,17HAIRCRAFT ACTIVITY,/1HO,                        ACEMV340
     . 54X,27HNUMBER OF AIRCRAFT TYPES = ,I3,/1HO,                     ACEMV341
     . 28X,8HAIRCRAFT,34X,18H(ANNUAL NUMBER OF)/1H ,                   ACEMV342
     . 30X,4HNAME,17X,8HARRIVALS,15X,10HDEPARTURES,15X,10HT/G CYCLES// ACEMV343
     . (1H ,28X,A8,F22.0,F24.0,F25.0))                                 ACEMV344
C                                                                      ACEMV345
      PRINT 93,NPKAR                                                   ACEMV346
   93 FORMAT(1H-/1HO,62X,13HPARKING AREAS/                             ACEMV347
     . 1HO,55X,26HNUMBER OF PARKING AREAS = ,I3)                       ACEMV348
      DO 96 I=1,NPKAR                                                  ACEMV349
      PRINT 94, IDPRKA(I),NPASQ(I)                                     ACEMV350
   94 FORMAT(1H-,29X,22HPARKING AREA NUMBER = ,I5,4X,                  ACEMV351
     . 44HTHE NUMBER OF SQUARES MAKING UP THIS AREA = ,I3/1H )         ACEMV352
      NPS=NPASQ(I)                                                     ACEMV353
      DO 96 J=1,NPS                                                    ACEMV354
   96 PRINT 95,J,(PAREA(I,J,K),K=1,3)                                  ACEMV355
   95 FORMAT(1H ,24X,16HSQUARE NUMBER = ,I3,8X,3HX= ,F8.3,5X,3HY= ,F8.3,ACEMV356
     . 8X,17HLENGTH OF SIDE = ,F6.3,3H KM )                            ACEMV357
C                                                                      ACEMV358
      PRINT 97, NLSEGS                                                 ACEMV359
   97 FORMAT(1H-/1HO,64X,8HTAXIWAYS/1HO,                               ACEMV360
     . 41X,54HNUMBER OF CATALOGUED AIRCRAFT TAXIWAY LINE SEGMENTS = ,I3) ACEMV361
      PRINT 98                                                         ACEMV362
   98 FORMAT(1H-,6X,24HGROUND LEVEL COORDINATES,2X,16HAVERAGE EMISSION, ACEMV363
     . 24X,24HGROUND LEVEL COORDINATES,2X,16HAVERAGE EMISSION/1H ,     ACEMV364
     . 4HLINE,5X,18HOF ONE END OF LINE,5X,16HHEIGHT  (METERS),3X,      ACEMV365
     . 8HWIDTH OF ,3X,7HDELTA Z,3X,23HAT OPPOSITE END OF LINE,3X,      ACEMV366
     . 16HHEIGHT  (METERS),4X,7HSEGMENT/5H  NO.,                       ACEMV367
     . 6X,4HX(1),8X,4HY(1),8X,12HAT X(1),Y(1),4X,10HLINE (MET),2X,     ACEMV368
     . 8H(METERS),6X,4HX(2),8X,4HY(2),8X,12HAT X(2),Y(2),4X,           ACEMV369
     . 11HLENGTH (KM))                                                 ACEMV370
      NC=0                                                             ACEMV371
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      DO 991 N=1,NLSEGS                                                  ACEMV372
      NC=NC+1                                                            ACEMV373
  991 PRINT 99, NC,(ACLNSG(K,N),K=1,8),ACLNSG(11,N)                      ACEMV374
   99 FORMAT(1H ,I3,1X,2F12.3,F14.2,F15.2,F11.2,2X,2F12.3,F14.2,F17.3)   ACEMV375
C                                                                        ACEMV376
      PRINT 112,NRNWYS                                                   ACEMV377
  112 FORMAT(1H-/1H0,65X,7HRUNWAYS/1H0,58X,20HNUMBER OF RUNWAYS = ,I3)   ACEMV378
      DO 62 N=1,NRNWYS                                                   ACEMV379
      PRINT 700, IRNWY(1,N)                                              ACEMV380
  700 FORMAT(1H-/1H0,59X,19HRUNWAY ID NUMBER = ,I4,/1H0,                 ACEMV381
     . 7X,16HCOORDINATES (KM),8X,16HAVERAGE EMISSION,6X,                 ACEMV382
     . 16HHORIZONTAL PLUME,7X,14HVERTICAL PLUME,7X,13HRUNWAY VECTOR,     ACEMV383
     . 8X,6HRUNWAY/1H ,7X,3H(X),10X,3H(Y),10X,12HHEIGHT (MET),8X,        ACEMV384
     . 16HDISPERSION (MET),6X,16HDISPERSION (MET),7X,                    ACEMV385
     . 11HANGLE (DEG),7X,11HLENGTH (KM))                                 ACEMV386
      DEGG=RNWY(7,N)*57.296                                              ACEMV387
      PRINT 63, (RNWY(I,N),I=2,6),DEGG,DISRNW(N)                         ACEMV388
   63 FORMAT(1H ,F12.3,F13.3,F16.2,F23.2,F21.2,F21.2,F17.2)              ACEMV389
      ISTOR=NWD-NSCASE                                                   ACEMV390
      PRINT 64, (IUSWD(I,N),I=1,ISTOR)                                   ACEMV391
   64 FORMAT(1H-,54X,28HRUNWAY USE BY WIND DIRECTION /1H ,               ACEMV392
     . 13X,109H(0= RUNWAY NOT USED WHEN WIND IS FROM THIS DIRECTION     ACEMV393
     . 1= RUNWAY IS USED WHEN WIND IS FROM THIS DIRECTION),/1H0,         ACEMV394
     . 15X,100HCALM     N     NNE    NE     ENE     E     ESE   SE     SACEMV395
     .    SSW   SW     WSW    W     WNW    NW     NNW ,/1H ,I18,1616)   ACEMV396
      PRINT 75, (IUSWD(I,N),I=18,20)                                     ACEMV397
   75 FORMAT(1H-,46X,42HRUNWAY USE BY SPECIAL CASE WIND CONDITIONS/1H ,  ACEMV398
     .25X,90H(0= RUNWAY NOT USED DURING THIS SPECIAL CASE      1= RUNWAYACEMV399
     . USED DURING THIS SPECIAL CASE)/1H0,                               ACEMV400
     . 49X,6HCASE 1,10X,6HCASE 2,10X,6HCASE 3/1H ,52X,I1,2(15X,I1))      ACEMV401
      PRINT 5001,(ACNAME(IACTYP(JJ)),JJ=1,NACTYP)                        ACEMV402
 5001 FORMAT(1H-,43X,50HNUMBER OF ARRIVALS ON THIS RUNWAY BY AIRCRAFT TYPACEMV403
     .E, /1H ,8X,8(A8,6X) )                                              ACEMV404
      PRINT 65,(RNWYAR(I,N),I=1,NACTYP)                                  ACEMV405
   65 FORMAT(1H ,8F14.0)                                                 ACEMV406
      PRINT 5002,(ACNAME(IACTYP(JJ)),JJ=1,NACTYP)                        ACEMV407
 5002 FORMAT(1H-,42X,52HNUMBER OF DEPARTURES ON THIS RUNWAY BY AIRCRAFT  ACEMV408
     .TYPE, /1H ,8X,8(A8,6X))                                            ACEMV409
      PRINT 65,(RNWYDP(I,N),I=1,NACTYP)                                  ACEMV410
      NT=NIBTT(N)                                                        ACEMV411
      IF (NT.EQ.0) GO TO 73                                              ACEMV412
C                                                                        ACEMV413
      DO 70 J=1,NT                                                       ACEMV414
      PRINT 5003, IDIBTW(J,N),IDIBPA(J,N)                                ACEMV415
 5003 FORMAT(1H-,54X,28HINBOUND TAXIWAY ID NUMBER = ,I3,/1H ,            ACEMV416
     . 42X,52HID OF PARKING AREA TO WHICH THIS TAXIWAY IS KEYED = ,I3)   ACEMV417
      PRINT 5004,(ACNAME(IACTYP(JJ)),JJ=1,NACTYP)                        ACEMV418
 5004 FORMAT(1H0,43X,49HFRACTIONAL USAGE OF THIS TAXIWAY BY AIRCRAFT TYPEACEMV419
     .E,/1H ,8X,8(A8,6X))                                                ACEMV420
      PRINT 71,(TTAPFR(J,I,N),I=1,NACTYP)                                ACEMV421
   71 FORMAT(1H ,F13.2,7F14.2)                                           ACEMV422
      NSEGS=NIBSEG(J,N)                                                  ACEMV423
      NSGPTS=NSEGS                                                       ACEMV424
      PRINT 72, NSGPTS,(IIBSEG(K,J,N),K=1,NSEGS)                         ACEMV425
   72 FORMAT(1H0,43X,49HNUMBER OF LINE SEGMENTS MAKING UP THIS TAXIWAY =ACEMV426
     . ,I3 /1H ,13X,70HSEQUENCE NUMBERS OF CATALOGED LINE SEGMENTS MAKINACEMV427
     .G UP THIS TAXIWAY =  ,10(I3,1H,) /1H ,40X,20(I3,1H,))             ACEMV428
   70 CONTINUE                                                           ACEMV429
   73 NT=NOETT(N)                                                        ACEMV430
      IF (NT.EQ.0) GO TO 62                                              ACEMV431
C                                                                        ACEMV432
      DO 80 J=1,NT                                                       ACEMV433
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      PRINT 5005,IDOBTW(J,N),IDOBPA(J,N)                                ACEMV434
 5005 FORMAT(1H-,54X,29HOUTBOUND TAXIWAY ID NUMBER = ,I3/1H ,           ACEMV435
     .42X,52HID OF PARKING AREA TO WHICH THIS TAXIWAY IS KEYED = ,I3)   ACEMV436
      PRINT 5004,(ACNAME(IACTYP(JJ)),JJ=1,NACTYP)                       ACEMV437
      PRINT 71,(TTDPFR(J,I,N),I=1,NACTYP)                               ACEMV438
      NSEGS=NOBSEG(J,N)                                                 ACEMV439
      NSGPTS=NSEGS                                                      ACEMV440
      PRINT 72, NSGPTS,(IOBSEG(K,J,N),K=1,NSEGS)                        ACEMV441
   80 CONTINUE                                                          ACEMV442
   62 CONTINUE                                                          ACEMV443
C                                                                       ACEMV444
      PRINT 6969                                                        ACEMV445
 6969 FORMAT(1H1,44X,49HI. B.2  INFORMATION FOR AIRCRAFT SERVICE VEHICLEACEMV446
     .S)                                                                ACEMV447
      DO 84  I=1,NACTYP                                                 ACEMV448
      PRINT 83, ACNAME(IACTYP(I))                                       ACEMV449
   83 FORMAT(1H-/1H ,51X,A8,26H SERVICE VEHICLE EMISSIONS)              ACEMV450
      PRINT 113                                                         ACEMV451
  113 FORMAT(1H0,58X,21HKILOGRAMS PER ARRIVAL)                          ACEMV452
      PRINT 5007,(PLNAME(JJ),JJ=1,NPLTS)                               ACEMV453
 5007 FORMAT(1H0,36X,6(A4,12X))                                         ACEMV454
      PRINT 87, (ARSVEM(K,I,1),K=1,NPLTS)                               ACEMV455
   87 FORMAT(1H0,14X,8HGASOLINE,10X,1P6(E10.3,6X))                      ACEMV456
      PRINT 88, (ARSVEM(K,I,2),K=1,NPLTS)                               ACEMV457
   88 FORMAT(1H0,14X,3HJP4,15X,1P6(E10.3,6X))                           ACEMV458
      PRINT 8900, (ARSVEM(K,I,3),K=1,NPLTS)                             ACEMV459
 8900 FORMAT(1H0,14X,3HJP5,15X,1P6(E10.3,6X))                           ACEMV460
      PRINT 9000, (ARSVEM(K,I,4),K=1,NPLTS)                             ACEMV461
 9000 FORMAT(1H0,14X,3HJP8,15X,1P6(E10.3,6X))                           ACEMV462
      PRINT 9100, (ARSVEM(K,I,5),K=1,NPLTS)                             ACEMV463
 9100 FORMAT(1H0,14X,5HJET A,13X,1P6(E10.3,6X))                         ACEMV464
      PRINT 89                                                          ACEMV465
   89 FORMAT(1H-,57X,23HKILOGRAMS PER DEPARTURE)                        ACEMV466
      PRINT 5007,(PLNAME(JJ),JJ=1,NPLTS)                               ACEMV467
      PRINT 87, (DPSVEM(K,I,1),K=1,NPLTS)                               ACEMV468
      PRINT 88, (DPSVEM(K,I,2),K=1,NPLTS)                               ACEMV469
      PRINT 8900, (DPSVEM(K,I,3),K=1,NPLTS)                             ACEMV470
      PRINT 9000, (DPSVEM(K,I,4),K=1,NPLTS)                             ACEMV471
      PRINT 9100, (DPSVEM(K,I,5),K=1,NPLTS)                             ACEMV472
      PRINT 111, ACFUEL(I),ACSPIL(I),ARFLVT(I),DPFLVT(I)                ACEMV473
  111 FORMAT(1H-,10X,21HREFUELING INFORMATION/1H0,15X,                  ACEMV474
     . 47HAVERAGE AMOUNT OF FUEL USED PER FILLUP (LITERS),              ACEMV475
     . 10(1H.),F10.2/1H ,15X,                                           ACEMV476
     . 50HAVERAGE AMOUNT OF FUEL SPILLED PER FILLUP (LITERS),           ACEMV477
     . 7(1H.),F10.2/1H ,15X,                                            ACEMV478
     . 50HAVERAGE AMOUNT OF FUEL VENTED PER ARRIVAL (LITERS),           ACEMV479
     . 7(1H.),F10.2/1H ,15X,                                            ACEMV480
     . 52HAVERAGE AMOUNT OF FUEL VENTED PER DEPARTURE (LITERS),         ACEMV481
     . 5(1H.),F10.2///)                                                 ACEMV482
   84 CONTINUE                                                          ACEMV483
      GO TO 86                                                          ACEMV484
C                                                                       ACEMV485
  100 STOP                                                              ACEMV486
   86 CONTINUE                                                          ACEMV487
      RETURN                                                            ACEMV488
      END                                                               ACEMV489
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SUBROUTINE ARRDEP

Purpose:

1. To establish arrival path points and links for each aircraft type used at airbase according to specified wind condition use array.

2. To calculate annual emissions due directly to the movement of arriving and departing aircraft on and over the airbase.

Input:

Aircraft data, runway and taxiway data, arrival - departure path data.

Output:

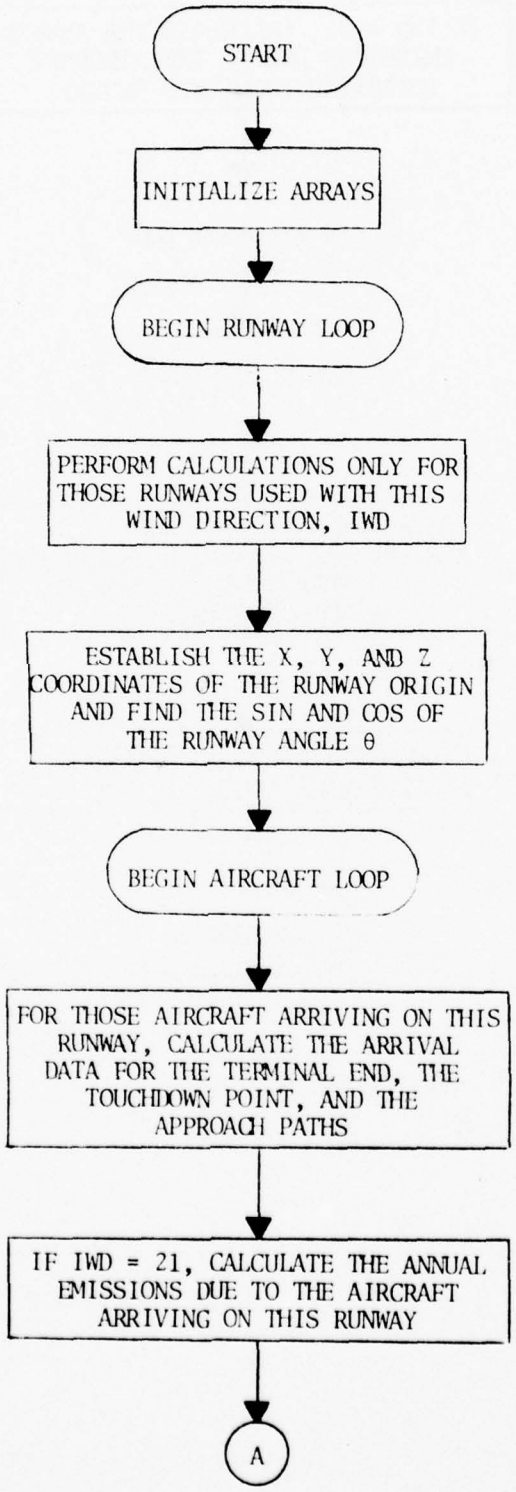
1. Annual emissions by aircraft for each of the 11 operational modes.

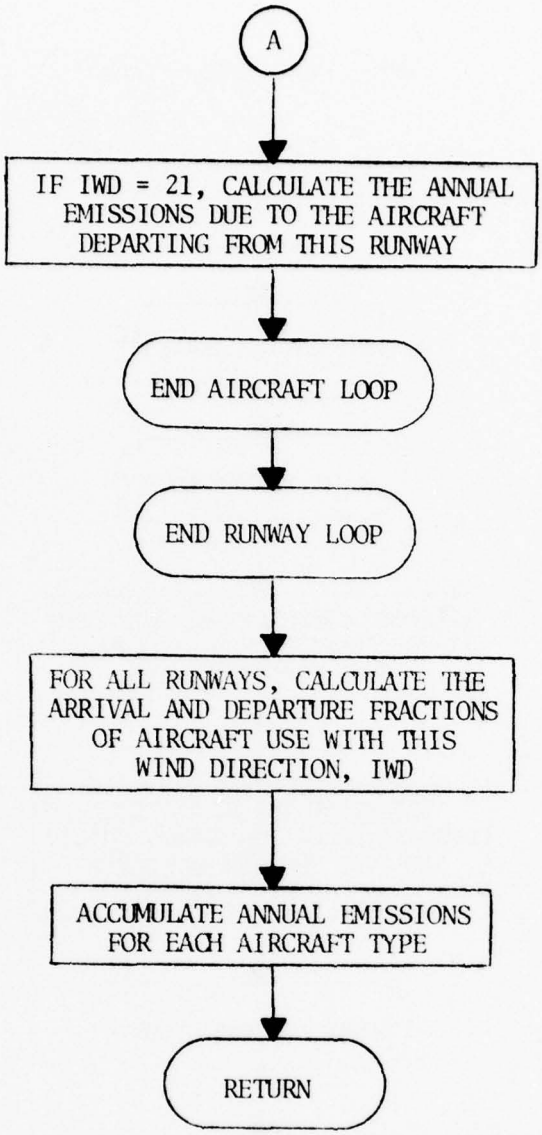
2. ARRFCN, DEPFCN for each wind condition (up to 20) by aircraft and runway serving to link runways to approach and climbout paths.

Subroutine Called:

RRDIST

SUBROUTINE ARRDEP (IWD)




A
IF IWD = 21, CALCULATE THE ANNUAL EMISSIONS DUE TO THE AIRCRAFT DEPARTING FROM THIS RUNWAY
END AIRCRAFT LOOP
END RUNWAY LOOP
FOR ALL RUNWAYS, CALCULATE THE ARRIVAL AND DEPARTURE FRACTIONS OF AIRCRAFT USE WITH THIS WIND DIRECTION, IWD
ACCUMULATE ANNUAL EMISSIONS FOR EACH AIRCRAFT TYPE
RETURN

```
      SUBROUTINE ARRDEP(IWD)                                                ARRDP000
C                                                                           ARRDP001
C     THIS ROUTINE COMPUTES THE ANNUAL EMISSIONS DUE DIRECTLY TO            ARRDP002
C     MOVEMENT OF AIRCRAFT ON OR OVER THE AIRBASE                           ARRDP003
C                                                                           ARRDP004
      REAL*8 ACNAME,EGNAME,MONAM1,THNAME                                    ARRDP005
      INTEGER ENGNO                                                         ARRDP006
      REAL LNDSPD                                                           ARRDP007
C                                                                           ARRDP008
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),ARRDP009
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),ARRDP010
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),ARRDP011
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)ARRDP012
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),    ARRDP013
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),     ARRDP014
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8)ARRDP015
     .,ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),        ARRDP016
     . NIBTT(6),NIBSEG(8,6),IIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),    ARRDP017
     . NOBTT(6),NOBSEG(8,6),IOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),    ARRDP018
     . NPASQ(6),IDPRKA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),          ARRDP019
     . NLSEGS,ACLNSG(12,25)                                              ARRDP020
      COMMON /DEFALT/ NPLTS                                              ARRDP021
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                   ARRDP022
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10),EMISS(8,15,6),ACEM(8,6)       ARRDP023
      COMMON /EGEDB1/ MONAM1(10),THNAME(4),MONAM2(10),IDACEG(50),        ARRDP024
     . IACABF(50),EGFF(4,50),IEGABF(50),IDBR(50)                         ARRDP025
      DIMENSION ARRSUM(8),DEPSUM(8)                                      ARRDP026
C                                                                           ARRDP027
      DO 20 I=1,NACTYP                                                   ARRDP028
      DEPSUM(I)=0.0                                                      ARRDP029
      ARRSUM(I)=0.0                                                      ARRDP030
      DO 20 N=1,NRNWYS                                                   ARRDP031
      DO 20 JK=1,24                                                      ARRDP032
      ARRFCN(JK,I,N)=0.0                                                 ARRDP033
   20 DEPFCN(JK,I,N)=0.0                                                 ARRDP034
C                                                                           ARRDP035
C     BEGIN RUNWAY LOOP                                                   ARRDP036
C                                                                           ARRDP037
      DO 30 N=1,NRNWYS                                                   ARRDP038
C                                                                           ARRDP039
C     PERFORM CALCULATIONS ONLY FOR THOSE RUNWAYS USED WITH               ARRDP040
C     THIS WIND DIRECTION, IWD                                            ARRDP041
C                                                                           ARRDP042
      IF (IWD.EQ.21) GO TO 35                                            ARRDP043
      IF (IUSWD(IWD,N).EQ.0) GO TO 30                                    ARRDP044
C                                                                           ARRDP045
C     ESTABLISH THE X, Y, AND Z COORDINATES OF THE RUNWAY ORIGIN          ARRDP046
C     AND FIND THE SIN AND COS OF THE RUNWAY ANGLE, THETA                 ARRDP047
C                                                                           ARRDP048
   35 XA=SIN(RNWY(7,N))                                                  ARRDP049
      YA=COS(RNWY(7,N))                                                  ARRDP050
      X=RNWY(2,N)                                                        ARRDP051
      Y=RNWY(3,N)                                                        ARRDP052
      Z=RNWY(4,N)/1000.                                                  ARRDP053
C                                                                           ARRDP054
C     BEGIN AIRCRAFT LOOP                                                 ARRDP055
C                                                                           ARRDP056
      DO 40 I=1,NACTYP                                                   ARRDP057
      ID=IACTYP(I)                                                       ARRDP058
      AA=ENGNO(ID,1)                                                     ARRDP059
      AAA=ENGNO(ID,1)                                                    ARRDP060
      ARR=RNWYAR(I,N)                                                    ARRDP061
```

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C                                                                       ARRDP062
C     FOR THOSE AIRCRAFT ARRIVING ON THIS RUNWAY, CALCULATE THE         ARRDP063
C     ARRIVAL DATA FOR THE TERMINAL END, THE TOUCHDOWN POINT,           ARRDP064
C     AND THE APPROACH PATHS                                            ARRDP065
C                                                                       ARRDP066
      IF (ARR.LE.0.0) GO TO 200                                         ARRDP067
      ARRSUM(I)=ARRSUM(I)+ARR                                           ARRDP068
      DIS23=APPHT2(ID)/SIN(DSCNT2(ID))                                  ARRDP069
      DIS12=(APPHT-APPHT2(ID))/SIN(DSCNT1(ID))                          ARRDP070
      HDIS12=(APPHT-APPHT2(ID))/TAN(DSCNT1(ID))                         ARRDP071
      HDIS23=APPHT2(ID)/TAN(DSCNT2(ID))                                 ARRDP072
      HDIS34=DISRNW(N)                                                  ARRDP073
C                                                                       ARRDP074
C     TERMINAL END                                                      ARRDP075
C                                                                       ARRDP076
      ARRFCN(19,I,N)=HDIS34*XA+X                                        ARRDP077
      ARRFCN(20,I,N)=HDIS34*YA+Y                                        ARRDP078
      ARRFCN(21,I,N)=Z*1000.                                            ARRDP079
      ARRFCN(22,I,N)=TXISPD(ID)                                         ARRDP080
      ARRFCN(23,I,N)=0.                                                 ARRDP081
      ARRFCN(24,I,N)=0.                                                 ARRDP082
C                                                                       ARRDP083
C     TOUCHDOWN POINT                                                   ARRDP084
C                                                                       ARRDP085
      ARRFCN(13,I,N)=X+0.3048*XA                                        ARRDP086
      ARRFCN(14,I,N)=Y+0.3048*YA                                        ARRDP087
      ARRFCN(15,I,N)=Z*1000.                                            ARRDP088
      ARRFCN(16,I,N)=LNDSPD(ID)                                         ARRDP089
      ARRFCN(17,I,N)=HDIS34-0.3048                                      ARRDP090
      ARRFCN(18,I,N)=2.0*ARRFCN(17,I,N)/(TXISPD(ID)+LNDSPD(ID))         ARRDP091
C                                                                       ARRDP092
C     APPROACH PATH POINT 2                                             ARRDP093
C                                                                       ARRDP094
      ARRFCN(7,I,N)=ARRFCN(13,I,N)-HDIS23*XA                            ARRDP095
      ARRFCN(8,I,N)=ARRFCN(14,I,N)-HDIS23*YA                            ARRDP096
      ARRFCN(9,I,N)=APPHT2(ID)*1000.                                    ARRDP097
      ARRFCN(10,I,N)=APSPD2(ID)                                         ARRDP098
      ARRFCN(11,I,N)=DIS23                                              ARRDP099
      ARRFCN(12,I,N)=2.0*DIS23/(LNDSPD(ID)+APSPD2(ID))                  ARRDP100
C                                                                       ARRDP101
C     APPROACH PATH POINT 1                                             ARRDP102
C                                                                       ARRDP103
      ARRFCN(1,I,N)=ARRFCN(7,I,N)-HDIS12*XA                             ARRDP104
      ARRFCN(2,I,N)=ARRFCN(8,I,N)-HDIS12*YA                             ARRDP105
      ARRFCN(3,I,N)=APPHT*1000.                                         ARRDP106
      ARRFCN(4,I,N)=APSPD1(ID)                                          ARRDP107
      ARRFCN(5,I,N)=DIS12                                               ARRDP108
      ARRFCN(6,I,N)=2.0*DIS12/(APSPD2(ID)+APSPD1(ID))                   ARRDP109
C                                                                       ARRDP110
C     IF IWD IS 21, CALCULATE THE ANNUAL EMISSIONS DUE TO THE           ARRDP111
C     AIRCRAFT ARRIVING ON THIS RUNWAY                                  ARRDP112
C                                                                       ARRDP113
      IF(IWD.NE.21) GO TO 200                                           ARRDP114
C                                                                       ARRDP115
C     APPROACH AND LANDING EMISSIONS, MODES 7, 8 AND 9                  ARRDP116
C                                                                       ARRDP117
      JK=0                                                              ARRDP118
      DO 110 J=1,3                                                      ARRDP119
      JMODE=J+6                                                         ARRDP120
      JK=JK+6                                                           ARRDP121
      DO 120 K=1,NPLTS                                                  ARRDP122
  120 EMISS(I,JMODE,K)=EMISS(I,JMODE,K)+AA*ACEMFC(ID,JMODE,K)*          ARRDP123
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     . ARR*ARRFCN(JR,I,N)                                                    ARRDP124
  110 CONTINUE                                                               ARRDP125
C                                                                            ARRDP126
C    INBOUND TAXI AND SHUTDOWN EMISSIONS, MODES 10 AND 11                    ARRDP127
C                                                                            ARRDP128
      NTT=NIBTT(N)                                                           ARRDP129
      DO 130 J=1,NTT                                                         ARRDP130
      IF (TTARFR(J,I,N).LE.0.) GO TO 130                                     ARRDP131
      NSEGS=NIBSEG(J,N)                                                      ARRDP132
      DO 131 K=1,NSEGS                                                       ARRDP133
      N2=IIBSEG(K,J,N)                                                       ARRDP134
      TIME=ACLNSG(11,N2)/(ACLNSG(9,N2)*TXISPD(ID))                           ARRDP135
      IF (IEGFLG.NE.0) AAA=ENGNO(ID,2)                                       ARRDP136
      DO 150 KK=1,NPLTS                                                      ARRDP137
  150 EMISS(I,10,KK)=EMISS(I,10,KK)+AAA*ACEMFC(ID,2,KK)*ARR*TIME*            ARRDP138
     . TTARFR(J,I,N)                                                         ARRDP139
  131 CONTINUE                                                               ARRDP140
      DO 160 K=1,NPLTS                                                       ARRDP141
  160 EMISS(I,11,K)=EMISS(I,11,K)+AAA*ACEMFC(ID,1,K)*ARR*SHTDNT(ID)*         ARRDP142
     . TTARFR(J,I,N)/60.                                                     ARRDP143
  130 CONTINUE                                                               ARRDP144
C                                                                            ARRDP145
C    IF IWD IS 21, CALCULATE THE ANNUAL EMISSIONS DUE TO THE                 ARRDP146
C    AIRCRAFT DEPARTING FROM THIS RUNWAY                                     ARRDP147
C                                                                            ARRDP148
  200 DEP=RNWYDP(I,N)                                                        ARRDP149
      IF (DEP.LE.0.0) GO TO 40                                               ARRDP150
      DEPSUM(I)=DEPSUM(I)+DEP                                                ARRDP151
      IF (IWD.NE.21) GO TO 40                                                ARRDP152
C                                                                            ARRDP153
      DIS23=COHT1(ID)/SIN(ASCNT1(ID))                                        ARRDP154
      DIS34=(CLMBHT-COHT1(ID))/SIN(ASCNT2(ID))                               ARRDP155
      WSPD=WSBAR*1.9426                                                      ARRDP156
      IR=IDRR(ID)                                                            ARRDP157
      HDIS12=RRDIST(IR,PA,TBAR,TOWT(ID),WSPD) * 3.048E-4                     ARRDP158
      HDIS23=COHT1(ID)/TAN(ASCNT1(ID))                                       ARRDP159
      HDIS34=(CLMBHT-COHT1(ID))/TAN(ASCNT2(ID))                              ARRDP160
      L=NOBSEG(1,N)                                                          ARRDP161
      NL=IOBSEG(L,1,N)                                                       ARRDP162
C                                                                            ARRDP163
C    START OF RUNWAY ROLL                                                    ARRDP164
C                                                                            ARRDP165
      DEPFCN(1,I,N)=X                                                        ARRDP166
      DEPFCN(2,I,N)=Y                                                        ARRDP167
      DEPFCN(3,I,N)=Z*1000.                                                  ARRDP168
      DEPFCN(4,I,N)=TXISPD(ID)*ACLNSG(10,NL)                                 ARRDP169
      DEPFCN(5,I,N)=HDIS12                                                   ARRDP170
      DEPFCN(6,I,N)=2.0*HDIS12/(TXISPD(ID)*ACLNSG(10,NL)+TOSPD(ID))          ARRDP171
C                                                                            ARRDP172
C    LIFTOFF POINT                                                           ARRDP173
C                                                                            ARRDP174
      DEPFCN(7,I,N)=X+HDIS12*XA                                              ARRDP175
      DEPFCN(8,I,N)=Y+HDIS12*YA                                              ARRDP176
      DEPFCN(9,I,N)=Z*1000.                                                  ARRDP177
      DEPFCN(10,I,N)=TOSPD(ID)                                               ARRDP178
      DEPFCN(11,I,N)=DIS23                                                   ARRDP179
      DEPFCN(12,I,N)=2.0*DIS23/(TOSPD(ID)+COSPD1(ID))                        ARRDP180
C                                                                            ARRDP181
C    CLIMBOUT - 2ND PHASE                                                    ARRDP182
C                                                                            ARRDP183
      DEPFCN(13,I,N)=DEPFCN(7,I,N)+HDIS23*XA                                 ARRDP184
      DEPFCN(14,I,N)=DEPFCN(8,I,N)+HDIS23*YA                                 ARRDP185
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      DEPFCN(15,I,N)=COHT1(ID)*1000.                                    ARRDP186
      DEPFCN(16,I,N)=COSPD1(ID)                                         ARRDP187
      DEPFCN(17,I,N)=DIS34                                              ARRDP188
      DEPFCN(18,I,N)=2.0*DIS34/(COSPD1(ID)+COSPD2(ID))                  ARRDP189
C                                                                       ARRDP190
C     END OF CLIMBOUT MODE                                              ARRDP191
C                                                                       ARRDP192
      DEPFCN(19,I,N)=DEPFCN(13,I,N)+HDIS34*XA                           ARRDP193
      DEPFCN(20,I,N)=DEPFCN(14,I,N)+HDIS34*YA                           ARRDP194
      DEPFCN(21,I,N)=CLMBHT*1000.                                       ARRDP195
      DEPFCN(22,I,N)=COSPD2(ID)                                         ARRDP196
      DEPFCN(23,I,N)=0.0                                                ARRDP197
      DEPFCN(24,I,N)=0.0                                                ARRDP198
C                                                                       ARRDP199
C     RUNWAY ROLL, LIFTOFF AND CLIMBOUT EMISSIONS, MODES 4, 5 AND 6     ARRDP200
C                                                                       ARRDP201
      JK=0                                                              ARRDP202
      DO 210 J=1,3                                                      ARRDP203
      JK=JK+6                                                           ARRDP204
      JMODE=J+3                                                         ARRDP205
      DO 220 K=1,NPLTS                                                  ARRDP206
  220 EMISS(I,JMODE,K)=EMISS(I,JMODE,K)+AA*ACEMFC(ID,JMODE,K)*          ARRDP207
     . DEP*DEPFCN(JK,I,N)                                               ARRDP208
  210 CONTINUE                                                          ARRDP209
C                                                                       ARRDP210
C     IDLE AT STARTUP, OUTBOUND TAXI, AND ENGINE CHECK EMISSIONS,       ARRDP211
C     MODES 1, 2 AND 3                                                  ARRDP212
C                                                                       ARRDP213
      NTT=NOBTT(N)                                                      ARRDP214
      DO 230 J=1,NTT                                                    ARRDP215
      IF (TTDPFR(J,I,N).LE.0.) GO TO 230                                ARRDP216
      NSEGS=NOBSEG(J,N)                                                 ARRDP217
      DO 231 K=1,NSEGS                                                  ARRDP218
      NK=IOBSEG(K,J,N)                                                  ARRDP219
      TIME=ACLNSG(11,NK)/(ACLNSG(9,NK)*TXISPD(ID))                      ARRDP220
      IF (IEGFLG.NE.0) AAA=ENGNO(ID,2)                                  ARRDP221
      DO 250 KK=1,NPLTS                                                 ARRDP222
  250 EMISS(I,2,KK)=EMISS(I,2,KK)+AAA*ACEMFC(ID,2,KK)*DEP*TIME*         ARRDP223
     . TTDPFR(J,I,N)                                                    ARRDP224
  231 CONTINUE                                                          ARRDP225
  230 CONTINUE                                                          ARRDP226
      DO 260 K=1,NPLTS                                                  ARRDP227
      EMISS(I,1,K)=EMISS(I,1,K)+AA*ACEMFC(ID,1,K)*DEP*SRTUPT(1D)/60.    ARRDP228
  260 EMISS(I,3,K)=EMISS(I,3,K)+AA*ACEMFC(ID,3,K)*DEP*EGCHKT(ID)/60.    ARRDP229
C                                                                       ARRDP230
C     END AIRCRAFT LOOP                                                 ARRDP231
C                                                                       ARRDP232
   40 CONTINUE                                                          ARRDP233
C                                                                       ARRDP234
C     END RUNWAY LOOP                                                   ARRDP235
C                                                                       ARRDP236
   30 CONTINUE                                                          ARRDP237
C                                                                       ARRDP238
C     FOR ALL RUNWAYS, CALCULATE THE ARRIVAL AND DEPARTURE              ARRDP239
C     FRACTIONS OF AIRCRAFT USE WITH THIS WIND DIRECTION, IWD           ARRDP240
C                                                                       ARRDP241
      DO 300 N=1,NRNWYS                                                 ARRDP242
      DO 300 I=1,NACTYP                                                 ARRDP243
      IF (IWD.EQ.21) GO TO 301                                          ARRDP244
C                                                                       ARRDP245
C     ACCUMULATE ANNUAL EMISSIONS FOR EACH AIRCRAFT TYPE                ARRDP246
C                                                                       ARRDP247
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      IF (IUSWD(IWD,N).EQ.0) GO TO 300                                  ARRDP248
  301 ARRFCN(23,I,N) =RNWYAR(I,N)/ARRSUM(I)                             ARRDP249
      DEPFCN(23,I,N)=RNWYDP(I,N)/DEPSUM(I)                             ARRDP250
      ARRFCN(24,I,N)=RNWY(5,N)                                          ARRDP251
      DEPFCN(24,I,N)=RNWY(6,N)                                          ARRDP252
  300 CONTINUE                                                          ARRDP253
      DO 270 I=1,NACTYP                                                 ARRDP254
      DO 270 J=1,11                                                     ARRDP255
      DO 270 K=1,NPLTS                                                  ARRDP256
  270 ACEM(I,K)=ACEM(I,K) + EMISS(I,J,K)                                ARRDP257
      RETURN                                                            ARRDP258
      END                                                               ARRDP259
```

BLOCK DATA

Purpose:

1. To provide default physical parameters for training fires, test cells, runup stands and storage tanks.
2. To initialize hydrocarbon evaporative parameters.
3. Initialize basic aircraft data.
4. Define power plant, incinerator, training fire, land use, aircraft engine emission factors and engine fuel flow rates.
5. To provide fuel constants used in the vapor pressure equations.

I/O:

None.

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      BLOCK DATA                                                        BLKDT000
C                                                                       BLKDT001
C  BLOCK DATA PLACES DEFAULT VALUES IN COMMON BLOCKS                    BLKDT002
C                                                                       BLKDT003
      REAL*8 ACNAME,MONAM1,THNAME,MINUS,EGNAME                          BLKDT004
      INTEGER ENGNO                                                     BLKDT005
      REAL LUEMFC,LNDSPD                                                BLKDT006
C                                                                       BLKDT007
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),BLKDT008
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),BLKDT009
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),BLKDT010
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)BLKDT011
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),   BLKDT012
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),    BLKDT013
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8)BLKDT014
     .,ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),       BLKDT015
     . NIBTT(6),NIBSEG(8,6),IIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),   BLKDT016
     . NOBTT(6),NOBSEG(8,6),IOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),   BLKDT017
     . NPASQ(6),IDPRKA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),         BLKDT018
     . NLSEGS,ACLNSG(12,25)                                             BLKDT019
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                  BLKDT020
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                             BLKDT021
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,  BLKDT022
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,   BLKDT023
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,  BLKDT024
     . TDDFLT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                        BLKDT025
      COMMON /EGEDB1/ MONAM1(10),THNAME(4),MONAM2(10),IDACEG(50),       BLKDT026
     . IACABF(50),EGFF(4,50),IEGABF(50),IDRR(50)                        BLKDT027
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),BLKDT028
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      BLKDT029
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      BLKDT030
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               BLKDT031
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10),EMISS(8,15,6),ACEM(8,6)      BLKDT032
C                                                                       BLKDT033
      DIMENSION      EGDA01(6,4), EGDA02(6,4), EGDA03(6,4), EGDA04(6,4),BLKDT034
     . EGDA05(6,4), EGDA06(6,4), EGDA07(6,4), EGDA08(6,4), EGDA09(6,4), BLKDT035
     . EGDA10(6,4), EGDA11(6,4), EGDA12(6,4), EGDA13(6,4), EGDA14(6,4), BLKDT036
     . EGDA15(6,4), EGDA16(6,4), EGDA17(6,4), EGDA18(6,4), EGDA19(6,4), BLKDT037
     . EGDA20(6,4), EGDA21(6,4), EGDA22(6,4), EGDA23(6,4), EGDA24(6,4), BLKDT038
     . EGDA25(6,4), EGDA26(6,4), EGDA27(6,4), EGDA28(6,4), EGDA29(6,4), BLKDT039
     . EGDA30(6,4), EGDA31(6,4), EGDA32(6,4), EGDA33(6,4), EGDA34(6,4), BLKDT040
     . EGDA35(6,4), EGDA36(6,4), EGDA37(6,4), EGDA38(6,4), EGDA39(6,4), BLKDT041
     . EGDA40(6,4), EGDA41(6,4), EGDA42(6,4), EGDA43(6,4), EGDA44(6,4), BLKDT042
     . EGDA45(6,4), EGDA46(6,4), EGDA47(6,4), EGDA48(6,4), EGDA49(6,4), BLKDT043
     . EGDA50(6,4)                                                      BLKDT044
C                                                                       BLKDT045
      EQUIVALENCE (EGEMFC(1),EGDA01(1)), (EGEMFC(25),EGDA02(1)),       BLKDT046
     .            (EGEMFC(49),EGDA03(1)), (EGEMFC(73),EGDA04(1)),     BLKDT047
     .            (EGEMFC(97),EGDA05(1)), (EGEMFC(121),EGDA06(1)),    BLKDT048
     .           (EGEMFC(145),EGDA07(1)), (EGEMFC(169),EGDA08(1)),    BLKDT049
     .           (EGEMFC(193),EGDA09(1)), (EGEMFC(217),EGDA10(1)),    BLKDT050
     .           (EGEMFC(241),EGDA11(1)), (EGEMFC(265),EGDA12(1)),    BLKDT051
     .           (EGEMFC(289),EGDA13(1)), (EGEMFC(313),EGDA14(1)),    BLKDT052
     .           (EGEMFC(337),EGDA15(1)), (EGEMFC(361),EGDA16(1)),    BLKDT053
     .           (EGEMFC(385),EGDA17(1)), (EGEMFC(409),EGDA18(1)),    BLKDT054
     .           (EGEMFC(433),EGDA19(1)), (EGEMFC(457),EGDA20(1)),    BLKDT055
     .           (EGEMFC(481),EGDA21(1)), (EGEMFC(505),EGDA22(1)),    BLKDT056
     .           (EGEMFC(529),EGDA23(1)), (EGEMFC(553),EGDA24(1)),    BLKDT057
     .           (EGEMFC(577),EGDA25(1)), (EGEMFC(601),EGDA26(1)),    BLKDT058
     .           (EGEMFC(625),EGDA27(1)), (EGEMFC(649),EGDA28(1)),    BLKDT059
     .           (EGEMFC(673),EGDA29(1)), (EGEMFC(697),EGDA30(1)),    BLKDT060
     .           (EGEMFC(721),EGDA31(1)), (EGEMFC(745),EGDA32(1)),    BLKDT061
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     .          (EGEMFC(769),EGDA33(1)), (EGEMFC(793),EGDA34(1)),        BLKDT062
     .          (EGEMFC(817),EGDA35(1)), (EGEMFC(841),EGDA36(1)),        BLKDT063
     .          (EGEMFC(865),EGDA37(1)), (EGEMFC(889),EGDA38(1)),        BLKDT064
     .          (EGEMFC(913),EGDA39(1)), (EGEMFC(937),EGDA40(1))         BLKDT065
      EQUIVALENCE (EGEMFC(961),EGDA41(1)), (EGEMFC(985),EGDA42(1)),      BLKDT066
     .            (EGEMFC(1009),FGDA43(1)), (EGEMFC(1033),EGDA44(1)),    BLKDT067
     .            (EGEMFC(1057),EGDA45(1)), (EGEMFC(1081),EGDA46(1)),    BLKDT068
     .            (EGEMFC(1105),EGDA47(1)), (EGEMFC(1129),EGDA48(1)),    BLKDT069
     .            (EGEMFC(1153),EGDA49(1)), (EGEMFC(1177),EGDA50(1))     BLKDT070
C                                                                         BLKDT071
      DATA EGDA01 / 38.8,  9.60,   2.4,  0.23,  1.0,  0.0,               BLKDT072
     A              10.0,  0.80,   5.5,  2.22,  1.0,  0.0,               BLKDT073
     M               2.3,  0.03,  12.0,  2.22,  1.0,  0.0,               BLKDT074
     B              13.0,  0.01,   4.6,  0.67,  1.0,  0.0 /              BLKDT075
      DATA EGDA02 / 70.03,  53.44,  2.23,  0.1905,  1.0,  0.0,           BLKDT076
     A              15.50,  5.50,  4.15,  0.5333,  1.0,  0.0,           BLKDT077
     M               1.91,  0.45,  9.94,  2.1120,  1.0,  0.0,           BLKDT078
     B              31.70,  0.70,  4.40,  0.1378,  1.0,  0.0 /          BLKDT079
      DATA EGDA03 / 79.7,  22.2,  1.8,  0.63,  1.0,  0.0,               BLKDT080
     A               9.5,   1.0,  7.5,  0.63,  1.0,  0.0,               BLKDT081
     M               2.1,   0.4,  9.5,  0.63,  1.0,  0.0,               BLKDT082
     B               2.1,   0.4,  9.5,  0.63,  1.0,  0.0 /              BLKDT083
      DATA EGDA04 / 83.35,  103.92,   2.02,  0.38,  1.0,  0.0,          BLKDT084
     A              8.99,    3.79,   7.30,  0.38,  1.0,  0.0,          BLKDT085
     M              0.41,     .11,  14.13,  0.38,  1.0,  0.0,          BLKDT086
     B              0.41,     .11,  14.13,  0.38,  1.0,  0.0 /         BLKDT087
      DATA EGDA05 / 68.20,  19.4  ,   6.52,  2.21,  1.0,  0.0,          BLKDT088
     A              6.30,   2.0  ,  12.0 ,  2.21,  1.0,  0.0,          BLKDT089
     M              3.10,   0.165,  26.9 ,  2.21,  1.0,  0.0,          BLKDT090
     B              6.39,   0.014,   9.0 ,  2.21,  1.0,  0.0 /         BLKDT091
      DATA EGDA06 / 179.57,  29.90,  1.26,  0.013,  1.0,  0.0,          BLKDT092
     A              43.34,   3.37,  2.32,  0.017,  1.0,  0.0,          BLKDT093
     M              29.33,   0.84,  2.68,  0.018,  1.0,  0.0,          BLKDT094
     B              26.04,   0.07,  1.99,  0.008,  1.0,  0.0 /         BLKDT095
      DATA EGDA07 / 76.2,  56.86,   1.29,  1.57,  1.0,  0.0,            BLKDT096
     A               1.4,   0.10,  11.9 ,  1.57,  1.0,  0.0,           BLKDT097
     M               0.6,   0.23,   8.2 ,  1.57,  1.0,  0.0,           BLKDT098
     B              12.0,   0.12,   4.1 ,  1.57,  1.0,  0.0 /          BLKDT099
      DATA EGDA08 / 66.73,  22.98,   2.95,  0.300,  1.0,  0.0,          BLKDT100
     A              38.50,  12.90,   3.75,  1.400,  1.0,  0.0,          BLKDT101
     M               0.59,   0.18,  28.52,  1.500,  1.0,  0.0,          BLKDT102
     B               0.50,   0.10,  38.00,  0.085,  1.0,  0.0 /         BLKDT103
      DATA EGDA09 / 14.01,  10.39,   6.17,  0.611,  1.0,  0.0,          BLKDT104
     A              6.08,   4.80,   6.46,  1.042,  1.0,  0.0,          BLKDT105
     M              2.00,   2.25,   9.26,  0.565,  1.0,  0.0,          BLKDT106
     B              1.04,   0.21,  10.98,  0.710,  1.0,  0.0 /         BLKDT107
      DATA EGDA10 / 23.78,  7.420,   7.35,  0.38,  1.0,  0.0,           BLKDT108
     A              5.92,  0.110,   9.88,  0.63,  1.0,  0.0,           BLKDT109
     M              2.28,  0.064,  10.27,  0.71,  1.0,  0.0,           BLKDT110
     B              2.28,  0.064,  10.27,  0.71,  1.0,  0.0 /          BLKDT111
      DATA EGDA11 /  742.50,  191.40,  1.02,  60.0,  0.6,  0.0,         BLKDT112
     A               691.66,   9.46,  9.37,  40.0,  0.6,  0.0,         BLKDT113
     M              1155.80,  20.40,  1.11,  20.0,  0.6,  0.0,         BLKDT114
     B              1155.80,  20.40,  1.11,  20.0,  0.6,  0.0 /        BLKDT115
      DATA EGDA12 /  848.18,  144.50,  1.09,  60.0,  0.6,  0.0,         BLKDT116
     A               971.97,  17.40,  6.60,  40.0,  0.6,  0.0,         BLKDT117
     M              1031.25,  22.47,  5.32,  20.0,  0.6,  0.0,         BLKDT118
     B              1031.25,  22.47,  5.32,  20.0,  0.6,  0.0 /        BLKDT119
      DATA EGDA13 / 75.3,  61.8,   1.9,  1.18,  1.0,  0.0,             BLKDT120
     A              46.1,  22.3,   3.6,  1.18,  1.0,  0.0,             BLKDT121
     M               2.3,   0.9,  15.2,  1.18,  1.0,  0.0,             BLKDT122
     B               2.3,   0.9,  15.2,  1.18,  1.0,  0.0 /            BLKDT123
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      DATA EGDA14 / 127.17,  19.50,  1.53,  0.729,  1.0,  0.0,          BLKDT124
     A              49.08,   1.29,  2.67,  0.017,  1.0,  0.0,          BLKDT125
     M              31.32,   0.50,  3.60,  0.020,  1.0,  0.0,          BLKDT126
     B              20.60,   0.02,  6.91,  0.017,  1.0,  0.0 /         BLKDT127
      DATA EGDA15 / 40.1,   9.00,   2.7,  0.23,  1.0,  0.0,           BLKDT128
     A               7.8,   1.70,   5.8,  2.22,  1.0,  0.0,           BLKDT129
     M               1.8,   0.06,  14.8,  2.22,  1.0,  0.0,           BLKDT130
     B              13.5,   0.02,   5.7,  0.67,  1.0,  0.0 /          BLKDT131
      DATA EGDA16 / 46.4,  12.58,   6.52,  2.21,  1.0,  0.0,          BLKDT132
     A               6.0,   2.00,  12.00,  2.21,  1.0,  0.0,          BLKDT133
     M               3.0,   1.20,  19.70,  2.21,  1.0,  0.0,          BLKDT134
     B              24.8,   2.00,   4.47,  2.21,  1.0,  0.0 /         BLKDT135
      DATA EGDA17 / 113.0,  17.4,   2.5,  0.105,  1.0,  0.0,          BLKDT136
     A              11.0,   0.9,   6.3,  0.105,  1.0,  0.0,          BLKDT137
     M               0.7,   0.2,  11.8,  0.105,  1.0,  0.0,          BLKDT138
     B               0.7,   0.2,  11.8,  0.105,  1.0,  0.0 /         BLKDT139
      DATA EGDA18 / 107.1,  66.2,   1.3,  0.105,  1.0,  0.0,          BLKDT140
     A               5.2,   2.4,  10.6,  0.105,  1.0,  0.0,          BLKDT141
     M               1.6,   0.6,  22.3,  0.105,  1.0,  0.0,          BLKDT142
     B               1.6,   0.6,  22.3,  0.105,  1.0,  0.0 /         BLKDT143
      DATA EGDA19 / 19.3,   2.30,   4.0,  0.53,  1.0,  0.0,           BLKDT144
     A               3.0,   0.60,  11.0,  0.53,  1.0,  0.0,          BLKDT145
     M               1.8,   0.05,  44.0,  0.53,  1.0,  0.0,          BLKDT146
     B              55.0,   0.10,  16.5,  0.53,  1.0,  0.0 /         BLKDT147
      DATA EGDA20 / 57.2,  12.00,   3.5,  0.044,  1.0,  0.0,          BLKDT148
     A               8.0,   0.20,   8.4,  0.045,  1.0,  0.0,          BLKDT149
     M               1.4,   0.20,  24.0,  0.050,  1.0,  0.0,          BLKDT150
     B              18.0,   0.04,   5.0,  0.052,  1.0,  0.0 /         BLKDT151
      DATA EGDA21 / 18.05,  15.05,   2.45,  0.38,  1.0,  0.0,         BLKDT152
     A               3.04,   0.29,   6.39,  0.63,  1.0,  0.0,         BLKDT153
     M               1.56,   0.18,  11.66,  0.71,  1.0,  0.0,         BLKDT154
     B               1.56,   0.18,  11.66,  0.71,  1.0,  0.0 /        BLKDT155
      DATA EGDA22 / 66.73,  22.98,   2.95,  0.021,  1.0,  0.0,        BLKDT156
     A              38.50,  12.90,   3.75,  0.016,  1.0,  0.0,        BLKDT157
     M               0.59,   0.18,  28.52,  0.009,  1.0,  0.0,        BLKDT158
     B               0.50,   0.10,  40.00,  0.085,  1.0,  0.0 /       BLKDT159
      DATA EGDA23 / 70.91,  9.85,  1.49,  0.026,  1.0,  0.0,          BLKDT160
     A              14.80,  0.32,  3.09,  0.158,  1.0,  0.0,          BLKDT161
     M               3.88,  0.09,  4.71,  0.167,  1.0,  0.0,          BLKDT162
     B               3.88,  0.09,  4.71,  0.167,  1.0,  0.0 /         BLKDT163
      DATA EGDA24 / 127.17,  19.50,  1.53,  0.729,  1.0,  0.0,        BLKDT164
     A              49.08,   1.29,  2.67,  0.017,  1.0,  0.0,        BLKDT165
     M              31.32,   0.50,  3.60,  0.020,  1.0,  0.0,        BLKDT166
     B              31.32,   0.50,  3.60,  0.020,  1.0,  0.0 /       BLKDT167
      DATA EGDA25 / 50.0,  9.6,  2.0,  0.6,  1.0,  0.0,               BLKDT168
     A               6.6,  1.4,  2.7,  2.7,  1.0,  0.0,              BLKDT169
     M               1.2,  0.6,  4.3,  2.5,  1.0,  0.0,              BLKDT170
     B               1.2,  0.6,  4.3,  2.5,  1.0,  0.0 /             BLKDT171
      DATA EGDA26 /  742.50,  191.40,  1.02,  60.0,  0.6,  0.0,       BLKDT172
     A              691.66,    9.46,  9.37,  40.0,  0.6,  0.0,       BLKDT173
     M             1155.80,   20.40,  1.11,  20.0,  0.6,  0.0,       BLKDT174
     B             1155.80,   20.40,  1.11,  20.0,  0.6,  0.0 /      BLKDT175
      DATA EGDA27 /  742.50,  191.40,  1.02,  60.0,  0.6,  0.0,       BLKDT176
     A              691.66,    9.46,  9.37,  40.0,  0.6,  0.0,       BLKDT177
     M             1155.80,   20.40,  1.11,  20.0,  0.6,  0.0,       BLKDT178
     B             1155.80,   20.40,  1.11,  20.0,  0.6,  0.0 /      BLKDT179
C                                                                     BLKDT180
      DATA PPEMFC / 0.5, 1.0, 5.0, 45.0, 0.5, 1.0, 5.0, 45.0, 0.4,    BLKDT181
     .  2*0.5, 0.6, 2*272.0, 2*320.0, 0.19, 0.18, 0.24, 0.0, 0.23, 0.0, BLKDT182
     2  0.15, 0.5, 1.5, 10.0, 0.015, 2*0.1, 1.25, 0.25, 3*0.35,      BLKDT183
     .  2*640.0, 2*128.0, 0.48, 0.45, 0.096, 0.0, 0.081, 0.0,        BLKDT184
     3  9.0, 7.5, 3.0, 1.5, 13.8, 4.6, 11.5, 2.3, 12.6, 2*7.2, 1.5,  BLKDT185
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     .  6250.0, 2810.0, 1600.0, 800.0, 1.45, 1.35, 1.2, .72, 1.12, .72,  BLKDT186
     4  8.0, 6.5, 1.0, 10.0, 8.5, 2*1.0, 5.0, 40.36, 41.67, 42.14,       BLKDT187
     .  310.0, 4*160.0, 0.22, 0.2, 0.23, 0.0, 0.22, 0.0,                 BLKDT188
     5  4*19.0, 3*19.19, 18.32, 2*19.19, 2*17.19,                        BLKDT189
     .  4*17143.0, 3*0.00005, 0.0, 0.00005, 0.0,                         BLKDT190
     6  22*0.0 /                                                         BLKDT191
C                                                                        BLKDT192
      DATA ENGNO / 4, 2*8, 2*2, 1, 2, 4*1, 4*2, 1, 2*2, 4, 2, 4*4, 2,   BLKDT193
     .  2*4, 2*2, 1, 3*2, 2*1, 2*2, 8, 1, 3*2, 2*4, 5*0, 2,             BLKDT194
     2  2, 2*4, 7*1, 8*1, 2, 1, 4*2, 1,                                  BLKDT195
     .  2*2, 10*1, 4, 4*1, 2*2, 5*0, 1 /                               BLKDT196
C                                                                        BLKDT197
      DATA APSPD1 / 0.0, 329.2, 329.2, 463.0, 463.0, 420.6, 438.9,       BLKDT198
     .     402.3, 471.8, 462.7, 402.3, 438.9, 548.7, 457.2, 556.0,      BLKDT199
     .     457.2,   0.0, 256.0, 329.2, 310.9, 292.6, 329.2, 329.2,      BLKDT200
     .     349.3, 219.4, 274.3, 274.3, 276.1, 276.1, 329.2, 256.0,      BLKDT201
     .     548.7, 420.6, 200.0, 219.4, 219.4, 274.3, 329.2, 471.8,      BLKDT202
     .     438.9, 457.2, 457.2, 329.2, 292.6, 5*0.0, 438.9 /            BLKDT203
C                                                                        BLKDT204
      DATA APSPD2 / 0.0, 310.9, 310.9, 333.0, 333.0, 329.0, 310.9,       BLKDT205
     .     329.2, 329.2, 332.8, 329.2, 310.9, 365.8, 329.2, 370.6,      BLKDT206
     .     310.9,   0.0, 219.4, 259.7, 274.3, 237.7, 310.9, 310.9,      BLKDT207
     .     299.9, 201.1, 219.4, 219.4, 219.4, 219.4, 237.7, 219.4,      BLKDT208
     .     365.8, 310.9, 150.0, 201.1, 201.1, 219.4, 310.9, 329.2,      BLKDT209
     .     310.9, 329.2, 329.2, 259.7, 237.7, 5*0.0, 310.9 /            BLKDT210
C                                                                        BLKDT211
      DATA ASCNT1 / 0.0, 5.0, 5.0, 4.0, 4.0, 5.0, 6.0, 6.0, 6.5, 8.0,   BLKDT212
     .              6.0, 6.0, 5.0, 7.0, 6.5, 10., 0.0, 5.0, 4.0, 5.0,   BLKDT213
     .              4.0, 4.6, 4.6, 6.0, 6.0, 5.0, 5.0, 5.0, 5.0, 6.0,   BLKDT214
     .              5.0, 5.0, 6.0, 4.0, 6.0, 6.0, 6.0, 5.0, 6.5, 6.0,   BLKDT215
     .              7.0, 7.0, 4.0, 4.0, 5*0.0, 6.0 /                    BLKDT216
C                                                                        BLKDT217
      DATA ASCNT2 / 0.0,  5.5,  5.5,  8.0,  8.0,  7.8,  8.2, 12.0,      BLKDT218
     .        9.9,  8.2, 12.9, 12.7,  9.1, 12.0, 11.25, 10.0, 0.0,     BLKDT219
     .        6.1, 11.2, 11.4, 10.0,  5.2,  5.2, 11.3,  6.0,  8.6,     BLKDT220
     .       10.3,  7.0,  7.0,  6.3,  6.0,  9.1,  7.5,  6.0,  6.0,     BLKDT221
     .        6.0,  9.0,  5.5,  9.9, 12.7, 12.0, 12.0, 11.2, 10.0,     BLKDT222
     .      5*0.0, 12.7 /                                               BLKDT223
C                                                                        BLKDT224
      DATA APPHT2 / 0.0, 0.22, 0.22, 0.16, 0.16, 0.18, 0.21, 0.22,      BLKDT225
     .       0.13, 0.12, 0.22, 0.20, 0.07, 0.15, 0.20, 0.17, 0.00,     BLKDT226
     .       0.08, 0.27, 0.26, 0.23, 0.18, 0.18, 0.29, 0.18, 0.21,     BLKDT227
     .       0.21, 0.21, 0.21, 0.29, 0.06, 0.06, 0.13, 0.40, 0.17,     BLKDT228
     .       0.17, 0.21, 0.22, 0.13, 0.20, 0.15, 0.15, 0.27, 0.23,     BLKDT229
     .      5*0.0, 0.20 /                                               BLKDT230
C                                                                        BLKDT231
      DATA DSCNT1 / 0.0, 2.5, 2.5, 8.0, 8.0, 3.5, 4.0, 3.5, 4.0, 4.0,   BLKDT232
     .              3.5, 3.5, 3.0, 3.5, 5.0, 3.5, 0.0, 5.5, 3.0, 3.0,   BLKDT233
     .              3.5, 2.5, 2.5, 3.5, 4.0, 3.5, 3.5, 3.5, 3.5, 4.0,   BLKDT234
     .              5.6, 3.0, 4.3, 10., 4.0, 4.0, 3.5, 2.5, 4.0, 3.5,   BLKDT235
     .              3.5, 3.5, 3.0, 3.5, 5*0.0, 3.5 /                    BLKDT236
C                                                                        BLKDT237
      DATA DSCNT2 / 0.0, 2.5, 2.5, 2.5, 2.5, 3.0, 3.5, 3.5, 3.5, 2.5,   BLKDT238
     .              3.5, 3.4, 2.5, 2.5, 3.4, 3.0, 0.0, 2.5, 2.5, 2.5,   BLKDT239
     .              2.5, 2.5, 2.5, 2.5, 2.5, 2.5, 2.5, 2.5, 2.5, 3.0,   BLKDT240
     .              2.5, 2.5, 3.0, 3.0, 2.5, 2.5, 2.5, 2.5, 3.5, 3.4,   BLKDT241
     .              2.5, 2.5, 2.5, 2.5, 5*0.0, 3.4 /                    BLKDT242
C                                                                        BLKDT243
      DATA COHT1 / 0.0, 0.33, 0.33, 0.60, 0.60, 0.32, 0.47, 0.30,       BLKDT244
     .       0.36, 0.52, 0.30, 0.30, 0.18, 0.34, 0.30, 0.91, 0.00,     BLKDT245
     .       0.20, 0.18, 0.27, 0.20, 0.30, 0.30, 0.25, 0.10, 0.25,     BLKDT246
     .       0.22, 0.21, 0.25, 0.23, 0.20, 0.18, 0.30, 0.50, 0.17,     BLKDT247
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     .      0.17, 0.27, 0.33, 0.36, 0.30, 0.34, 0.34, 0.18, 0.20,      BLKDT248
     .     5*0.0, 0.30 /                                               BLKDT249
C                                                                       BLKDT250
      DATA LNDSPD / 0.0, 296.0, 296.0, 203.0, 203.0, 278.0, 278.0,      BLKDT251
     .     296.0, 314.0, 332.0, 296.0, 287.0, 239.0, 258.0, 287.0,     BLKDT252
     .     241.0, 167.0, 166.0, 227.0, 212.0, 185.0, 296.0, 296.0,     BLKDT253
     .     240.0, 128.0, 166.0, 166.0, 166.0, 166.0, 185.0, 148.0,     BLKDT254
     .     240.0, 203.0, 111.0, 111.0, 111.0, 111.0, 166.0, 296.0,     BLKDT255
     .     314.0, 297.0, 258.0, 227.0, 185.0, 5*0.0, 287.0 /           BLKDT256
C                                                                       BLKDT257
      DATA COSPD1 / 0.0, 369.0, 369.0, 582.0, 582.0, 450.0, 585.0,      BLKDT258
     .     549.0, 592.0, 554.0, 554.0, 554.0, 556.0, 554.0, 648.6,     BLKDT259
     .     463.0,   0.0, 366.0, 399.0, 349.0, 300.0, 331.0, 331.0,     BLKDT260
     .     463.0, 210.0, 256.0, 256.0, 250.0, 250.0, 300.0, 366.0,     BLKDT261
     .     556.0, 349.0, 150.0, 201.0, 201.0, 329.0, 369.0, 592.0,     BLKDT262
     .     554.0, 554.0, 554.0, 399.0, 300.0, 5*0.0, 554.0 /           BLKDT263
C                                                                       BLKDT264
      DATA COSPD2 / 0.0, 558.0, 558.0, 582.0, 582.0, 499.0, 658.0,      BLKDT265
     .     549.0, 558.0, 554.0, 554.0, 554.0, 556.0, 554.0, 640.0,     BLKDT266
     .     463.0,   0.0, 439.0, 499.0, 450.0, 400.0, 481.0, 481.0,     BLKDT267
     .     554.0, 219.0, 402.0, 402.0, 377.0, 342.0, 450.0, 457.0,     BLKDT268
     .     556.0, 450.0, 200.0, 219.0, 219.0, 439.0, 558.0, 658.0,     BLKDT269
     .     554.0, 554.0, 554.0, 499.0, 400.0, 5*0.0, 554.0 /           BLKDT270
C                                                                       BLKDT271
      DATA TOSPD / 0.0, 267.0, 267.0, 212.0, 212.0, 296.0, 314.0,       BLKDT272
     .    314.0, 365.0, 342.0, 296.0, 314.0, 287.0, 283.0, 314.0,     BLKDT273
     .    263.0,   0.0, 185.0, 234.0, 260.0, 194.0, 305.0, 305.0,     BLKDT274
     .    250.0, 128.0, 183.0, 183.0, 170.0, 185.0, 223.0, 168.0,     BLKDT275
     .    287.0, 223.0, 129.0, 129.0, 129.0, 190.0, 267.0, 366.0,     BLKDT276
     .    314.0, 283.0, 283.0, 234.0, 194.0, 5*0.0, 314.0 /           BLKDT277
C                                                                       BLKDT278
      DATA SRTUPT / 0.0, 20.0, 20.0, 10.0, 10.0,  6.1,  6.1,  8.0,     BLKDT279
     .        5.0,  6.1,  8.0,  6.4,  5.0,  6.2,  7.5, 15.0,  0.0,     BLKDT280
     .        8.0,  3.0,  3.2,  2.8, 20.0, 20.0,  2.0,  7.0, 15.0,     BLKDT281
     .       15.0,  3.2,  2.5,  2.5,  3.8,  5.2,  2.3,  8.0, 10.0,     BLKDT282
     .       20.0, 15.0, 20.0,  5.0,  6.4,  6.2,  6.2,  3.0,  2.8,     BLKDT283
     .      5*0.0,  6.4 /                                              BLKDT284
C                                                                       BLKDT285
      DATA EGCHKT / 0.0, 4.5, 4.5, 0.1,  0.1, 0.6,  2.0, 2.0,          BLKDT286
     1         0.8, 0.8, 2.0, 0.8, 0.75, 1.4, .125, 2.0, 0.0,         BLKDT287
     1         2.0, 0.1, 0.1, 0.1, 2.5,  2.5, 0.1,  3.0, 3.0,         BLKDT288
     1         3.0, 0.1, 0.1, 0.3, 0.5,  0.3, 0.1,  2.0, 2.0,         BLKDT289
     1         2.0, 2.0, 4.5, 0.8, 0.8,  1.4, 1.4,  0.1, 0.1,         BLKDT290
     1       5*0.0, 0.8 /                                             BLKDT291
C                                                                       BLKDT292
      DATA SHTDNT / 0.0, 4.8, 4.8, 0.5, 0.5, 1.0, 2.0, 2.0, 0.5, 0.8,  BLKDT293
     .              2.0, 0.4, .66, 1.3, .25, 3.0, 0.0, 2.0, 2.0, 0.3,  BLKDT294
     .              0.7, 4.5, 4.5, 7.3, 7.0, 2.0, 2.0, 0.3, 0.5, 0.4,  BLKDT295
     .              0.6, 0.7, 0.3, 2.0, 2.0, 2.0, 2.0, 4.8, 0.5, 0.4,  BLKDT296
     .              1.3, 1.3, 2.0, 0.7, 5*0.0, 0.4 /                   BLKDT297
C                                                                       BLKDT298
      DATA TOWT / 0.0, 340.0, 340.0,  45.0,  45.0,  36.0,  45.0,       BLKDT299
     .    30.0,  20.0,  45.0,  35.0,  50.0,  18.0,  75.0,  42.0,      BLKDT300
     .    30.0,   0.0,  11.0, 520.0,  84.0, 100.0, 220.0, 220.0,      BLKDT301
     .   220.0,  24.0,  50.0,  50.0,  50.0,  50.0,  14.0,   6.0,      BLKDT302
     .    12.0,  14.0,   4.5,   4.5,   4.5,  11.0, 340.0,  20.0,      BLKDT303
     .    50.0,  75.0,  75.0, 520.0, 100.0, 5*0.0,  50.0 /            BLKDT304
C                                                                       BLKDT305
      DATA TXISPD / 0.0, 12.0, 12.0, 27.0, 27.0,  9.9, 34.0, 34.0,     BLKDT306
     .        9.2, 12.0, 34.0, 37.0, 25.0, 12.9, 37.1, 37.0,  0.0,     BLKDT307
     .       22.0, 15.9, 32.5, 42.0, 13.3, 13.3, 24.8, 35.0, 27.0,     BLKDT308
     .       27.0, 23.6, 17.1, 34.2, 22.3, 21.8, 37.5, 27.0, 27.0,     BLKDT309
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     .      27.0, 34.0, 12.0,  9.2, 37.0, 12.9, 12.9, 15.9, 42.0,      BLKDT310
     .     5*0.0, 37.0 /                                               BLKDT311
C                                                                       BLKDT312
      DATA EGNAME / 8HJ 79-G15, 8HJ57-P21B, 8HJ 52    , 8HTF33-P3 ,     BLKDT313
     .  8HTF30-P7 , 8HJ 85    , 8HJ 75    , 8HTF39    , 8HT 56-A7 ,     BLKDT314
     .  8HT 76    , 8H0470    , 8H0360    , 8HJ 57-P43, 8HJ 69    ,     BLKDT315
     .  8HJ 79-G17, 8HTF30-P9 , 8HT 34    , 8HTF41    , 8HF100    ,     BLKDT316
     .  8HF101    , 8HT 56-A15, 8HTF39 LS , 8HJ60     , 8HJ-33    ,     BLKDT317
     .  8HJT-8D   , 8HR-4360  , 8HR-3350  , 23*8HUNASSGND /             BLKDT318
C                                                                       BLKDT319
      DATA ACNAME / 8HB-1     , 8HB 52    , 8HB 52 H  , 8HB 57A-3C,     BLKDT320
     .  8HB 57 E-G, 8HF 100   , 8HF 101   , 8HF 102   , 8HF 104A  ,     BLKDT321
     .  8HF 105   , 8HF 106   , 8HF 4     , 8HF 5     , 8HF 111A  ,     BLKDT322
     .  8HF 15    , 8HA 7     , 8HA 10    , 8HA 37    , 8HC 5     ,     BLKDT323
     .  8HC 9     , 8HC 130   , 8HKC 135A , 8HC 135B  , 8HC 141   ,     BLKDT324
     .  8HC 7     , 8HC 121   , 8HC 97    , 8HC119    , 8HUNASSGND,     BLKDT325
     .  8HT 33    , 8HT 37    , 8HT 38    , 8HT 39    , 8HT 41    ,     BLKDT326
     .  8HO 1     , 8HO 2     , 8HOV10    , 8HB-52G   , 8HF104C   ,     BLKDT327
     .  8HF 4 E   , 8HF111D   , 8HF111F   , 8HC-5 LS  , 8HC130 H  ,     BLKDT328
     .  8HHDM     , 4*8HUNASSIGN, 8HTRANSENT /                          BLKDT329
C                                                                       BLKDT330
      DATA EMFCIN / 0.0, 100.0, 12.5, 50.0, 6.25,                       BLKDT331
     2              0.0,  25.0, 10.0, 12.5, 5.0 ,                      BLKDT332
     3              1.5,   1.0,  1.5,  0.5, 0.75,                      BLKDT333
     4              5.0,  15.5,  4.0,  7.5, 2.0 ,                      BLKDT334
     5              0.0,  0.75, 0.75, 0.35, 0.35,                      BLKDT335
     6            5*0.0 /                                              BLKDT336
C                                                                       BLKDT337
      DATA LUEMFC / 130.0, 72.0, 26.0, 11.0, 1.0, 0.0, 14.0, 15.0, 0.0, BLKDT338
     2               21.0, 12.0,  4.7,  1.8, .17, 0.0,  2.4, 23.0, 0.0, BLKDT339
     3               17.0,  5.9,  1.9, 0.76, .07, 0.0,  1.0,  4.0, 0.0, BLKDT340
     4                8.3,  4.3,  0.4, 0.16, .03, 0.0,  0.2,  4.7, 0.0, BLKDT341
     5               56.0,  6.8,  0.5, 0.16, .03, 0.0,  0.3,  1.4, 0.0, BLKDT342
     6              9*0.0 /                                            BLKDT343
C                                                                       BLKDT344
      DATA IDACEG / 20,  2,  4,  6,  4,  2,  2,  2,  1,  7,             BLKDT345
     1               7,  1,  6,  5, 19, 18, 17,  6,  8, 25,            BLKDT346
     2               9, 13,  4,  4,  9, 27, 26, 27, 50, 24,            BLKDT347
     3              14,  6, 23, 12, 11, 12, 10, 13, 15, 15,            BLKDT348
     4              16, 16, 22, 21, 50, 50, 50, 50, 50,  1 /           BLKDT349
C                                                                       BLKDT350
      DATA IACABF / 2*1, 0, 1, 0, 10*1, 14*0, 1, 0, 1, 6*0, 4*1,        BLKDT351
     .              7*0, 1 /                                           BLKDT352
C                                                                       BLKDT353
      DATA IDRR / 12,  2,  3,  4,  5,  6,  7,  8,  9, 10,              BLKDT354
     1            11, 12, 13, 14, 15, 16, 17, 18, 19, 20,             BLKDT355
     2            21, 22, 23, 24, 25, 26, 27, 28, 29, 30,             BLKDT356
     3            31, 32, 33, 34, 35, 36, 37,  2,  9, 12,             BLKDT357
     4            14, 14, 19, 21,  5*100, 12 /                        BLKDT358
C                                                                       BLKDT359
      DATA EGFF /                          1.131,  2.72 ,  8.921, 32.238, BLKDT360
     2  1.051,  2.500,  7.752, 36.100,    0.830,  4.860,  6.490,  6.490, BLKDT361
     4  0.846,  3.797,  9.979,  9.979,    1.250,  6.650,  7.120, 38.400, BLKDT362
     6  0.453,  1.462,  2.630,  8.323,    1.700, 11.300, 13.200, 53.700, BLKDT363
     8  1.134,  1.500, 11.909, 11.41 ,    0.693,  0.827,  1.967,  2.079, BLKDT364
     0  0.192,  0.347,  0.387,  0.387,   .01512, .08555, .13125, .13125, BLKDT365
     2 .01517, .06788, 0.0887, 0.0887,    1.214,  1.849, 10.612, 10.612, BLKDT366
     4  0.231,  0.698,  1.095,  1.907,    1.06 ,  3.34 ,  9.82 , 34.95 , BLKDT367
     6  1.25 ,  6.65 ,  7.12 , 42.85 ,    0.373,  1.215,  3.275,  3.275, BLKDT368
     8  1.07 ,  5.31 ,  9.04 ,  9.04 ,    1.06 ,  3.0  , 10.00 , 44.2  , BLKDT369
     0  0.0  ,  0.0  ,  0.0  ,  0.0  ,    0.493,  1.145,  2.392,  2.392, BLKDT370
     2  1.134,  1.5  , 11.909, 11.41 ,    0.459,  1.423,  2.456,  2.456, BLKDT371
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     4  1.2   ,  4.75 ,  5.525,  5.525,   0.959,  7.37 ,  8.755,  8.755, BLKDT372
     6  .1403, 0.7939,  1.218, .13125,   .1078,  0.61 ,  .9362, .13125, BLKDT373
     8  92*0.0 /                                                         BLKDT374
C                                                                        BLKDT375
      DATA MONAM1 / 8HIDLE    , 8HTAXI    , 8HENGINE C, 8HRUNWAY R,      BLKDT376
     .  8HCLIMB 1 , 8HCLIMB 2 , 8HAPPROACH, 8HAPPROACH, 8HLANDING ,      BLKDT377
     .  8H        /                                                      BLKDT378
C                                                                        BLKDT379
      DATA MONAM2 / 4H    , 4H    , 4HHECK, 4HOLL , 4H    , 4H    ,     BLKDT380
     .              4H 1  , 4H 2  , 4H    , 4H    /                    BLKDT381
C                                                                        BLKDT382
      DATA APPHT,CLMBHT / 2* 0.9144 /                                    BLKDT383
      DATA ACLNDY / 20.0 /, ACLNDZ, EGCKDZ, ARDSDZ / 3*8.0 /             BLKDT384
      DATA EGCKDY, ACMLPL / 2*100.0 /                                    BLKDT385
      DATA IEGABP / 2*1, 2*0, 3*1, 7*0, 2*1, 2*0, 2*1, 7*0, 23*1 /       BLKDT386
      DATA THNAME / 8HIDLE    , 8HNORMAL  , 8HMILITARY, 8HAFTER BR /     BLKDT387
C                                                                        BLKDT388
      DATA FLNAME / 4HAM G, 4HJP 4, 4HAC G, 4HDESL, 4HJP 5, 4HJP 8,      BLKDT389
     .     4HJETA /                                                      BLKDT390
      DATA ALPHA / 11.70365, 11.10675, 12.42382, 12.68789, 13.687,       BLKDT391
     .     13.038, 13.024 /                                              BLKDT392
      DATA BETA / 2868.54, 3129.5187, 3276.8848, 5108.4194, 5329.139,    BLKDT393
     .     4789.301, 4782.209 /                                          BLKDT394
      DATA FLDENS / 0.695, 0.773, 0.693, 0.842, 0.824, 0.807, 0.807 /    BLKDT395
C                                                                        BLKDT396
      DATA ATDSDY / 10.0 /, ATDSDZ / 2.0 /, NPLTS / 5 /, ITAPE / 21 /    BLKDT397
      DATA FIXFCT / 0.024, 0.023, 0.0235, 0.019, 0.021, 0.020, 0.20 /    BLKDT398
      DATA FLTFCT / 1.0, 0.96, 0.98, 0.79, 0.89, 0.83, 0.83  /           BLKDT399
      DATA WRKFCT / 0.3, 0.324, 0.312, 0.276, 0.31, 0.295, 0.295 /       BLKDT400
      DATA FPDFLT / 1.2 /, TDDFLT / 1.0 /, RFDFLT / 0.1 /                BLKDT401
      DATA RUDSDF, RUTSDF, RUVSDF, TFHBDF, TFHODF / 5*0.0 /              BLKDT402
      DATA RUHBDF, RUHODF, RUDYDF, RUDZDF / 4*5.0 /                      BLKDT403
      DATA TCDSDF / 9.0 /, TCTSDF / 422.0 /, TCVSDF / 12.5 /             BLKDT404
      DATA TCHBDF, TCHODF, TCDYDF, TCDZDF / 4*10.0 /                     BLKDT405
      DATA TFEMFC / 560., 320., 4.15, 128., 2*1.0 /                      BLKDT406
      DATA SFDFLT, PFDFLT, TFDFLT / 3*1.0 /                              BLKDT407
      DATA TFQDF / 25000.0 /, TFDZDF, TFDYDF / 2*30.0 /                  BLKDT408
C                                                                        BLKDT409
      DATA PLNAME / 4HCO  , 4HHC  , 4HNOX , 4HPM  , 4HSOX , 4H    /      BLKDT410
C                                                                        BLKDT411
      DATA TOTEM / 120*0.0 /, TOTEVP / 10*0.0 /                          BLKDT412
      DATA MINUS / 6*8H-------- /                                        BLKDT413
      END                                                                BLKDT414
```

SUBROUTINE CHARAC

Purpose:

To print single characters in a title as a 9 x 12 matrix.

Input:

The title line to be printed. A maximum of 12 characters is allowed.

Output:

The title line in large print.

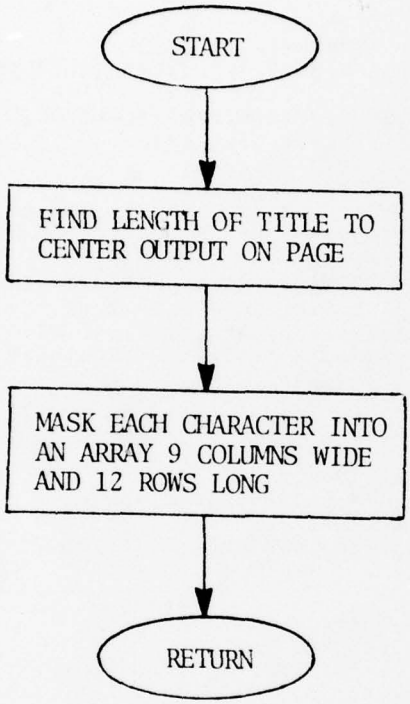
Procedure:

This routine masks the characters using hexadecimal numbers as required on an IBM systems/360. A similar routine exists for the CDC 7600.

Subroutines Called:

None

SUBROUTINE CHARAC (ITITLE)



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      SUBROUTINE CHARAC(ITITLE)                                          CHARC000
C                                                                        CHARC001
C     THIS ROUTINE WAS WRITTEN FOR THE IBM SYSTEMS/360 TO                CHARC002
C     PRINT SINGLE CHARACTERS AS A 9 BY 12 MATRIX.  A SIMILAR            CHARC003
C     ROUTINE EXISTS FOR THE CDC 7600.                                   CHARC004
C                                                                        CHARC005
      DIMENSION ICHAR(12,37),IALPHA(37),ID(12),ITITLE(12),MASK(11),      CHARC006
     .  LINE1(132)                                                       CHARC007
      INTEGER OFFSET                                                     CHARC008
      DIMENSION LETTER(12,26),NUMBER(12,11)                              CHARC009
      EQUIVALENCE (ICHAR(1,1),LETTER(1,1)),(ICHAR(1,27),NUMBER(1,1))     CHARC010
C                                                                        CHARC011
      DATA LETTER /Z070,Z0F8,Z18C,3*Z306,2*Z3FE,4*Z306,                  CHARC012
     B Z3F8,Z3FC,3*Z306,2*Z3FC,3*Z306,Z3FC,Z3F8,                         CHARC013
     C Z0FE,Z1FE,Z380,6*Z300,Z380,Z1FE,Z0FE,                             CHARC014
     D Z3F8,Z3FC,Z30E,6*Z306,Z30E,Z3FC,Z3F8,                             CHARC015
    E,F 2*Z3FE,3*Z300,2*Z3FE,3*Z300,2*Z3FE, 2*Z3FE,3*Z300,2*Z3FE,5*Z300, CHARC016
    G,H Z0FE,Z1FE,3*Z300,Z31C,Z33E,3*Z306,Z1FE,Z0FC,5*Z306,2*Z3FE,5*Z306,CHARC017
    I,J 2*Z3FE,8*Z070,2*Z3FE, 2*Z07E,6*Z018,2*Z318,Z3F8,Z1F0,            CHARC018
     K Z306,Z30E,Z318,Z330,Z360,2*Z3E0,Z360,Z330,Z318,Z30E,Z306,         CHARC019
    L,M 10*Z300,2*Z3FE, Z306,Z38E,Z3DE,2*Z376,Z326,6*Z306,               CHARC020
     N 2*Z306,Z386,Z3C6,2*Z366,2*Z336,Z31E,Z30E,2*Z306,                  CHARC021
    O,P Z1FC,Z3FE,8*Z306,Z3FE,Z1FC, Z3F8,Z3FC,3*Z306,Z3FC,Z3F8,5*Z300,   CHARC022
     Q Z0F8,Z1FC,6*Z306,Z336,Z31E,Z1FC,Z0F8,                             CHARC023
     R Z3F8,Z3FC,3*Z306,Z3FC,Z3F8,Z330,Z318,Z30C,2*Z306,                 CHARC024
    S,T Z0FE,Z1FE,3*Z300,Z1F8,Z0FC,3*Z006,Z3FC,Z3F8, 2*Z3FE,10*Z070,     CHARC025
    U,V 10*Z306,Z1FC,Z0F8, 7*Z306,2*Z18C,Z0D8,Z070,Z020,                 CHARC026
     W 6*Z306,Z326,2*Z376,Z3DE,Z38E,Z306,                                CHARC027
     X 2*Z306,Z18C,2*Z0D8,2*Z070,2*Z0D8,Z18C,2*Z306,                     CHARC028
     Y 2*Z306,2*Z18C,2*Z0D8,6*Z070,                                      CHARC029
     Z 2*Z3FE,Z006,Z00C,Z018,Z030,Z060,Z0C0,Z180,Z300,2*Z3FE/            CHARC030
C                                                                        CHARC031
      DATA NUMBER /12*0,                                                 CHARC032
     0. Z0F8,Z1FC,8*Z306,Z1FC,Z0F8,                                      CHARC033
     1 Z030,Z070,Z0F0,7*Z030,2*Z1FE,                                     CHARC034
     2 Z1F8,Z3FC,Z30C,2*Z00C,Z018,Z030,Z060,Z0C0,Z180,2*Z3FE,            CHARC035
     3 Z1FC,Z3FE,Z306,2*Z006,2*Z07C,2*Z006,Z306,Z3FE,Z1FC,               CHARC036
     4 Z00C,Z01C,Z03C,Z06C,Z0CC,Z18C,2*Z3FE,4*Z00C,                      CHARC037
     5 2*Z3FE,3*Z300,Z3FC,Z3FE,3*Z006,Z3FE,Z1FC,                         CHARC038
     6 Z1FC,Z3FE,3*Z300,Z3FC,Z3FE,3*Z306,Z3FE,Z1FC,                      CHARC039
     7 2*Z3FE,Z306,3*Z00C,2*Z018,4*Z030,                                 CHARC040
     8 Z1FC,Z3FE,3*Z306,2*Z1FC,3*Z306,Z3FE,Z1FC,                         CHARC041
     9 Z1FC,Z3FE,3*Z306,Z3FE,Z1FE,3*Z006,Z3FE,Z1FC/                      CHARC042
C                                                                        CHARC043
      DATA IO /4H0000/                                                   CHARC044
      DATA BI /4H    /                                                   CHARC045
      DATA LINE1 /132*1H /                                               CHARC046
      DATA MASK /Z400,Z200,Z100,Z80,Z40,Z20,Z10,Z8,Z4,Z2,Z1/             CHARC047
      DATA IALPHA /1HA,1HB,1HC,1HD,1HE,1HF,1HG,1HH,1HI,1HJ,1HK,1HL,      CHARC048
     . 1HM,1HN,1HO,1HP,1HQ,1HR,1HS,1HT,1HU,1HV,1HW,1HX,1HY,1HZ,          CHARC049
     . 1H ,1H0,1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9/                      CHARC050
C                                                                        CHARC051
      DO 150 IJ=1,12                                                     CHARC052
      J=13-IJ                                                            CHARC053
      IF (ITITLE(J).NE.IALPHA(27)) GO TO 70                              CHARC054
  150 CONTINUE                                                           CHARC055
   70 CONTINUE                                                           CHARC056
      NUMLET=J                                                           CHARC057
      OFFSET=(12-NUMLET)*6                                               CHARC058
      DO 250 IJ=1,12                                                     CHARC059
      DO 251 JK=1,37                                                     CHARC060
      IF (ITITLE(IJ).NE.IALPHA(JK)) GO TO 251                            CHARC061
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      ID(LJ)=JK                                                        CHARC062
      GO TO 250                                                        CHARC063
  251 CONTINUE                                                         CHARC064
  249 ID(LJ)=27                                                        CHARC065
  250 CONTINUE                                                         CHARC066
      DO 2000 LNCNT=1,12                                               CHARC067
      DO 1000 LPOS=1,12                                                CHARC068
      IPOS=(11*(LPOS-1))+OFFSET                                        CHARC069
      IPF=ICHAR(LNCNT,ID(LPOS))                                        CHARC070
      DO 1200 MAKEUP=1,11                                              CHARC071
      IF (IPF-MASK(MAKEUP).LT.0) GO TO 1200                            CHARC072
      IPF=IPF-MASK(MAKEUP)                                             CHARC073
      LINE1(IPOS+MAKEUP)=IO                                            CHARC074
 1200 CONTINUE                                                         CHARC075
 1000 CONTINUE                                                         CHARC076
      PRINT 200, (LINE1(JQ),JQ=1,132)                                  CHARC077
  200 FORMAT(132A1)                                                    CHARC078
      DO 106 I =1,132                                                  CHARC079
  106 LINE1(I)=BL                                                      CHARC080
 2000 CONTINUE                                                         CHARC081
      RETURN                                                           CHARC082
      END                                                              CHARC083
```

SUBROUTINE ENEMIV

Purpose:

1. To input environ source activity and geometric data.
2. To calculate annual emissions from environ point sources, stationary and mobile areas, land use areas, or combined areas, and roadway and non-roadway line sources.
3. To output to the master source tape all data needed to define environ sources.

Input:

Environ source activity and geometric data.

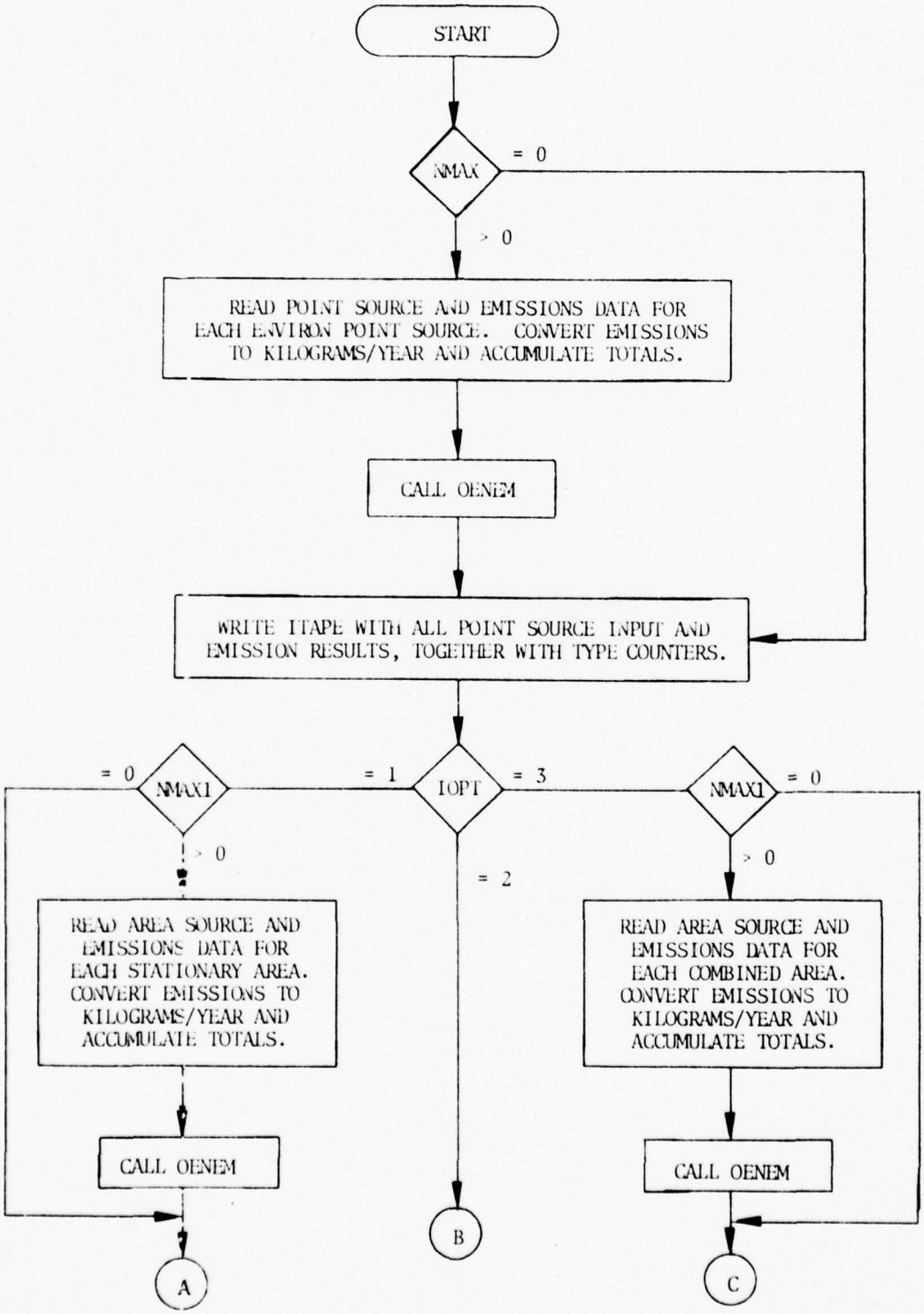
Output:

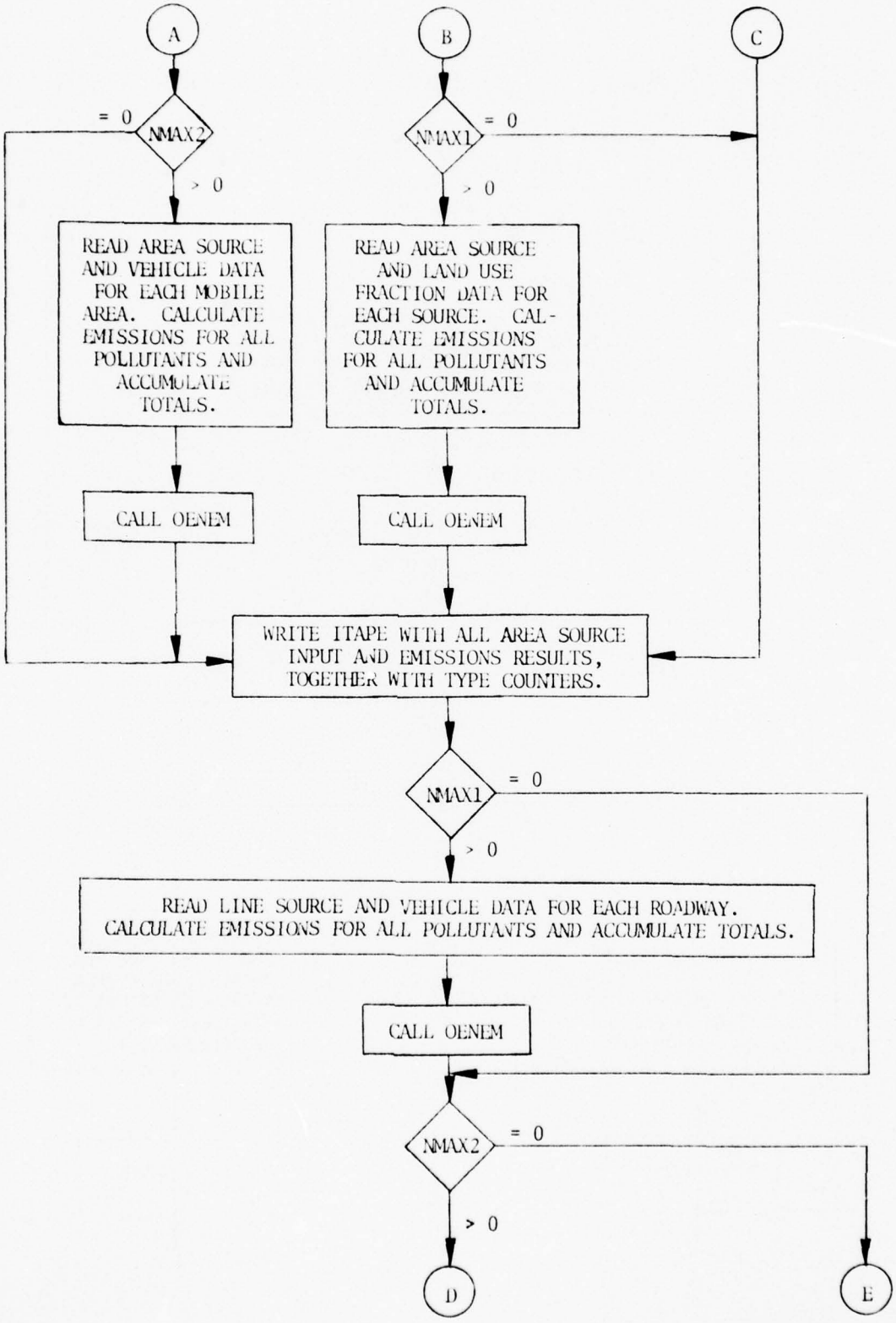
Print all input data which does not conform to the basic input formats.

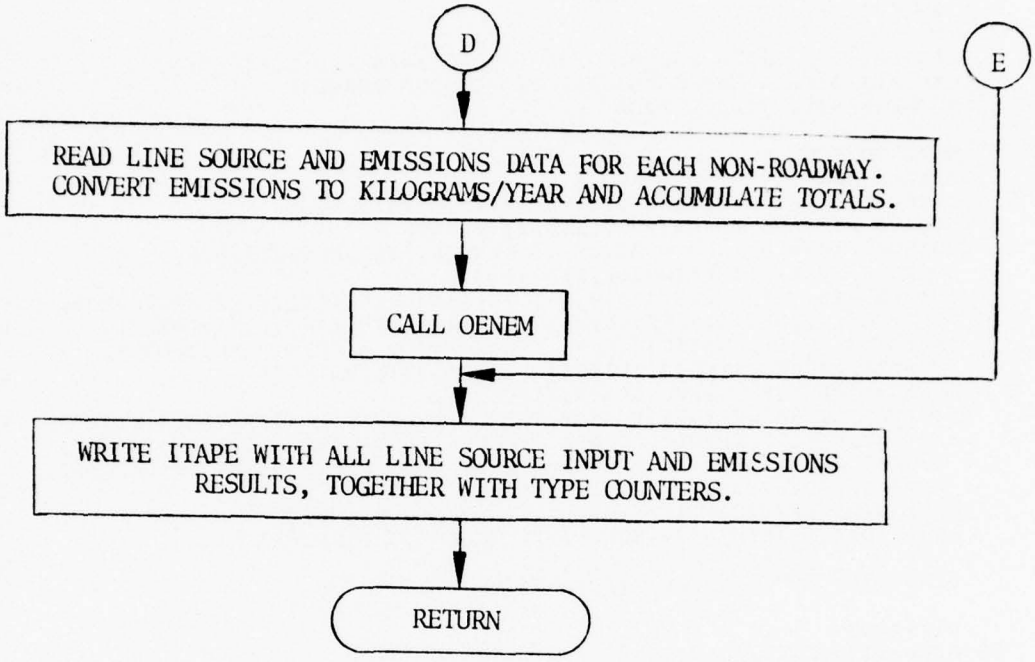
Subroutines Called:

OENEM

SUBROUTINE ENEMIV




A
B
C
NMAX2
= 0
> 0
NMAX1
= 0
> 0
READ AREA SOURCE AND VEHICLE DATA FOR EACH MOBILE AREA. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS.
READ AREA SOURCE AND LAND USE FRACTION DATA FOR EACH SOURCE. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS.
CALL OENEM
CALL OENEM
WRITE ITAPE WITH ALL AREA SOURCE INPUT AND EMISSIONS RESULTS, TOGETHER WITH TYPE COUNTERS.
NMAX1
= 0
> 0
READ LINE SOURCE AND VEHICLE DATA FOR EACH ROADWAY. CALCULATE EMISSIONS FOR ALL POLLUTANTS AND ACCUMULATE TOTALS.
CALL OENEM
NMAX2
= 0
> 0
D
E


D
E
READ LINE SOURCE AND EMISSIONS DATA FOR EACH NON-ROADWAY.
CONVERT EMISSIONS TO KILOGRAMS/YEAR AND ACCUMULATE TOTALS.
CALL OENEM
WRITE ITAPE WITH ALL LINE SOURCE INPUT AND EMISSIONS
RESULTS, TOGETHER WITH TYPE COUNTERS.
RETURN

```
      SUBROUTINE  ENEMIV                                                ENEMV000
C                                                                       ENEMV001
C     THIS ROUTINE READS THE ENVIRON POINT, AREA AND LINE DATA,         ENEMV002
C     COMPUTES ANNUAL EMISSIONS AND STORES THE RESULTS                  ENEMV003
C     ON THE MASTER SOURCE TAPE                                         ENEMV004
C                                                                       ENEMV005
      REAL LUEMFC                                                       ENEMV006
      REAL*8 MINUS                                                      ENEMV007
      COMMON /POINTS/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                   ENEMV008
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                           ENEMV009
      COMMON /ARRAYS/ HCWRK(10,50),HCBRTH(5,100),HCEVP(3,50)            ENEMV010
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                              ENEMV011
      COMMON /EMFDBI/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),ENEMV012
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      ENEMV013
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      ENEMV014
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               ENEMV015
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                             ENEMV016
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,  ENEMV017
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,   ENEMV018
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,  ENEMV019
     . TDDFLT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                        ENEMV020
      DIMENSION ENPTS(11,100),ENARS(7,100),ENLNS(10,20)                 ENEMV021
      EQUIVALENCE (ENPTS(1),SORCE(1)),(ENARS(1),SORCE(1))               ENEMV022
     .           ,(ENLNS(1),SORCE(1))                                   ENEMV023
      DIMENSION FRCTLU(9),VP(6),CDSTN(6),SFDC(6)                        ENEMV024
C                                                                       ENEMV025
      PRINT 40                                                          ENEMV026
   40 FORMAT(1H1,28(/),57X,21HS E C T I O N   I I I,///,                ENEMV027
     . 53X,29HE N V I R O N   S O U R C E S/)                           ENEMV028
      M=0                                                               ENEMV029
      NTOT=NPLTS+2                                                      ENEMV030
C                                                                       ENEMV031
C     DATA SET 34  ENVIRON POINT SOURCES                                ENEMV032
C                                                                       ENEMV033
      READ 8676, AE1234                                                 ENEMV034
 8676 FORMAT(A1)                                                        ENEMV035
      READ 1,NMAX                                                       ENEMV036
    1 FORMAT(I4)                                                        ENEMV037
C                                                                       ENEMV038
C     NMAX = NO. OF ENVIRON POINT SOURCES                               ENEMV039
C                                                                       ENEMV040
      IF (NMAX.EQ.0) GO TO 50                                           ENEMV041
      LSRCES=1                                                          ENEMV042
      NSRCES=NSRCES+NMAX                                                ENEMV043
      IC=1                                                              ENEMV044
      PRINT 10                                                          ENEMV045
   10 FORMAT(1H1,42X,53HI I I.  A.  E N V I R O N   P O I N T   S O U R ENEMV046
     .C E S)                                                            ENEMV047
      DO 20 N=LSRCES,NSRCES                                             ENEMV048
      READ 2,(ENPTS(I,N),I=1,11)                                        ENEMV049
    2 FORMAT(2F4.0,9F8.2)                                               ENEMV050
C                                                                       ENEMV051
C     POINT SOURCE INPUT                                                ENEMV052
C                                                                       ENEMV053
C      ENPTS(1,N) = ID                                                  ENEMV054
C      ENPTS(2,N) = PLMD                                                ENEMV055
C      ENPTS(3,N) = X   (KM)                                            ENEMV056
C      ENPTS(4,N) = Y   (KM)                                            ENEMV057
C      ENPTS(5,N) = HO  (M)                                             ENEMV058
C      ENPTS(6,N) = DY  (M)                                             ENEMV059
C      ENPTS(7,N) = DZ  (M)                                             ENEMV060
C      ENPTS(8,N) = TS  (DEG. F)                                        ENEMV061
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```
C      ENPTS(9,N) = VS   (M/S)                                          ENEMV062
C      ENPTS(10,N) = DS   (M)                                           ENEMV063
C      ENPTS(11,N) = HB   (M)                                           ENEMV064
C                                                                       ENEMV065
       READ 3,SID,(SOREM(I,N),I=3,NTOT)                                 ENEMV066
     3 FORMAT(F4.0,4X,9F8.2)                                            ENEMV067
C                                                                       ENEMV068
C     EMISSIONS INPUT   (KGM*10**3/YEAR)                               ENEMV069
C                                                                       ENEMV070
C      SOREM(3,N) = CO                                                  ENEMV071
C      SOREM(4,N) = HC                                                  ENEMV072
C      SOREM(5,N) = NOX                                                 ENEMV073
C      SOREM(6,N) = PART                                                ENEMV074
C      SOREM(7,N) = SOX                                                 ENEMV075
C      SOREM(8,N) = POL 6                                               ENEMV076
C                                                                       ENEMV077
       IF (SID.NE.ENPTS(1,N)) GO TO 9000                                ENEMV078
       SOREM(1,N)=SID                                                   ENEMV079
       DO 20 I=1,NPLTS                                                  ENEMV080
       SOREM(I+2,N)=SOREM(I+2,N)*1000.                                  ENEMV081
       TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                         ENEMV082
    20 CONTINUE                                                         ENEMV083
       CALL CENEM(IO)                                                   ENEMV084
C                                                                       ENEMV085
       NLEN=NPLTS+11                                                    ENEMV086
       WRITE(ITAPE) NSRCES,NLEN,((ENPTS(I,N),I=1,11),(SOREM(I,N),       ENEMV087
      .  I=3,NTOT),N=1,NSRCES)                                          ENEMV088
       GO TO 100                                                        ENEMV089
    50 NLEN=1                                                           ENEMV090
       WRITE(ITAPE) NSRCES,NLEN,((ENPTS(I,N),I=1,NLEN),N=1,NSRCES)      ENEMV091
C                                                                       ENEMV092
C     DATA SET 35  ENVIRON AREA SOURCES                                 ENEMV093
C                                                                       ENEMV094
   100 NSRCES=0                                                         ENEMV095
       READ 8676, AB1234                                                ENEMV096
       READ 1,IOPT                                                      ENEMV097
C                                                                       ENEMV098
C     IOPT = 0   NO ENVIRON AREAS                                       ENEMV099
C     IOPT = 1   STATIONARY AND/OR MOBILE SOURCES DEFINED SEPARATELY    ENEMV100
C     IOPT = 2   LAND USE AREAS                                         ENEMV101
C     IOPT = 3   STATIONARY AND MOBILE SOURCES COMBINED                 ENEMV102
C                                                                       ENEMV103
       PRINT 76                                                         ENEMV104
    76 FORMAT(1H1,44X,51HI I I.  P.  E N V I R O N   A R E A   S O U R C ENEMV105
      .E S)                                                             ENEMV106
       PRINT 900, IOPT                                                  ENEMV107
   900 FORMAT(1H-,52X,26HENVIRON AREA SOURCE OPTION,I2,5H USED)         ENEMV108
       IF (IOPT.EQ.0) GO TO 490                                         ENEMV109
       GO TO (110,300,400),IOPT                                         ENEMV110
C                                                                       ENEMV111
C     OPTION 1  NMAX1 = NO. OF ENVIRON STATIONARY AREA SOURCES          ENEMV112
C                                                                       ENEMV113
   110 READ 1,NMAX1                                                     ENEMV114
       IF (NMAX1.EQ.0) GO TO 200                                        ENEMV115
       LSRCES=1                                                         ENEMV116
       NSRCES=NSRCES+NMAX1                                              ENEMV117
       IO=2                                                             ENEMV118
       PRINT 111                                                        ENEMV119
   111 FORMAT(1H-,52X,34HIII. B.1  ENVIRON STATIONARY AREAS)            ENEMV120
       DO 120 N=LSRCES,NSRCES                                           ENEMV121
       READ 2,(ENARS(I,N),I=1,7)                                        ENEMV122
C                                                                       ENEMV123
```

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C     AREA SOURCE INPUT                                                    ENEMV124
C                                                                          ENEMV125
C      ENARS(1,N) = AD                                                     ENEMV126
C      ENARS(2,N) = PLMD                                                   ENEMV127
C      ENARS(3,N) = X   (KM)                                               ENEMV128
C      ENARS(4,N) = Y   (KM)                                               ENEMV129
C      ENARS(5,N) = ZBAR   (M)                                             ENEMV130
C      ENARS(6,N) = L   (M)                                                ENEMV131
C      ENARS(7,N) = DZ   (M)                                               ENEMV132
C                                                                          ENEMV133
       IF (ENARS(7,N).LE.0.0) ENARS(7,N)=ARDSDZ                            ENEMV134
       READ 3,SID,(SOREM(I,N),I=3,NTOT)                                    ENEMV135
       IF (SID.NE.ENARS(1,N)) GO TO 9000                                   ENEMV136
       SOREM(1,N)=SID                                                      ENEMV137
       DO 120 I=1,NPLTS                                                    ENEMV138
       SOREM(I+2,N)=SOREM(I+2,N)*1000.                                     ENEMV139
       TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                            ENEMV140
   120 CONTINUE                                                            ENEMV141
       CALL CENEM(IO)                                                      ENEMV142
C                                                                          ENEMV143
C     OPTION 1  NMAX2 = NO. OF ENVIRON MOBILE AREA SOURCES                 ENEMV144
C                                                                          ENEMV145
   200 READ 1,NMAX2                                                        ENEMV146
       IF (NMAX2.EQ.0) GO TO 450                                           ENEMV147
       LSRCES=NSRCES+1                                                     ENEMV148
       NSRCES=NSRCES+NMAX2                                                 ENEMV149
       DO 210 J=4,NPLTS                                                    ENEMV150
       SPDC(J)=1.0                                                         ENEMV151
   210 CONTINUE                                                            ENEMV152
       IC=3                                                                ENEMV153
       PRINT 201                                                           ENEMV154
   201 FORMAT(1H1,54X,30HIII. B.2  ENVIRON MOBILE AREAS)                   ENEMV155
       PRINT 221                                                           ENEMV156
   221 FORMAT(1H-,61X,13HVEHICLE INPUT,/1H0,20X,5HSPEED,6X,                ENEMV157
      . 45HTHOUSANDS OF MILES PER VEHICLE CLASS PER YEAR,5X,               ENEMV158
      . 38HCOLD STARTS PER VEHICLE CLASS PER YEAR,3X,8HANN. HOT /          ENEMV159
      . 1H ,3X,2HID,5X,6HOPTION,4X,5H(MPH),7X,3H(1),5X,3H(2),5X,3H(3),5X,ENEMV160
      . 3H(4),5X,3H(5),5X,3H(6),6X,3H(1),4X,3H(2),4X,3H(3),4X,3H(4),4X,   ENEMV161
      . 3H(5),4X,3H(6),5X,5HSOAKS)                                         ENEMV162
C                                                                          ENEMV163
       DO 260 N=LSRCES,NSRCES                                              ENEMV164
       READ 2,(ENARS(I,N),I=1,7)                                           ENEMV165
       IF (ENARS(7,N).LE.0.0) ENARS(7,N)=ATDSDZ                            ENEMV166
       DO 230 J=1,3                                                        ENEMV167
       SPDC(J)=1.0                                                         ENEMV168
   230 CONTINUE                                                            ENEMV169
C                                                                          ENEMV170
       READ 2,SID,CLDST,SPEED,(VM(J),J=1,6)                                ENEMV171
       PRINT 232,SID,CLDST,SPEED,(VM(J),J=1,6)                             ENEMV172
   232 FORMAT(1H ,2X,F5.0,F6.0,F12.2,3X,6F8.2)                             ENEMV173
       IF (SID.NE.ENARS(1,N)) GO TO 9000                                   ENEMV174
       SOREM(1,N)=SID                                                      ENEMV175
                                                                           ENEMV176
       IF (SPEED.NE.19.6) SPDC(1)=12.5*(SPEED**(-0.845))                   ENEMV177
       IF (SPEED.NE.19.6) SPDC(2)=7.0*(SPEED**(-0.649))                    ENEMV178
       IF (SPEED.NE.19.6) SPDC(3)=1.0+(SPEED-19.6)*0.01262                 ENEMV179
       K=CLDST                                                             ENEMV180
       IF (CLDST.NE.3.0) GO TO 240                                         ENEMV181
C                                                                          ENEMV182
       READ 231,SID,(CDSTN(J),J=1,6)                                       ENEMV183
   231 FORMAT(7F4.0)                                                       ENEMV184
       PRINT 233,(CDSTN(J),J=1,6)                                          ENEMV185
```

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  233 FORMAT (1H+,T78,6F7.1)                                          ENEMV186
      IF (SID.NE.ENARS(1,N)) GO TO 9000                               ENEMV187
      READ 231,SID,HSOAKN                                             ENEMV188
      B=ATSOAK*HSOAKN                                                 ENEMV189
      IF (SID.NE.ENARS(1,N)) GO TO 9000                               ENEMV190
      PRINT 234,HSOAKN                                                ENEMV191
  234 FORMAT(1H+,T122,F6.0)                                           ENEMV192
      K=1                                                             ENEMV193
C                                                                     ENEMV194
  240 DO 260 I=1,NPLTS                                                ENEMV195
      SOREM(I+2,N)=0.0                                                ENEMV196
      DO 250 J=1,6                                                    ENEMV197
      A=SPDC(I)*VM(J)*ATEMFC(K,J,I)                                   ENEMV198
      IF (CLDST.NE.3.0) GO TO 245                                     ENEMV199
      A=A+CSEMFC(J,I)*CDSTN(J)                                        ENEMV200
      IF (J.EQ.1) A=A+B                                               ENEMV201
  245 SOREM(I+2,N)=SOREM(I+2,N)+A*1000.                               ENEMV202
  250 CONTINUE                                                        ENEMV203
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                        ENEMV204
  260 CONTINUE                                                        ENEMV205
      CALL CENEM(IO)                                                  ENEMV206
      GO TO 450                                                       ENEMV207
C                                                                     ENEMV208
C     OPTION 2  NMAX1 = NO. OF ENVIRON LAND USE AREAS                 ENEMV209
C                                                                     ENEMV210
  300 READ 1,NMAX1                                                    ENEMV211
      IF (NMAX1.EQ.0) GO TO 490                                       ENEMV212
      LSRCES=1                                                        ENEMV213
      NSRCES=NMAX1                                                    ENEMV214
      IO=4                                                            ENEMV215
      PRINT 302                                                       ENEMV216
  302 FORMAT(1H-,53X,32HIII. B.1  ENVIRON LAND USE AREAS/1H-,         ENEMV217
     . 48X,41HFRACTIONAL BREAKDOWN OF AREAS BY LAND USE/1H0,6X,       ENEMV218
     . 7HAREA ID,6X,11HCITY CENTER,6X,10HURBAN AREA,6X,13HSUBURBAN AREA,ENEMV219
     . 6X,10HSEMI-RURAL,6X,5HRURAL,6X,8HCEMETARY,6X,4HPARK,6X,7HAIRPORT ENEMV220
     . /1H )                                                          ENEMV221
C                                                                     ENEMV222
      DO 320 N=LSRCES,NSRCES                                          ENEMV223
      READ 2,(ENARS(I,N),I=1,7)                                       ENEMV224
      READ 301,SID,(FRCTLU(I),I=1,8)                                  ENEMV225
  301 FORMAT(F4.0,4X,8F8.7)                                           ENEMV226
      PRINT 303,SID,(FRCTLU(I),I=1,8)                                 ENEMV227
  303 FORMAT(1H ,F12.0,F14.2,F16.2,F18.2,F17.2,F14.2,3F12.2)          ENEMV228
      IF (SID.NE.ENARS(1,N)) GO TO 9000                               ENEMV229
      SOREM(1,N)=SID                                                  ENEMV230
      AREA=(ENARS(6,N)**2)*1.0E-6                                     ENEMV231
      IF (ENARS(7,N).LE.0.0) ENARS(7,N)=ARDSDZ                        ENEMV232
      DO 320 I=1,NPLTS                                                ENEMV233
      SOREM(I+2,N)=0.0                                                ENEMV234
      DO 310 J=1,8                                                    ENEMV235
      SOREM(I+2,N)=SOREM(I+2,N)+LUEMFC(J,I)*AREA*FRCTLU(J)*           ENEMV236
     .  3600.*24.*365./1000.                                          ENEMV237
  310 CONTINUE                                                        ENEMV238
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                        ENEMV239
  320 CONTINUE                                                        ENEMV240
      CALL CENEM(IO)                                                  ENEMV241
      GO TO 450                                                       ENEMV242
C                                                                     ENEMV243
C****OPTION 3  NMAX1 = NO. OF ENVIRON COMBINED AREA SOURCES           ENEMV244
C                                                                     ENEMV245
  400 READ 1,NMAX1                                                    ENEMV246
      IF (NMAX1.EQ.0) GO TO 490                                       ENEMV247
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      LSRCES=1                                                          ENEMV248
      NSRCES=NMAX1                                                      ENEMV249
      IO=5                                                              ENEMV250
      PRINT 401                                                         ENEMV251
  401 FORMAT(1H-,53X,32HIII. B.1  ENVIRON COMBINED AREAS)               ENEMV252
      DO 410 N=LSRCES,NSRCES                                            ENEMV253
      READ 2,(ENARS(I,N),I=1,7)                                         ENEMV254
      IF (ENARS(7,N).LE.0.0) ENARS(7,N)=ARDSDZ                          ENEMV255
      READ 3,SID,(SOREM(I,N),I=3,NTOT)                                  ENEMV256
      IF (SID.NE.ENARS(1,N)) GO TO 9000                                 ENEMV257
      SCREM(1,N)=SID                                                    ENEMV258
      SOREM(1,N)=SID                                                    ENEMV259
      DO 410 I=1,NPLTS                                                  ENEMV260
      SCREM(I+2,N)=SOREM(I+2,N)*1000.                                   ENEMV261
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ENEMV262
  410 CONTINUE                                                          ENEMV263
      CALL CENEM(IO)                                                    ENEMV264
C                                                                       ENEMV265
  450 NLEN=NPLTS+7                                                      ENEMV266
      WRITE(ITAPE) NSRCES,NLEN,IOPT,NMAX1,NMAX2,                        ENEMV267
     .  ((ENARS(I,N),I=1,7),(SOREM(I+2,N),I=1,NPLTS),N=1,NSRCES)        ENEMV268
      GO TO 500                                                         ENEMV269
C                                                                       ENEMV270
  490 NLEN=1                                                            ENEMV271
      NMAX1=0                                                           ENEMV272
      NMAX2=0                                                           ENEMV273
      WRITE(ITAPE) NSRCES,NLEN,IOPT,NMAX1,NMAX2,((ENARS(I,N),           ENEMV274
     .  I=1,NLEN),N=1,NSRCES)                                           ENEMV275
C                                                                       ENEMV276
C     DATA SET 36  ENVIRON LINE SOURCES                                 ENEMV277
C                                                                       ENEMV278
  500 NSRCES=0                                                          ENEMV279
      READ 8676, AB1234                                                 ENEMV280
C                                                                       ENEMV281
C     NMAX1 = NO. OF ROADWAY LINE SOURCES                               ENEMV282
C                                                                       ENEMV283
      READ 1,NMAX1                                                      ENEMV284
      IF (NMAX1.EQ.0) GO TO 600                                         ENEMV285
      LSRCES=1                                                          ENEMV286
      NSRCES=NMAX1                                                      ENEMV287
      IO=6                                                              ENEMV288
      PRINT 918                                                         ENEMV289
  918 FORMAT(1H1,41X,51HI I I.  C.  E N V I R O N   L I N E   S O U R C ENEMV290
     .E S/1H-,52X,31HIII. C.1  ENVIRON ROADWAY LINES)                   ENEMV291
      PRINT 221                                                         ENEMV292
      DO 510 N=LSRCES,NSRCES                                            ENEMV293
      READ 2,(ENLNS(I,N),I=1,10)                                        ENEMV294
C                                                                       ENEMV295
C     LINE SOURCE INPUT                                                 ENEMV296
C                                                                       ENEMV297
C      ENLNS(1,N)  = ID                                                 ENEMV298
C      ENLNS(2,N)  = PLMD                                               ENEMV299
C      ENLNS(3,N)  = X1   (KM)                                          ENEMV300
C      ENLNS(4,N)  = Y1   (KM)                                          ENEMV301
C      ENLNS(5,N)  = Z1   (M)                                           ENEMV302
C      ENLNS(6,N)  = W    (M)                                           ENEMV303
C      ENLNS(7,N)  = DZ   (M)                                           ENEMV304
C      ENLNS(8,N)  = X2   (KM)                                          ENEMV305
C      ENLNS(9,N)  = Y2   (KM)                                          ENEMV306
C      ENLNS(10,N)  = Z2   (M)                                          ENEMV307
C                                                                       ENEMV308
      IF (ENLNS(6,N).LE.0.0) ENLNS(6,N)=ATDSDY                          ENEMV309
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      IF (ENLNS(7,N).LE.0.0) ENLNS(7,N)=ATDSDZ                          ENEMV310
      DO 530 J=1,6                                                      ENEMV311
      SPDC(J)=1.0                                                       ENEMV312
  530 CONTINUE                                                          ENEMV313
C                                                                       ENEMV314
      READ 2,SID,CLDST,SPEED,(VM(J),J=1,6)                             ENEMV315
      PRINT 232,SID,CLDST,SPEED,(VM(J),J=1,6)                          ENEMV316
      IF (SID.NE.ENLNS(1,N)) GO TO 9000                                 ENEMV317
      SOREM(1,N)=SID                                                    ENEMV318
      IF (SPEED.NE.19.6) SPDC(1)=12.5*(SPEED**(-0.845))                 ENEMV319
      IF (SPEED.NE.19.6) SPDC(2)=7.0*(SPEED**(-0.649))                  ENEMV320
      IF (SPEED.NE.19.6) SPDC(3)=1.0+(SPEED-19.6)*0.01262               ENEMV321
      K=CLDST                                                           ENEMV322
      IF (CLDST.NE.3.0) GO TO 540                                       ENEMV323
C                                                                       ENEMV324
      READ 231,SID,(CDSTN(J),J=1,6)                                     ENEMV325
      PRINT 233,(CDSTN(J),J=1,6)                                        ENEMV326
      IF (SID.NE.ENLNS(1,N)) GO TO 9000                                 ENEMV327
      READ 231,SID,HSOAKN                                               ENEMV328
      B=ATSOAK*HSOAKN                                                   ENEMV329
      IF (SID.NE.ENARS(1,N)) GO TO 9000                                 ENEMV330
      PRINT 234,HSOAKN                                                  ENEMV331
      K=1                                                               ENEMV332
C                                                                       ENEMV333
  540 DO 510 I=1,NPLTS                                                  ENEMV334
      SOREM(I+2,N)=0.0                                                  ENEMV335
      DO 550 J=1,6                                                      ENEMV336
      A=SPDC(I)*VM(J)*ATEMFC(K,J,I)                                     ENEMV337
      IF (CLDST.NE.3.0) GO TO 545                                       ENEMV338
      A=A+CSEMFC(J,I)*CDSTN(J)                                          ENEMV339
      IF (J.EQ.1) A=A+B                                                 ENEMV340
  545 SOREM(I+2,N)=SOREM(I+2,N)+A*1000.                                 ENEMV341
  550 CONTINUE                                                          ENEMV342
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ENEMV343
  510 CONTINUE                                                          ENEMV344
      CALL CENEM(IO)                                                    ENEMV345
C                                                                       ENEMV346
C     DATA SET 37  ENVIRON NON-ROADWAY LINE SOURCES                     ENEMV347
C                                                                       ENEMV348
  600 READ 8676, AB1234                                                 ENEMV349
C                                                                       ENEMV350
C     NMAX2 = NO. OF NON-ROADWAY LINE SOURCES                           ENEMV351
C                                                                       ENEMV352
      READ 1, NMAX2                                                     ENEMV353
      IF (NMAX2.EQ.0) GO TO 650                                         ENEMV354
      LSRCES=NSRCES+1                                                   ENEMV355
      NSRCES=NSRCES+NMAX2                                               ENEMV356
      IO=7                                                              ENEMV357
      PRINT 601                                                         ENEMV358
  601 FORMAT(1H1,50X,35HIII. C.2  ENVIRON NON-ROADWAY LINES)            ENEMV359
      DO 610 N=LSRCES,NSRCES                                            ENEMV360
      READ 2,(ENLNS(I,N),I=1,10)                                        ENEMV361
C                                                                       ENEMV362
      IF (ENLNS(6,N).LE.0.0) ENLNS(6,N)=ATDSDY                          ENEMV363
      IF (ENLNS(7,N).LE.0.0) ENLNS(7,N)=ATDSDZ                          ENEMV364
C                                                                       ENEMV365
      READ 3,SID,(SOREM(I,N),I=3,NTOT)                                  ENEMV366
      IF (SID.NE.ENLNS(1,N)) GO TO 9000                                 ENEMV367
      SOREM(1,N)=SID                                                    ENEMV368
      IF (NPLTS.EQ.10) READ 3,SID,SOREM(12,N)                           ENEMV369
      SOREM(1,N)=SID                                                    ENEMV370
      DO 610 I=1,NPLTS                                                  ENEMV371
```

```
      SOREM(I+2,N)=SOREM(I+2,N)*1000.                                   ENEMV372
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+SOREM(I+2,N)                          ENEMV373
  610 CONTINUE                                                          ENEMV374
      CALL OENEM(IO)                                                    ENEMV375
C                                                                       ENEMV376
  650 IF (NSRCES.EQ.0) GO TO 690                                        ENEMV377
      NLEN=NPLTS+10                                                     ENEMV378
      WRITE(ITAPE) NSRCES,NLEN,NMAX1,NMAX2,                             ENEMV379
     .  ((ENLNS(I,N),I=1,10),(SOREM(I+2,N),I=1,NPLTS),N=1,NSRCES)       ENEMV380
      GO TO 700                                                         ENEMV381
C                                                                       ENEMV382
  690 NLEN=1                                                            ENEMV383
      WRITE(ITAPE) NSRCES,NLEN,NMAX1,NMAX2,((ENLNS(I,N),                ENEMV384
     .  I=1,NLEN),N =1,NSRCES)                                          ENEMV385
      GO TO 700                                                         ENEMV386
C                                                                       ENEMV387
 9000 PRINT 9001,SID                                                    ENEMV388
 9001 FORMAT(17H0CONTINUATION ID ,F4.0,                                 ENEMV389
     . 35H, DOES NOT AGREE WITH PREVIOUS CARD)                          ENEMV390
      STOP                                                              ENEMV391
C                                                                       ENEMV392
  700 CONTINUE                                                          ENEMV393
      RETURN                                                            ENEMV394
      END                                                               ENEMV395
```

SUBROUTINE EVAPHC

Purpose:

1. To input air base non-aircraft evaporative hydrocarbon activity data.

2. To calculate annual emissions from hydrocarbon filling or working losses and spillage, breathing losses from petroleum storage tanks, tank truck parking areas and military and civilian vehicle parking areas, and other sources.

Input:

Air base non-aircraft evaporative hydrocarbon activity data.

Output:

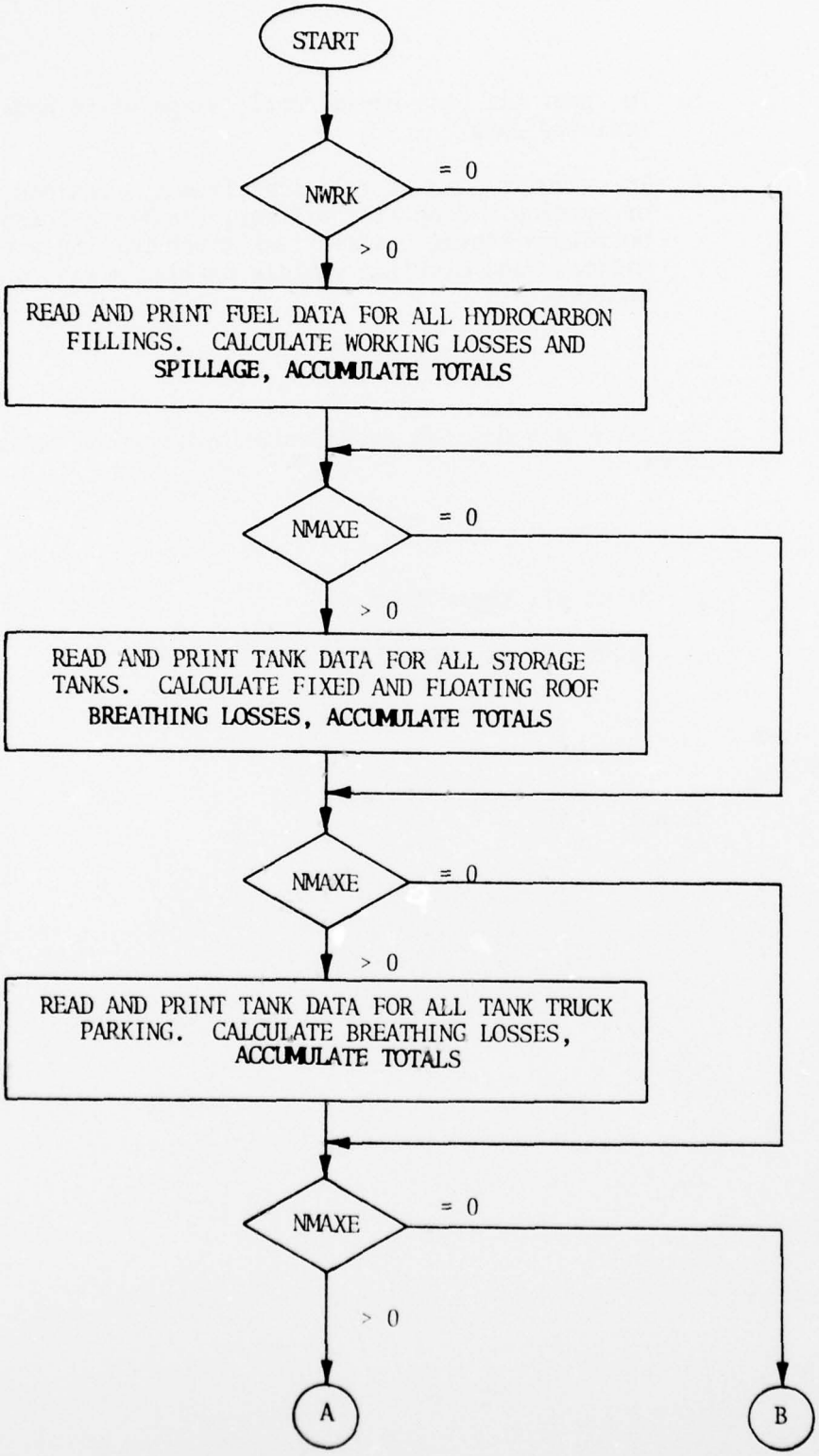
1. Print all input data.

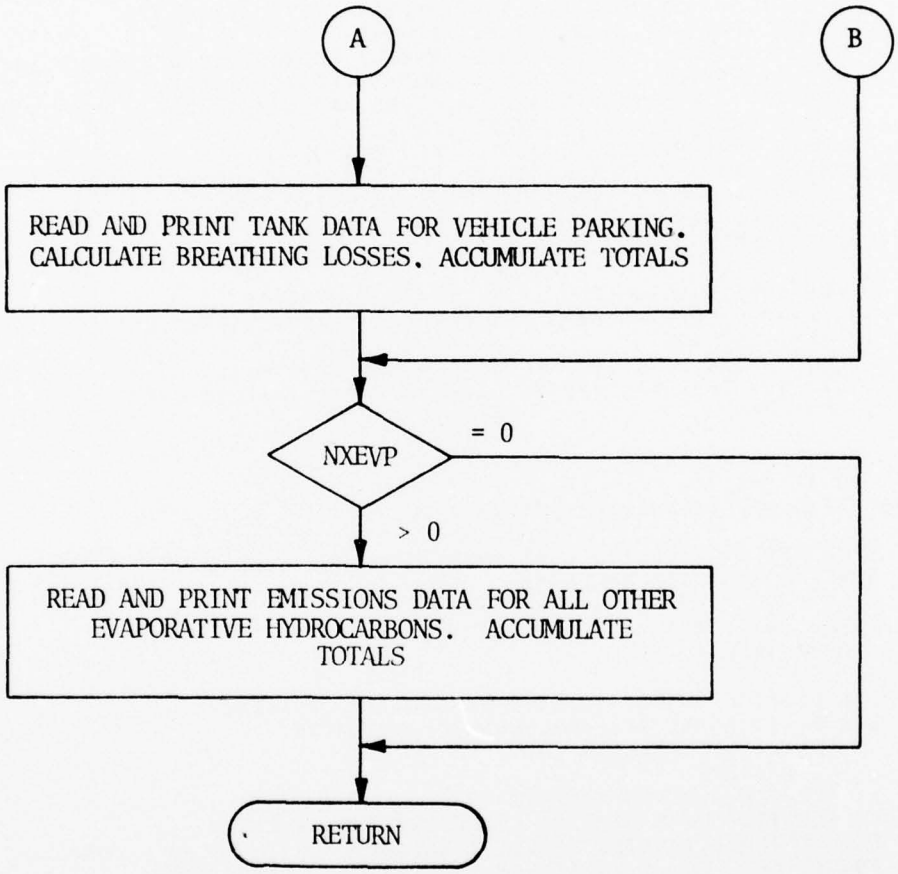
2. Print all calculated annual emissions.

Subroutines Called:

None

SUBROUTINE EVAPHC




A
B
READ AND PRINT TANK DATA FOR VEHICLE PARKING. CALCULATE BREATHING LOSSES. ACCUMULATE TOTALS
NXEVP
= 0
> 0
READ AND PRINT EMISSIONS DATA FOR ALL OTHER EVAPORATIVE HYDROCARBONS. ACCUMULATE TOTALS
RETURN

```
      SUBROUTINE EVAPHC(NWRK,NHCBR,NXEVP)                                EVAPH000
C                                                                        EVAPH001
C     THIS ROUTINE READS THE AIRBASE EVAPORATIVE HYDROCARBON DATA        EVAPH002
C     AND COMPUTES ANNUAL EMISSIONS                                      EVAPH003
C                                                                        EVAPH004
      REAL*8 MINUS                                                       EVAPH005
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                               EVAPH006
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                   EVAPH007
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                    EVAPH008
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6), EVAPH009
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),       EVAPH010
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,       EVAPH011
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)                EVAPH012
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                              EVAPH013
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,   EVAPH014
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,    EVAPH015
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,   EVAPH016
     . TDDFLT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                        EVAPH017
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                            EVAPH018
      COMMON /ARRAYS/ HCWRK(10,50),HCBRTH(5,100),HCEVP(3,50)             EVAPH019
      DIMENSION TVP(7),YRUSE(7),CC(7),TSAVE1(7,50)                       EVAPH020
      DIMENSION ABARS(7,300)                                             EVAPH021
      EQUIVALENCE (ABARS(1),SORCE(1))                                    EVAPH022
C                                                                        EVAPH023
      FXROOF(FX,A,P,D,H,T,C1,C2)=FX*42.0*3.785*A*                        EVAPH024
     .   (P/(14.7-P))**0.68*(D*3.28)**1.73*(H*3.281)**0.51*              EVAPH025
     .   T**0.5*C1*C2                                                    EVAPH026
      FLROOF(FL,A,P,W,D,C1,C2,C3)=FL*42.0*3.785*A*                       EVAPH027
     .   (P/(14.7-P))**0.7*(W*2.237)**0.7*(D*3.281)**1.5*               EVAPH028
     .   C1*C2*C3                                                       EVAPH029
C                                                                        EVAPH030
      TP=(5.0/9.0)*(TBAR  -32.)+273.                                     EVAPH031
      DO 10 J=1,7                                                        EVAPH032
   10 TVP(J)=EXP(ALPHA(J)-(BETA(J)/TP))                                  EVAPH033
C                                                                        EVAPH034
C     DATA SET 21  AIRBASE AREA SOURCES WITH HYDROCARBON FILLING,        EVAPH035
C     WORKING LOSS AND SPILLAGE                                          EVAPH036
C                                                                        EVAPH037
      READ 8676, AB1234                                                  EVAPH038
 8676 FORMAT(A1)                                                         EVAPH039
C                                                                        EVAPH040
C     CALCULATION OF HYDROCARBON FILLING AND WORKING                     EVAPH041
C     LOSSES FROM ALL AIRBASE SOURCES INCLUDING                          EVAPH042
C        TANK TRUCK FILLING                                              EVAPH043
C        AC FILLING                                                      EVAPH044
C        SERVICE VEHICLE FILLING                                         EVAPH045
C        ALL PETROLEUM STORAGE AND DISTRIBUTION TANKS                    EVAPH046
C     EXCEPT THOSE TREATED AS POINT SOURCES.                             EVAPH047
C     AMOUNT LOST DUE TO SPILLAGE IS ALSO CALCULATED HERE                EVAPH048
C                                                                        EVAPH049
      READ 1, NWRK                                                       EVAPH050
    1 FORMAT(I4)                                                         EVAPH051
C                                                                        EVAPH052
C     NWRK = NO. OF AREAS TO BE DESCRIBED                                EVAPH053
C                                                                        EVAPH054
      IF (NWRK.EQ.0) GO TO 100                                           EVAPH055
      PRINT 13                                                           EVAPH056
   13 FORMAT(1H1,50X,36HII. C.2  AIRBASE HYDROCARBON FILLING)            EVAPH057
      PRINT 2                                                            EVAPH058
    2 FORMAT(1H-,61X,14HEMISSION INPUT)                                  EVAPH059
      PRINT 14, (FLNAME(I),I=1,7)                                        EVAPH060
   14 FORMAT(1H0,1X,6HSOURCE,42X,28HKILOLITERS OF FUEL PROCESSED,38X,    EVAPH061
```

```
     . 15HANNUAL SPILLAGE/1H ,3X,2HID,7X,7(A4,11X),11H(M-TONS/YR)/1H ,)  EVAPH062
C                                                                        EVAPH063
      DO 60 N=1,NWRK                                                     EVAPH064
      READ 11,SID,(YRUSE(J),J=1,7)                                       EVAPH065
   11 FORMAT(F4.0,4X,7F8.2)                                              EVAPH066
      READ 2222,(CC(J),J=1,7),SPILL                                      EVAPH067
 2222 FORMAT(8X,8F8.2)                                                   EVAPH068
      DO 3333 J=1,7                                                      EVAPH069
      IF (CC(J).LE.0.0) CC(J)=TFDFLT                                     EVAPH070
 3333 TSAVE1(J,N)=CC(J)                                                  EVAPH071
      DO 20 J=1,NMAX                                                     EVAPH072
      IF (SID.EQ.ABARS(1,J)) GO TO 30                                    EVAPH073
   20 CONTINUE                                                           EVAPH074
      GO TO 9000                                                         EVAPH075
   30 HCWRK(1,N)=SID                                                     EVAPH076
      HCWRK(2,N)=J                                                       EVAPH077
      DO 40 J=1,4                                                        EVAPH078
      IF (CC(J).LE.0.0) CC(J)=TFDFLT                                     EVAPH079
   40 CONTINUE                                                           EVAPH080
      PRINT 12, SID,(YRUSE(J),J=1,7),SPILL                               EVAPH081
   12 FORMAT(1H ,F7.0,3X,1P7(E9.3,6X),3X,1PE9.3)                         EVAPH082
      WRKLSS=0.0                                                         EVAPH083
      DO 50 J=1,7                                                        EVAPH084
      A=WRKFCT(J)*CC(J)*TVP(J)*FLDENS(J)*YRUSE(J)                        EVAPH085
      WRKLSS=WRKLSS+A                                                    EVAPH086
   50 HCWRK(2+J,N)=A                                                     EVAPH087
      TOTEVP(4)=TOTEVP(4)+WRKLSS                                         EVAPH088
      TOTEVP(5)=TOTEVP(5)+SPILL*1000.                                    EVAPH089
      HCWRK(10,N)=SPILL*1000.                                            EVAPH090
   60 CONTINUE                                                           EVAPH091
C                                                                        EVAPH092
      PRINT 5555, (FLNAME(I),I=1,7)                                      EVAPH093
 5555 FORMAT(1H0,1X,6HSOURCE,42X,30HESTIMATES OF THROUGHPUT FACTOR/      EVAPH094
     . 1H ,3X,2HID,8X,7(A4,10X)/1H ,)                                    EVAPH095
      DO 4444 N=1,NWRK                                                   EVAPH096
      PRINT 6666, HCWRK(1,N),(TSAVE1(J,N),J=1,7)                         EVAPH097
 6666 FORMAT(1H ,F7.0,F10.2,4X,6(F10.2,4X))                              EVAPH098
 4444 CONTINUE                                                           EVAPH099
      PRINT 3                                                            EVAPH100
    3 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR))       EVAPH101
      PRINT 7                                                            EVAPH102
    7 FORMAT(1H0,61X,14H(WORKING LOSS))                                  EVAPH103
      WRITE(6,61) (FLNAME(IJ),IJ=1,7)                                    EVAPH104
   61 FORMAT(1H0,1X,6HSOURCE/1H ,3X,2HID,7X,7(A4,11X),1X,8HSPILLAGE/1H ) EVAPH105
      DO 65 N=1,NWRK                                                     EVAPH106
      PRINT 62,HCWRK(1,N),(HCWRK(2+J,N),J=1,7),HCWRK(10,N)               EVAPH107
   62 FORMAT(1H ,F7.0,3X,1P7(E9.3,6X),3X,1PE9.3)                         EVAPH108
      DO 65 J=1,7                                                        EVAPH109
      HCWRK(2+J,N)=HCWRK(2+J,N)/TVP(J)                                   EVAPH110
   65 CONTINUE                                                           EVAPH111
      PRINT 4                                                            EVAPH112
    4 FORMAT(1H-,48X,41HTOTAL ANNUAL SOURCE EMISSION RATE (KG/YR))       EVAPH113
      PRINT 66,(TOTEVP(J),J=4,5)                                         EVAPH114
   66 FORMAT(1H0,47X,12HWORKING LOSS,20X,8HSPILLAGE/1H0,49X,1PE9.3,      EVAPH115
     . 21X,E9.3)                                                         EVAPH116
      TOTEVP(4)=TOTEVP(4)/1000.                                          EVAPH117
      TOTEVP(5)=TOTEVP(5)/1000.                                          EVAPH118
C                                                                        EVAPH119
C     DATA SET 22  HYDROCARBON BREATHING LOSS SITES  (FROM               EVAPH120
C     PETROLEUM STOPAGE TANKS)                                           EVAPH121
C                                                                        EVAPH122
  100 READ 8676, AB1234                                                  EVAPH123
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```
      READ 1, NMAXE                                                    EVAPH124
C                                                                      EVAPH125
C     NMAXE = NO. OF PETROLEUM STORAGE TANK AREAS                      EVAPH126
C                                                                      EVAPH127
      NHCBR=0                                                          EVAPH128
      IF (NMAXE.EQ.0) GO TO 200                                        EVAPH129
      BRLOSS=0.0                                                       EVAPH130
      LHCBR=NHCBR+1                                                    EVAPH131
      NHCBR=NHCBR+NMAXE                                                EVAPH132
      PRINT 102                                                        EVAPH133
  102 FORMAT(1H1,48X,40HII. C.3  AIRBASE PETROLEUM STORAGE TANKS)      EVAPH134
      PRINT 2                                                          EVAPH135
      PRINT 103                                                        EVAPH136
  103 FORMAT(1H0,3X,6HSOURCE,4X,4HFUEL,4X,4HROOF,4X,7HNUM. OF,4X,      EVAPH137
     . 8HAVG TANK,4X,5HPAINT,5X,28HROOF ID 1 = TANK DIAM FACTOR,4X,    EVAPH138
     . 37HROOF ID 1 = AVG HT OF VAPOR SPACE (M) /1H ,                  EVAPH139
     . 5X,2HID,1X,2(6X,2HID),6X,5HTANKS,5X,8HDIAMETER,4X,6HFACTOR,4X,  EVAPH140
     . 23HROOF ID 2 = SEAL FACTOR,9X,24HROOF ID 2 = RIVET FACTOR)      EVAPH141
      DO 150 N=LHCBR,NHCBR                                             EVAPH142
      READ 101,SID,IDFUEL,IDROOF,NTANKS,DIAM,C1,C2,C3                  EVAPH143
  101 FORMAT(F4.0,3I4,5F8.2)                                           EVAPH144
      DO 110 J=1,NMAX                                                  EVAPH145
      IF (SID.EQ.ABARS(1,J)) GO TO 120                                 EVAPH146
  110 CONTINUE                                                         EVAPH147
      GO TO 9000                                                       EVAPH148
  120 HCBRTH(1,N)=SID                                                  EVAPH149
      HCBRTH(2,N)=J                                                    EVAPH150
      HCBRTH(3,N)=IDFUEL                                               EVAPH151
      HCBRTH(4,N)=IDROOF                                               EVAPH152
      GO TO (130,140),IDROOF                                           EVAPH153
C                                                                      EVAPH154
  130 IF (C1.LE.0.0) C1=FPDFLT                                         EVAPH155
      IF (C2.LE.0.0) C2=TDDFLT                                         EVAPH156
      HVS=C3                                                           EVAPH157
      A=NTANKS*FXROOF(FIXFCT(IDFUEL),FLDENS(IDFUEL),TVP(IDFUEL),DIAM,  EVAPH158
     . HVS,DTBAR,C1,C2)                                                EVAPH159
      TOTEVP(6)=TOTEVP(6)+A                                            EVAPH160
      HCBRTH(5,N)=A                                                    EVAPH161
      PRINT 131,SID,IDFUEL,IDROOF,NTANKS,DIAM,C1,C2,HVS                EVAPH162
  131 FORMAT(1H ,F9.0,I7,I8,I10,F13.2,F10.2,F21.2,F35.2)               EVAPH163
      GO TO 150                                                        EVAPH164
C                                                                      EVAPH165
  140 IF (C1.LE.0.0) C1=PFDFLT                                         EVAPH166
      IF (C2.LE.0.0) C2=SFDFLT                                         EVAPH167
      IF (C3.LE.0.0) C3=RFDFLT                                         EVAPH168
      A=NTANKS*FLROOF(FLTFCT(IDFUEL),FLDENS(IDFUEL),TVP(IDFUEL),WSBAR, EVAPH169
     .  DIAM,C1,C2,C3)                                                 EVAPH170
      TOTEVP(7)=TOTEVP(7)+A                                            EVAPH171
      HCBRTH(5,N)=A                                                    EVAPH172
      PRINT 131,SID,IDFUEL,IDROOF,NTANKS,DIAM,C1,C2,C3                 EVAPH173
  150 CONTINUE                                                         EVAPH174
      PRINT 3                                                          EVAPH175
      PRINT 151                                                        EVAPH176
  151 FORMAT(1H0,41X,6HSOURCE,12X,10HFIXED ROOF,12X,14HFLOATING  ROOF/ EVAPH177
     . 1H ,43X,2HID,12X,2(14HBREATHING LOSS,10X))                      EVAPH178
C                                                                      EVAPH179
      DO 170 N=LHCBR,NHCBR                                             EVAPH180
      IDROOF=HCBRTH(4,N)                                               EVAPH181
      GO TO (160,165),IDROOF                                           EVAPH182
  160 PRINT 161,HCBRTH(1,N),HCBRTH(5,N)                                EVAPH183
  161 FORMAT(1H ,F47.0,12X,1PE9.3)                                     EVAPH184
      J=HCBRTH(3,N)                                                    EVAPH185
```

```
      HCBRTH(5,N)=HCBRTH(5,N)/(TVP(J)/(14.7-TVP(J)))**0.68                EVAPH186
      GO TO 170                                                           EVAPH187
  165 PRINT 166,HCBRTH(1,N),HCBRTH(5,N)                                   EVAPH188
  166 FORMAT(1H0,F47.0,36X,1PE9.3)                                        EVAPH189
      J=HCBRTH(3,N)                                                       EVAPH190
      HCBRTH(5,N)=HCBRTH(5,N)/(TVP(J)/(14.7-TVP(J)))**0.7                 EVAPH191
  170 CONTINUE                                                            EVAPH192
      PRINT 169, (MINUS(JK),JK=1,2)                                       EVAPH193
  169 FORMAT(1H ,60X,A8,15X,A8)                                           EVAPH194
      PRINT 171,(TOTEVP(J),J=6,7)                                         EVAPH195
  171 FORMAT(1H ,38X,12HTOTAL ANNUAL,9X,1PE9.3,15X,E9.3)                  EVAPH196
      TOTEVP(6)=TOTEVP(6)/1000.                                           EVAPH197
      TOTEVP(7)=TOTEVP(7)/1000.                                           EVAPH198
C                                                                         EVAPH199
C     DATA SET 23  HYDROCARBON BREATHING LOSSES FROM PETROLEUM            EVAPH200
C     TANK TRUCK PARKING AREAS                                            EVAPH201
C                                                                         EVAPH202
  200 READ 8676, AB1234                                                   EVAPH203
      READ 1, NMAXE                                                       EVAPH204
C                                                                         EVAPH205
C     NMAXE = NO. OF TANK TRUCK PARKING AREA SOURCES                      EVAPH206
C                                                                         EVAPH207
      IF (NMAXE.EQ.0) GO TO 300                                           EVAPH208
      IDROOF=1                                                            EVAPH209
      BRLOSS=0.0                                                          EVAPH210
      LHCBR=NHCBR+1                                                       EVAPH211
      NHCBR=NHCBR+NMAXE                                                   EVAPH212
      PRINT 202                                                           EVAPH213
  202 FORMAT(1H1,51X,35HII. C.4  AIRBASE TANK TRUCK PARKING)              EVAPH214
      PRINT 2                                                             EVAPH215
      PRINT 203                                                           EVAPH216
  203 FORMAT(1H0,70X,8HAVG TANK,14X,7HAVERAGE,11X,8HAVG TANK /1H ,        EVAPH217
     . 17X,6HSOURCE,10X,4HFUEL,11X,9HNUMBER OF,13X,8HCAPACITY,12X,       EVAPH218
     . 11HFRACTION OF,10X,8HDIAMETER /1H ,                                EVAPH219
     . 6X,2(13X,2HID),11X,11HTANK TRUCKS,10X,12H(KILOLITERS),10X,         EVAPH220
     . 11HTANK FILLED,10X,8H(METERS))                                     EVAPH221
      DO 230 N=LHCBR,NHCBR                                                EVAPH222
      READ 201,SID,IDFUEL,NTRKS,TNKCAP,FRCFUL,DIAM                        EVAPH223
  201 FORMAT(F4.0,2I4,4X,3F8.2)                                           EVAPH224
      DO 210 J=1,NMAX                                                     EVAPH225
      IF (SID.EQ.ABARS(1,J)) GO TO 220                                    EVAPH226
  210 CONTINUE                                                            EVAPH227
      GO TO 9000                                                          EVAPH228
  220 HCBRTH(1,N)=SID                                                     EVAPH229
      HCBRTH(2,N)=J                                                       EVAPH230
      HCBRTH(3,N)=IDFUEL                                                  EVAPH231
      HCBRTH(4,N)=IDROOF                                                  EVAPH232
      HVS=(1.0-FRCFUL)*4.0*TNKCAP/(3.14159*DIAM**2)                       EVAPH233
      C1=FPDFLT                                                           EVAPH234
      C2=TDDFLT                                                           EVAPH235
      A=NTRKS*FXROOF(FIXFCT(IDFUEL),FLDENS(IDFUEL),TVP(IDFUEL),DIAM,HVS,EVAPH236
     .    DTBAR,C1,C2)                                                    EVAPH237
      TOTEVP(8)=TOTEVP(8)+A                                               EVAPH238
      HCBRTH(5,N)=A                                                       EVAPH239
      PRINT 221,SID,IDFUEL,NTRKS,TNKCAP,FRCFUL,DIAM                       EVAPH240
  221 FORMAT(1H ,F23.0,I13,I17,F24.2,2F20.2)                              EVAPH241
  230 CONTINUE                                                            EVAPH242
      PRINT 3                                                             EVAPH243
      PRINT 231                                                           EVAPH244
  231 FORMAT(1H0,49X,9HSOURCE ID,15X,14HBREATHING LOSS/1H )               EVAPH245
      DO 240 N=LHCBR,NHCBR                                                EVAPH246
      PRINT 232,HCBRTH(1,N),HCBRTH(5,N)                                   EVAPH247
```

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  232 FORMAT(1H ,F56.0,19X,1PE9.3)                                      EVAPH248
      J=HCBRTH(3,N)                                                     EVAPH249
      HCBRTH(5,N)=HCBRTH(5,N)/(TVP(J)/(14.7-TVP(J)))**0.68              EVAPH250
  240 CONTINUE                                                          EVAPH251
      PRINT 75, (MINUS(JK),JK=1,1)                                      EVAPH252
   75 FORMAT(1H ,75X,A8)                                                EVAPH253
      PRINT 241,TOTEVP(8)                                               EVAPH254
  241 FORMAT(1H ,49X,12HTOTAL ANNUAL,14X,1PE9.3)                        EVAPH255
      TOTEVP(8)=TOTEVP(8)/1000.                                         EVAPH256
C                                                                       EVAPH257
C     DATA SET 24  HYDROCARBON BREATHING LOSSES FROM MILITARY           EVAPH258
C     AND CIVILIAN PARKING AREAS                                        EVAPH259
C                                                                       EVAPH260
  300 READ 8676, AB1234                                                 EVAPH261
      READ 1, NMAXE                                                     EVAPH262
C                                                                       EVAPH263
C     NMAXE = NO. OF VEHICLE PARKING AREA SOURCES, BOTH                 EVAPH264
C     MILITARY AND CIVILIAN                                             EVAPH265
C                                                                       EVAPH266
      IF (NMAXE.EQ.0) GO TO 400                                         EVAPH267
      IDROOF=1                                                          EVAPH268
      BRLOSS=0.0                                                        EVAPH269
      LHCBR=NHCBR+1                                                     EVAPH270
      NHCBR=NHCBR+NMAXE                                                 EVAPH271
      PRINT 302                                                         EVAPH272
  302 FORMAT(1H1,52X,32HII. C.5  AIRBASE VEHICLE PARKING)               EVAPH273
      PRINT 2                                                           EVAPH274
      PRINT 303                                                         EVAPH275
  303 FORMAT(1HO,60X,6HNUM OF,11X,8HAVG TANK,12X,7HAVERAGE/1H ,         EVAPH276
     . 29X,6HSOURCE,10X,4HFUEL,10X,8HVEHICLES,10X,8HCAPACITY,10X,       EVAPH277
     . 11HFRACTION OF/1H ,31X,                                          EVAPH278
     . 2HID,13X,2HID,11X,7HIN AREA,11X,8H(LITERS),10X,11HTANK FILLED)   EVAPH279
      DO 330 N=LHCBR,NHCBR                                              EVAPH280
      READ 301,SID,IDFUEL,NVEH,TNKCAP,FRCFUL                            EVAPH281
  301 FORMAT(F4.0,2I4,4X,2F8.2)                                         EVAPH282
      PRINT 213, SID,IDFUEL,NVEH,TNKCAP,FRCFUL                          EVAPH283
  213 FORMAT(1H ,F35.0,I13,I16,2F19.2)                                  EVAPH284
      TNKCAP=TNKCAP/1000.                                               EVAPH285
      DO 310 J=1,NMAX                                                   EVAPH286
      IF (SID.EQ.ABARS(1,J)) GO TO 320                                  EVAPH287
  310 CONTINUE                                                          EVAPH288
      GO TO 9000                                                        EVAPH289
  320 HCBRTH(1,N)=SID                                                   EVAPH290
      HCBRTH(2,N)=J                                                     EVAPH291
      HCBRTH(3,N)=IDFUEL                                                EVAPH292
      HCBRTH(4,N)=IDROOF                                                EVAPH293
      EFDIAM=(4.0*TNKCAP/3.14159)**.33333333                            EVAPH294
      HVS=(1.0-FRCFUL)*EFDIAM                                           EVAPH295
      C1=FPDFLT                                                         EVAPH296
      C2=TDDFLT                                                         EVAPH297
      A=NVEH*FXROOF(FIXFCT(IDFUEL),FLDENS(IDFUEL),TVP(IDFUEL),EFDIAM,   EVAPH298
     . HVS,DTBAR,C1,C2)                                                 EVAPH299
      TOTEVP(9)=TOTEVP(9)+A                                             EVAPH300
      HCBRTH(5,N)=A                                                     EVAPH301
  330 CONTINUE                                                          EVAPH302
      PRINT 3                                                           EVAPH303
      PRINT 231                                                         EVAPH304
      DO 340 N=LHCBR,NHCBR                                              EVAPH305
      PRINT 232,HCBRTH(1,N),HCBRTH(5,N)                                 EVAPH306
      J=HCBRTH(3,N)                                                     EVAPH307
      HCBRTH(5,N)=HCBRTH(5,N)/(TVP(J)/(14.7-TVP(J)))**0.68              EVAPH308
  340 CONTINUE                                                          EVAPH309
```

```
      PRINT 75, (MINUS(1))                                                  EVAPH310
      PRINT 241,TOTEVP(9)                                                   EVAPH311
      TOTEVP(9)=TOTEVP(9)/1000.                                             EVAPH312
C                                                                           EVAPH313
C     DATA SET 25  OTHER EVAPORATIVE HYDROCARBON AREA SOURCES               EVAPH314
C                                                                           EVAPH315
  400 READ 8676, AB1234                                                     EVAPH316
      READ 1, NXEVP                                                         EVAPH317
C                                                                           EVAPH318
C     NXEVP = NO. OF EVAPORATIVE HYDROCARBONS FROM OTHER SOURCES,           EVAPH319
C     E.G., PAINT SPRAY BOOTHS, DEICERS, DRY CLEANING, ETC.                 EVAPH320
C                                                                           EVAPH321
      IF (NXEVP.EQ.0) GO TO 500                                             EVAPH322
      HCSUM=0.0                                                             EVAPH323
      PRINT 402                                                             EVAPH324
  402 FORMAT(1H1,45X,47HII. C.6  OTHER AIRBASE EVAPORATIVE HYDROCARBONS)    EVAPH325
      PRINT 571                                                             EVAPH326
  571 FORMAT(1H-,53X,31HEMISSION INPUT (KILOGRAMS/YEAR))                    EVAPH327
      PRINT 403                                                             EVAPH328
  403 FORMAT(1H0,51X,9HSOURCE ID,12X,15HANNUAL EMISSION)                    EVAPH329
      DO 430 N=1,NXEVP                                                      EVAPH330
      READ 401,SID,ANNEM                                                    EVAPH331
  401 FORMAT(F4.0,4X,F8.2)                                                  EVAPH332
      ANNEM=ANNEM*1000.                                                     EVAPH333
      PRINT 404, SID,ANNEM                                                  EVAPH334
  404 FORMAT(1H ,53X,F5.0,17X,1PE9.3)                                       EVAPH335
      DO 410 J=1,NMAX                                                       EVAPH336
      IF (SID.EQ.ABARS(1,J)) GO TO 420                                      EVAPH337
  410 CONTINUE                                                              EVAPH338
      GO TO 9000                                                            EVAPH339
  420 HCEVP(1,N)=SID                                                        EVAPH340
      HCEVP(2,N)=J                                                          EVAPH341
      HCEVP(3,N)=ANNEM                                                      EVAPH342
      TOTEVP(10)=TOTEVP(10)+ANNEM                                           EVAPH343
  430 CONTINUE                                                              EVAPH344
      PRINT 3                                                               EVAPH345
      PRINT 431                                                             EVAPH346
  431 FORMAT(1H0,51X,9HSOURCE ID,15X,9HEMISSIONS )                          EVAPH347
      DO 440 N=1,NXEVP                                                      EVAPH348
      PRINT 432,HCEVP(1,N),HCEVP(3,N)                                       EVAPH349
  432 FORMAT(1H ,53X,F5.0,17X,1PE9.3)                                       EVAPH350
  440 CONTINUE                                                              EVAPH351
      TOTEVP(6)=TOTEVP(6)+HCSUM                                             EVAPH352
      PRINT 45, (MINUS(JK),JK=1,1)                                          EVAPH353
   45 FORMAT(1H ,75X,A8)                                                    EVAPH354
      PRINT 441,TOTEVP(10)                                                  EVAPH355
  441 FORMAT(1H ,49X,12HTOTAL ANNUAL,14X,1PE9.3)                            EVAPH356
      TOTEVP(10)=TOTEVP(10)/1000.                                           EVAPH357
      GO TO 500                                                             EVAPH358
C                                                                           EVAPH359
 9000 PRINT 9001,SID                                                        EVAPH360
 9001 FORMAT(3HOID,F5.0,65H DOES NOT CORRESPOND TO ANY OF THE AIRBASE AREVAPH361
     .EA SOURCE ID NUMBERS)                                                 EVAPH362
      STOP                                                                  EVAPH363
C                                                                           EVAPH364
  500 RETURN                                                                EVAPH365
      END                                                                   EVAPH366
```

SUBROUTINE FIRST

Purpose:

To print the title, table of contents, introduction and list of airbase sources, and then direct control to subroutines INPUT and ACEFCT.

Input:

None

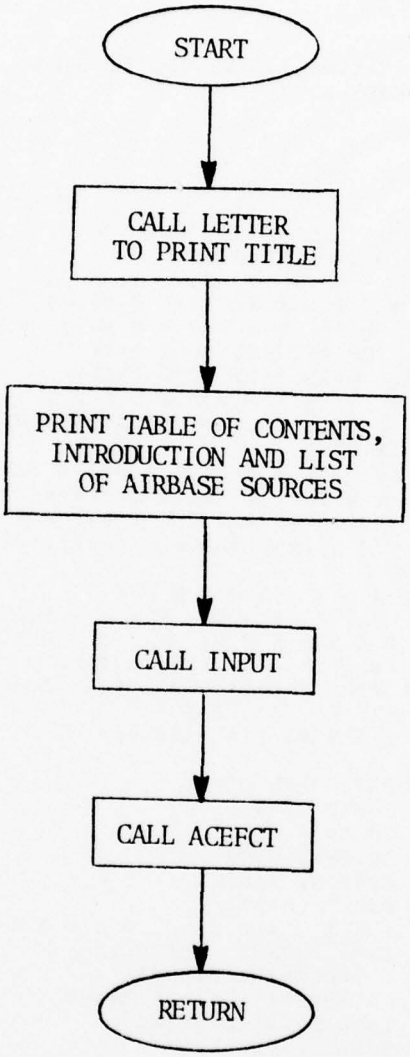
Output:

See purpose.

Subroutines Called:

LETTER, INPUT, ACEFCT

SUBROUTINE FIRST



```
      SUBROUTINE FIRST                                                  FIRST000
C                                                                       FIRST001
C     THIS ROUTINE PRINTS THE TITLE, TABLE OF CONTENTS,                 FIRST002
C     INTRODUCTION AND LIST OF AIRBASE SOURCES, AND THEN                FIRST003
C     CALL SUBROUTINES INPUT AND ACEFCT                                 FIRST004
C                                                                       FIRST005
      REAL*8 DES(10),FACND                                              FIRST006
C                                                                       FIRST007
C     DATA SET 1  TITLE INFORMATION AND DESCRIPTION OF                  FIRST008
C     AIRBASE SOURCES AND LOCATIONS                                     FIRST009
C                                                                       FIRST010
      READ 8676, AB1234                                                 FIRST011
 8676 FORMAT(A1)                                                        FIRST012
      CALL LETTER                                                       FIRST013
C                                                                       FIRST014
      PRINT 115                                                         FIRST015
  115 FORMAT(1H1,60X,17HTABLE OF CONTENTS)                              FIRST016
      PRINT 201                                                         FIRST017
  201 FORMAT(1H-,33X,34HI. A I R C R A F T   S O U R C E S              FIRST018
     . //44X,40HA. D E F A U L T   I N F O R M A T I O N               FIRST019
     . //54X,33H1. ENGINE POLLUTANT EMISSION DATA                       FIRST020
     . //54X,34H2. ENGINE POLLUTANT EMISSION RATES                      FIRST021
     . //44X,36HB. I N P U T   I N F O R M A T I O N                   FIRST022
     . //54X,56H1. INFORMATION ON AIRCRAFT ACTIVITY, PARKING AREAS, TAXIFIRST023
     .       16HWAYS AND RUNWAYS                                        FIRST024
     . //54X,44H2. INFORMATION FOR AIRCRAFT SERVICE VEHICLES           FIRST025
     . //54X,42H3. AIRCRAFT LANDING AND TAKEOFF PARAMETERS             FIRST026
     . //44X,42HC. I N T E R I M   C A L C U L A T I O N S             FIRST027
     . //54X,56H1. AIRCRAFT EMISSION FACTORS BY AIRCRAFT TYPE (KG PER ENFIRST028
     .       14HGINE PER HOUR)                                          FIRST029
     . //33X,33HII. A I R B A S E   S O U R C E S                       FIRST030
     . //44X,56HA. V E H I C L E   A G E   D I S T R I B U T I O N   A NFIRST031
     .       2H D/47X,31HE M I S S I O N   F A C T O R S               FIRST032
     . //54X,35H1. AIRBASE VEHICLE AGE DISTRIBUTION                    FIRST033
     . //54X,51H2. MILITARY AND CIVILIAN POLLUTION EMISSION FACTORS     FIRST034
     . //44X,44HB. A I R B A S E   P O I N T   S O U R C E S           FIRST035
     . //54X,30H1. AIRBASE TRAINING FIRE SITES)                        FIRST036
      PRINT 202                                                         FIRST037
  202 FORMAT(/54X,21H2. AIRBASE TEST CELLS                              FIRST038
     . //54X,23H3. AIRBASE RUNUP STANDS                                FIRST039
     . //54X,23H4. AIRBASE POWER PLANTS                                FIRST040
     . //54X,23H5. AIRBASE INCINERATORS                                FIRST041
     . //54X,24H6. AIRBASE STORAGE TANKS                               FIRST042
     . //54X,23H7. AIRBASE OTHER POINTS                                FIRST043
     . //44X,42HC. A I R B A S E   A R E A   S O U R C E S             FIRST044
     . //54X,33H1. AIRBASE AREA SOURCE GEOMETRIES                       FIRST045
     . //54X,30H2. AIRBASE HYDROCARBON FILLING                         FIRST046
     . //54X,34H3. AIRBASE PETROLEUM STORAGE TANKS                     FIRST047
     . //54X,29H4. AIRBASE TANK TRUCK PARKING                          FIRST048
     . //54X,26H5. AIRBASE VEHICLE PARKING                             FIRST049
     . //54X,41H6. OTHER AIRBASE EVAPORATIVE HYDROCARBONS              FIRST050
     . //54X,24H7. AIRBASE SPACE HEATING                               FIRST051
     . //54X,27H8. AIRBASE OFFROAD VEHICLES                           FIRST052
     . //54X,32H9. AIRBASE MILITARY AREA SOURCES                       FIRST053
     . //53X,41H10. AIRBASE CIVILIAN VEHICLE AREA SOURCES             FIRST054
     . //44X,42HD. A I R B A S E   L I N E   S O U R C E S)           FIRST055
      PRINT 203                                                         FIRST056
  203 FORMAT(/54X,46H1. AIRBASE NON-AIRCRAFT LINE SOURCE GEOMETRIES     FIRST057
     . //54X,33H2. AIRBASE MILITARY VEHICLE LINES                      FIRST058
     . //54X,33H3. AIRBASE CIVILIAN VEHICLE LINES                     FIRST059
     . //54X,35H4. AIRBASE OTHER NON-AIRCRAFT LINES                   FIRST060
     . //32X,34HIII. E N V I R O N   S O U R C E S                     FIRST061
```

```
     . //44X,44HA. E N V I R O N   P O I N T   S O U R C E S                FIRST062
     . //44X,42HB. E N V I R O N   A R E A   S O U R C E S                  FIRST063
     . //54X,27H1. ENVIRON STATIONARY AREAS                                 FIRST064
     . //54X,23H2. ENVIRON MOBILE AREAS                                     FIRST065
     . //44X,42HC. E N V I R O N   L I N E   S O U R C E S                  FIRST066
     . //54X,24H1. ENVIRON ROADWAY LINES                                    FIRST067
     . //54X,44H2. ENVIRON NON-ROADWAY LINES                                FIRST068
     . //33X,17HIV. S U M M A R Y                                           FIRST069
     . //44X,56HA. M E T E O R O L O G I C A L   D A T A   S U M M A R YFIRST070
     . //44X,56HB. T E M P O R A L   D I S T R I B U T I O N   F R A C TFIRST071
     .       22H I O N   S U M M A R Y                                      FIRST072
     . //44X,52HC. A I R C R A F T   E M I S S I O N   S U M M A R Y      FIRST073
     . //54X,47H1. SUMMARY OF ANNUAL EMISSIONS BY AIRCRAFT TYPE            FIRST074
     . //54X,47H2. SUMMARY OF ANNUAL EMISSIONS FOR ALL AIRCRAFT)           FIRST075
      PRINT 204                                                            FIRST076
  204 FORMAT(/44X,50HD. A I R B A S E   E M I S S I O N   S U M M A R Y FIRST077
     . //54X,56H1. SUMMARY OF ANNUAL EMISSIONS FROM GROUND MOBIL SOURCESFIRST078
     . //54X,54H2. SUMMARY OF ANNUAL EMISSIONS FROM AIRBASE FACILITIES  FIRST079
     . //54X,56H3. SUMMARY OF ANNUAL EMISSIONS FROM EVAPORATIVE HYDROCARFIRST080
     .       12HBON SOURCES                                               FIRST081
     . //44X,50HE. E N V I R O N   E M I S S I O N   S U M M A R Y      FIRST082
     . //54X,44H1. SUMMARY OF ANNUAL EMISSIONS FROM ENVIRONS              FIRST083
     . //44X,28HF. T O T A L   S U M M A R Y                              FIRST084
     . //54X,34H1. SUMMARY OF ALL ANNUAL EMISSIONS                        FIRST085
     . //54X,47H2. EMISSION PERCENTAGE BREAKDOWN OF ALL SOURCES)          FIRST086
C                                                                         FIRST087
      PRINT 9000                                                          FIRST088
 9000 FORMAT(1H1,//60X,12HINTRODUCTION,8(/))                              FIRST089
      PRINT 9001                                                          FIRST090
 9001 FORMAT(1H ,28X,80HTHE US AIR FORCE, THROUGH A CONTRACTUAL EFFORT BFIRST091
     .Y ARGONNE NATIONAL LABORATORY   /1H ,28X,                           FIRST092
     .           80H(ANL), HAS DEVELOPED THE USAF/ANL AIR QUALITY ASSESSFIRST093
     .MENT MODEL (AQAM).  THIS    /1H ,28X,                               FIRST094
     .           80HMODEL CONSISTS OF FOUR COMPUTER CODES: A SOURCE INVEFIRST095
     .NTORY PROGRAM TO COMPUTE    /1H ,28X,                               FIRST096
     .           80HTOTAL EMISSIONS FROM OPERATIONAL INPUT DATA, A SHORTFIRST097
     .-TERM DISPERSION PROGRAM TO /1H ,28X,                               FIRST098
     .           80HPREDICT AIR QUALITY CONCENTRATIONS ON A ONE-HOUR BASFIRST099
     .IS, A LONG-TERM PROGRAM TO  /1H ,28X,                               FIRST100
     .           80HPREDICT CONCENTRATIONS ON AN ANNUAL BASIS, AND A METFIRST101
     .EOROLOGICAL PROGRAM TO      /1H ,28X,                               FIRST102
     .           80HCOMPILE THE CLIMATOLOGY FOR USE IN THE LONG-TERM PREFIRST103
     .DICTIONS.  DETAILED         /1H ,28X,                               FIRST104
     .           80HDISCUSSIONS OF THE AQAM THEORY AND APPLICATIONS ARE FIRST105
     .PRESENTED IN AFWL-TR-74-304,/1H ,28X,                               FIRST106
     .           35HAFWL-TR-75-220, AND AFWL-TR-75-307.)                  FIRST107
      PRINT 9002                                                          FIRST108
 9002 FORMAT(1H0,28X,80HTHE SOURCE INVENTORY PROGRAM INPUT DATA INCLUDESFIRST109
     . AIRCRAFT ENGINE EMISSION       /1H ,28X,                           FIRST110
     .           80HFACTORS, LANDING AND TAKEOFF (LTO) CYCLE INFORMATIONFIRST111
     ., RUNWAY, TAXIWAY, AND      /1H ,28X,                               FIRST112
     .           80HPARKING RAMP COORDINATES, LTO ACTIVITY BY AIRCRAFT TFIRST113
     .YPE, AND EMISSION           /1H ,28X                                FIRST114
     .           80HINFORMATION FOR MANY NON-AIRCRAFT EMISSION SOURCES. FIRST115
     . AIRCRAFT ENGINE EMISSION   /1H ,28X,                               FIRST116
     .           80HINFORMATION WAS COMPILED FROM MEASURMENTS TAKEN BY TFIRST117
     .HE AIR FORCE, NAVY, OTHER   /1H ,28X,                               FIRST118
     .           34HGOVERNMENT AGENCIES, AND INDUSTRY.)                   FIRST119
      PRINT 9003                                                          FIRST120
 9003 FORMAT(1H0,28X,80HTHE LTO CYCLE INFORMATION WAS OBTAINED FROM FIELFIRST121
     .D OBSERVATIONS AT FIVE LOCATIONS/1H ,28X,                           FIRST122
     .           80HAND PILOT SURVEYS AT SIX LOCATIONS.  THIS INFORMATIOFIRST123
```

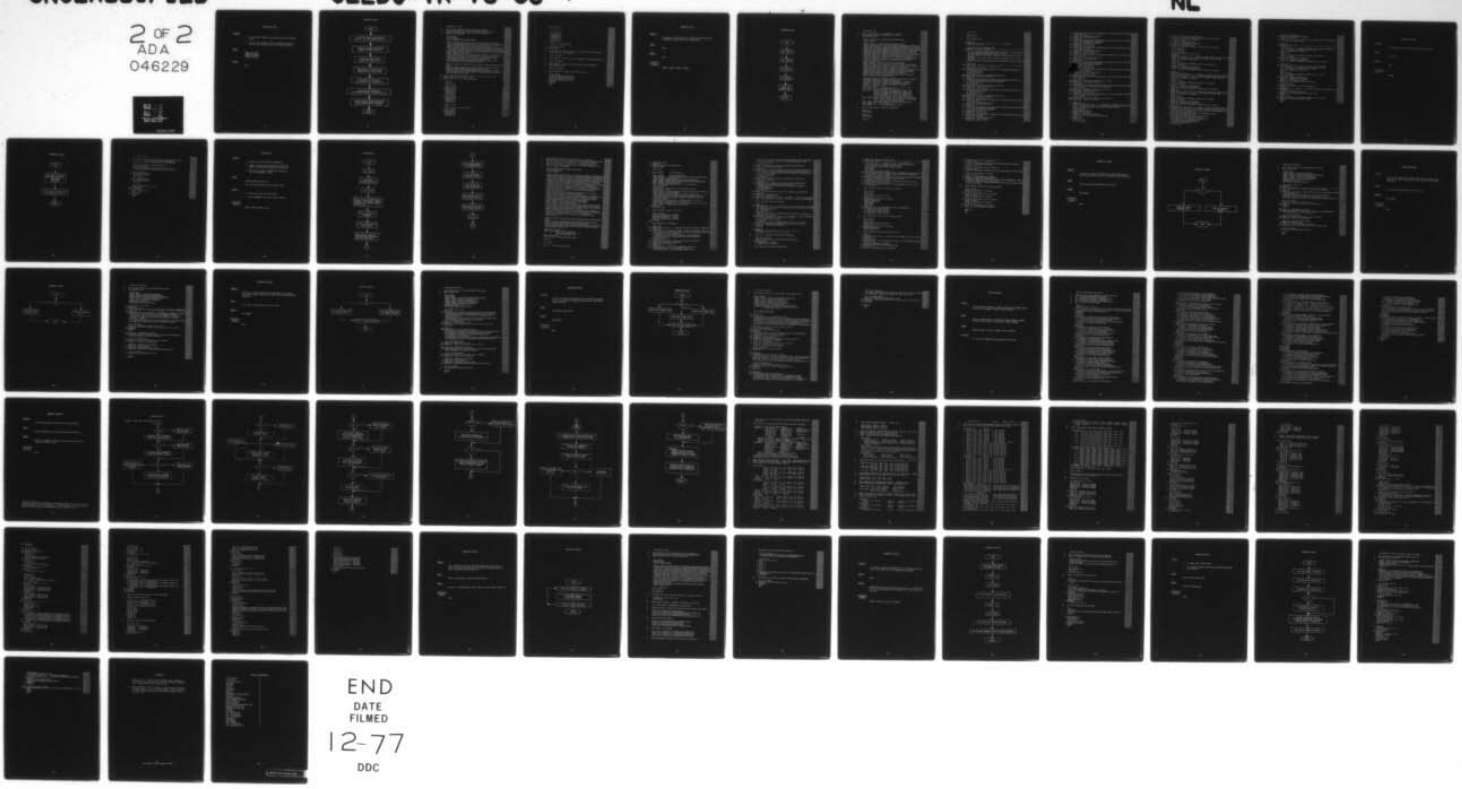
```
     .N INCLUDES TIME IN MODE     /1H ,28X,                                    FIRST124
     .           80HMEASURMENTS, AIRCRAFT VELOCITIES AT SELECTED CHECKPOFIRST125
     .INTS, AND ENGINE FUEL FLOWS /1H ,28X,                                    FIRST126
     .           80HIN EACH OF THE NINE MODES OF THE LTO CYCLE (IDLE AT FIRST127
     .START-UP, TAXI-OUT, ENGINE  /1H ,28X,                                    FIRST128
     .           80HCHECK, TAKEOFF ROLE, CLIMBOUT, APPROACH, LANDING ON FIRST129
     .RUNWAY, TAXI-IN, AND        /1H ,28X,                                    FIRST130
     .           80HSHUTDOWN).  RUNWAY ROLL TIMES AND LOCATIONS ARE COMPFIRST131
     .UTED FROM A SERIES OF       /1H ,28X,                                    FIRST132
     .           80HALGORITHIMS DEVELOPED FROM AIRCRAFT OPERATING MANUALFIRST133
     .S AND ARE FUNCTIONS OF AIR- /1H ,28X,                                    FIRST134
     .           80HCRAFT GROSS WEIGHT, PRESSURE ALTITUDE, AND AMBIENT TFIRST135
     .EMPERATURE.  CLIMBOUT TIMES /1H ,28X,                                    FIRST136
     .           80HARE COMPUTED FROM VELOCITY DIFFERENCES BETWEEN TAKEOFIRST137
     .FF AND AT A 3000-FOOT       /1H ,28X,                                    FIRST138
     .           9HALTITUDE.)                                                 FIRST139
      PRINT 9004                                                              FIRST140
 9004 FORMAT(1HO,28X,80HNONAIRCRAFT EMISSION SOURCES ARE COMPUTED BY UTIFIRST141
     .LIZING A DATA BANK OF EMISSION  /1H ,28X,                               FIRST142
     .           9OHFACTORS WHICH HAS BEEN PROGRAMMED INTO THE AQAM.  THFIRST143
     .ESE VALUES ARE CONSISTANT   /1H ,28X,                                   FIRST144
     .           80HWITH THE EPA PUBLICATION AP-42.  OPERATIONAL INFORMAFIRST145
     .TION MUST BE INPUT          /1H ,28X,                                   FIRST146
     .           39HSPECIFICALLY FOR EACH AIRBASE ANALYZED.)                  FIRST147
C                                                                             FIRST148
C    IDMAX  IS THE TOTAL NUMBER OF GRID LOCATIONS                             FIRST149
C                                                                             FIRST150
      READ 806, IDMAX                                                         FIRST151
  806 FORMAT(I4)                                                              FIRST152
      IF (IDMAX.LE.0) GO TO 816                                               FIRST153
C                                                                             FIRST154
      PRINT 808                                                               FIRST155
  808 FORMAT(1H1//54X,26HLOCATION  OF  GRID  ORIGIN//)                        FIRST156
      PRINT 810                                                               FIRST157
  810 FORMAT(1X,16X,9HBENCHMARK,25X,8HLATITUDE,14X,9HLONGITUDE,12X,           FIRST158
     . 12HUTM NORTHING,11X,11HUTM EASTING)                                    FIRST159
      PRINT 811                                                               FIRST160
  811 FORMAT(T15,13H(DESCRIPTION),21X,13H(DEG/MIN/SEC),9X,                    FIRST161
     . 13H(DEG/MIN/SEC),13X,12H(KILOMETERS),11X,12H(KILOMETERS),/)            FIRST162
      DO 813 JJ=1,IDMAX                                                       FIRST163
      READ 814, (DES(I),I=1,6),ID1,IM1,S1,ID2,IM2,S2,KMN,KME                  FIRST164
  814 FORMAT(6A6,2(2I4,F6.3),2F8.3)                                           FIRST165
      PRINT 815, (DES(I),I=1,6),ID1,IM1,S1,ID2,IM2,S2,KMN,KME                 FIRST166
  815 FORMAT(1X,6A6,12X,2I4,1X,F6.3,7X,2I4,1X,F6.3,T96,F8.3,                  FIRST167
     . T120,F8.3)                                                             FIRST168
  813 CONTINUE                                                                FIRST169
  816 CONTINUE                                                                FIRST170
C                                                                             FIRST171
C    IDMAX  IS THE TOTAL NUMBER OF AIRBASE SOURCES                            FIRST172
C                                                                             FIRST173
C                                                                             FIRST174
      READ 812, IDMAX                                                         FIRST175
  812 FORMAT(I4)                                                              FIRST176
      IF (IDMAX.LE.0) GO TO 817                                               FIRST177
      PRINT 800                                                               FIRST178
  800 FORMAT(1HO/1HO,T54,26HLIST  OF  AIRBASE  SOURCES,/1HO)                  FIRST179
      PRINT 821                                                               FIRST180
  821 FORMAT(1X,6HSOURCE,9X,8HFACILITY,19X,11HDESCRIPTION)                    FIRST181
      PRINT 801                                                               FIRST182
  801 FORMAT(3X,2HID,12X,6HNUMBER/)                                           FIRST183
      DO 807 IJ=1,IDMAX                                                       FIRST184
      READ 802, NID,FACND,(DES(I),I=1,8)                                      FIRST185
```

```
  802 FORMAT(I4,2X,A8,2X,8A8)                                          FIRST186
      PRINT 803, NID,FACND,(DES(I),I=1,8)                              FIRST187
  803 FORMAT(2X,I4,11X,A8,10X,8A8)                                     FIRST188
  807 CONTINUE                                                         FIRST189
  817 CONTINUE                                                         FIRST190
C                                                                      FIRST191
      PRINT 117                                                        FIRST192
  117 FORMAT(1H1,28(/),59X,17HS E C T I O N   I,///,                   FIRST193
     . 52X,31HA I R C R A F T   S O U R C E S/)                        FIRST194
C                                                                      FIRST195
      CALL INPUT                                                       FIRST196
C                                                                      FIRST197
      CALL ACEFCT                                                      FIRST198
      RETURN                                                           FIRST199
      END                                                              FIRST200
```

AD-A046 229 CIVIL AND ENVIRONMENTAL ENGINEERING DEVELOPMENT OFFIC--ETC F/G 13/2
AIR QUALITY ASSESSMENT MODEL FOR AIR FORCE OPERATIONS -- SOURCE--ETC(U)
APR 77 D J BINGAMAN, L E WANGEN

UNCLASSIFIED CEEDO-TR-76-33 NL

2 OF 2
ADA
046229



END
DATE
FILMED
12-77
DDC

SUBROUTINE INPUT

Purpose:

1. To initialize temporal distribution arrays to default values.

2. To enter, via namelist reads, non-default values for basic engine, aircraft and time distribution data.

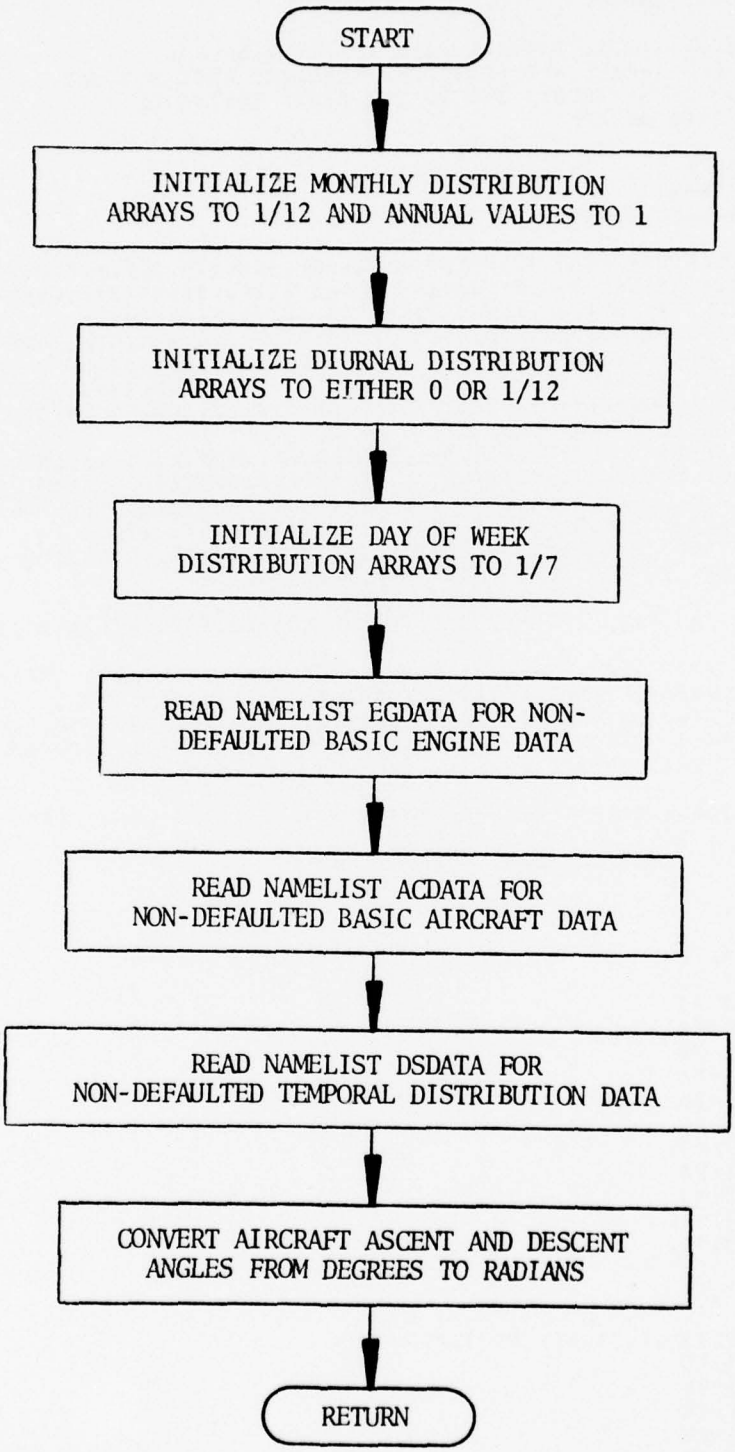
Input:

NAMELIST/EGDATA/
NAMELIST/ACDATA/
NAMELIST/DSDATA/

Output:

None

SUBROUTINE INPUT



```
      SUBROUTINE  INPUT                                                 INPUT000
C                                                                       INPUT001
C     THIS ROUTINE STORES DEFAULT DATA IN THE TEMPORAL                  INPUT002
C     DISTRIBUTION ARRAYS AND READS THE NAMELIST DATA FOR ANY           INPUT003
C     CHANGES TO THOSE ARRAYS AND TO THE BASIC ENGINE OR                INPUT004
C     AIRCRAFT DATA ARRAYS                                              INPUT005
C                                                                       INPUT006
      REAL LNDSPD                                                       INPUT007
      INTEGER ENGNO                                                     INPUT008
      REAL*8 ACNAME,EGNAME,MONAM1,THNAME                                INPUT009
C                                                                       INPUT010
      COMMON /DSTRBT/ ACMO(13,50),ACDY(2,50),ACHR(24,50),VHMLMO(13),    INPUT011
     . VHMLDY(2),VHMLHR(24),CVABMO(13),CVABDY(2),CVABHR(24),CVENMO(13), INPUT012
     . CVENDY(2),CVENHR(24),FLMO(13,7),FLDY(2,7),FLHR(24,7)             INPUT013
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),INPUT014
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),INPUT015
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),INPUT016
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)INPUT017
      COMMON /DEFALT/ NPLTS,ITAPE                                       INPUT018
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PEEMFC(22,6),EMFCIN(5,6),INPUT019
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      INPUT020
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      INPUT021
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               INPUT022
      COMMON /EGEDB1/ MONAM1(10),THNAME(4),MONAM2(10),IDACEG(50),       INPUT023
     . IACABF(50),EGFF(4,50),IEGABF(50),IDRR(50)                        INPUT024
C                                                                       INPUT025
      NAMELIST /EGDATA/ EGNAME,EGFF,IEGABF,EGEMFC,ACNAME,IDACEG,IACABF, INPUT026
     . IDRR                                                             INPUT027
      NAMELIST /DSDATA/ ACMO,ACDY,ACHR,VHMLMO,VHMLDY,VHMLHR,CVABMO,     INPUT028
     . CVABDY,CVABHR,CVENMO,CVENDY,CVENHR,FLMO,FLDY,FLHR                INPUT029
      NAMELIST /ACDATA/ APPHT,CLMBHT,ENGNO,DSCNT1,DSCNT2,APSPD1,APSPD2, INPUT030
     . APPHT2,ASCNT1,ASCNT2,COSPD1,COSPD2,COHT1,TXISPD,LNDSPD,TOSPD,    INPUT031
     . SRTUPT,EGCHKT,SHTDNT,TOWT                                        INPUT032
C                                                                       INPUT033
C     SET UP TEMPORAL DISTRIBUTIONS, MONTH = 1/12, DAYS =1/7, AND       INPUT034
C     HOURS FROM 6 A.M. TO 6 P.M. = 1 /12.                              INPUT035
C     HOURS FROM 6 P.M. TO 6 A.M. EQUAL ZERO.                           INPUT036
C                                                                       INPUT037
      FM=1./12.                                                         INPUT038
      FD=1./7                                                           INPUT039
      DO 10 I=1,12                                                      INPUT040
      DO 11 J=1,50                                                      INPUT041
      ACMO(13,J)=1.                                                     INPUT042
   11 ACMO(I,J)=FM                                                      INPUT043
      VHMLMO(I)=FM                                                      INPUT044
      CVABMO(I)=FM                                                      INPUT045
      CVENMO(I)=FM                                                      INPUT046
      DO 10 J=1,7                                                       INPUT047
      FLMO(13,J)=1.                                                     INPUT048
   10 FLMO(I,J)=FM                                                      INPUT049
      VHMLMO(13)=1.                                                     INPUT050
      CVABMO(13)=1.                                                     INPUT051
      CVENMO(13)=1.                                                     INPUT052
C                                                                       INPUT053
      DO 15 I=1,24                                                      INPUT054
      FH=0.                                                             INPUT055
      IF(I.GT.6.AND.I.LT.19) FH=1./12.                                  INPUT056
      DO 16 J=1,50                                                      INPUT057
   16 ACHR(I,J)=FH                                                      INPUT058
      VHMLHR(I)=FH                                                      INPUT059
      CVABHR(I)=FH                                                      INPUT060
      CVENHR(I)=FH                                                      INPUT061
```

```
      DO 15 J=1,7                                                        INPUT062
   15 FLHR(I,J)=FH                                                       INPUT063
C                                                                        INPUT064
      DO 20 I=1,2                                                        INPUT065
      DO 21 J=1,50                                                       INPUT066
   21 ACDY(I,J)=FD                                                       INPUT067
      VHMLDY(I)=FD                                                       INPUT068
      CVABDY(I)=FD                                                       INPUT069
      CVENDY(I)=FD                                                       INPUT070
      DO 20 J=1,7                                                        INPUT071
   20 FLDY(I,J)=FD                                                       INPUT072
C                                                                        INPUT073
C     DATA SET 2  NAMELIST DATA                                          INPUT074
C                                                                        INPUT075
      READ 8676, AB1234                                                  INPUT076
 8676 FORMAT(A1)                                                         INPUT077
C                                                                        INPUT078
C     USING NAMELIST EGDATA, INPUT ANY CHANGES TO BASIC ENGINE DATA      INPUT079
C     OR DATA TO ADD A NEW AIRCRAFT                                      INPUT080
C                                                                        INPUT081
      READ (5,EGDATA)                                                    INPUT082
C                                                                        INPUT083
C     USING NAMELIST ACDATA, INPUT ANY CHANGES TO BASIC AIRCRAFT DATA    INPUT084
C                                                                        INPUT085
      READ (5,ACDATA)                                                    INPUT086
C                                                                        INPUT087
C     USING NAMELIST DSDATA, INPUT ANY CHANGES TO THE TEMPORAL           INPUT088
C     DISTRIBUTION ARRAYS                                                INPUT089
C                                                                        INPUT090
      READ (5,DSDATA)                                                    INPUT091
C                                                                        INPUT092
C    CHANGE DEGREES TO RADIANS FOR AIRCRAFT ANGLES.                      INPUT093
C                                                                        INPUT094
      DO 25 I=1,50                                                       INPUT095
      ASCNT1(I)=ASCNT1(I)*0.0174533                                      INPUT096
      ASCNT2(I)=ASCNT2(I)*0.0174533                                      INPUT097
      DSCNT1(I)=DSCNT1(I)*0.0174533                                      INPUT098
      DSCNT2(I)=DSCNT2(I)*0.0174533                                      INPUT099
   25 CONTINUE                                                           INPUT100
      RETURN                                                             INPUT101
      END                                                                INPUT102
```

SUBROUTINE LAST

Purpose:

To contain in one overlay all the non-aircraft emission subroutines, and to print the summary data.

Input:

None

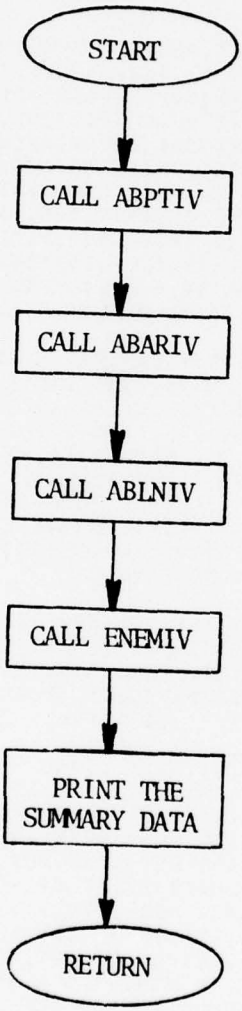
Output:

None

Subroutines Called:

ABPTIV, ABARIV, ABLNIV, ENEMIV

SUBROUTINE LAST



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      SUBROUTINE LAST                                                    LAST0000
C                                                                        LAST0001
C     THIS ROUTINE SERVES AS A SUBDRIVER TO CALL ALL                     LAST0002
C     NON-AIRCRAFT EMISSION SUBROUTINES AND PRINT                        LAST0003
C     THE SUMMARY DATA                                                   LAST0004
C                                                                        LAST0005
      REAL*8 ACNAME,OPNAM1,OPNAM3,OPNAM5,EGNAME,MINUS                    LAST0006
      INTEGER ENGNO                                                      LAST0007
C                                                                        LAST0008
      COMMON /PCINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                    LAST0009
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),LAST0010
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),LAST0011
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),LAST0012
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)LAST0013
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),    LAST0014
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),     LAST0015
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8)LAST0016
     .,ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),        LAST0017
     . NIBTT(6),NIBSEG(8,6),IIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),    LAST0018
     . NOBTT(6),NOBSEG(8,6),IOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),    LAST0019
     . NPASQ(6),IDPRKA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),          LAST0020
     . NLSEGS,ACINSG(12,25)                                              LAST0021
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                   LAST0022
      COMMON /DSTRBT/ ACMO(13,50),ACDY(2,50),ACHR(24,50),VHMLMO(13),     LAST0023
     . VHMLDY(2),VHMLHR(24),CVABMO(13),CVABDY(2),CVABHR(24),CVENMO(13),  LAST0024
     . CVENDY(2),CVENHR(24),FLMO(13,7),FLDY(2,7),FLHR(24,7)              LAST0025
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),LAST0026
     . TFEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),       LAST0027
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,       LAST0028
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)                LAST0029
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10),EMISS(8,15,6),ACEM(8,6)       LAST0030
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6)                               LAST0031
C                                                                        LAST0032
      DIMENSION OPNAM1(16),OPNAM2(16),OPNAM3(20),OPNAM4(20),OPNAM5(4),   LAST0033
     . OPNAM6(4),SUMEMI(4,6),TSUMEM(6),IMISS(15,6)                       LAST0034
      DATA OPNAM1 /8HSTARTUP ,8HTAXI OUT,8HENGINE C, 8HRUNWAY R,         LAST0035
     . 8HCLIMB 1 ,8HCLIMB 2 ,8HAPPROACH,8HAPPROACH,8HLANDING ,           LAST0036
     . 8HTAXI IN ,8HSHUTDOWN,8HARR + DE,8HFUEL VEN,8HFILL + S,           LAST0037
     . 8HTOUCH + ,8HTOTAL   /                                            LAST0038
      DATA OPNAM2 /2*4H     ,4HHECK,4HOLL ,2*4H     ,4H 1  ,4H 2  ,     LAST0039
     . 3 * 4H     ,4HP SV,4HTING,4HPILL,4HGO  ,4H    /                   LAST0040
      DATA OPNAM3 /8HENVIRON ,8HENV STA ,8HENV MOB ,8HENV LAND,          LAST0041
     .             8HENV COM ,8HENV ROAD,8HENV NON-,8HTRAIN FI,          LAST0042
     .             8HTEST CEL,8HRUN-UP S,8HPOWER PL,8HINCINERA,          LAST0043
     .             8HCTHER AB,8HSPACE HE,8HOFF ROAD,8HMILITARY,          LAST0044
     .             8HCIVILIAN,8HMIL VEH ,8HCIV VEH ,8HOTHER AB/          LAST0045
      DATA OPNAM4 /4HPTS.,4HAREA,4HAREA,4H USE,4HAREA,4H WAY,4HROAD,     LAST0046
     .             4HRES ,4HLS  ,4HTDS ,4HANTS,4HTORS,4H PTS,4HATNG,     LAST0047
     .             4H VEH,4H VEH,4H VEH,4HLINE,4HLINE/                   LAST0048
      DATA OPNAM5 /8HAIRCRAFT,8HGROUND M,8HFACILITI,8HENVIRONS/          LAST0049
      DATA OPNAM6 /4H     ,4HOBIL,4HES  ,4H    /                       LAST0050
      DATA SUMEMI / 24 * 0.0 /,TSUMEM,THCEVL/ 7*0.0/                     LAST0051
C                                                                        LAST0052
C     CALL THE NON-AIRCRAFT EMISSION SUBROUTINES                         LAST0053
C                                                                        LAST0054
      NSRCES=0                                                           LAST0055
      CALL ABPTIV                                                        LAST0056
C                                                                        LAST0057
      NSRCES=0                                                           LAST0058
      CALL ABARIV                                                        LAST0059
C                                                                        LAST0060
      NSRCES=0                                                           LAST0061
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      CALL ABINIV                                                       LAST0062
C                                                                       LAST0063
      NSRCES = 0                                                        LAST0064
      CALL ENEMIV                                                       LAST0065
C                                                                       LAST0066
C     PRINT SUMMARY DATA                                                LAST0067
C                                                                       LAST0068
      PRINT 70                                                          LAST0069
   70 FORMAT(1H1,28(/),58X,19HS E C T I O N   I V,///,61X,              LAST0070
     . 13HS U M M A R Y/)                                               LAST0071
C                                                                       LAST0072
      PRINT 20, TBAR,ADD,PA,WSBAR,DTBAR                                 LAST0073
   20 FORMAT(1H1/1H-/1H-,38X,61HI V.  A.  M E T E R O L O G I C A L  D LAST0074
     .A T A   S U M M A R Y/1H-/1H-/                                    LAST0075
     . 1H-,28X,38HAVERAGE ANNUAL TEMPERATURE (DEGREES F),32(1H.),F10.2/ LAST0076
     . 1H0,28X,18HANNUAL DEGREE DAYS,52(1H.),F10.2/                     LAST0077
     . 1H0,28X,36HPRESSURE ALTITUDE (HUNDREDS OF FEET),34(1H.),F10.2/   LAST0078
     . 1H0,28X,                                                         LAST0079
     . 45HAVERAGE ANNUAL WIND SPEED (METERS PER SECOND),25(1H.),F10.2/  LAST0080
     . 1H0,28X,                                                         LAST0081
     .47HDAILY AVERAGE TEMPERATURE VARIATION (DEGREES F),23(1H.),F10.2/)LAST0082
C                                                                       LAST0083
      PRINT 1000                                                        LAST0084
 1000 FORMAT(1H1,25X,85HI V.  B.  T E M P O R A L   D I S T R I B U T I LAST0085
     .O N   F R A C T I O N   S U M M A R Y/)                           LAST0086
      PRINT 1001, (II,II=1,24)                                          LAST0087
 1001 FORMAT(1H-,48X,40HHOURLY DISTRIBUTION OF AIRCRAFT ACTIVITY/1H ,   LAST0088
     . 9H AIRCRAFT,24I5)                                                LAST0089
      DO 6000 JJ=1,NACTYP                                               LAST0090
      LL=IACTYP(JJ)                                                     LAST0091
 6000 PRINT 1002, ACNAME(LL),(ACHR(KK,LL),KK=1,24)                      LAST0092
 1002 FORMAT(1H ,1X,A8,1X,24(1X,F4.3))                                  LAST0093
      PRINT 1003                                                        LAST0094
 1003 FORMAT(1H-,48X,40HWEEKLY DISTRIBUTION OF AIRCRAFT ACTIVITY /1H ,  LAST0095
     . 47X,8HAIRCRAFT,10X,7HWEEKDAY,10X,7HWEEKEND)                      LAST0096
      DO 6002 JJ=1,NACTYP                                               LAST0097
      LL=IACTYP(JJ)                                                     LAST0098
 6002 PRINT 1004, ACNAME(LL),(ACDY(KK,LL),KK=1,2)                       LAST0099
 1004 FORMAT(1H ,47X,A8,F15.3,F17.3)                                    LAST0100
      PRINT 1005, (II,II=1,12)                                          LAST0101
 1005 FORMAT(1H-,48X,41HMONTHLY DISTRIBUTION OF AIRCRAFT ACTIVITY /1H , LAST0102
     . 4X,8HAIRCRAFT,I8,11I10)                                          LAST0103
      DO 6003 JJ=1,NACTYP                                               LAST0104
      LL=IACTYP(JJ)                                                     LAST0105
 6003 PRINT 1006, ACNAME(LL),(ACMO(KK,LL),KK=1,12)                      LAST0106
 1006 FORMAT(1H ,4X,A8,F9.3,11F10.3)                                    LAST0107
      PRINT 1009, (II,II=1,24)                                          LAST0108
 1009 FORMAT(1H-,44X,48HHOURLY DISTRIBUTION OF MILITARY VEHICLE ACTIVITYLAST0109
     . /1H ,10X,24I5)                                                   LAST0110
      PRINT 6007, (VHMLHR(II),II=1,24)                                  LAST0111
 6007 FORMAT(1H ,10X,24(1X,F4.3))                                       LAST0112
      PRINT 6008                                                        LAST0113
 6008 FORMAT(1H-,44X,48HWEEKLY DISTRIBUTION OF MILITARY VEHICLE ACTIVITYLAST0114
     . /1H ,56X,7HWEEKDAY,10X,7HWEEKEND)                                LAST0115
      PRINT 6010, (VHMLDY(II),II=1,2)                                   LAST0116
 6010 FORMAT(1H ,F61.3,F17.3)                                           LAST0117
      PRINT 6011, (II,II=1,12)                                          LAST0118
 6011 FORMAT(1H-,43X,49HMONTHLY DISTRIBUTION OF MILITARY VEHICLE ACTIVITLAST0119
     .Y/1H ,12X,I8,11I10)                                               LAST0120
      PRINT 6012, (VHMLMO(II),II=1,12)                                  LAST0121
 6012 FORMAT(1H ,12X,F9.3,11F10.3)                                      LAST0122
      PRINT 6014, (II,II=1,24)                                          LAST0123
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 6014 FORMAT(1H-,44X,48HHOURLY DISTRIBUTION OF CIVILIAN VEHICLE ACTIVITYLAST0124
     . /1H ,10X,24I5)                                                   LAST0125
      PRINT 6016, (CVABHR(II),II=1,24)                                  LAST0126
 6016 FORMAT(1H ,10X,24(1X,F4.3))                                       LAST0127
      PRINT 6018                                                        LAST0128
 6018 FORMAT(1H-,44X,48HWEEKLY DISTRIBUTION OF CIVILIAN VEHICLE ACTIVITYLAST0129
     . /1H ,56X,7HWEEKDAY,10X,7HWEEKEND)                                LAST0130
      PRINT 6020, (CVABDY(II),II=1,2)                                   LAST0131
 6020 FORMAT(1H ,F61.3,F17.3)                                           LAST0132
      PRINT 6022, (II,II=1,12)                                          LAST0133
 6022 FORMAT(1H-,43X,49HMONTHLY DISTRIBUTION OF CIVILIAN VEHICLE ACTIVITLAST0134
     .Y/1H ,12X,I8,11I10)                                               LAST0135
      PRINT 6024, (CVABMO(II),II=1,12)                                  LAST0136
 6024 FORMAT(1H ,12X,F9.3,11F10.3)                                      LAST0137
      PRINT 6026, (II,II=1,24)                                          LAST0138
 6026 FORMAT(1H-,45X,47HHOURLY DISTRIBUTION OF ENVIRON VEHICLE ACTIVITY/LAST0139
     . 1H ,10X,24I5)                                                    LAST0140
      PRINT 6028, (CVENHR(II),II=1,24)                                  LAST0141
 6028 FORMAT(1H ,10X,24(1X,F4.3))                                       LAST0142
      PRINT 6030                                                        LAST0143
 6030 FORMAT(1H-,45X,47HWEEKLY DISTRIBUTION OF ENVIRON VEHICLE ACTIVITY/LAST0144
     . 1H ,56X,7HWEEKDAY,10X,7HWEEKEND)                                 LAST0145
      PRINT 6032, (CVENDY(II),II=1,2)                                   LAST0146
 6032 FORMAT(1H ,F61.3,F17.3)                                           LAST0147
      PRINT 6034, (II,II=1,12)                                          LAST0148
      FORMAT(1H-,44X,48HMONTHLY DISTRIBUTION OF ENVIRON VEHICLE ACTIVITYLAST0149
     /1H ,12X,I8,11I10)                                                 LAST0150
      PRINT 6036, (CVENMO(II),II=1,12)                                  LAST0151
 6036 FORMAT(1H ,12X,F9.3,11F10.3)                                      LAST0152
      PRINT 6038, (II,II=1,24)                                          LAST0153
 6038 FORMAT(1H-,45X,47HHOURLY DISTRIBUTION OF FUEL PROCESSING ACTIVITY/LAST0154
     . 1H ,10X,24I5)                                                    LAST0155
      DO 6040 JJ=1,7                                                    LAST0156
 6040 PRINT 6042, FLNAME(JJ),(FLHR(II,JJ),II=1,24)                      LAST0157
 6042 FORMAT(1H ,4X,A4,4X,24(1X,F4.3))                                  LAST0158
      PRINT 6044                                                        LAST0159
 6044 FORMAT(1H-,45X,47HWEEKLY DISTRIBUTION OF FUEL PROCESSING ACTIVITY/LAST0160
     . 1H ,49X,4HFUEL,10X,7HWEEKDAY,10X,7HWEEKEND)                      LAST0161
      DO 6046 JJ=1,7                                                    LAST0162
 6046 PRINT 6048, FLNAME(JJ),(FLDY(II,JJ),II=1,2)                       LAST0163
 6048 FORMAT(1H ,49X,A4,F15.3,F17.3)                                    LAST0164
      PRINT 6050, (II,II=1,12)                                          LAST0165
 6050 FORMAT(1H-,44X,48HMONTHLY DISTRIBUTION OF FUEL PROCESSING ACTIVITYLAST0166
     . /1H ,4X,4HFUEL,4X,I8,11I10)                                      LAST0167
      DO 6052 JJ=1,7                                                    LAST0168
 6052 PRINT 6054, FLNAME(JJ),(FLMO(II,JJ),II=1,12)                      LAST0169
 6054 FORMAT(1H ,4X,A8,F9.3,11F10.3)                                    LAST0170
C                                                                       LAST0171
      PRINT 300                                                         LAST0172
  300 FORMAT(1H1,40X,59HI V. C. A I R C R A F T  E M I S S I O N  S LAST0173
     .U M M A R Y/1H-,42X,54HIV. C.1  SUMMARY OF ANNUAL EMISSIONS BY AILAST0174
     .RCRAFT TYPE/1H ,53X,29HAIL POLLUTANTS IN METRIC TONS)             LAST0175
      DO 310 II=1,NACTYP                                                LAST0176
      ID=IACTYP(II)                                                     LAST0177
      PRINT 302, ACNAME(ID)                                             LAST0178
  302 FORMAT(1H-/1H0,64X,A8)                                            LAST0179
      PRINT 27, (PLNAME(I),I=1,NPLTS)                                   LAST0180
   27 FORMAT(1H0,15X,9HOPERATION,12X,6(A4,12X))                         LAST0181
      PRINT 26                                                          LAST0182
   26 FORMAT(1H )                                                       LAST0183
      DO 311 J=1,15                                                     LAST0184
      DO 312 K=1,NPLTS                                                  LAST0185
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  312 EMISS(II,J,K)=EMISS(II,J,K)/1000.0                                LAST0186
  311 PRINT 31, OPNAM1(J),OPNAM2(J),(EMISS(II,J,K),K=1,NPLTS)           LAST0187
   31 FORMAT(1H ,13X,A8,A4,2X,1P6E16.4)                                 LAST0188
      DO 313 J=1,NPLTS                                                  LAST0189
  313 ACEM(II,J)=ACEM(II,J)/1000.0                                      LAST0190
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                 LAST0191
  563 FORMAT(1H ,34X,6(A8,8X))                                          LAST0192
  310 PRINT 31, OPNAM1(16),OPNAM2(16),(ACEM(II,J),J=1,NPLTS)            LAST0193
      DO 28 J=1,15                                                      LAST0194
      DO 28 K=1,NPLTS                                                   LAST0195
      TMISS(J,K)=0.0                                                    LAST0196
      DO 28 I=1,NACTYP                                                  LAST0197
   28 TMISS(J,K)=TMISS(J,K)+EMISS(I,J,K)                                LAST0198
      PRINT 25                                                          LAST0199
   25 FORMAT(1H1,37X,63HIV. C.2  SUMMARY OF ANNUAL EMISSIONS FOR ALL AIRLAST0200
     .CRAFT LTO MODES/1H ,53X,29HALL POLLUTANTS IN METRIC TONS/)         LAST0201
      PRINT 27, (PLNAME(I),I=1,NPLTS)                                   LAST0202
      PRINT 26                                                          LAST0203
      DO 30 I=1,15                                                      LAST0204
      PRINT 31, OPNAM1(I),OPNAM2(I),(TMISS(I,J),J=1,NPLTS)              LAST0205
      DO 30 J=1,NPLTS                                                   LAST0206
   30 SUMEMI(1,J)=SUMEMI(1,J)+TMISS(I,J)                                LAST0207
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                 LAST0208
      PRINT 31, OPNAM1(16),OPNAM2(16),(SUMEMI(1,J),J=1,NPLTS)           LAST0209
C                                                                       LAST0210
      PRINT 400                                                         LAST0211
  400 FORMAT(1H1,40X,57HI V.  D.  A I R B A S E   E M I S S I O N   S U LAST0212
     .M M A R Y/1H-,37X,63HIV. D.1  SUMMARY OF ANNUAL EMISSIONS FROM GROLAST0213
     .UND MOBILE SOURCES/1H ,53X,29HALL POLLUTANTS IN METRIC TONS/)     LAST0214
      PRINT 27,(PLNAME(I),I=1,NPLTS)                                    LAST0215
      PRINT 26                                                          LAST0216
      DO 410 I=15,20                                                    LAST0217
      PRINT 31,OPNAM3(I),OPNAM4(I),(TOTEM(I,J),J=1,NPLTS)               LAST0218
      DO 410 J=1,NPLTS                                                  LAST0219
  410 SUMEMI(2,J)=SUMEMI(2,J)+TOTEM(I,J)                                LAST0220
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                 LAST0221
      PRINT 31, OPNAM1(16),OPNAM2(16),(SUMEMI(2,J),J=1,NPLTS)           LAST0222
      PRINT 401                                                         LAST0223
  401 FORMAT(1H-/1H-,38X,60HIV. D.2  SUMMARY OF ANNUAL EMISSIONS FROM AILAST0224
     .REASE FACILITIES/1H ,53X,29HALL POLLUTANTS IN METRIC TONS/)       LAST0225
      PRINT 27,(PLNAME(I),I=1,NPLTS)                                    LAST0226
      PRINT 26                                                          LAST0227
      DO 411 I=8,14                                                     LAST0228
      PRINT 31,OPNAM3(I),OPNAM4(I),(TOTEM(I,J),J=1,NPLTS)               LAST0229
      DO 411 J=1,NPLTS                                                  LAST0230
  411 SUMEMI(3,J)=SUMEMI(3,J)+TOTEM(I,J)                                LAST0231
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                 LAST0232
      PRINT 31, OPNAM1(16),OPNAM2(16),(SUMEMI(3,J),J=1,NPLTS)           LAST0233
      PRINT 135                                                         LAST0234
  135 FORMAT(1H-/1H-,35X,66HIV. D.3  SUMMARY OF ANNUAL EMISSIONS FROM EVLAST0235
     .APORATIVE HYDROCARBONS/1H ,56X,25HALL LOSSES IN METRIC TONS/1H-, 1LAST0236
     .5X,9HOPERATION,10X,7HWORKING,8X,10HFIXED ROOF,4X,14HFLOATING  ROOFLAST0237
     .,5X,8HSPILLAGE,9X,5HOTHER /1H ,                                   LAST0238
     .36X,4HLOSS,7X,14HBREATHING LOSS,2X,14HBREATHING LOSS  )           LAST0239
      PRINT 136, (TOTEVP(I),I=1,10)                                     LAST0240
  136 FORMAT(1H0,13X,12HSTORAGE TNKS,2X1P3E16.4/1H ,                    LAST0241
     . 13X,7HFILLING,13X,E10.4,38X,E10.4/1H ,                           LAST0242
     . 13X,12HPET STOR TKS,24X,E10.4,6X,E10.4/1H ,                      LAST0243
     . 13X,12HTNK TRUCK PK,24X,E10.4/1H ,                               LAST0244
     . 13X,11HVEH PARKING,25X,E10.4/1H ,                                LAST0245
     . 13X,6HOTHERS,78X,E10.4)                                          LAST0246
      DO 420 I=1,10                                                     LAST0247
```

```
      THCEVI=THCEVL+TOTEVP(I)                                            LAST0248
  420 SUMEMI(3,2)=SUMEMI(3,2)+TOTEVP(I)                                  LAST0249
      PRINT 432, THCEVL                                                  LAST0250
  432 FORMAT(1H-,13X,50HTOTAL EMISSIONS FROM EVAPORATIVE HYDROCARBONS ISLAST0251
     .  ,1PE10.4,13H  METRIC TONS  )                                     LAST0252
C                                                                        LAST0253
      PRINT 402                                                          LAST0254
  402 FORMAT(1H1,40X,57HI V.  E.  E N V I R O N   E M I S S I O N   S U LAST0255
     .M M A R Y/                                                         LAST0256
     . 1H-,43X,50HIV. E.1  SUMMARY OF ANNUAL EMISSIONS FROM ENVIRONS/    LAST0257
     . 1H ,54X,29HALL POLLUTANTS IN METRIC TONS)                         LAST0258
      PRINT 27,(PLNAME(I),I=1,NPLTS)                                     LAST0259
      PRINT 26                                                           LAST0260
      DO 412 I=1,7                                                       LAST0261
      PRINT 31,OPNAM3(I),OPNAM4(I),(TOTEM(I,J),J=1,NPLTS)                LAST0262
      DO 412 J=1,NPLTS                                                   LAST0263
  412 SUMEMI(4,J)=SUMEMI(4,J)+TOTEM(I,J)                                 LAST0264
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                  LAST0265
      PRINT 31, OPNAM1(16),OPNAM2(16),(SUMEMI(4,J),J=1,NPLTS)            LAST0266
C                                                                        LAST0267
      PRINT 403                                                          LAST0268
  403 FORMAT(1H1,50X,35HI V.  F.  T O T A L   S U M M A R Y/             LAST0269
     . 1H-,48X,40HIV. F.1  SUMMARY OF ALL ANNUAL EMISSIONS/              LAST0270
     . 1H ,53X,29HALL POLLUTANTS IN METRIC TONS)                         LAST0271
      PRINT 27,(PLNAME(I),I=1,NPLTS)                                     LAST0272
      PRINT 26                                                           LAST0273
      DO 413 I=1,4                                                       LAST0274
      PRINT 31,OPNAM5(I),OPNAM6(I),(SUMEMI(I,J),J=1,NPLTS)               LAST0275
      DO 413 J=1,NPLTS                                                   LAST0276
  413 TSUMEM(J)=TSUMEM(J)+SUMEMI(I,J)                                    LAST0277
      PRINT 563, (MINUS(JK),JK=1,NPLTS)                                  LAST0278
      PRINT 35, (TSUMEM(I),I=1,NPLTS)                                    LAST0279
   35 FORMAT(1H ,13X,11HGRAND TOTAL,3X,1P6E16.4)                         LAST0280
      DO 414 I=1,4                                                       LAST0281
      DO 414 J=1,NPLTS                                                   LAST0282
  414 SUMEMI(I,J)=(SUMEMI(I,J)*100.0)/TSUMEM(J)                          LAST0283
      PRINT 404                                                          LAST0284
  404 FORMAT(1H-/1H-,41X,53HIV. F.2  EMISSION PERCENTAGE BREAKDOWN OF ALLLAST0285
     .I SOURCES)                                                         LAST0286
      PRINT 74, (PLNAME(I),I=1,NPLTS)                                    LAST0287
   74 FORMAT(1H0,15X,9HOPERATION,15X,5(A4,12X),A4)                       LAST0288
      PRINT 26                                                           LAST0289
      DO 415 I=1,4                                                       LAST0290
  415 PRINT 431,OPNAM5(I),OPNAM6(I),(SUMEMI(I,J),J=1,NPLTS)              LAST0291
  431 FORMAT(1H ,13X,A8,A4,8X,6(F10.3,6X))                               LAST0292
      RETURN                                                             LAST0293
      END                                                                LAST0294
```

SUBROUTINE LETTER

Purpose:

To construct a four line title page in large print.

Input:

The title

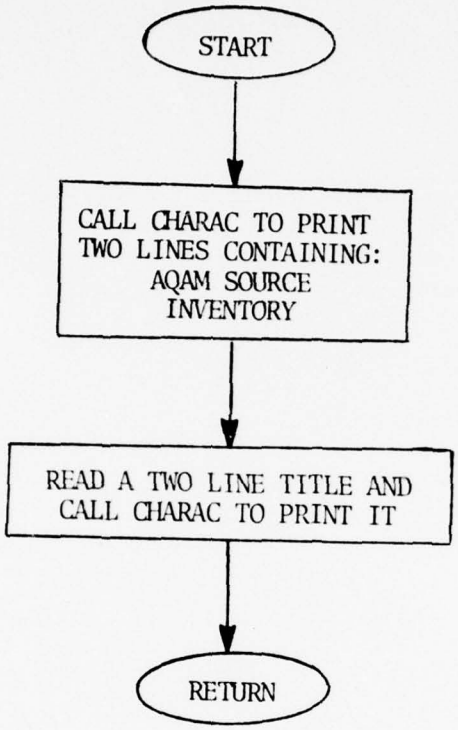
Output:

None

Subroutines Called:

CHARAC

SUBROUTINE LETTER



```
      SUBROUTINE LETTER                                                 LETTR000
C                                                                       LETTR001
C     THIS ROUTINE PRINTS A FOUR LINE TITLE PAGE IN LARGE PRINT         LETTR002
C     THE FIRST 2 LINES CONTAIN AQAM SOURCE INVENTORY AND               LETTR003
C     THE SECOND 2 LINES THE TITLE INPUT TO THE PROGRAM                 LETTR004
C                                                                       LETTR005
      DIMENSION ITITLE(12),LINE1(12),LINE2(12)                          LETTR006
      DATA LINE1,LINE2 /                                                LETTR007
     1 1HA,1HQ,1HA,1HM,1H ,1HS,1HO,1HU,1HR,1HC,1HE,1H ,                 LETTR008
     2 1HI,1HN,1HV,1HE,1HN,1HT,1HO,1HR,1HY,1H ,1H ,1H /                 LETTR009
C                                                                       LETTR010
      DO 200 IK=1,12                                                    LETTR011
  200 ITITLE(IK)=LINE1(IK)                                              LETTR012
      CALL CHARAC(ITITLE)                                               LETTR013
      PRINT 6002                                                        LETTR014
      DO 201 IK=1,12                                                    LETTR015
  201 ITITLE(IK)=LINE2(IK)                                              LETTR016
      CALL CHARAC(ITITLE)                                               LETTR017
      PRINT 6002                                                        LETTR018
C                                                                       LETTR019
      DO 1000 L=1,2                                                     LETTR020
      READ(5,100) (ITITLE(I),I=1,12)                                    LETTR021
  100 FORMAT(12A1)                                                      LETTR022
 6002 FORMAT(1H-)                                                       LETTR023
      CALL CHARAC(ITITLE)                                               LETTR024
      PRINT 6002                                                        LETTR025
 1000 CONTINUE                                                          LETTR026
      RETURN                                                            LETTR027
      END                                                               LETTR028
```

PROGRAM MAIN

Purpose:

1. Primary driver for various subroutines.
2. Output to master source tape part of the data needed for time period emission calculations.
3. Print certain input, default and calculated data for diagnostic purpose.

Input:

Annual meteorological data.

Auto and truck emission factor control cards.

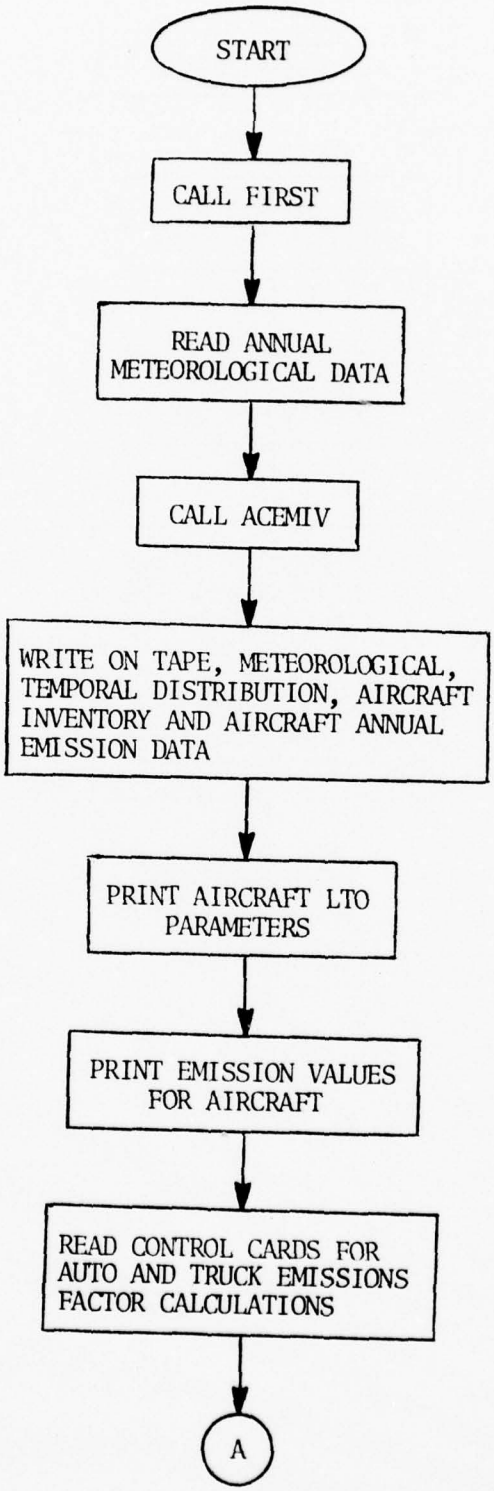
Output:

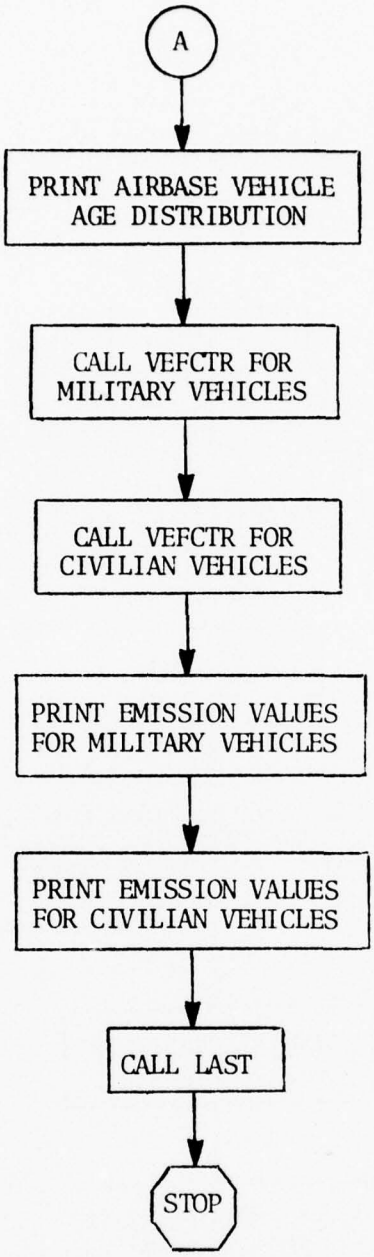
1. Write data on master source tape.
2. Print automobile and truck emission factors.

Subroutines Called:

FIRST, VEFCTR, ACEMIV, LAST.

PROGRAM MAIN




A
PRINT AIRBASE VEHICLE AGE DISTRIBUTION
CALL VEFCTR FOR MILITARY VEHICLES
CALL VEFCTR FOR CIVILIAN VEHICLES
PRINT EMISSION VALUES FOR MILITARY VEHICLES
PRINT EMISSION VALUES FOR CIVILIAN VEHICLES
CALL LAST
STOP

```
C                                                                       MAIN0000
C     THIS PROGRAM IS THE MAIN DRIVER ROUTINE.  IT READS THE            MAIN0001
C     METEOROLOGICAL DATA AND THE AIRBASE VEHICLE AGE DISTRIBUTION DATA MAIN0002
C     AND DIRECTS THE CALLS TO SUBROUTINES TO CALCULATE EMISSIONS       MAIN0003
C     FOR THE AIRBASE AND ITS ENVIRONS.  IT WRITES DATA ON THE          MAIN0004
C     MASTER SOURCE TAPE AND PRINTS CERTAIN AIRCRAFT PARAMETERS AND     MAIN0005
C     AIRBASE VEHICLE INFORMATION                                       MAIN0006
C                                                                       MAIN0007
      REAL*8 ACNAME,MONAM1,THNAME,EGNAME,MINUS                          MAIN0008
      REAL LNDSPD,LUEMFC                                                MAIN0009
      INTEGER ENGNO                                                     MAIN0010
C                                                                       MAIN0011
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),MAIN0012
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),MAIN0013
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),MAIN0014
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50)MAIN0015
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),   MAIN0016
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),    MAIN0017
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8)MAIN0018
     .,ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),       MAIN0019
     . NIBTI(6),NIBSEG(8,6),IIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),   MAIN0020
     . NOBTI(6),NOBSEG(8,6),IOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),   MAIN0021
     . NPASG(6),IDPERA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),         MAIN0022
     . NLSEGS,ACLNSG(12,25)                                             MAIN0023
      COMMON /EGEDB1/ MONAM1(10),THNAME(4),MONAM2(10),IDACEG(50),       MAIN0024
     . IACABF(50),EGFF(4,50),IEGABF(50),IDRR(50)                        MAIN0025
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6),PPEMFC(22,6),EMFCIN(5,6),MAIN0026
     . TPEMFC(6),LUEMFC(9,6),ALPHA(7),BETA(7),FLDENS(7),FLNAME(7),      MAIN0027
     . AFEMFC(2,6,6),ATEMFC(2,6,6),CSEMFC(6,6),AFCSEM(6,6),AFSOAK,      MAIN0028
     . ATSOAK,AFBRTH,ATBRTH,FLTFCT(7),FIXFCT(7),WRKFCT(7)               MAIN0029
      COMMON /ANNMET/ TBAR,ADD,P,PA,WSBAR,DTBAR,AMDBAR                  MAIN0030
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6),                             MAIN0031
     . ACLNDY,ACLNDZ,TCVSDF,TCHBDF,TCHODF,TCDYDF,TCDZDF,RUDSDF,RUTSDF,  MAIN0032
     . RUVSDF,RUHBDF,RUHODF,RUDYDF,RUDZDF,TFDZDF,TFQDF,TFHBDF,TFHODF,   MAIN0033
     . EGCKDY,EGCKDZ,ACMLPL,ARDSDZ,ATDSDY,ATDSDZ,TCDSDF,TCTSDF,FPDFLT,  MAIN0034
     . IDDFIT,RFDFLT,SFDFLT,PFDFLT,TFDFLT,TFDYDF                        MAIN0035
      COMMON /DSTRBT/ ACMO(13,50),ACDY(2,50),ACHR(24,50),VHMLMO(13),    MAIN0036
     . VHMLDY(2),VHMLHR(24),CVAEMO(13),CVABDY(2),CVABHR(24),CVENMO(13), MAIN0037
     . CVENDY(2),CVENHR(24),FLMO(13,7),FLDY(2,7),FLHR(24,7)             MAIN0038
      COMMON /AUTOS/ XEMITT(2,6,6),YCLDST(6,6),SOAK,BRTH,IAREA,         MAIN0039
     . IHDV,IAAT,IYEAR                                                  MAIN0040
C                                                                       MAIN0041
      NAMELIST /EGDATA/ EGNAME,EGFF,IEGABF,EGEMFC,ACNAME,IDACEG,IACABF, MAIN0042
     . IDRR                                                             MAIN0043
      NAMELIST /DSDATA/ ACMO,ACDY,ACHR,VHMLMO,VHMLDY,VHMLHR,CVABMO,     MAIN0044
     . CVABDY,CVABHR,CVENMO,CVENDY,CVENHR,FLMO,FLDY,FLHR                MAIN0045
      NAMELIST /ACDATA/ APPHT,CLMBHT,ENGNO,DSCNT1,DSCNT2,APSPD1,APSPD2, MAIN0046
     . APPHT2,ASCNT1,ASCNT2,COSPD1,COSPD2,COHT1,TXISPD,LNDSPD,TOSPD,    MAIN0047
     . SRTUPT,EGCHKT,SHTDNT,TOWT                                        MAIN0048
C                                                                       MAIN0049
      DIMENSION VHTILE(4,3)                                             MAIN0050
      DATA VHTILE /4HLOW  ,4HALTI,4HTUDE,4H    ,                        MAIN0051
     .             4HHIGH,4H ALT,4HITUD,4HE    ,                       MAIN0052
     .             4HCALI,4HFORN,4HIA  ,4H    /                        MAIN0053
      REAL*8 NMIL,NCIV                                                  MAIN0054
      DATA NMIL,NCIV /8HMILITARY,8HCIVILIAN/                            MAIN0055
C                                                                       MAIN0056
      IEGFIG=0                                                          MAIN0057
C                                                                       MAIN0058
      CALL FIRST                                                        MAIN0059
C                                                                       MAIN0060
C     DATA SET 3  METEOROLOGICAL DATA                                   MAIN0061
```

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C                                                                       MAIN0062
      READ 8676, AB1234                                                 MAIN0063
 8676 FORMAT(A1)                                                        MAIN0064
      READ 10, TBAR,ADD,PA,WSBAR,DTBAR                                  MAIN0065
   10 FORMAT(8F8.2)                                                     MAIN0066
C                                                                       MAIN0067
      CALL ACEMIV                                                       MAIN0068
C                                                                       MAIN0069
C     WRITE AIRCRAFT DATA ON OUTPUT TAPE                                MAIN0070
C                                                                       MAIN0071
      WRITE (ITAPE) TBAR,ADD,PA,WSBAR,DTBAR                             MAIN0072
      WRITE (ITAPE) VHMLMO,VHMLDY,VHMLHR,CVABMO,CVABDY,CVABHR,CVENMO,   MAIN0073
     . CVENDY,CVENHR,FLMO,FLDY,FLHR                                     MAIN0074
      WRITE (ITAPE) NIBTT,NIBSEG,IIBSEG,NOBTT,NOBSEG,IOBSEG             MAIN0075
      WRITE (ITAPE) IDOBTW,IDIBTW,IDPRKA,PAREA,IDIBPA,IDOBPA,NPASQ      MAIN0076
      WRITE (ITAPE) RNWY,IUSWD,DISRNW                                   MAIN0077
      WRITE (ITAPE) ((ACLNSG(II,JJ),II=1,12),JJ=1,NLSEGS)               MAIN0078
      DO 40 J=1,NACTYP                                                  MAIN0079
      I=IACTYP(J)                                                       MAIN0080
      WRITE (ITAPE) (ACMO(K,I),K=1,13),(ACDY(K,I),K=1,2),               MAIN0081
     . (ACHR(K,I),K=1,24)                                               MAIN0082
      WRITE (ITAPE) ANNARR(J),ANNDEP(J),ANNTGO(J),ACFUEL(J),ARFLVT(J),  MAIN0083
     . DPFLVT(J),ACSPIL(J),IACTYP(J)                                    MAIN0084
      WRITE (ITAPE) DSCNT1(I),DSCNT2(I),ASCNT1(I),ASCNT2(I),            MAIN0085
     . TXISPD(I),LNDSPD(I),APSPD1(I),APSPD2(I),TOSPD(I),COSPD1(I),      MAIN0086
     . COSPD2(I),SRTUPT(I),EGCHKT(I),SHTDNT(I),TOWT(I),APPHT2(I),       MAIN0087
     . CCHT1(I),IDRR(I)                                                 MAIN0088
      WRITE(ITAPE) ((ARSVEM(K,J,L), DPSVEM(K,J,L),I=1,5),K=1,6),        MAIN0089
     . ((TTARFR(K,J,L),TTDPFR(K,J,L),K=1,8),L=1,6)                      MAIN0090
      WRITE (ITAPE) (ENGNO(I,L),L=1,2),((ACEMFC(I,K,L),K=1,10),L=1,6)   MAIN0091
      WRITE (ITAPE) ((TGO(K,L,J),K=1,3),L=1,4)                          MAIN0092
   40 CONTINUE                                                          MAIN0093
      END FILE ITAPE                                                    MAIN0094
C                                                                       MAIN0095
C     CONVERT ANGLES TO DEGREES FOR PRINT                               MAIN0096
C                                                                       MAIN0097
      DO 440 I=1,50                                                     MAIN0098
      ASCNT1(I)=ASCNT1(I)/ 0.0174533                                    MAIN0099
      ASCNT2(I)=ASCNT2(I)/ 0.0174533                                    MAIN0100
      DSCNT1(I)=DSCNT1(I)/ 0.0174533                                    MAIN0101
      DSCNT2(I)=DSCNT2(I)/ 0.0174533                                    MAIN0102
  440 CONTINUE                                                          MAIN0103
C                                                                       MAIN0104
C     PRINT AIRCRAFT LTO PARAMETERS                                     MAIN0105
C                                                                       MAIN0106
      PRINT 6060                                                        MAIN0107
 6060 FORMAT(1H1,43X,47HI. B.3  AIRCRAFT LANDING AND TAKEOFF PARAMETERS)MAIN0108
      PRINT 6062                                                        MAIN0109
 6062 FORMAT(1H-/10H  AIRCRAFT,9X,10HTAXI SPEED,8X,13HLANDING SPEED,6X, MAIN0110
     . 13HTAKEOFF SPEED,3X,18HIDLE START UP TIME,2X,17HENGINE CHECK TIMEMAIN0111
     . ,2X,19HIDLE SHUT DOWN TIME/1H ,                                  MAIN0112
     . 3X,4HNAME,13X,7H(KM/HR),12X,7H(KM/HR),12X,7H(KM/HR),9X,          MAIN0113
     . 12H(MIN/ENGINE),7X,12H(MIN/ENGINE),7X,12H(MIN/ENGINE))           MAIN0114
      DO 6064 JJ=1,NACTYP                                               MAIN0115
      II=IACTYP(JJ)                                                     MAIN0116
 6064 PRINT 6066, ACNAME(II),TXISPD(II),LNDSPD(II),TOSPD(II),           MAIN0117
     . SRTUPT(II),EGCHKT(II),SHTDNT(II)                                 MAIN0118
 6066 FORMAT(1H ,1X,A8,1P6E19.4)                                        MAIN0119
      PRINT 6070                                                        MAIN0120
 6070 FORMAT(1H-/10H  AIRCRAFT,6X,16HAPPROACH ANGLE 1,3X,               MAIN0121
     . 16HAPPROACH ANGLE 2,3X,16HAPPROACH SPEED 1,3X,                   MAIN0122
     . 16HAPPROACH SPEED 2,3X,17HAPPROACH HEIGHT 2,3X,                  MAIN0123
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     . 14HTAKEOFF WEIGHT/1H ,3X,4HNAME,12X,9H(DEGREES),10X,9H(DEGREES),  MAIN0124
     . 11X,7H(KM/HR),12X,7H(KM/HR),13X,4H(KM),12X,10H(1000 LBS))         MAIN0125
      DO 6072 JJ=1,NACTYP                                                MAIN0126
      II=IACTYP(JJ)                                                      MAIN0127
 6072 PRINT 6066, ACNAME(II),DSCNT1(II),DSCNT2(II),APSPD1(II),           MAIN0128
     . APSPD2(II),APPHT2(II),TOWT(II)                                    MAIN0129
      PRINT 7000                                                         MAIN0130
 7000 FORMAT(1H-/10H  AIRCRAFT,8X,13HCLIMB ANBLE 1,6X,13HCLIMB ANGLE 2,  MAIN0131
     . 6X,13HCLIMB SPEED 1,6X,13HCLIMB SPEED 2,5X,14HCLIMB HEIGHT 2/     MAIN0132
     . 1H ,3X,4HNAME,12X,9H(DEGREES),10X,9H(DEGREES),11X,7H(KM/HR),12X,  MAIN0133
     . 7H(KM/HR),13X,4H(KM))                                             MAIN0134
      DO 7001 JJ=1,NACTYP                                                MAIN0135
      II=IACTYP(JJ)                                                      MAIN0136
 7001 PRINT 6066, ACNAME(II),ASCNT1(II),ASCNT2(II),COSPD1(II),           MAIN0137
     . COSPD2(II),COHT1(II)                                              MAIN0138
      PRINT 7010                                                         MAIN0139
 7010 FORMAT(1H-/10H  AIRCRAFT,10X,8HAIRCRAFT,12X,6HENGINE,12X,          MAIN0140
     . 9HNUMBER OF,11X,6HAFTER-,12X,8HRUN ROLL/1H ,                      MAIN0141
     . 3X,4HNAME,15X,2HID,17X,2HID,15X,7HENGINES,12X,6HBURNER,           MAIN0142
     . 12X,8HEQUATION)                                                   MAIN0143
      DO 7020 JJ=1,NACTYP                                                MAIN0144
      II=IACTYP(JJ)                                                      MAIN0145
 7020 PRINT 7021, ACNAME(II),II,IDACEG(II),ENGNO(II,1),IACABF(II),       MAIN0146
     . IDBR(II)                                                          MAIN0147
 7021 FORMAT(1H ,1X,A8,I15,4I19)                                         MAIN0148
      PRINT 6076, APPHI,CLMEHT                                           MAIN0149
 6076 FORMAT(1H-,32HALTITUDE AT START OF APPROACH = ,1PE10.4,12H  KILOME MAIN0150
     .TERS //1X,30HALTITUDE AT END OF CLIMBOUT = ,E10.4,11H KILOMETERS)  MAIN0151
C                                                                        MAIN0152
C     PRINT EMISSION VALUES FOR AIRCRAFT                                 MAIN0153
C                                                                        MAIN0154
      PRINT 510                                                          MAIN0155
  510 FORMAT(1H1,44X,47HI.  C.  I N T E R I M   C A L C U L A T I C N S/ MAIN0156
     . 1H-,30X,75HI. C.1  AIRCRAFT EMISSION FACTORS BY AIRCRAFT TYPE (KG MAIN0157
     . PER ENGINE PER HOUR)/)                                            MAIN0158
      DO 7 JJ=1,NACTYP                                                   MAIN0159
      I=IACTYP(JJ)                                                       MAIN0160
      PRINT 511, (ACNAME(I),I,EGNAME(IDACEG(I)),IDACEG(I),ENGNO(I,1),    MAIN0161
     . (PLNAME(K),K=1,NPLTS))                                            MAIN0162
  511 FORMAT(1H-/1H0,13X,A8,6X,4HID =,I3,6X,9HENGINE = ,A8,6X,12HENGINE  MAIN0163
     . ID =,I3,6X,19HNUMBER OF ENGINES =,I2, /1H-,                       MAIN0164
     . 16X,6H(MODE),15X,6(A4,12X))                                       MAIN0165
      DO 7 J=1,10                                                        MAIN0166
      IF (ACEMFC(I,J,1).LE.0.0.AND.ACEMFC(I,J,2).LE.0.0) GO TO 7         MAIN0167
      PRINT 512, (MONAM1(J),MONAM2(J),(ACEMFC(I,J,K),K=1,NPLTS))         MAIN0168
  512 FORMAT(1H ,13X,A8,A4,2X,1P6E16.3)                                  MAIN0169
    7 CONTINUE                                                           MAIN0170
C                                                                        MAIN0171
      PRINT 90                                                           MAIN0172
   90 FORMAT(1H1,28(/),58X,19HS E C T I O N   I I,///,                   MAIN0173
     . 53X,29HA I R B A S E   S O U R C E S/)                            MAIN0174
C                                                                        MAIN0175
C     DATA SET 11  AIRBASE VEHICLE AGE DISTRIBUTION                      MAIN0176
C                                                                        MAIN0177
      READ 8676, AB1234                                                  MAIN0178
      READ 11, IAREA,IHDVML,IHDVCV,IAATML,IAATCV,IYEAR                   MAIN0179
   11 FORMAT(20I4)                                                       MAIN0180
      IF (IHDVML.EQ.0) IHDVML=2                                          MAIN0181
      IF (IHDVCV.EQ.0) IHDVCV=2                                          MAIN0182
C                                                                        MAIN0183
C     PRINT AIRBASE VEHICLE AGE DISTRIBUTION                             MAIN0184
C                                                                        MAIN0185
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      PRINT 200, (VHTILE(I,IAREA),I=1,4)                                MAIN0186
  200 FORMAT(1H1,18X,99HI I.  A.  V E H I C L E   A G E   D I S T R I B MAIN0187
     .U T I O N   A N D   E M I S S I O N   F A C T O R S/,             MAIN0188
     . 1H-,46X,41HII. A.1  AIRBASE VEHICLE AGE DISTRIBUTION/1H-/        MAIN0189
     . 34H VEHICLE EMISSION AREA IS SET FOR ,4A4/                       MAIN0190
     . 1H-,10X,28HMILITARY VEHICLE INFORMATION/)                        MAIN0191
      IHDV=IHDVML                                                       MAIN0192
      IAAT=IAATML                                                       MAIN0193
      IF (IHDV.EQ.1) PRINT 203,NMIL                                     MAIN0194
  203 FORMAT(1H0,67HNO GROSS VEHICLE WEIGHT DEPENDENCE FOR HEAVY DUTY GAMAIN0195
     .SOLINE-POWERED ,A8,37H VEHICLES EMISSION FACTOR CALCULATION)      MAIN0196
      IF (IHDV.EQ.2) PRINT 204,NMIL                                     MAIN0197
  204 FORMAT(1H0,28HHEAVY DUTY GASOLINE POWERED ,A8,63H VEHICLE EMISSIONMAIN0198
     . FACTORS ARE DEPENDENT ON GROSS VEHICLE WEIGHT)                   MAIN0199
      IF (IAAT.EQ.0) PRINT 201,NMIL                                     MAIN0200
  201 FORMAT(1H0,A8,42H VEHICLE AGE DISTRIBUTION SUPPLIED BY USER)      MAIN0201
      IF (IAAT.EQ.1) PRINT 202,NMIL                                     MAIN0202
  202 FORMAT(1H0,43HNATIONAL VEHICLE AGE DISTRIBUTION USED FOR ,A8,     MAIN0203
     . 9H VEHICLES)                                                     MAIN0204
C                                                                       MAIN0205
C     CALL SUBROUTINE VEFCTR FOR MILITARY VEHICLES                      MAIN0206
C                                                                       MAIN0207
      CALL VEFCTR                                                       MAIN0208
      DO 21 I=1,6                                                       MAIN0209
      DO 21 J=1,6                                                       MAIN0210
      AFCSEM(J,I)=YCLDST(J,I)/1000.0                                    MAIN0211
      DO 21 K=1,2                                                       MAIN0212
   21 AFEMFC(K,J,I)=XEMITT(K,J,I)/1000.0                                MAIN0213
      AFSOAK=SOAK/1000.0                                                MAIN0214
      AFBRTH=BRTH/1000.0                                                MAIN0215
      IHDV=IHDVCV                                                       MAIN0216
      IAAT=IAATCV                                                       MAIN0217
      PRINT 700                                                         MAIN0218
  700 FORMAT(1H-/,1H ,10X,28HCIVILIAN VEHICLE INFORMATION/)             MAIN0219
      IF (IHDV.EQ.1) PRINT 203,NCIV                                     MAIN0220
      IF (IHDV.EQ.2) PRINT 204,NCIV                                     MAIN0221
      IF (IAAT.EQ.0) PRINT 201,NCIV                                     MAIN0222
      IF (IAAT.EQ.1) PRINT 202,NCIV                                     MAIN0223
C                                                                       MAIN0224
C     CALL SUBROUTINE VEFCTR FOR CIVILIAN VEHICLES                      MAIN0225
C                                                                       MAIN0226
      CALL VEFCTR                                                       MAIN0227
      DO 22 I=1,6                                                       MAIN0228
      DO 22 J=1,6                                                       MAIN0229
      CSEMFC(J,I)=YCLDST(J,I)/1000.0                                    MAIN0230
      DO 22 K=1,2                                                       MAIN0231
   22 ATEMFC(K,J,I)=XEMITT(K,J,I)/1000.0                                MAIN0232
      ATSOAK=SOAK/1000.0                                                MAIN0233
      ATBRTH=BRTH/1000.0                                                MAIN0234
C                                                                       MAIN0235
C     PRINT EMISSION VALUES FOR MILITARY VEHICLES                       MAIN0236
C                                                                       MAIN0237
      PRINT 50                                                          MAIN0238
   50 FORMAT(1H1,38X,57HII. A.2  MILITARY AND CIVILIAN POLLUTION EMISSIOMAIN0239
     .N FACTORS)                                                        MAIN0240
      PRINT 51,NMIL                                                     MAIN0241
   51 FORMAT(1H-,36X,A8,57H VEHICLE COLD STARTS PLUS HOT RUNNING EMISSIOMAIN0242
     .NS (KG/MILE))                                                     MAIN0243
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                   MAIN0244
   60 FORMAT(1H0,10X,5HCLASS,14X,5(A4,14X),A4)                          MAIN0245
      DO 250 J=1,6                                                      MAIN0246
  250 PRINT 61, J,(AFEMFC(2,J,I),I=1,NPLTS)                             MAIN0247
```

```
   61 FORMAT(1H ,12X,I1,4X,1P6(8X,E10.3))                                MAIN0248
      PRINT 52,NMIL                                                      MAIN0249
   52 FORMAT(1H-,44X,A8,40H VEHICLE HOT RUNNING EMISSIONS (KG/MILE))     MAIN0250
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                    MAIN0251
      DO 251 J=1,6                                                       MAIN0252
  251 PRINT 61, J,(AFEMFC(1,J,I),I=1,NPLTS)                              MAIN0253
      PRINT 53,NMIL                                                      MAIN0254
   53 FORMAT(1H-,41X,A8,45H VEHICLE COLD START EMISSIONS (KG/COLD START)MAIN0255
     .)                                                                  MAIN0256
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                    MAIN0257
      DO 252 I=1,6                                                       MAIN0258
  252 PRINT 61, I,(AFCSEM(I,J),J=1,NPLTS)                                MAIN0259
      PRINT 54, NMIL,AFSOAK,NMIL,AFBRTH                                  MAIN0260
   54 FORMAT(1H-,10X,A8,61H VEHICLE CARBURETOR SOAK HYDROCARBON LOSSES PMAIN0261
     .ER VEHICLE START,1PE12.3,5H (KG),/1H0,                             MAIN0262
     . 10X,A8,55H VEHICLE HYDROCARBON BREATHING LOSSES PER VEHICLE STARTMAIN0263
     . ,1PE12.3,5H (KG))                                                 MAIN0264
C                                                                        MAIN0265
C    PRINT EMISSION VALUES FOR CIVILIAN VEHICLES                         MAIN0266
C                                                                        MAIN0267
      PRINT 51,NCIV                                                      MAIN0268
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                    MAIN0269
      DO 260 J=1,6                                                       MAIN0270
  260 PRINT 61, J,(ATEMFC(2,J,I),I=1,NPLTS)                              MAIN0271
      PRINT 52,NCIV                                                      MAIN0272
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                    MAIN0273
      DO 261 J=1,6                                                       MAIN0274
  261 PRINT 61, J,(ATEMFC(1,J,I),I=1,NPLTS)                              MAIN0275
      PRINT 53,NCIV                                                      MAIN0276
      PRINT 60, (PLNAME(I),I=1,NPLTS)                                    MAIN0277
      DO 262 I=1,6                                                       MAIN0278
  262 PRINT 61, I,(CSEMFC(I,J),J=1,NPLTS)                                MAIN0279
      PRINT 54, NCIV,ATSOAK,NCIV,ATBRTH                                  MAIN0280
C                                                                        MAIN0281
      CALL IAST                                                          MAIN0282
      STOP                                                               MAIN0283
      END                                                                MAIN0284
```

SUBROUTINE OABARS

Purpose:

To print all geometric input for air base non-aircraft area sources and to print the calculated annual emissions.

Input:

All airbase non-aircraft area source data.

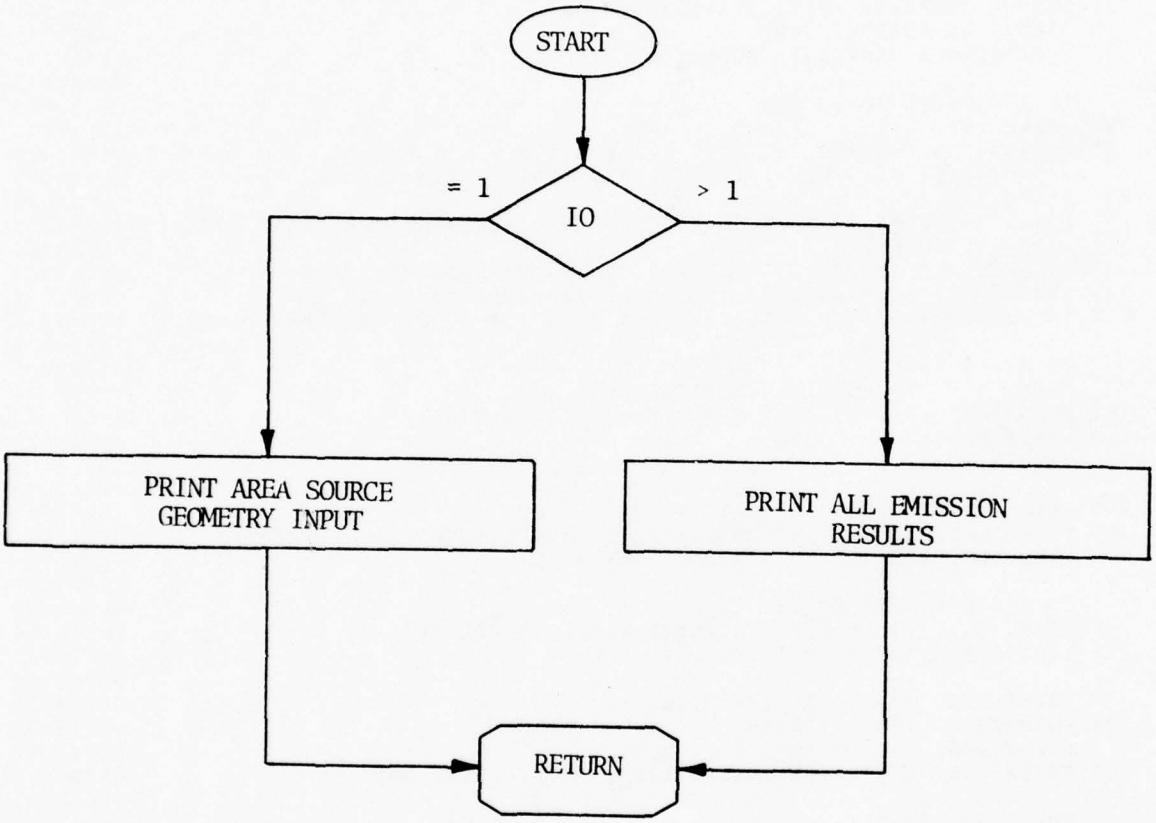
Output:

See purpose

Subroutines Called:

None

SUBROUTINE OABARS



```
      SUBROUTINE OABARS(IO)                                              OABAR000
C                                                                        OABAR001
C     THIS ROUTINE PRINTS THE NON-AIRCRAFT AREA INPUT                    OABAR002
C     AND EMISSION DATA                                                  OABAR003
C                                                                        OABAR004
      REAL*8 MINUS                                                       OABAR005
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                               OABAR006
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                    OABAR007
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                            OABAR008
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6)                           OABAR009
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6)                               OABAR010
      DIMENSION ABARS(7,300)                                             OABAR011
      EQUIVALENCE (ABARS(1),SORCE(1))                                    OABAR012
C                                                                        OABAR013
      IF (IO.GT.1) GO TO 200                                             OABAR014
  100 PRINT 101                                                          OABAR015
  101 FORMAT(1H1,44X,49HI I. C. A I R B A S E  A R E A  S O U R C E OABAR016
     .S/1H-,49X,39HII. C.1  AIRBASE AREA SOURCE GEOMETRIES)              OABAR017
  110 PRINT 111                                                          OABAR018
  111 FORMAT(1H-,28X,24HAREA SOURCE GROUND LEVEL,14X,16HAVERAGE EMISSIONOABAR019
     .,10X,6HLENGTH /1H ,                                               OABAR020
     .9X,6HSOURCE,10X,31HCOORDINATES OF CENTER AREA (KM),10X,           OABAR021
     .16HHEIGHT  (METERS),10X,7HOF SIDE,10X,7HDELTA Z /1H ,             OABAR022
     .11X,2HID,14X,3H(X),21X,3H(Y),18X,3H(Z),6X,2(10X,8H(METERS))/1H ,) OABAR023
C                                                                        OABAR024
      DO 120 N=1,NMAX                                                    OABAR025
      PRINT 112, ABARS(1,N),(ABARS(I,N),I=3,7)                           OABAR026
  112 FORMAT(1H ,F15.0,F17.3,F24.3,F20.2,F23.3,F16.2)                    OABAR027
  120 CONTINUE                                                           OABAR028
      RETURN                                                             OABAR029
C                                                                        OABAR030
  200 PRINT 201, (PLNAME(I),I=1,NPLTS)                                   OABAR031
  201 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR)/       OABAR032
     . 1H0,10X,9HSOURCE ID,11X,A4,5(15X,A4))                            OABAR033
C                                                                        OABAR034
      DO 270 N=LSRCES,NSRCES                                             OABAR035
  270 PRINT 271, SOREM(1,N),(SOREM(I+2,N),I=1,NPLTS)                     OABAR036
  271 FORMAT(1H ,12X,F5.0,1P6(9X,E10.4))                                 OABAR037
C                                                                        OABAR038
      PRINT 272, (MINUS(JK),JK=1,NPLTS)                                  OABAR039
  272 FORMAT(1H ,16X,6(11X,A8))                                          OABAR040
      PRINT 281, (TOTEM(IO+M,I),I=1,NPLTS)                               OABAR041
  281 FORMAT(1H ,8X,12HTOTAL ANNUAL,6X,1PE10.4,5(9X,E10.4))              OABAR042
C                                                                        OABAR043
      DO 27 I=1,NPLTS                                                    OABAR044
   27 TOTEM(IO+M,I)=TOTEM(IO+M,I)/1000.                                  OABAR045
C                                                                        OABAR046
      RETURN                                                             OABAR047
      END                                                                OABAR048
```

SUBROUTINE OABLNS

Purpose:

To print all input following the basic format for air base non-aircraft line sources and to print the calculated annual emissions.

Input:

All airbase non-aircraft line source data.

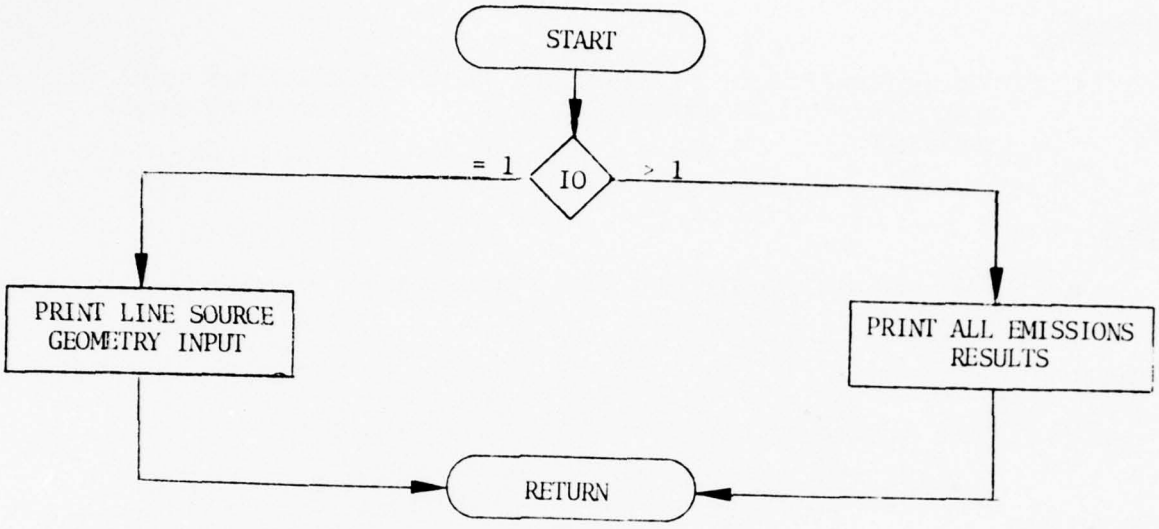
Output:

See purpose

Subroutines Called:

None

SUBROUTINE OABLNS



```
      SUBROUTINE OABLNS(IO)                                              OABLN000
C                                                                        OABLN001
C     THIS ROUTINE PRINTS THE NON-AIRCRAFT LINE INPUT                    OABLN002
C     AND EMISSION DATA                                                  OABLN003
C                                                                        OABLN004
      REAL*8 MINUS                                                       OABLN005
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6)                               OABLN006
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6)                           OABLN007
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                    OABLN008
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                            OABLN009
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                               OABLN010
      DIMENSION ABLNS(10,100)                                            OABLN011
      EQUIVALENCE (ABLNS(1),SORCE(1))                                    OABLN012
C                                                                        OABLN013
      IF (IO.GT.1) GO TO 200                                             OABLN014
  100 PRINT 101                                                          OABLN015
  101 FORMAT(1H1,44X,49HI I.  D.  A I R B A S E   L I N E   S O U R C E  OABLN016
     .S/1H-,43X,52HII. D.1  AIRBASE NON-AIRCRAFT LINE SOURCE GEOMETRIES)OABLN017
  110 PRINT 111                                                          OABLN018
  111 FORMAT(1H-,10X,24HGROUND LEVEL COORDINATES,4X,16HAVERAGE EMISSION,OABLN019
     . 30X,24HGROUND LEVEL COORDINATES,4X,16HAVERAGE EMISSION/           OABLN020
     . 7H SOURCE,7X,18HOF ONE END OF LINE,7X,16HHEIGHT  (METERS),5X,     OABLN021
     . 8HWIDTH OF,5X,7HDELTA Z,5X,23HAT OPPOSITE END OF LINE,5X,         OABLN022
     . 16HHEIGHT  (METERS)/                                              OABLN023
     . 5H   ID,9X,4HX(1),9X,4HY(1),10X,12HAT X(1),Y(1),6X,10HLINE (MET),OABLN024
     . 4X,8H(METERS),7X,4HX(2),9X,4HY(2),10X,12HAT X(2),Y(2))            OABLN025
C                                                                        OABLN026
      DO 120 N=1,NMAX                                                    OABLN027
      PRINT 112, ABLNS(1,N),(ABLNS(I,N),I=3,10)                          OABLN028
  112 FORMAT(1H ,F6.0,2F13.3,F16.2,F18.2,F12.2,F15.3,F13.3,F16.2)        OABLN029
  120 CONTINUE                                                           OABLN030
      RETURN                                                             OABLN031
C                                                                        OABLN032
  200 PRINT 201, (PLNAME(I),I=1,NPLTS)                                   OABLN033
  201 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR)/       OABLN034
     . 1H0,10X,9HSOURCE ID,11X,A4,5(15X,A4))                             OABLN035
C                                                                        OABLN036
      DO 270 N=LSRCES,NSRCES                                             OABLN037
  270 PRINT 271, SOREM(1,N),(SOREM(I+2,N),I=1,NPLTS)                     OABLN038
  271 FORMAT(1H ,12X,F5.0,1P6(9X,E10.4))                                 OABLN039
C                                                                        OABLN040
      PRINT 272, (MINUS(JK),JK=1,NPLTS)                                  OABLN041
  272 FORMAT(1H ,16X,6(11X,A8))                                          OABLN042
      PRINT 281, (TOTEM(IO+M,I),I=1,NPLTS)                               OABLN043
  281 FORMAT(1H ,8X,12HTOTAL ANNUAL,6X,1PE10.4,5(9X,E10.4))              OABLN044
C                                                                        OABLN045
      DO 27 I=1,NPLTS                                                    OABLN046
   27 TOTEM(IO+M,I)=TOTEM(IO+M,I)/1000.                                  OABLN047
C                                                                        OABLN048
      RETURN                                                             OABLN049
      END                                                                OABLN050
```

SUBROUTINE OABPTS

Purpose:

To print all input following the basic format for airbase non-aircraft point sources and to print the calculated annual emissions.

Input:

All airbase non-aircraft point source data.

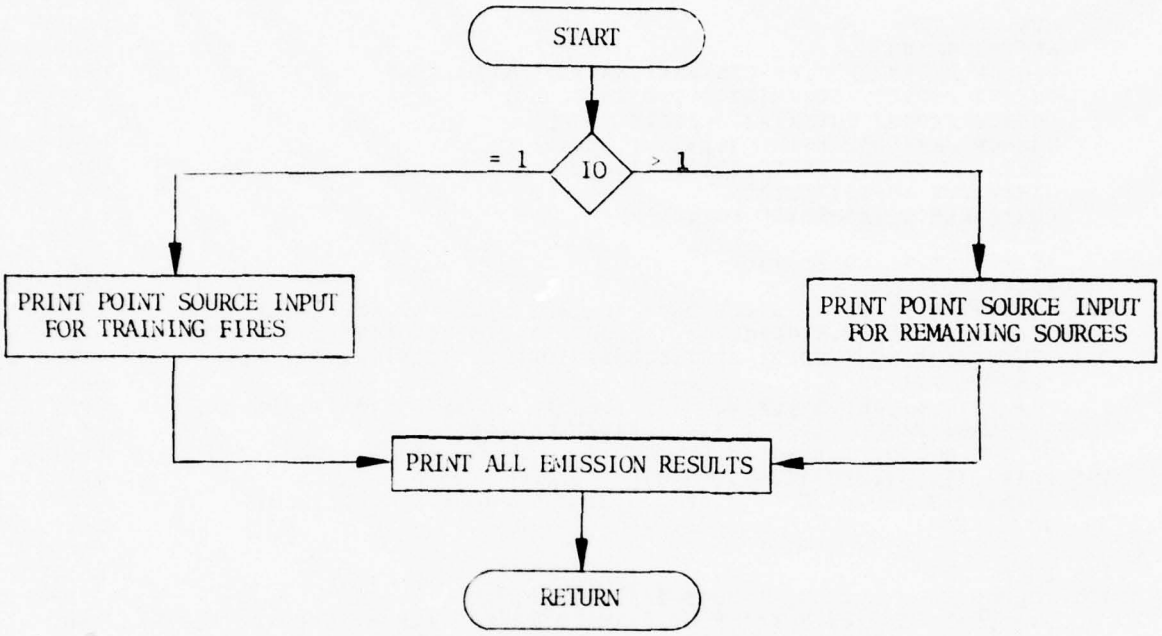
Output:

See purpose

Subroutines Called:

None

SUBROUTINE OABPTS



```
      SUBROUTINE OAEPTS(IO)                                              OABPT000
C                                                                        OABPT001
C     THIS ROUTINE PRINTS THE NON-AIRCRAFT POINT INPUT                   OABPT002
C     AND EMISSION DATA                                                  OABPT003
C                                                                        OABPT004
      REAL LUEMFC                                                        OABPT005
      REAL*8 MINUS                                                       OABPT006
      COMMON /POINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                    OABPT007
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                            OABPT008
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                               OABPT009
      COMMON /EMFDB1/ EGEMFC(6,4,50),PLNAME(6)                           OABPT010
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6)                               OABPT011
      DIMENSION ABPTS(11,150)                                            OABPT012
      EQUIVALENCE (ABPTS(1),SORCE(1))                                    OABPT013
C                                                                        OABPT014
      IF (IC.GT.1) GO TO 150                                             OABPT015
      PRINT 101                                                          OABPT016
  101 FORMAT(1H-,63X,11HSOURCE DATA/1H-,48X,5HSTACK,36X,4HHEAT/1H ,      OABPT017
     . 5X,6HSOURCE,3X,5HPLUME,8X,11HCOORDINATES,10X,6HHEIGHT,6X,         OABPT018
     . 7HDELTA Y,6X,7HDELTA Z,7X,8HEMISSION,6X,10HANNUAL NO.,5X,         OABPT019
     . 9HFUEL/FIRE /1H ,                                                 OABPT020
     . 7X,2HID,6X,4HFLAG,6X,3H(X),9X,3H(Y),2X,3(5X,8H(METERS)),5X,       OABPT021
     . 10H(KCAL/SEC),6X,8HOF FIRES,6X,9H(GALLONS))                       OABPT022
      DO 115 N=LSRCES,NSRCES                                             OABPT023
  115 PRINT 113, (ABPTS(I,N),I=1,10)                                     OABPT024
  113 FORMAT(1H ,5X,F5.0,F8.0,3F12.3,2F13.3,F15.3,F14.3,F15.3)           OABPT025
      GO TO 200                                                          OABPT026
C                                                                        OABPT027
  150 PRINT 151                                                          OABPT028
  151 FORMAT(1H-/1H0,63X,11HSOURCE DATA/1H0,                             OABPT029
     . 48X,5HSTACK,34X,5HSTACK,8X,5HSTACK,7X,5HSTACK,6X,8HBUILDING/1H ,  OABPT030
     . 5X,6HSOURCE,3X,5HPLUME,8X,11HCOORDINATES,10X,6HHEIGHT,            OABPT031
     . 6X,7HDELTA Y,6X,7HDELTA Z,7X,4HTEMP,8X,8HVELOCITY,                OABPT032
     . 4X,8HDIAMETER,5X,6HHEIGHT/1H ,                                    OABPT033
     . 7X,2HID,6X,4HFLAG,6X,3H(X),9X,3H(Y),7X,8H(METERS),5X,9H(METERS),  OABPT034
     . 5X,8H(METERS),5X,7H(DEG K),7X,7H(M/SEC),2(4X,8H(METERS)))         OABPT035
C                                                                        OABPT036
      DO 160 N=LSRCES,NSRCES                                             OABPT037
  160 PRINT 161, (ABPTS(I,N),I=1,11)                                     OABPT038
  161 FORMAT(1H ,6X,F5.0,F7.0,3F12.3,4F13.3,2F12.3)                      OABPT039
C                                                                        OABPT040
  200 PRINT 201, (PLNAME(I),I=1,NPLTS)                                   OABPT041
  201 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR)/       OABPT042
     . 1H0,10X,9HSOURCE ID,11X,A4,5(15X,A4))                             OABPT043
C                                                                        OABPT044
      DO 270 N=LSRCES,NSRCES                                             OABPT045
  270 PRINT 271, SOREM(1,N),(SOREM(I+2,N),I=1,NPLTS)                     OABPT046
  271 FORMAT(1H ,12X,F5.0,1P6(9X,E10.4))                                 OABPT047
C                                                                        OABPT048
      PRINT 272, (MINUS(JK),JK=1,NPLTS)                                  OABPT049
  272 FORMAT(1H ,16X,6(11X,A8))                                          OABPT050
      PRINT 281, (TOTEM(IO+M,I),I=1,NPLTS)                               OABPT051
  281 FORMAT(1H ,8X,12HTOTAL ANNUAL,6X,1PE10.4,5(9X,E10.4))              OABPT052
C                                                                        OABPT053
      DO 27 I=1,NPLTS                                                    OABPT054
   27 TOTEM(IO+M,I)=TOTEM(IO+M,I)/1000.                                  OABPT055
C                                                                        OABPT056
      RETURN                                                             OABPT057
      END                                                                OABPT058
```

SUBROUTINE OENEM

Purpose:

To print all input following the basic formats for environ point, area and line sources and to print the calculated annual emissions.

Input:

All environ source data.

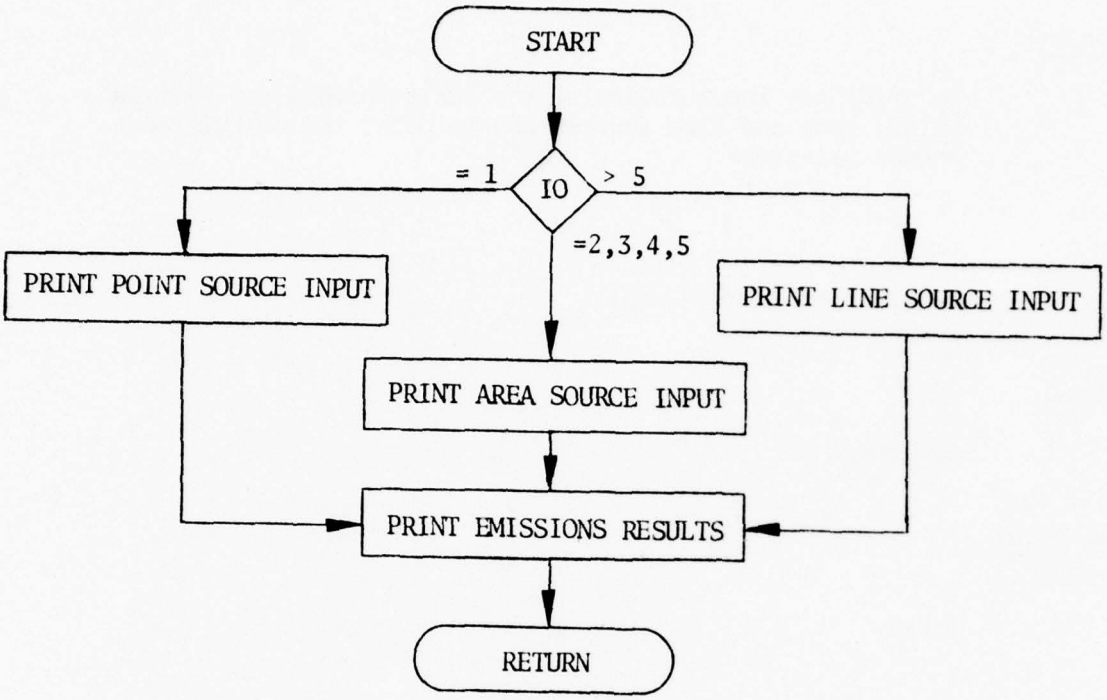
Output:

See purpose

Subroutines Called:

None

SUBROUTINE OENEM



```
      SUBROUTINE OENEM(IO)                                                  OENEM000
C                                                                           OENEM001
C     THIS ROUTINE PRINTS THE ENVIRON INPUT AND EMISSION DATA               OENEM002
C                                                                           OENEM003
      REAL*8 MINUS                                                          OENEM004
      COMMON /PCINTR/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                       OENEM005
      COMMON /SPACE/ SORCE(2100),SOREM(8,250)                               OENEM006
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                                  OENEM007
      COMMON/ EMPDE1/ EGEMFC(6,4,50),PLNAME(6)                              OENEM008
      COMMON /DEFALT/ NPLTS,ITAPE,MINUS(6)                                  OENEM009
      DIMENSION ENPTS(11,100),ENARS(7,100),ENLNS(10,20)                     OENEM010
      EQUIVALENCE (ENPTS(1),SORCE(1)),(ENARS(1),SORCE(1))                   OENEM011
     .           ,(ENLNS(1),SORCE(1))                                       OENEM012
C                                                                           OENEM013
      IF (IC.GE.6) GO TO 600                                                OENEM014
      IF (IO.GE.2) GO TO 200                                                OENEM015
C                                                                           OENEM016
  100 PRINT 101                                                             OENEM017
  101 FORMAT(1H-/1H0,63X,11HSOURCE DATA /1H0,                               OENEM018
     .48X,5HSTACK,34X,5HSTACK,8X,5HSTACK,7X,5HSTACK,6X,8HBUILDING/1H ,      OENEM019
     .5X,6HSOURCE,3X,5HPLUME,8X,11HCOORDINATES,10X,6HHEIGHT,6X,7HDELTA YOENEM020
     .,6X,7HDELTA Z,7X,4HTEMP,8X,8HVELOCITY,4X,8HDIAMETER,5X,6HHEIGHT/      OENEM021
     .1H ,7X,2HID,6X,4HFLAG,6X,3H(X),9X,3H(Y),7X,8H(METERS),5X,             OENEM022
     .8H(METERS),5X,8H(METERS),6X,6H(KCAL),7X,7H(M/SEC),2(4X,8H(METERS))OENEM023
     .)                                                                     OENEM024
  104 FORMAT(1H ,6X,F5.0,F7.0,3F12.3,4F13.3,2F12.3)                         OENEM025
      DO 110 N=LSRCES,NSRCES                                                OENEM026
  110 PRINT 104, (ENPTS(I,N),I=1,11)                                        OENEM027
  150 CONTINUE                                                              OENEM028
  152 FORMAT(1H-/1H0,50X,37HSOURCE EMISSION DATA (KILOGRAMS/YEAR)/          OENEM029
     . 1H0,10X,9HSOURCE ID,11X,A4,5(15X,A4))                                OENEM030
  153 FORMAT(1H ,12X,F5.0,1P6(9X,E10.4))                                    OENEM031
  161 FORMAT(1H ,16X,6(11X,A8))                                             OENEM032
  163 FORMAT(1H ,8X,12HTOTAL ANNUAL,6X,1PE10.4,5(9X,E10.4))                 OENEM033
      PRINT 152, (PLNAME(I),I=1,NPLTS)                                      OENEM034
      DO 160 N=LSRCES,NSRCES                                                OENEM035
  160 PRINT 153, SOREM(1,N),(SOREM(I+2,N),I=1,NPLTS)                        OENEM036
      PRINT 161, (MINUS(JK),JK=1,NPLTS)                                     OENEM037
      PRINT 163, (TOTEM(IO+M,I),I=1,NPLTS)                                  OENEM038
      DO 27 I=1,NPLTS                                                       OENEM039
   27 TOTEM(IO+M,I)=TOTEM(IO+M,I)/1000.                                     OENEM040
      GO TO 190                                                             OENEM041
C                                                                           OENEM042
  200 PRINT 201                                                             OENEM043
  201 FORMAT(1H-/1H0,63X,11HSOURCE DATA/1H0,                                OENEM044
     .26X,24HAREA SOURCE GROUND LEVEL,14X,16HAVERAGE EMISSION,10X,6HLENGOENEM045
     .TH/1H ,9X,6HSOURCE,10X,31HCOORDINATES OF CENTER AREA (KM),10X,        OENEM046
     .16HHEIGHT  (METERS),10X,7HOF SIDE,10X,7HDELTA Z /1H ,                 OENEM047
     .11X,2HID,14X,3H(X),21X,3H(Y),18X,3H(Z),6X,2(10X,8H(METERS))/1H ,)     OENEM048
C                                                                           OENEM049
      DO 260 N=LSRCES,NSRCES                                                OENEM050
      PRINT 253, ENARS(1,N),(ENARS(I,N),I=3,7)                              OENEM051
  253 FORMAT(1H ,F15.0,F17.3,F24.3,F20.2,F21.2,F18.2)                       OENEM052
  260 CONTINUE                                                              OENEM053
      GO TO 150                                                             OENEM054
C                                                                           OENEM055
  600 PRINT 601                                                             OENEM056
  601 FORMAT(1H-,63X,11HSOURCE DATA/1H0,                                    OENEM057
     . 10X,24HGROUND LEVEL COORDINATES,4X,16HAVERAGE EMISSION,              OENEM058
     . 30X,24HGROUND LEVEL COORDINATES,4X,16HAVERAGE EMISSION/              OENEM059
     . 7H SOURCE,7X,18HOF ONE END OF LINE,7X,16HHEIGHT  (METERS),5X,        OENEM060
     . 8HWIDTH OF,5X,7HDELTA Z,5X,23HAT OPPOSITE END OF LINE,5X,            OENEM061
```

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     . 16HHEIGHT  (METERS)/                                                    OENEM062
     . 5H    ID,9X,4HX(1),9X,4HY(1),10X,12HAT X(1),Y(1),6X,10HLINE (MET),     OENEM063
     . 4X,8H(METERS),7X,4HX(2),9X,4HY(2),10X,12HAT X(2),Y(2))                  OENEM064
C                                                                              OENEM065
      DO 660 N=LSRCES,NSRCES                                                   OENEM066
      PRINT 653, ENLNS(1,N),(ENLNS(I,N),I=3,10)                                OENEM067
  653 FORMAT(1H ,F6.0,1X,2F13.3,F17.2,F19.2,F13.2,F15.2,F13.2,F18.2)           OENEM068
  660 CONTINUE                                                                 OENEM069
      GO TO 150                                                                OENEM070
C                                                                              OENEM071
  190 RETURN                                                                   OENEM072
      END                                                                      OENEM073
```

FUNCTION RRDIST

Purpose:

To calculate the amount of runway necessary for takeoff using the aircraft dependent takeoff length equations.

Input:

Aircraft identification, pressure altitude, ambient temperature and wind velocity, and aircraft takeoff weight.

Output:

Takeoff length in feet of runway roll to liftoff.

Procedure:

Use of sets of takeoff equations provided by USAF.

```
      FUNCTION RRDIST (IR,PA,T,GW,WS)                                   RRDST000
C                                                                       RRDST001
C     FUNCTION CALCULATES RUNWAY ROLL DISTANCE IN FEET                  RRDST002
C     IR IS AIRCRAFT IDENTIFICATION NUMBER                              RRDST003
C     PA IS PRESSURE ALTITUDE IN HUNDREDS OF FEET                       RRDST004
C     T IS TEMPERATURE IN DEGREES FAHRENHEIT                            RRDST005
C     GW IS AC TAKE OFF WEIGHT IN THOUSAND POUNDS                       RRDST006
C     WS IS THE WIND SPEED IN KNOTS                                     RRDST007
C                                                                       RRDST008
      FGR=0.0                                                           RRDST009
      IF(IR.EQ.100) GO TO 100                                           RRDST010
      GO TO (1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,  RRDST011
     123,24,25,26,27,28,29,30,31,32,33,34,35,36,37,100,100,100,100,100, RRDST012
     2 100,100,100,100,100,100,100,12),IR                               RRDST013
    1 CONTINUE                                                          RRDST014
      GO TO 100                                                         RRDST015
    3 CONTINUE                                                          RRDST016
    2 TOF=(2.78-8.5714E-4*PA)+(1.82E-2+7.2857E-5*PA)*GW                 RRDST017
      GR=(1.184E+1-4.2167E-1*T+1.0E-2*T**2-4.583E-5*T**3)+              RRDST018
     .   (4.194+1.7197E-2*T-9.26018E-4*T**2)*TOF+                       RRDST019
     .   (1.0457+8.40E-3*T+2.117E-4*T**2+2.98E-7*T**3)*TOF**2          RRDST020
      FGR=(GR-(1.15E-1+9.0E-3*GR)*WS)*100.                              RRDST021
      GO TO 100                                                         RRDST022
    4 CONTINUE                                                          RRDST023
    5 TOF=(1.589+6.883E-3*PA+1.2767E-4*PA**2)+                          RRDST024
     .   (8.819E-3+1.1007E-4*PA-3.924E-7*PA**2)*T+                      RRDST025
     .   (5.979E-5+3.38096E-7*PA+8.532E-9*PA**2)*T**2                   RRDST026
      GR=(-13.25+8.75E-1*GW-1.25E-2*GW**2)+                             RRDST027
     .   (1.3925E+1-9.275E-1*GW+2.125E-2*GW**2)*TOF                     RRDST028
      FGR=(GR-(1.316E-1+8.748E-3*GR)*WS)*100.                           RRDST029
      GO TO 100                                                         RRDST030
    6 TOF=(9.3937E-1+2.0947E-2*PA+2.005E-4*PA**2)+                      RRDST031
     .   (3.746467E-2+4.05625E-4*PA)*T+                                 RRDST032
     .   (1.9928E-4-5.75006E-6*PA+1.40234E-7*PA**2)*T**2                RRDST033
      GR=(1.4307E+1-7.57144E-1*GW+2.6785E-2*GW**2)+                     RRDST034
     .   (1.67257E+1-1.17762*GW+2.7381E-2*GW**2)*TOF                    RRDST035
      FGR=(GR-(2.412799E-2+7.82971E-3*GR)*WS)*100.                      RRDST036
      GO TO 100                                                         RRDST037
    7 TOF=(-1.06E-3+1.674E-2*PA+8.1888E-5*PA**2)+                       RRDST038
     .   (1.36E-2+9.592E-6*PA+1.755E-6*PA**2)*T+                        RRDST039
     .   (5.1099E-5+1.2899E-6*PA-6.123E-9*PA**2)*T**2                   RRDST040
      GR=(-1.423E+1+6.349998E-1*GW+1.6667E-3*GW**2)+                    RRDST041
     .   (6.1857-3.2179E-1*GW+8.214E-3*GW**2)*TOF                       RRDST042
      FGR=(GR-(6.293E-2+7.328E-3*GR)*WS)*100.                           RRDST043
      GO TO 100                                                         RRDST044
    8 TOF=(9.503E-2+3.313E-2*PA+1.3666E-4*PA**2)+                       RRDST045
     .   (2.2546E-2+1.7848E-4*PA-4.04E-6*PA**2)*T+                      RRDST046
     .   (1.3438E-4-1.2166E-6*PA+4.1854E-8*PA**2)*T**2                  RRDST047
      GR=(2.95E+1-2.394*GW+6.497E-2*GW**2)+                             RRDST048
     .   (3.1035+7.52E-2*GW-3.186E-3*GW**2)*TOF+                        RRDST049
     .   (1.2715-1.5535E-1*GW+4.3889E-3*GW**2)*TOF**2                   RRDST050
      FGR=(GR-(-9.0E-2+1.807E-2*GR-7.143E-5*GR**2)*WS)*100.             RRDST051
      GO TO 100                                                         RRDST052
    9 TOF=(3.36455E-3+5.63556E-2*PA)+                                   RRDST053
     .   (4.417E-2-2.031E-3*PA+5.63E-5*PA**2-3.9954E-7*PA**3)*T+        RRDST054
     .   (-9.2E-5+2.08E-5*PA-5.39E-7*PA**2+3.8E-9*PA**3)*T**2           RRDST055
      GR=(1.65838-3.069E-1*GW+8.1363E-2*GW**2)+                         RRDST056
     .   (-3.6111+3.63559E-1*GW)*TOF+                                   RRDST057
     .   (7.3975E-1-8.78749E-2*GW+3.2487E-3*GW**2)*TOF**2               RRDST058
      FGR=(GR-(5.0E-2+7.4E-3*GR)*WS)*100.                               RRDST059
      GO TO 100                                                         RRDST060
   10 TOF=(12.5546-5.7192E-2*PA+1.3075E-4*PA**2)-                       RRDST061
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     .   (2.9032E-2-1.0254E-4*PA-1.45125E-7*PA**2)*T                    RRDST062
         GR=((-5.14955E+1+2.57957*GW-1.4425E-2*GW**2)-                  RRDST063
     .   (-1.1535E+1+5.915E-1*GW-4.6828E-3*GW**2)*TOF+                  RRDST064
     .   (-6.2285E-1+3.2375E-2*GW-2.9056E-4*GW**2)*TOF**2)*1000.        RRDST065
         FGR=(3.305E+1+9.729E-1*GR+2.31E-6*GR**2)-                      RRDST066
     .   (8.244+8.3598E-3*GR-1.44E-8*GR**2)*WS                          RRDST067
         GO TO 100                                                      RRDST068
   11 TOF=(7.436E-1+4.29E-2*PA)+(2.1276E-2-3.1116E-5*PA)*T              RRDST069
         GR=(1.638E+1-7.78E-1*GW+2.84E-2*GW**2)+                        RRDST070
     .   (3.809-1.947E-1*GW+4.264E-3*GW**2)*TOF+                        RRDST071
     .   (-1.976E-1+1.5757E-2*GW+4.6189E-4*GW**2)*TOF**2                RRDST072
         FGR=(GR-(8.5E-2+8.25E-3*GR)*WS)*100.                           RRDST073
         GO TO 100                                                      RRDST074
   12 TOF=(1.1405-4.659E-3*PA+1.28E-5*PA**2)-                           RRDST075
     .   (2.0146E-3-2.46E-5*PA+3.5514E-7*PA**2)*T                       RRDST076
         GR=(-3.0029E+1-9.6225E-2*GW+1.25428E-1*GW**2)-                 RRDST077
     .   (-7.3845E+1+1.20433*GW+1.7857E-1*GW**2)*TOF+                   RRDST078
     .   (-3.57857E+1+7.857E-1*GW+7.14286E-2*GW**2)*TOF**2              RRDST079
         FGR=((3.17413E-1+9.762E-1*GR+2.657E-4*GR**2)-                  RRDST080
     .   (1.1114E-1+7.91177E-3*GR+4.40169E-5*GR**2)*WS)*100.            RRDST081
         GO TO 100                                                      RRDST082
   13 TOF=(9.166-5.485E-2*PA)-(3.412E-2-1.8E-4*PA)*T                    RRDST083
         GR=(3.02E+2-3.519E+1*GW+1.841*GW**2)-                          RRDST084
     .   (1.306E+2-1.277E+1*GW+5.4E-1*GW**2)*TOF+                       RRDST085
     .   (2.0687E+1-1.715*GW+6.07E-2*GW**2)*TOF**2-                     RRDST086
     .   (1.1578-8.4228E-2*GW+2.46E-3*GW**2)*TOF**3                     RRDST087
         FGR=(GR-(9.55E-2+7.15E-3*GR)*WS)*100.                          RRDST088
         GO TO 100                                                      RRDST089
   14 TOF=(2.336+1.582E-2*PA+1.172E-4*PA**2)+                           RRDST090
     .   (5.604E-3+9.97746E-5*PA-5.8117147E-7*PA**2)*T+                 RRDST091
     .   (9.19269E-5-1.34357E-8*PA+1.61411E-8*PA**2)*T**2               RRDST092
         GR=(7.7366-2.52997E-1*GW+2.385E-3*GW**2)+                      RRDST093
     .   (-2.1071+4.2586E-2*GW+12.748E-4*GW**2)*TOF                     RRDST094
         FGR=(GR-(1.0755E-1+1.4588E-2*GR-7.94156E-5*GR**2)*WS)*100.     RRDST095
         GO TO 100                                                      RRDST096
   15 CONTINUE                                                          RRDST097
         GO TO 100                                                      RRDST098
   16 TOF=(7.6859-1.15E-1*PA+4.413E-4*PA**2)-                           RRDST099
     .   (2.925E-2-8.1128E-4*PA+6.999E-6*PA**2)*T-                      RRDST100
     .   (2.2289E-4+5.054E-6*PA-7.57E-8*PA**2)*T**2                     RRDST101
         GR=(2.546E+1-2.3388*GW+1.0717E-1*GW**2)-                       RRDST102
     .   (7.9095-6.7434E-1*GW+2.1045E-2*GW**2)*TOF+                     RRDST103
     .   (6.099E-1-5.0858E-2*GW+1.434E-3*GW**2)*TOF**2                  RRDST104
         FGR=(GR-(1.16E-1+7.27E-3*GR-3.64E-6*GR**2)*WS)*100.            RRDST105
         GO TO 100                                                      RRDST106
   17 CONTINUE                                                          RRDST107
         GO TO 100                                                      RRDST108
   18 TOF=(2.118+1.058E-2*PA+1.014E-4*PA**2)+                           RRDST109
     .   (2.102E-3+1.84E-4*PA-1.177E-6*PA**2)*T+                        RRDST110
     .   (1.001E-4-7.046E-7*PA+1.355E-8*PA**2)*T**2                     RRDST111
         GR=(1.0E-5)+(-1.9687+4.209E-1*GW+3.9445E-2*GW**2)*TOF          RRDST112
         FGR=(GR-(8.363E-2+1.488E-2*GR-9.78E-5*GR**2)*WS)*100.          RRDST113
         GO TO 100                                                      RRDST114
   19 TOF=(4.65478+6.94444E-3*T)+(3.257E-1+2.7778E-4*T)*(PA/10.)        RRDST115
         GR=(.1457+3.5625E-2*GW-6.763E-5*GW**2)+                        RRDST116
     .   (5.1428-3.175E-2*GW+7.0089E-5*GW**2)*TOF                       RRDST117
         FGR=(GR-(.1+.0082*GR)*WS)*100.                                 RRDST118
         GO TO 100                                                      RRDST119
   20 TOF=(1.2192956+2.2091577E-3*PA+3.380102E-4*PA**2)+                RRDST120
     .   (1.4628966E-2+2.6313968E-4*PA-1.3818053E-7*PA**2)*T-           RRDST121
     .   (2.4891E-4-6.875E-6*PA+7.8125E-8*PA**2)*T**2+                  RRDST122
     .   (2.20314E-6-6.49E-8*PA+7.47E-10*PA**2)*T**3                    RRDST123
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      GR=((2.3806396-5.9265772E-2*GW+6.67969E-4*GW**2)+                 RRDST124
     .   (-1.19933136+5.041098E-2*GW-2.12517E-4*GW**2)*TOF)*10.         RRDST125
      FGR=(1.0+9.7757143E+1*GR+6.4285714E-2*GR**2)-                     RRDST126
     .   (4.8785706+5.4275515E-1*GR+4.438775E-3*GR**2)*WS               RRDST127
      GO TO 100                                                         RRDST128
   21 TOF=(-4.799107E-1 + 3.3165178E-2*PA +2.7902E-4*PA**2)  +          RRDST129
     . (2.129E-2 + 2.2538E-4 * PA - 2.9186E-6 * PA ** 2)  * T           RRDST130
      GR = (1.16103 + 5.318E-2 * GW + 9.0525E-4 * GW **2 )  +           RRDST131
     . (3.3695E1 - 6.94278E-1 * GW + 3.8559E-3 * GW ** 2 )  * TOF -     RRDST132
     . (-9.041 + 2.307E-1 * GW - 1.264E-3 * GW ** 2 ) * TOF ** 2 +      RRDST133
     . (-1.0708 + 2.477E-2 * GW - 1.108E-4 * GW ** 2 )*TOF ** 3         RRDST134
      FGR=(GR-(2.4131E-1+2.115E-4*GR + 1.935E-4*GR**2)*WS)*100.         RRDST135
      GO TO 100                                                         RRDST136
   22 CONTINUE                                                          RRDST137
   23 TOF=(3.9116E-2+6.3976E-2*PA)+(1.6557E-2-7.6643E-6*PA)*T           RRDST138
      GR=(5.625-9.5E-2*GW+1.3125E-3*GW**2)+                             RRDST139
     .   (8.6496E-1-1.2768E-2*GW+1.077E-4*GW**2)*TOF+                   RRDST140
     .   (4.0067E-1-5.982E-3*GW+3.627E-5*GW**2)*TOF**2                  RRDST141
      FGR=(GR-(1.508E-1+8.625E-3*GR)*WS)*100.                           RRDST142
      GO TO 100                                                         RRDST143
   24 TOF=(5.4067E+1-1.3375E-1*PA-2.2755E-4*PA**2+3.6508E-6*PA**3)-     RRDST144
     .   (7.395E-2-1.71E-4*PA-5.91E-6*PA**2+4.22E-8*PA**3)*T            RRDST145
      GR=(8.6549E+3-7.75196E+1*GW+2.07846E-1*GW**2)-                    RRDST146
     .   (5.6302E+2-4.9948*GW+1.30519E-2*GW**2)*TOF+                    RRDST147
     .   (1.22509E+1-1.07805E-1*GW+2.759985E-4*GW**2)*TOF**2-           RRDST148
     .   (8.8948E-2-7.77463E-4*GW+1.956483E-6*GW**2)*TOF**3             RRDST149
      FGR=(GR-(1.4123219E-1+8.5293578E-3*GR+5.709895E-6*GR**2)*WS)*100. RRDST150
      GO TO 100                                                         RRDST151
   25 TOF=(7.90371+6.68965E-2*PA+2.12622E-4*PA**2)+                     RRDST152
     .   (3.00808E-2+2.67118E-5*PA+9.85E-6*PA**2)*T+                    RRDST153
     .   (1.23149E-4+1.3589E-6*PA-3.1641E-8*PA**2)*T**2                 RRDST154
      GR=(2.1742857+2.04286E-1*GW-1.071429E-2*GW**2)+                   RRDST155
     .   (1.14943-1.2707E-1*GW+5.1785E-3*GW**2)*TOF                     RRDST156
      FGR=(GR-(-2.7327E-2+1.904E-2*GR)*WS+                              RRDST157
     .   (-6.308077E-4+1.94654E-4*GR)*WS**2)*100.                       RRDST158
      GO TO 100                                                         RRDST159
   26 CONTINUE                                                          RRDST160
   27 CONTINUE                                                          RRDST161
   28 CONTINUE                                                          RRDST162
   29 TOF=(7.83935E-1+5.38189E-2*PA)+                                   RRDST163
     .   (1.20408E-2+9.888357E-5*PA-2.32448E-6*PA**2)*T-                RRDST164
     .   (9.72E-6+1.8278E-6*PA-2.405E-8*PA**2)*T**2                     RRDST165
      GR=(3.18978E+1-1.785*GW+3.602E-2*GW**2)+                          RRDST166
     .   (-8.8285+5.1387E-1*GW-5.679E-3*GW**2)*TOF+                     RRDST167
     .   (-1.76441+4.82709E-2*GW)*TOF**2                                RRDST168
      FGR=(GR-(8.6457E-2+1.1414E-2*GR)*WS)*100.                         RRDST169
      GO TO 100                                                         RRDST170
   30 TOF=(-2.890514E-1+5.8370956E-2*PA)+                               RRDST171
     .   (4.161561E-2-3.518445E-5*PA)*T+(-6.0515E-5+3.53095E-6*PA)*T**2 RRDST172
      GR=(-2.684337E+1+3.224954*GW)+(-2.0581519+3.7024356E-1*GW)*TOF+   RRDST173
     .   (-8.861357E-1+8.3093188E-2*GW)*TOF**2                          RRDST174
      FGR=(GR-(1.3583333E-1+9.5833E-3*GR)*WS)*100.                      RRDST175
      GO TO 100                                                         RRDST176
   31 TOF=(7.46275E-1+1.789924E-2*PA+1.667729E-4*PA**2)+                RRDST177
     .   (6.1017875E-3+3.4816947E-4*PA-1.6406229E-6*PA**2)*T+           RRDST178
     .   (1.718525E-4-2.621825E-6*PA+4.184375E-8*PA**2)*T**2            RRDST179
      GR=(-7.2378129E+1+3.8485684E+1*GW-6.565*GW**2+3.916E-1*GW**3)+    RRDST180
     .   (-5.477E+1+2.92E+1*GW-4.975*GW**2+2.906E-1*GW**3)*TOF          RRDST181
      FGR=((-1.607758+1.222176*GR-5.64375E-3*GR**2)-                    RRDST182
     .   (.482382E-1+2.2260152E-2*GR-4.7462116E-4*GR**2)*WS)*100.       RRDST183
      GO TO 100                                                         RRDST184
   32 TOF=(1.996+1.69E-2*PA+2.56E-5*PA**2)+                             RRDST185
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     .   (8.64E-3-7.5E-5*PA+1.61E-6*PA**2)*T                                RRDST186
      GR=(6.26E+1-1.299E+1*GW+6.886E-1*GW**2)+                             RRDST187
     .   (-1.0004E+2+2.0317E+1*GW-9.67E-1*GW**2)*TOF+                      RRDST188
     .   (1.30368E+1-2.689*GW+1.403E-1*GW**2)*TOF**2                       RRDST189
      FGR=((-3.3E-1+1.047*GR-8.57E-4*GR**2)-                               RRDST190
     .   (4.22E-2+9.47E-3*GR+1.9898E-5*GR)*WS)*100.                        RRDST191
      GO TO 100                                                            RRDST192
   33 TOF=(6.6742857E-1+4.4226786E-2*PA)+                                  RRDST193
     .   (1.027143E-2+3.051339E-4*PA)*T+(1.74994E-4+5.023E-7*PA)*T**2      RRDST194
      GR=(-1.37666666E+1+1.679166666*GW)+(-3.55+4.71875E-1*GW)*TOF         RRDST195
      FGR=(GR-(1.5166666666E-1+1.0083333333E-2*GR)*WS)*100.                RRDST196
      GO TO 100                                                            RRDST197
   34 CONTINUE                                                             RRDST198
   35 CONTINUE                                                             RRDST199
   36 TOF=(-9.2083337E-1+5.9113889E-2*PA)+(2.291666E-2-2.7778E-5*PA)*T     RRDST200
      GR=(3.711176E+1-1.640279E+1*GW+2.22809*GW**2)+                       RRDST201
     .   (-2.09922E+1+8.6991796*GW-8.4586E-1*GW**2)*TOF+                   RRDST202
     .   (2.248949-9.093486E-1*GW+1.061975E-1*GW**2)*TOF**2                RRDST203
      FGR=(GR-(4.3358E-2+2.196E-2*GR)*WS+                                  RRDST204
     .   (8.79209E-4+8.21219E-5*GR)*WS**2)*100.                            RRDST205
      GO TO 100                                                            RRDST206
   37 TOF=(-6.46E-1+6.7857E-2*PA+2.723E-4*PA**2)+                          RRDST207
     .   (3.69E-2-2.24E-3*PA+3.49E-5*PA**2)*T+                            RRDST208
     .   (1.07E-4+3.85E-5*PA-4.688E-7*PA**2)*T**2                         RRDST209
      GR=(5.38-1.105*GW+1.14E-1*GW**2)+                                    RRDST210
     .   (8.02E-1-2.57E-1*GW+2.4E-2*GW**2)*TOF                            RRDST211
      FGR=(GR-(1.6E-2+2.44E-2*GR-2.128E-4*GR**2)*WS)*100.                  RRDST212
      GO TO 100                                                            RRDST213
  100 RRDIST=FGR                                                           RRDST214
      RETURN                                                               RRDST215
      END                                                                  RRDST216
```

SUBROUTINE TREFCT*

Purpose:

To calculate emission factors for cars and trucks.

Input:

Option parameters, non-default data where specified.

Output:

Exhaust, crankcase, evaporative and cold start emission factors by vehicle class.

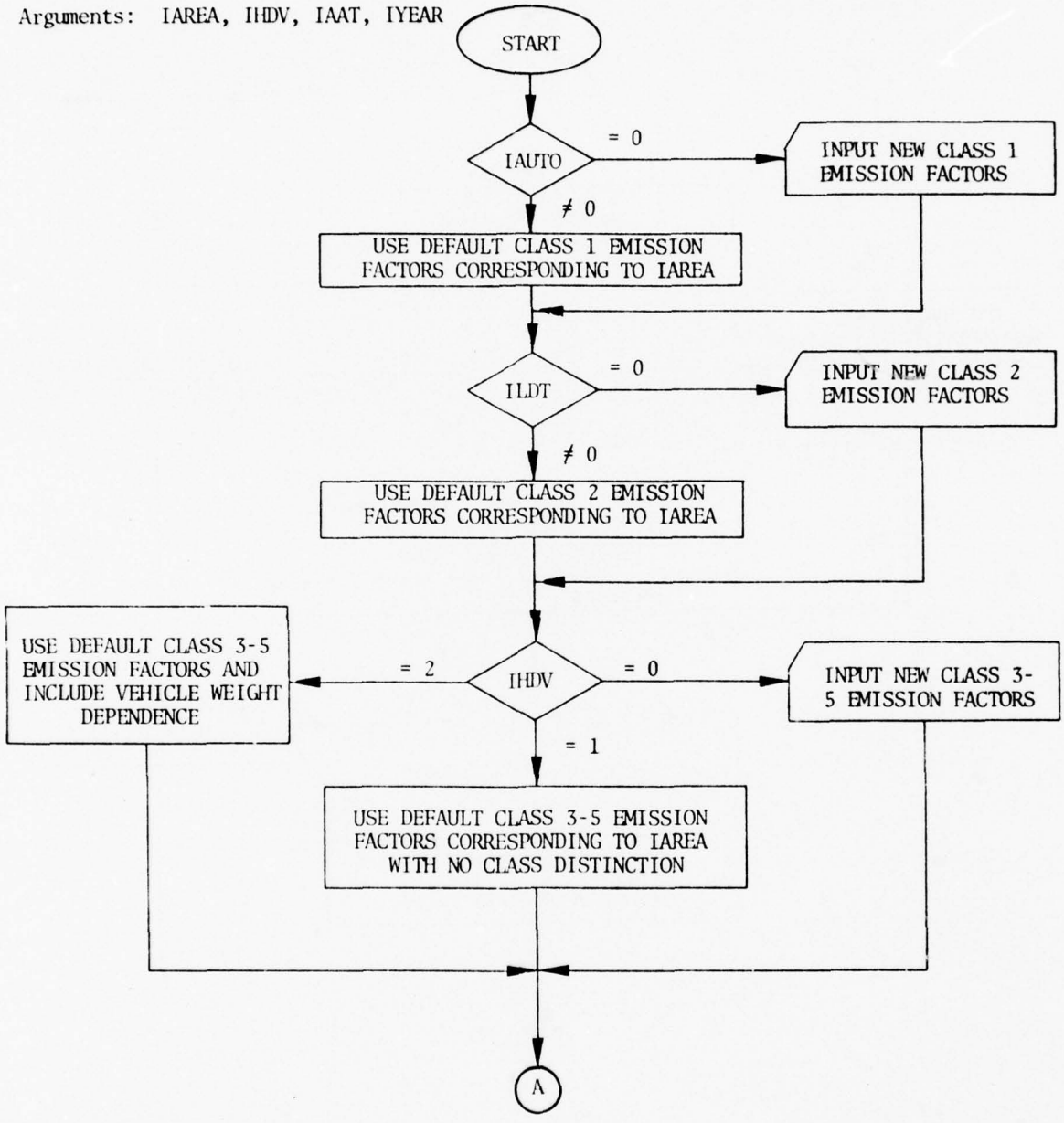
Subroutines Called:

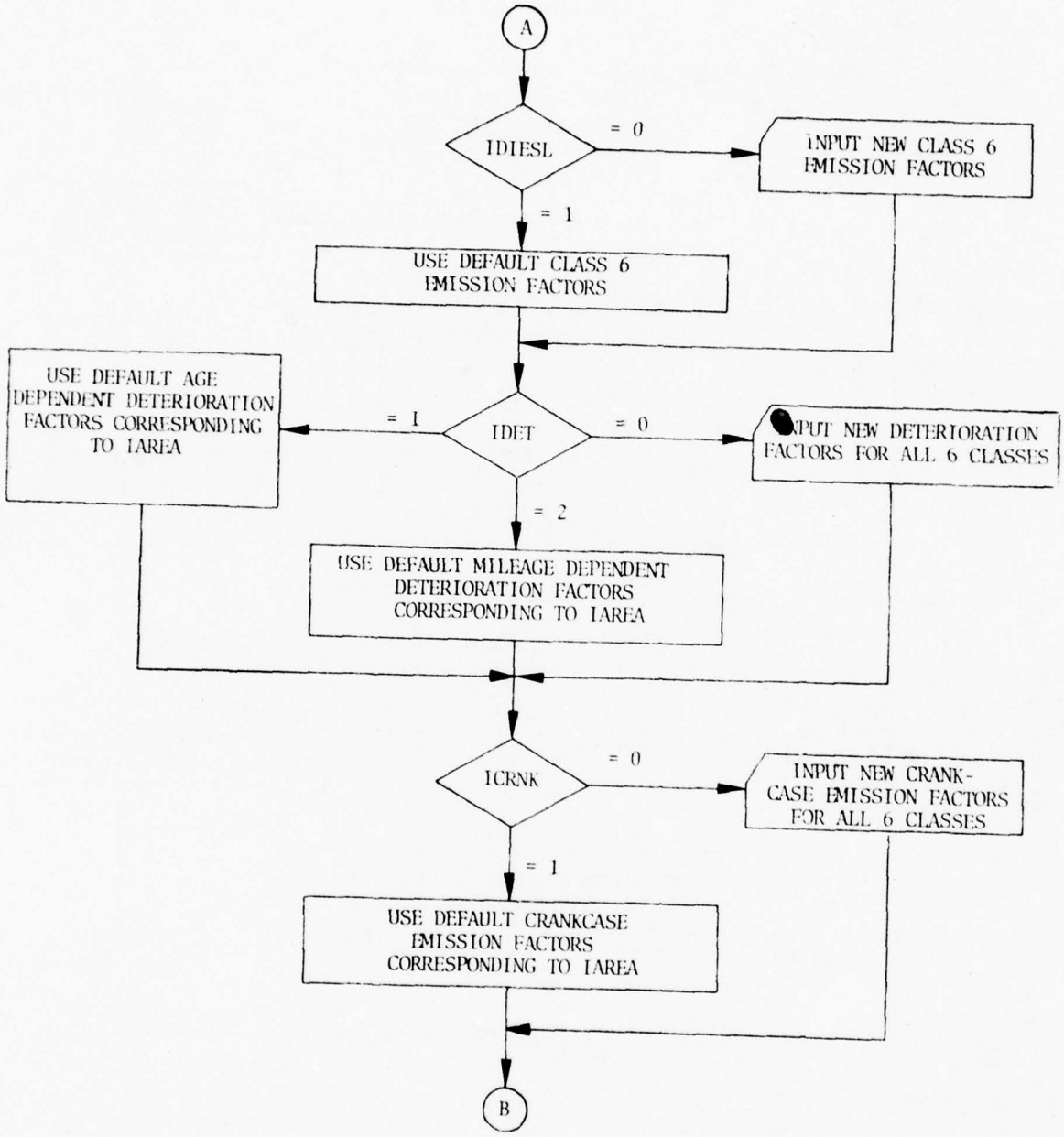
None

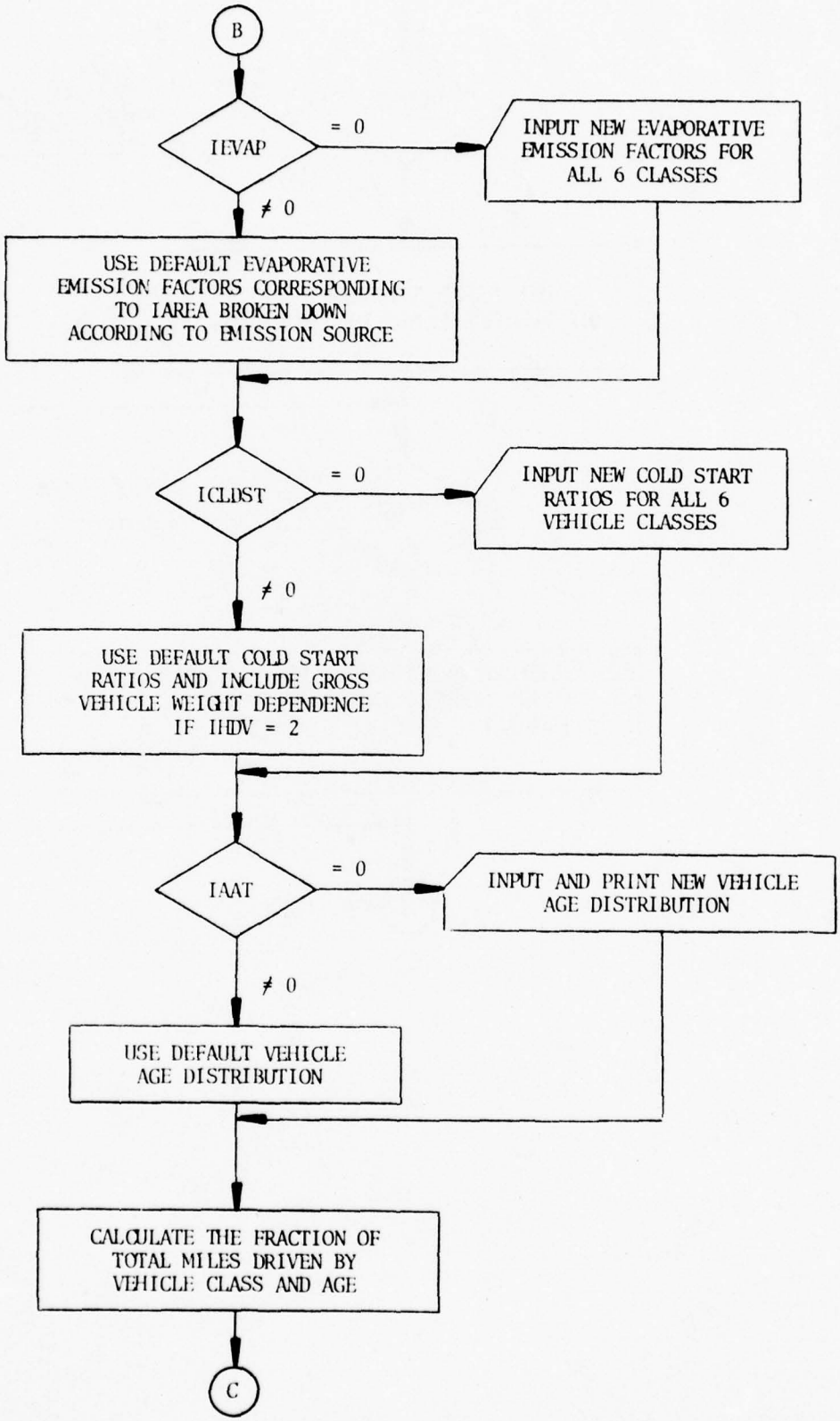
*Several of the options available in the original TREFCT have been defaulted in this version via a data statement. If these options are desired the program could very easily be converted back to its original form.

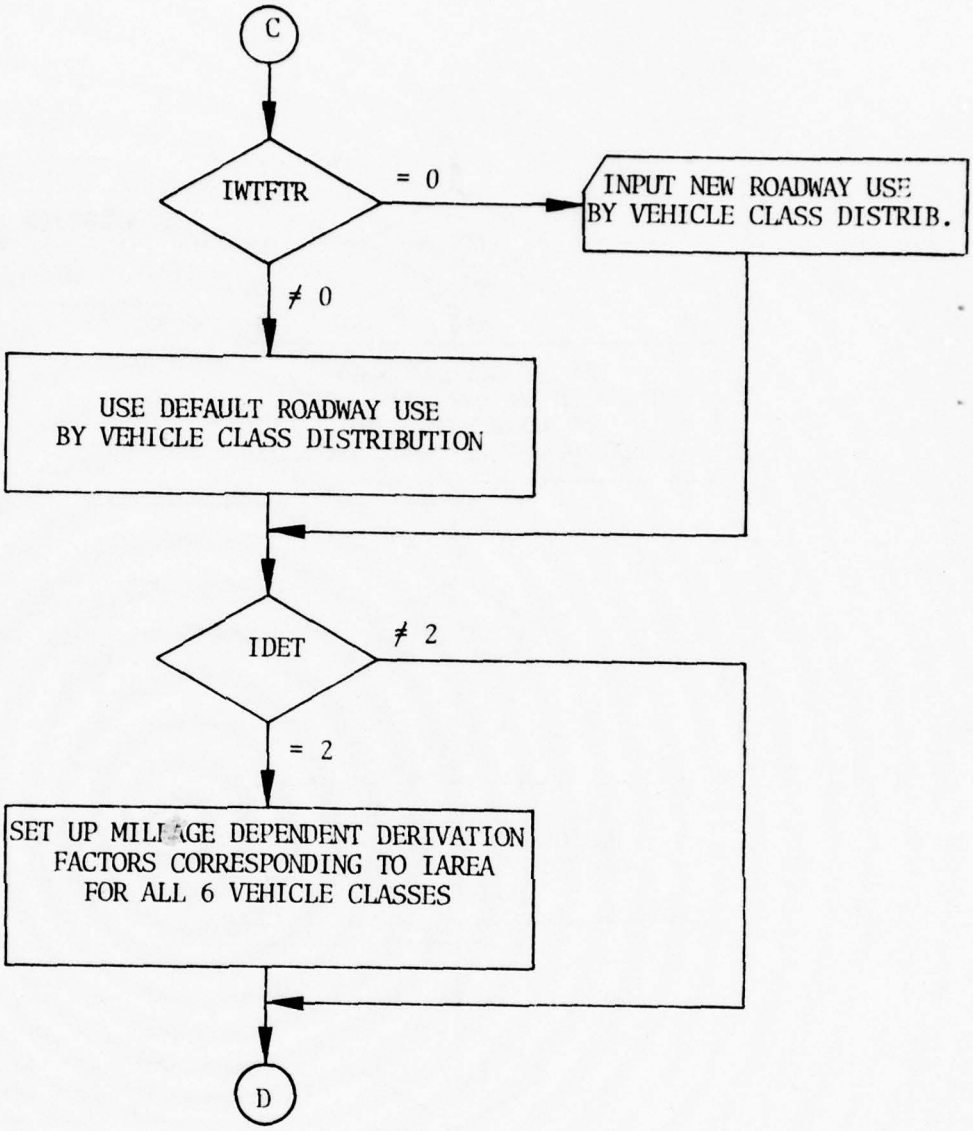
SUBROUTINE TREFCT

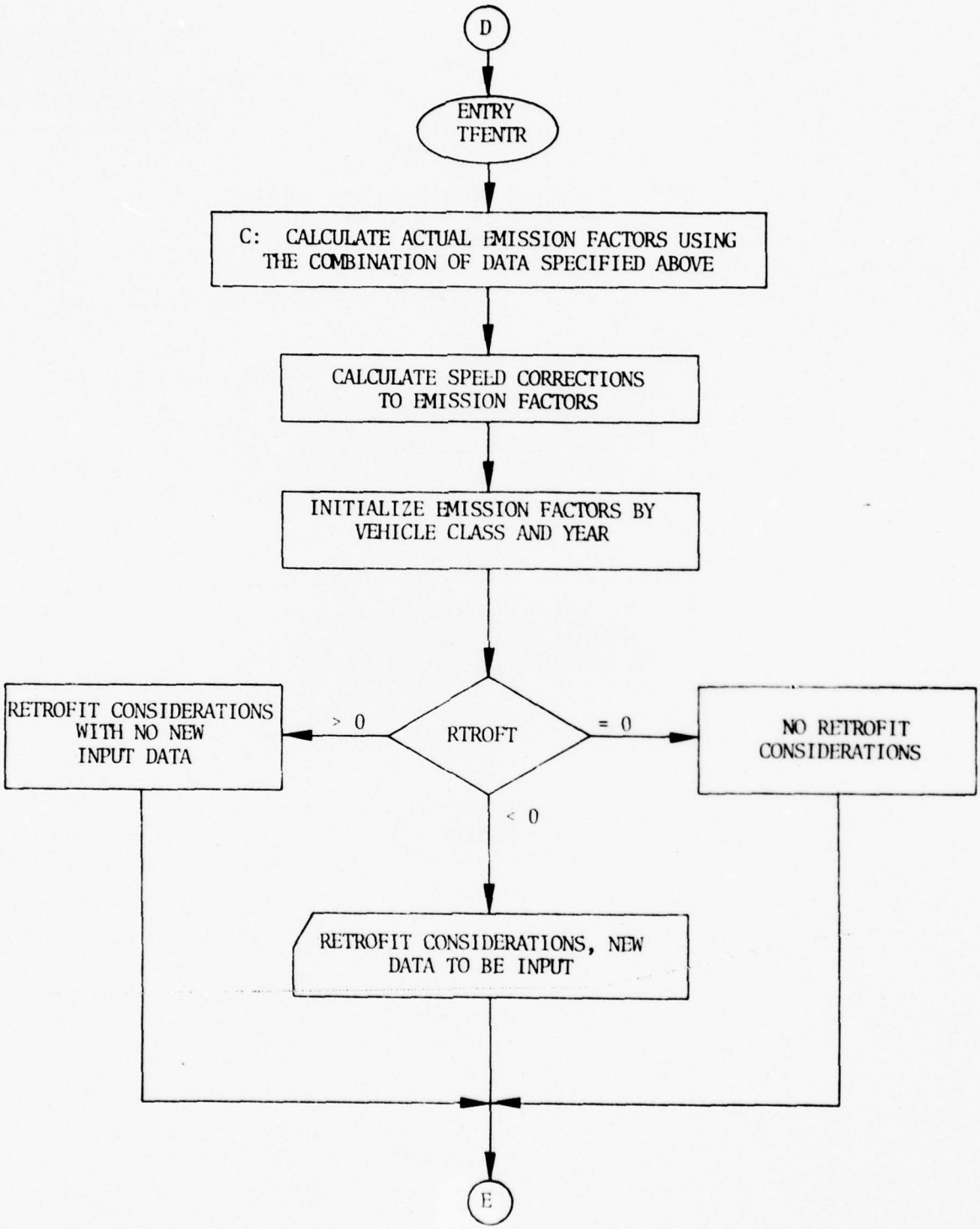
Arguments: IAREA, IHDV, IAAT, IYEAR

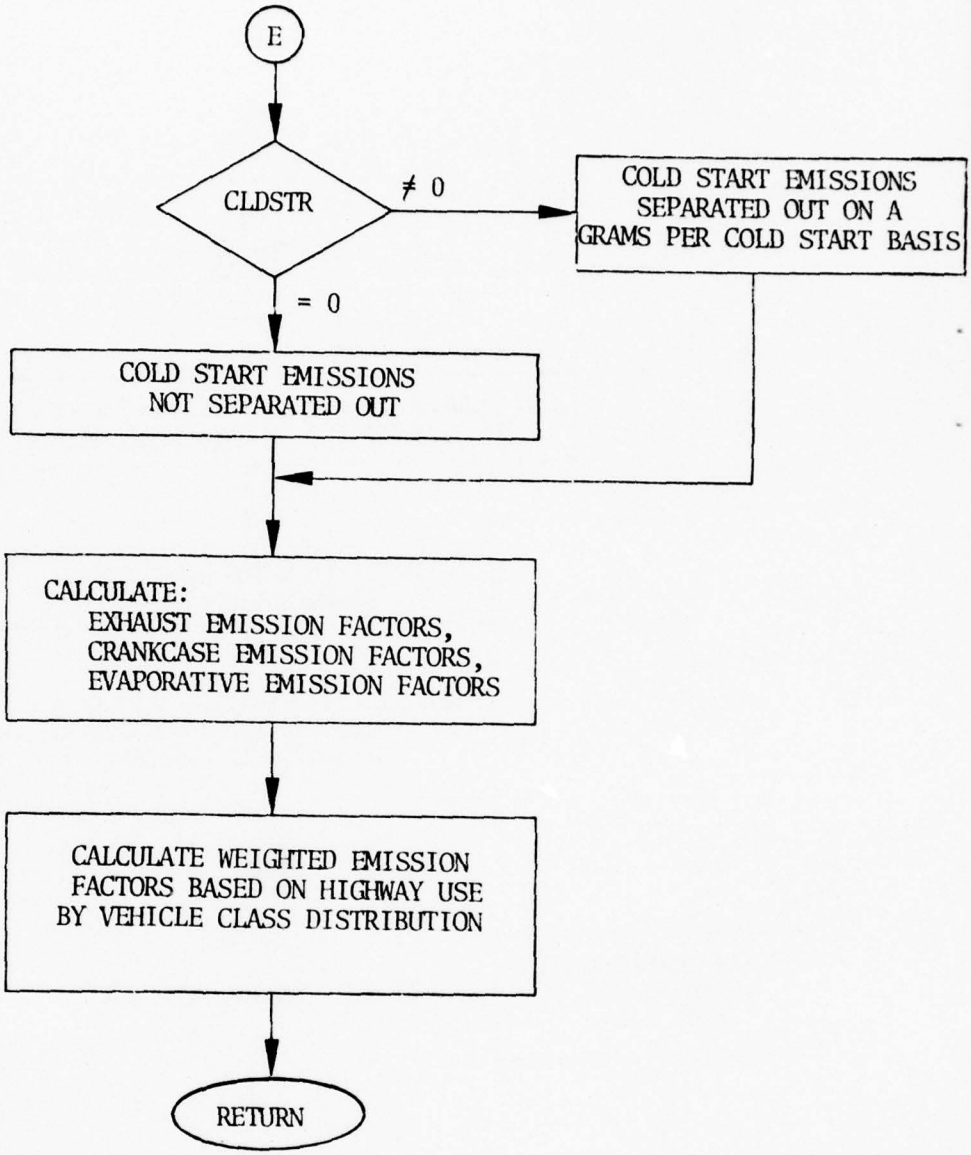



A
IDIESL
= 0
INPUT NEW CLASS 6 EMISSION FACTORS
= 1
USE DEFAULT CLASS 6 EMISSION FACTORS
USE DEFAULT AGE DEPENDENT DETERIORATION FACTORS CORRESPONDING TO IAREA
= 1
IDET
= 0
INPUT NEW DETERIORATION FACTORS FOR ALL 6 CLASSES
= 2
USE DEFAULT MILEAGE DEPENDENT DETERIORATION FACTORS CORRESPONDING TO IAREA
ICRNK
= 0
INPUT NEW CRANK-CASE EMISSION FACTORS FOR ALL 6 CLASSES
= 1
USE DEFAULT CRANKCASE EMISSION FACTORS CORRESPONDING TO IAREA
B


B
IEVAP
= 0
INPUT NEW EVAPORATIVE EMISSION FACTORS FOR ALL 6 CLASSES
≠ 0
USE DEFAULT EVAPORATIVE EMISSION FACTORS CORRESPONDING TO IAREA BROKEN DOWN ACCORDING TO EMISSION SOURCE
ICLDST
= 0
INPUT NEW COLD START RATIOS FOR ALL 6 VEHICLE CLASSES
≠ 0
USE DEFAULT COLD START RATIOS AND INCLUDE GROSS VEHICLE WEIGHT DEPENDENCE IF IHDV = 2
IAAT
= 0
INPUT AND PRINT NEW VEHICLE AGE DISTRIBUTION
≠ 0
USE DEFAULT VEHICLE AGE DISTRIBUTION
CALCULATE THE FRACTION OF TOTAL MILES DRIVEN BY VEHICLE CLASS AND AGE
C


C
IWTFTR
= 0
INPUT NEW ROADWAY USE
BY VEHICLE CLASS DISTRIB.
≠ 0
USE DEFAULT ROADWAY USE
BY VEHICLE CLASS DISTRIBUTION
IDET
≠ 2
= 2
SET UP MILEAGE DEPENDENT DERIVATION
FACTORS CORRESPONDING TO IAREA
FOR ALL 6 VEHICLE CLASSES
D


D
ENTRY
TFENTR
C: CALCULATE ACTUAL EMISSION FACTORS USING THE COMBINATION OF DATA SPECIFIED ABOVE
CALCULATE SPEED CORRECTIONS TO EMISSION FACTORS
INITIALIZE EMISSION FACTORS BY VEHICLE CLASS AND YEAR
RETROFIT CONSIDERATIONS WITH NO NEW INPUT DATA
> 0
RTROFT
= 0
NO RETROFIT CONSIDERATIONS
< 0
RETROFIT CONSIDERATIONS, NEW DATA TO BE INPUT
E


E
CLDSTR
≠ 0
COLD START EMISSIONS SEPARATED OUT ON A GRAMS PER COLD START BASIS
= 0
COLD START EMISSIONS NOT SEPARATED OUT
CALCULATE:
EXHAUST EMISSION FACTORS,
CRANKCASE EMISSION FACTORS,
EVAPORATIVE EMISSION FACTORS
CALCULATE WEIGHTED EMISSION FACTORS BASED ON HIGHWAY USE BY VEHICLE CLASS DISTRIBUTION
RETURN

```
      SUBROUTINE TREFCT (CLDSTR,EXEMI,CSCO,CSHC,EVAP,CRANK,IAREA,IHDV,   TREFT000
     . IAAT,YEAR)                                                        TREFT001
C                                                                        TREFT002
C     THIS ROUTINE CALCULATES EMISSION FACTORS FOR CARS AND TRUCKS       TREFT003
C                                                                        TREFT004
      INTEGER TRETIT,OPT,YEAR,RTROFT,CLDSTR                              TREFT005
      DIMENSION    BYEFCO(6,31),      BYEFHC(6,31),      BYEFNO(6,31),   TREFT006
     .              DETCO(6,31,16),    DETHC(6,31,16),    DETNO(6,31,16), TREFT007
     C             RTROCO(6,31),      RTROHC(6,31),      RTRONO(6,31),   TREFT008
     .              RCSCO(6,31),       RCSHC(6,31),                       TREFT009
     .              YEFCO(6,31),       YEFHC(6,31),       YEFNO(6,31),    TREFT010
     .             YEFCSC(6,31),      YEFCSH(6,31),                       TREFT011
     .                SCO(6),            SHC(6),            SNO(6),      TREFT012
     .     CREF(6,31), EVEF(6,31,3), REGIS(16,6), AAT(16,6), PAAT(16,6),  TREFT013
     .     SUM(6), PTRVL(6,16), WFCTR(6), WEVAP(3),                       TREFT014
     .     EXEMI(6,3), CSCO(6), CSHC(6), CRANK(6), EVAP(6,3), Y(2)        TREFT015
      DIMENSION    FEXCO(31,3,3),     FEXHC(31,3,3),     FEXNO(31,3,3),  TREFT016
     .             HDVCO(31,3,3),     HDVHC(31,3,3),     HDVNO(31,3,3),  TREFT017
     .             FDEFCO(31),        FDEFHC(31),        FDEFNO(31),     TREFT018
     .             FDETCO(21,10,2),   FDETHC(21,10,2),   FDETNO(21,10,2), TREFT019
     .             FCHDCO(16),        FCHDHC(16),        FCHDNO(16),     TREFT020
     .             FFCSCO(31,3),      FFCSHC(31,3),                      TREFT021
     .             HDCSCO(4),         HDCSHC(4),                         TREFT022
     .     CM(10), FCRNK(31,2,2), FEVAP(31,2,2), CMH(16),                 TREFT023
     .     SEV1(31,3,2), SEV2(31,3,2), SEV3(31,3,2)                       TREFT024
      DIMENSION TRETIT(16),OPT(6),RAGIS(16,6),RFGIS(16,6)                TREFT025
      DATA TRETIT /0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15/                TREFT026
C                                                                        TREFT027
C     USEPA EXHAUST EMISSION FACTORS -- 1960-1990   (GRAMS/VEHICLE-MILE) TREFT028
C     FIRST 31 VALUES ARE AUTOS, NEXT 31 ARE LIGHT DUTY TRUCKS, NEXT     TREFT029
C     31 ARE HEAVY DUTY GASOLINE-POWERED TRUCKS                          TREFT030
C                                                                        TREFT031
      DATA FEXCC/                                                        TREFT032
     .            8*87., 46., 39., 36., 34., 3*19.,12.5, 15*1.8,         TREFT033
     .            8*87., 46., 39., 36., 34., 3*19.,12.5, 15*1.8,         TREFT034
     .           10*140.,  21*130.,                                      TREFT035
     .           8*130., 74., 48., 72., 75., 3*42.,20.0, 15*1.8,         TREFT036
     .           8*130., 74., 48., 72., 75., 3*42.,20.0, 15*1.8,         TREFT037
     .           10*210., 21*190.,                                       TREFT038
     .  6*87., 51., 50., 46., 39., 36., 34., 3*19., 2.8, 15*1.8,         TREFT039
     .  6*87., 51., 50., 46., 39., 36., 34., 3*19., 2.8, 15*1.8,         TREFT040
     .  10*140.,   5*130.,   16*81./                                     TREFT041
      DATA FEXHC/                                                        TREFT042
     .            8*8.8, 4.5, 4.4, 3.6, 2.9, 3*2.7, 1.3, 15*.23,         TREFT043
     .            8*8.8, 4.5, 4.4, 3.6, 2.9, 3*2.7, 1.3, 15*.23,         TREFT044
     .           10*17.,    4*16.,   17*13.,                             TREFT045
     .            8*10., 6.0, 5.4, 6.1, 5.3, 3*4.9, 1.8, 15*.23,         TREFT046
     .            8*10., 6.0, 5.4, 6.1, 5.3, 3*4.9, 1.8, 15*.23,         TREFT047
     .           10*19.,    4*18.,   17*15.,                             TREFT048
     .  6*8.8, 6.0, 4.6, 4.5, 4.4, 3.6, 2.9, 3*2.7, .33, 15*.23,         TREFT049
     .  6*8.8, 6.0, 4.6, 4.5, 4.4, 3.6, 2.9, 3*2.7, .33, 15*.23,         TREFT050
     .  10*17.,    2*16.,    3*13.,     16*4.1/                          TREFT051
      DATA FEXNC/                                                        TREFT052
     .  8*3.6, 4.3, 5.5, 5.1,    2*4.8, 2*2.3, 2.2, 1.6, 14*.31,         TREFT053
     .  8*3.6, 4.3, 5.5, 5.1,    2*4.8, 2*2.3, 2.2, 1.6, 14*.31,         TREFT054
     .  10*9.4,   21*9.2,                                                TREFT055
     .  8*1.9, 2.2, 2.6, 2.8,    2*3.1, 2*1.4, 1.4, 1.3, 14*.31,         TREFT056
     .  8*1.9, 2.2, 2.6, 2.8,    2*3.1, 2*1.4, 1.4, 1.3, 14*.31,         TREFT057
     .  10*5.0,   21*4.9,                                                TREFT058
     . 6*3.6,2*3.4,4.3,5.5,5.1,  2*3.5, 2*2.3, 1.1, 1.1, 14*.31,         TREFT059
     . 6*3.6,2*3.4,4.3,5.5,5.1,  2*3.5, 2*2.3, 1.1, 1.1, 14*.31,         TREFT060
     . 10*9.4,    5*9.2,   16*2.8/                                       TREFT061
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C                                                                       TREFT062
C     USEPA DIESEL EMISSION FACTORS --  1960- 1990                      TREFT063
C                                                                       TREFT064
      DATA FDEFCC/ 10*49.2, 21*32.5/                                    TREFT065
      DATA FDEFHC/ 10*9.84, 21*3.78/                                    TREFT066
      DATA FDEFNO/ 10*51.5, 21*76.4/                                    TREFT067
C                                                                       TREFT068
C     HEAVY DUTY VEHICLE EXHAUST EMISSION FACTORS 1960-1990  SWRI STUDY TREFT069
C     FIRST 31 VALUES ARE FOR GVW  6000-16000 LBS                       TREFT070
C     NEXT 31 VALUES ARE FOR GVW 16001-33000 LBS                        TREFT071
C     NEXT 31 VALUES ARE FOR GVW GREATER THAN 33000 LBS                 TREFT072
C                                                                       TREFT073
      DATA HDVCO/                                                       TREFT074
     .   10*108.5,21*100.8,   10*146.2,21*135.7,   10*271.3,21*251.9,   TREFT075
     .   10*162.8,21*147.3,   10*219.2,21*198.4,   10*407.0,21*368.2,   TREFT076
     .   10*108.5,5*100.8,16*62.8,10*146.2,5*135.7,16*84.6,10*271.3,    TREFT077
     .     5*251.9,16*157.0/                                            TREFT078
      DATA HDVHC/                                                       TREFT079
     . 10*13.1,4*12.3,17*10.0,10*20.2,4*19.0,17*15.4,10*29.0,4*27.3,    TREFT080
     . 17*22.3,   10*14.6,4*13.9,17*11.6,10*22.6,4*21.4,17*17.8,10*32.4,TREFT081
     . 4*30.7,17*25.6,   10*13.1,2*12.3,3*10.0,16*3.2,10*20.2,2*19.0,   TREFT082
     . 3*15.4,16*4.9,10*29.0,2*27.3,3*22.2,16*7.0/                      TREFT083
      DATA HDVNO/                                                       TREFT084
     .   10*9.4,21*9.2,       10*9.6,21*9.4,       10*9.3,21*9.1,      TREFT085
     .   10*5.0,21*4.9,       10*5.1,21*5.0,       10*5.0,21*4.9,      TREFT086
     .   10*9.4,5*9.2,16*2.8, 10*9.6,5*9.4,16*2.9, 10*9.3,5*9.1,16*2.8/ TREFT087
C                                                                       TREFT088
C     COLD START RATIOS FOR LDV FROM 6-CITIES AND GM DATA    1960-1990  TREFT089
C                                                                       TREFT090
      DATA FFCSCO/ 8*.175, .274, .347, .305, 5*.322,15*1.369,           TREFT091
     .             8*.138, .220, .372, .285, 5*.237,15*1.369,           TREFT092
     .  6*.175, .349,.372, .274, .347, .305, 4*.322,16*1.369/           TREFT093
      DATA FFCSHC/ 8*.163, .227, .263, .229, 5*.221,15*0.556,           TREFT094
     .             8*.199, .334, .396, .297, 5*.358,15*0.556,           TREFT095
     .  6*.163, .198,.291, .227, .263, .229, 4*.221,16*0.556/           TREFT096
C                                                                       TREFT097
C     COLD START RATIOS FOR HDV FROM SWRI STUDY  ALL MODEL YEARS - AREAS TREFT098
C     FIRST VALUE IS FOR ALL HDV, NEXT 3 ARE FOR GVW CLASSES            TREFT099
C                                                                       TREFT100
      DATA HDCSCO/ .105, .238, .076, .033/                              TREFT101
      DATA HDCSHC/ .142, .171, .139, .131/                              TREFT102
C                                                                       TREFT103
C     EPA CRANKCASE AND EVAPORATIVE EMISSIONS - KIRCHER 1/12/73         TREFT104
C     FIRST 31 VALUES ARE LIGHT-DUTY,  NEXT 31 ARE HEAVY-DUTY           TREFT105
C                                                                       TREFT106
      DATA FCRNK/ 3*4.1, 5*0.8, 23*0.0,     8*5.2,23*0.0,               TREFT107
     .            4.1, 3*0.8, 27*0.0,      4*5.2,27*0.0/              TREFT108
      DATA FEVAP/ 11*3.0, 0.5, 19*0.2,     31*3.0,                    TREFT109
     .           10*3.0,2*0.5,19*0.2,     13*3.0,18*0.2/             TREFT110
C                                                                       TREFT111
C     EVAPORATIVE EMISSION FACTORS BY SOURCE  1960-1990  6-CITIES STUDY  TREFT112
C     FIRST 31 VALUES ARE DIURNAL LOSS, NEXT 31 ARE RUNNING LOSS, NEXT  TREFT113
C     31 ARE HOT SOAK LOSS                                              TREFT114
C                                                                       TREFT115
      DATA SEV1 /                                                       TREFT116
     .   11*26.0,  16.3,19*6.5,       31*0.0,     11*14.7,  10.9,19*4.4,TREFT117
     .   31*26.0,                     31*0.0,     31*14.7 /             TREFT118
      DATA SEV2 /                                                       TREFT119
     .   11*75.3,  47.2,19*18.9,      31*0.0,     11*46.7,  34.8,19*13.9TREFT120
     .,  31*75.3,                     31*0.0,     31*46.7 /             TREFT121
      DATA SEV3 /                                                       TREFT122
     .   10*26.0,2*16.3,19*6.5,       31*0.0,     10*14.7,2*10.9,19*4.4,TREFT123
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     .   13*26.0,18*6.5,                31*0.0,      13*14.7,18*4.4 /      TREFT124
C                                                                          TREFT125
C    USEPA EXHAUST EMISSION DETERIORATION FACTORS  1960-1980  LIGHT DUTY TREFT126
C    EACH SET OF 21 VALUES REPRESENTS THE AGE OF THE VEHICLE               TREFT127
C                                                                          TREFT128
      DATA FDETCO/          21*1.00    ,                                   TREFT129
     .   8*1.0, 1.24, 1.42,  5*1.18    , 1.04, 5*1.16,                     TREFT130
     .   8*1.0, 1.35, 1.53,  5*1.32    , 1.30, 5*1.34,                     TREFT131
     .   8*1.0, 1.41, 1.59,  5*1.38    , 1.36, 5*1.50,                     TREFT132
     .   8*1.0, 1.47, 1.63,  5*1.40    , 1.43, 5*1.62,                     TREFT133
     .   8*1.0, 1.53, 1.68,  5*1.44    , 1.44, 5*1.75,                     TREFT134
     .   8*1.0, 1.58, 1.71,  5*1.47    , 1.49, 5*1.88,                     TREFT135
     .   8*1.0, 1.63, 1.75,  5*1.50    , 1.56, 5*2.00,                     TREFT136
     .   8*1.0, 1.67, 1.79,  5*1.51    , 1.63, 5*2.10,                     TREFT137
     .   8*1.0, 1.72, 1.82,  5*1.56    , 1.69, 5*2.22,   21*1.0,           TREFT138
     .   6*1.0, 1.13, 1.11, 1.24, 1.42, 5*1.18, 6*1.16,                    TREFT139
     .   6*1.0, 1.21, 1.18, 1.35, 1.53, 5*1.32, 6*1.34,                    TREFT140
     .   6*1.0, 1.24, 1.23, 1.41, 1.59, 5*1.38, 6*1.50,                    TREFT141
     .   6*1.0, 1.25, 1.29, 1.47, 1.63, 5*1.40, 6*1.62,                    TREFT142
     .   6*1.0, 1.28, 1.35, 1.53, 1.68, 5*1.44, 6*1.75,                    TREFT143
     .   6*1.0, 1.29, 1.40, 1.58, 1.71, 5*1.47, 6*1.88,                    TREFT144
     .   6*1.0, 1.31, 1.46, 1.63, 1.75, 5*1.50, 6*2.00,                    TREFT145
     .   6*1.0, 1.32, 1.50, 1.67, 1.79, 5*1.51, 6*2.10,                    TREFT146
     .   6*1.0, 1.34, 1.56, 1.72, 1.82, 5*1.56, 6*2.22 /                   TREFT147
      DATA FDETHC/          21*1.00    ,                                   TREFT148
     .   8*1.0, 1.12, 1.10,  5*1.05    , 1.00, 5*1.14,                     TREFT149
     .   8*1.0, 1.18, 1.16,  5*1.10    , 1.13, 5*1.30,                     TREFT150
     .   8*1.0, 1.21, 1.18,  5*1.13    , 1.22, 5*1.44,                     TREFT151
     .   8*1.0, 1.23, 1.21,  5*1.15    , 1.29, 5*1.55,                     TREFT152
     .   8*1.0, 1.26, 1.23,  5*1.17    , 1.37, 5*1.67,                     TREFT153
     .   8*1.0, 1.28, 1.25,  5*1.20    , 1.43, 5*1.77,                     TREFT154
     .   8*1.0, 1.30, 1.28,  5*1.22    , 1.50, 5*1.88,                     TREFT155
     .   8*1.0, 1.32, 1.29,  5*1.24    , 1.56, 5*1.96,                     TREFT156
     .   8*1.0, 1.35, 1.31,  5*1.26    , 1.63, 5*2.07,   21*1.0,           TREFT157
     .   6*1.0, 1.14, 1.07, 1.12, 1.10, 5*1.05, 6*1.14,                    TREFT158
     .   6*1.0, 1.22, 1.10, 1.18, 1.16, 5*1.10, 6*1.30,                    TREFT159
     .   6*1.0, 1.25, 1.12, 1.21, 1.18, 5*1.13, 6*1.44,                    TREFT160
     .   6*1.0, 1.27, 1.14, 1.23, 1.21, 5*1.15, 6*1.55,                    TREFT161
     .   6*1.0, 1.29, 1.15, 1.26, 1.23, 5*1.17, 6*1.67,                    TREFT162
     .   6*1.0, 1.30, 1.17, 1.28, 1.25, 5*1.20, 6*1.77,                    TREFT163
     .   6*1.0, 1.32, 1.18, 1.30, 1.28, 5*1.22, 6*1.88,                    TREFT164
     .   6*1.0, 1.35, 1.20, 1.32, 1.29, 5*1.24, 6*1.96,                    TREFT165
     .   6*1.0, 1.35, 1.21, 1.35, 1.31, 5*1.26, 6*2.07 /                   TREFT166
      DATA FDETNO/    21*1.00,                                             TREFT167
     . 13*1.0,2*1.11,1.00,1.03,4*1.17,  13*1.0,2*1.18,1.18,1.07,4*1.37,   TREFT168
     . 13*1.0,2*1.20,1.23,1.10,4*1.53,  13*1.0,2*1.21,1.23,1.13,4*1.67,   TREFT169
     . 13*1.0,2*1.22,1.41,1.17,4*1.82,  13*1.0,2*1.23,1.45,1.19,4*1.94,   TREFT170
     . 13*1.0,2*1.24,1.45,1.21,4*2.06,  13*1.0,2*1.25,1.45,1.24,4*2.17,   TREFT171
     . 13*1.0,2*1.26,1.45,1.26,4*2.32,                                    TREFT172
     .                21*1.00,                                            TREFT173
     . 11*1.0,4*1.11,2*1.03,4*1.17,     11*1.0,4*1.18,2*1.07,4*1.37,      TREFT174
     . 11*1.0,4*1.20,2*1.10,4*1.53,     11*1.0,4*1.21,2*1.13,4*1.67,      TREFT175
     . 11*1.0,4*1.22,2*1.17,4*1.82,     11*1.0,4*1.23,2*1.19,4*1.94,      TREFT176
     . 11*1.0,4*1.24,2*1.21,4*2.06,     11*1.0,4*1.25,2*1.24,4*2.17,      TREFT177
     . 11*1.0,4*1.26,2*1.26,4*2.32/                                       TREFT178
      DATA CM/ 4000., 20400., 35100., 48830., 61660., 73590., 84590.,     TREFT179
     .   94620., 103750., 111980./                                        TREFT180
      DATA FCHDCO/ 1.00, 1.24, 1.35, 1.43, 1.50, 1.57, 1.63, 1.69,        TREFT181
     .   1.73, 7*1.77/                                                    TREFT182
      DATA FCHDHC/ 1.00, 1.12, 1.18, 1.22, 1.25, 1.28, 1.30, 1.33,        TREFT183
     .   1.36, 7*1.38/                                                    TREFT184
      DATA FCHDNO/ 1.00, 1.11, 1.18, 1.20, 1.22, 1.23, 1.24, 1.25,        TREFT185
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     .   1.27, 7*1.28/                                                    TREFT186
      DATA CMH/ 4000., 22360., 39140., 54940., 69900., 82900., 95300.,    TREFT187
     .   106300., 116700., 125700., 133650., 139150., 144650., 150150.,  TREFT188
     .   155650., 161150./                                               TREFT189
C                                                                        TREFT190
C    USEPA REGISTRATION (MID-YEAR) AND ANNUAL TRAVEL                     TREFT191
C                                                                        TREFT192
      DATA REGIS/ .078, .116, .110, .098, .106, .106, .088, .078,        TREFT193
     .   .063, .041, .035, .021, .060,  0., 0., 0.,                      TREFT194
     .            .078, .116, .110, .098, .106, .106, .088, .078,        TREFT195
     .   .063, .041, .035, .021, .060,  0., 0., 0.,                      TREFT196
     .            .071, .106, .087, .081, .084, .076, .065, .055,        TREFT197
     .   .047, .035, .037, .033, .223,  0., 0., 0.,                      TREFT198
     .            .071, .106, .087, .081, .084, .076, .065, .055,        TREFT199
     .   .047, .035, .037, .033, .223,  0., 0., 0.,                      TREFT200
     .            .071, .106, .087, .081, .084, .076, .065, .055,        TREFT201
     .   .047, .035, .037, .033, .223,  0., 0., 0.,                      TREFT202
     .            .071, .106, .087, .081, .084, .076, .065, .055,        TREFT203
     .   .047, .035, .037, .033, .223,  0., 0., 0./                      TREFT204
      DATA AAT/15900.,15000.,14000.,13100.,12200.,11300.,10300., 9400.,  TREFT205
     .   8500., 7600., 6700., 6700., 6700., 6700., 6700., 6700.,        TREFT206
     .         15900.,15000.,14000.,13100.,12200.,11300.,10300., 9400.,  TREFT207
     .   8500., 7600., 6700., 6700., 6700., 6700., 6700., 6700.,        TREFT208
     .         17200.,17200.,15800.,15800.,13000.,13000.,11000.,11000.,  TREFT209
     .   9000., 9000., 5500., 5500., 5500., 5500., 5500., 5500.,        TREFT210
     .         17200.,17200.,15800.,15800.,13000.,13000.,11000.,11000.,  TREFT211
     .   9000., 9000., 5500., 5500., 5500., 5500., 5500., 5500.,        TREFT212
     .         17200.,17200.,15800.,15800.,13000.,13000.,11000.,11000.,  TREFT213
     .   9000., 9000., 5500., 5500., 5500., 5500., 5500., 5500.,        TREFT214
     .         17200.,17200.,15800.,15800.,13000.,13000.,11000.,11000.,  TREFT215
     .   9000., 9000., 5500., 5500., 5500., 5500., 5500., 5500./        TREFT216
      DATA PAAT/ .38,15*.30,  .38,15*.30,  .37,15*.30,  .37,15*.30,      TREFT217
     .   .37,15*.30, .37,15*.30/                                         TREFT218
      DATA WFCTR/ .821, .100, .045, .018, .010, .006/                    TREFT219
C                                                                        TREFT220
C    OPTION DEFAULTS                                                     TREFT221
C                                                                        TREFT222
      DATA IAUTO,ILDT,IDIESL,IDET,ICRNK,ICLDST,IWTFTR,IEVAP,RTRCFT,      TREFT223
     . ITIME,SPEED / 7*1,2,2*0,19.6 /                                    TREFT224
C                                                                        TREFT225
C    INITIALIZE DATA ARRAYS                                              TREFT226
C                                                                        TREFT227
      IF (IAUTO.EQ.0) GO TO 101                                          TREFT228
      DO 1 M=1,31                                                        TREFT229
      BYEFCC(1,M) = FEXCO(M,1,IAREA)                                     TREFT230
      BYEFHC(1,M) = FEXHC(M,1,IAREA)                                     TREFT231
      BYEFNC(1,M) = FEXNO(M,1,IAREA)                                     TREFT232
    1 CONTINUE                                                           TREFT233
      GO TO 2                                                            TREFT234
  101 READ 210, (BYEFCO(1,M),M=1,31)                                     TREFT235
      READ 210, (BYEFHC(1,M),M=1,31)                                     TREFT236
      READ 210, (BYEFNO(1,M),M=1,31)                                     TREFT237
  210 FORMAT(9F8.0)                                                      TREFT238
    2 IF (ILDT.EQ.0) GO TO 102                                           TREFT239
      DO 3 M=1,31                                                        TREFT240
      BYEFCC(2,M) = FEXCO(M,2,IAREA)                                     TREFT241
      BYEFHC(2,M) = FEXHC(M,2,IAREA)                                     TREFT242
      BYEFNC(2,M) = FEXNO(M,2,IAREA)                                     TREFT243
    3 CONTINUE                                                           TREFT244
      GO TO 4                                                            TREFT245
  102 READ 210, (BYEFCO(2,M),M=1,31)                                     TREFT246
      READ 210, (BYEFHC(2,M),M=1,31)                                     TREFT247
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      READ 210, (BYEFNO(2,M),M=1,31)                                    TREFT248
    4 IH=IHDV+1                                                         TREFT249
      IF (IH-2) 103,5,7                                                 TREFT250
    5 DO 6 M=1,31                                                       TREFT251
      DO 6 J=3,5                                                        TREFT252
      BYEFCO(J,M) = FEXCO(M,3,IAREA)                                    TREFT253
      BYEFHC(J,M) = FEXHC(M,3,IAREA)                                    TREFT254
      BYEFNO(J,M) = FEXNO(M,3,IAREA)                                    TREFT255
    6 CONTINUE                                                          TREFT256
      GO TO 9                                                           TREFT257
    7 DO 8 M=1,31                                                       TREFT258
      DO 8 J=3,5                                                        TREFT259
      BYEFCO(J,M) = HDVCO(M,J-2,IAREA)                                  TREFT260
      BYEFNO(J,M) = HDVNO(M,J-2,IAREA)                                  TREFT261
      BYEFHC(J,M) = HDVHC(M,J-2,IAREA)                                  TREFT262
    8 CONTINUE                                                          TREFT263
      GO TO 9                                                           TREFT264
  103 DO 104 J=3,5                                                      TREFT265
      READ 210, (BYEFCO(J,M),M=1,31)                                    TREFT266
      READ 210, (BYEFHC(J,M),M=1,31)                                    TREFT267
      READ 210, (BYEFNO(J,M),M=1,31)                                    TREFT268
  104 CONTINUE                                                          TREFT269
    9 IF (IDIESL.EQ.0) GO TO 106                                        TREFT270
      DO 105 M=1,31                                                     TREFT271
      BYEFCO(6,M) = FDEFCO(M)                                           TREFT272
      BYEFHC(6,M) = FDEFHC(M)                                           TREFT273
      BYEFNO(6,M) = FDEFNO(M)                                           TREFT274
  105 CONTINUE                                                          TREFT275
      GO TO 107                                                         TREFT276
  106 READ 210, (BYEFCO(6,M),M=1,31)                                    TREFT277
      READ 210, (BYEFHC(6,M),M=1,31)                                    TREFT278
      READ 210, (BYEFNO(6,M),M=1,31)                                    TREFT279
  107 IDT=IDET+1                                                        TREFT280
      IAD=MAX0(IAREA-1,1)                                               TREFT281
      IF (IDT-2) 118,108,115                                            TREFT282
  108 DO 111 J=1,2                                                      TREFT283
      DO 110 N=1,10                                                     TREFT284
      DO 109 M=1,21                                                     TREFT285
      DETCO(J,M,N)=FDETCO(M,N,IAD)                                      TREFT286
      DETHC(J,M,N)=FDETHC(M,N,IAD)                                      TREFT287
      DETNO(J,M,N)=FDETNO(M,N,IAD)                                      TREFT288
  109 CONTINUE                                                          TREFT289
      DO 110 M=22,31                                                    TREFT290
      DETCO(J,M,N)=FDETCO(21,N,IAD)                                     TREFT291
      DETHC(J,M,N)=FDETHC(21,N,IAD)                                     TREFT292
      DETNO(J,M,N)=FDETNO(21,N,IAD)                                     TREFT293
  110 CONTINUE                                                          TREFT294
      DO 111 N=11,16                                                    TREFT295
      DO 111 M=1,31                                                     TREFT296
      DETCO(J,M,N)=DETCO(J,M,10)                                        TREFT297
      DETHC(J,M,N)=DETHC(J,M,10)                                        TREFT298
      DETNO(J,M,N)=DETNO(J,M,10)                                        TREFT299
  111 CONTINUE                                                          TREFT300
      DO 112 J=3,6                                                      TREFT301
      DO 112 N=1,16                                                     TREFT302
      DO 112 M=1,31                                                     TREFT303
      DETCO(J,M,N)=1.0                                                  TREFT304
      DETHC(J,M,N)=1.0                                                  TREFT305
      DETNO(J,M,N)=1.0                                                  TREFT306
  112 CONTINUE                                                          TREFT307
      IF (IAREA.NE.3) GO TO 120                                         TREFT308
      DO 113 J=3,5                                                      TREFT309
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      DO 113 M=16,31                                                    TREFT310
      DO 113 N=1,16                                                     TREFT311
      DETCO(J,M,N) = FCHDCO(N)                                          TREFT312
      DETHC(J,M,N) = FCHDHC(N)                                          TREFT313
      DETNO(J,M,N) = FCHDNO(N)                                          TREFT314
  113 CONTINUE                                                          TREFT315
  115 GO TO 120                                                         TREFT316
C                                                                       TREFT317
C     MILEAGE DEPENDANT DETERIORATION FACTORS WILL BE                   TREFT318
C     INITIALIZED AFTER REGISTRATION DATA IS INPUT                      TREFT319
C                                                                       TREFT320
  118 DO 119 J=1,6                                                      TREFT321
      DO 119 M=1,31                                                     TREFT322
      READ 230, (DETCO(J,M,N),N=1,16)                                   TREFT323
      READ 230, (DETHC(J,M,N),N=1,16)                                   TREFT324
      READ 230, (DETNO(J,M,N),N=1,16)                                   TREFT325
  230 FORMAT(16F5.0)                                                    TREFT326
  119 CONTINUE                                                          TREFT327
  120 IF (ICRNK.EQ.0) GO TO 122                                         TREFT328
      DO 121 M=1,31                                                     TREFT329
      CREF(1,M) = FCRNK(M,1,IAD)                                        TREFT330
      CREF(2,M) = FCRNK(M,1,IAD)                                        TREFT331
      CREF(3,M) = FCRNK(M,2,IAD)                                        TREFT332
      CREF(4,M) = FCRNK(M,2,IAD)                                        TREFT333
      CREF(5,M) = FCRNK(M,2,IAD)                                        TREFT334
      CREF(6,M) = 0.                                                    TREFT335
  121 CONTINUE                                                          TREFT336
      GO TO 124                                                         TREFT337
  122 DO 123 J=1,6                                                      TREFT338
      READ 210, (CREF(J,M),M=1,31)                                      TREFT339
  123 CONTINUE                                                          TREFT340
  124 IF (IEVAP-1) 130,125,125                                          TREFT341
  125 DO 126 M=1,31                                                     TREFT342
      EVEF(1,M,2) = FEVAP(M,1,IAD)                                      TREFT343
      EVEF(2,M,2) = FEVAP(M,1,IAD)                                      TREFT344
      EVEF(3,M,2) = FEVAP(M,2,IAD)                                      TREFT345
      EVEF(4,M,2) = FEVAP(M,2,IAD)                                      TREFT346
      EVEF(5,M,2) = FEVAP(M,2,IAD)                                      TREFT347
      EVEF(6,M,2) = 0.                                                  TREFT348
  126 CONTINUE                                                          TREFT349
  127 IF (IAREA-2) 501,502,503                                          TREFT350
  501 DO 511 M=1,31                                                     TREFT351
      DO 511 K=1,3,2                                                    TREFT352
      EVEF(1,M,K) = SEV1(M,K,1)                                         TREFT353
      EVEF(2,M,K) = SEV1(M,K,1)                                         TREFT354
      EVEF(3,M,K) = SEV1(M,K,2)                                         TREFT355
      EVEF(4,M,K) = SEV1(M,K,2)                                         TREFT356
      EVEF(5,M,K) = SEV1(M,K,2)                                         TREFT357
      EVEF(6,M,K) = 0.                                                  TREFT358
  511 CONTINUE                                                          TREFT359
      GO TO 135                                                         TREFT360
  502 DO 512 M=1,31                                                     TREFT361
      DO 512 K=1,3,2                                                    TREFT362
      EVEF(1,M,K) = SEV2(M,K,1)                                         TREFT363
      EVEF(2,M,K) = SEV2(M,K,1)                                         TREFT364
      EVEF(4,M,K) = SEV2(M,K,2)                                         TREFT365
      EVEF(3,M,K) = SEV2(M,K,2)                                         TREFT366
      EVEF(6,M,K) = 0.                                                  TREFT367
      EVEF(5,M,K) = SEV2(M,K,2)                                         TREFT368
  512 CONTINUE                                                          TREFT369
      GO TO 135                                                         TREFT370
  503 DO 513 M=1,31                                                     TREFT371
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      DO 513 K=1,3,2                                                    TREFT372
      EVEF(1,M,K) = SEV3(M,K,1)                                         TREFT373
      EVEF(2,M,K) = SEV3(M,K,1)                                         TREFT374
      EVEF(3,M,K) = SEV3(M,K,2)                                         TREFT375
      EVEF(4,M,K) = SEV3(M,K,2)                                         TREFT376
      EVEF(5,M,K) = SEV3(M,K,2)                                         TREFT377
      EVEF(6,M,K) = 0.                                                  TREFT378
  513 CONTINUE                                                          TREFT379
      GO TO 135                                                         TREFT380
  130 DO 131 J=1,6                                                      TREFT381
      DO 131 K=1,3                                                      TREFT382
      READ 210, (EVEF(J,M,K),M=1,31)                                    TREFT383
  131 CONTINUE                                                          TREFT384
  135 IF (ICLDST.EQ.0) GO TO 140                                        TREFT385
      DO 139 M=1,31                                                     TREFT386
      RCSCO(1,M)   = FFCSCO(M,IAREA)                                    TREFT387
      RCSHC(1,M)   = FFCSHC(M,IAREA)                                    TREFT388
      RCSCO(2,M)   = FFCSCO(M,IAREA)                                    TREFT389
      RCSHC(2,M)   = FFCSHC(M,IAREA)                                    TREFT390
      RCSCO(6,M) = 0.                                                   TREFT391
      RCSHC(6,M) = 0.                                                   TREFT392
      IF (IHDV.EQ.2) GO TO 137                                          TREFT393
      DO 136 J=3,5                                                      TREFT394
      RCSCO(J,M)   = HDCSCO(1)                                          TREFT395
      RCSHC(J,M)   = HDCSHC(1)                                          TREFT396
  136 CONTINUE                                                          TREFT397
      GO TO 139                                                         TREFT398
  137 DO 138 J=3,5                                                      TREFT399
      RCSCO(J,M)   = HDCSCO(J-1)                                        TREFT400
      RCSHC(J,M)   = HDCSHC(J-1)                                        TREFT401
  138 CONTINUE                                                          TREFT402
  139 CONTINUE                                                          TREFT403
      GO TO 142                                                         TREFT404
  140 DO 141 J=1,6                                                      TREFT405
      READ 210, (RCSCO(J,M),M=1,31)                                     TREFT406
      READ 210, (RCSHC(J,M),M=1,31)                                     TREFT407
  141 CONTINUE                                                          TREFT408
  142 IF (IAAT.NE.0) GO TO 1247                                         TREFT409
C                                                                       TREFT410
      IYEAR1=YEAR-1                                                     TREFT411
      IYEAR2=YEAR-2                                                     TREFT412
      PRINT 1197, YEAR,IYEAR1,IYEAR2,TRETIT                             TREFT413
 1197 FORMAT(1HO,13X,70HDISTRIBUTION OF VEHICLE CLASSES (BREAKDOWN BY AGTREFT414
     .E, 0 THROUGH 15 YEARS),6H,  0= ,I4,5H, 1= ,I4,5H, 2= ,I4,3(1X,1H.)TREFT415
     . /1HO,5HCLASS,8H  OPTION,2X,16(1H(,I2,1H),3X))                    TREFT416
      DO 143 J=1,6                                                      TREFT417
      READ 205, JJ,OPT(JJ),(RFGIS(N,JJ),N=1,16)                         TREFT418
  205 FORMAT(2(I2,2X),16F4.4)                                           TREFT419
      IF (OPT(JJ).EQ.0) PRINT 1198, JJ,OPT(JJ),(RFGIS(N,JJ),N=1,16)     TREFT420
      IF (OPT(JJ).EQ.1) PRINT 1198, JJ,OPT(JJ),(REGIS(N,JJ),N=1,16)     TREFT421
 1198 FORMAT(1H ,I4,4X,I3,4X,16(F4.3,3X))                               TREFT422
  143 CONTINUE                                                          TREFT423
      PRINT 1196                                                        TREFT424
 1196 FORMAT(1HO,5X,30HOPTION 0 IS USER SUPPLIED DATA / 6X,24HOPTION 1 ITREFT425
     .S DEFAULT DATA )                                                  TREFT426
      DO 1246 I=1,6                                                     TREFT427
      IF (OPT(I).EQ.1) GO TO 1244                                       TREFT428
      DO 1243 J=1,16                                                    TREFT429
 1243 RAGIS(J,I)=RFGIS(J,I)                                             TREFT430
      GO TO 1246                                                        TREFT431
 1244 DO 1245 J=1,16                                                    TREFT432
 1245 RAGIS(J,I)=REGIS(J,I)                                             TREFT433
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 1246 CONTINUE                                                          TREFT434
      GO TO 144                                                         TREFT435
C                                                                       TREFT436
 1247 DO 1248 I=1,6                                                     TREFT437
      DO 1248 J=1,16                                                    TREFT438
 1248 RAGIS(J,I)=REGIS(J,I)                                             TREFT439
  144 DO 145 J=1,6                                                      TREFT440
      SUM(J)=0.0                                                        TREFT441
      DO 145 N=1,16                                                     TREFT442
      PTRVL(J,N)=RAGIS(N,J)*AAT(N,J)                                    TREFT443
      SUM(J)=SUM(J)+PTRVL(J,N)                                          TREFT444
  145 CONTINUE                                                          TREFT445
      DO 146 J=1,6                                                      TREFT446
      DO 146 N=1,16                                                     TREFT447
      PTRVL(J,N)=PTRVL(J,N)/SUM(J)                                      TREFT448
  146 CONTINUE                                                          TREFT449
      IF (IWTFTR.NE.0) GO TO 147                                        TREFT450
      READ 210, WFCTR                                                   TREFT451
  147 CONTINUE                                                          TREFT452
      IF (IDET.NE.2) GO TO 199                                          TREFT453
C                                                                       TREFT454
      DO 160 J=1,2                                                      TREFT455
      XMILES=0.0                                                        TREFT456
      DO 160 N=1,16                                                     TREFT457
      XMILES=XMILES+AAT(N,J)                                            TREFT458
      XM = XMILES - AAT(N,J)*(1.-PAAT(N,J))                             TREFT459
      DO 151 N1=1,10                                                    TREFT460
      IF (XM.LE.CM(N1)) GO TO 154                                       TREFT461
  151 CONTINUE                                                          TREFT462
      DO 152 M=1,21                                                     TREFT463
      DETCO(J,M,N) = FDETCO(M,10,IAD)                                   TREFT464
      DETHC(J,M,N) = FDETHC(M,10,IAD)                                   TREFT465
      DETNC(J,M,N) = FDETNO(M,10,IAD)                                   TREFT466
  152 CONTINUE                                                          TREFT467
      DO 153 M=22,31                                                    TREFT468
      DETCO(J,M,N) = DETCO(J,21,N)                                      TREFT469
      DETHC(J,M,N) = DETHC(J,21,N)                                      TREFT470
      DETNO(J,M,N) = DETNO(J,21,N)                                      TREFT471
  153 CONTINUE                                                          TREFT472
      GO TO 160                                                         TREFT473
  154 IF (N1.NE.1) GO TO 156                                            TREFT474
      DO 155 M=1,31                                                     TREFT475
      DETCO(J,M,N) = 1.0                                                TREFT476
      DETHC(J,M,N) = 1.0                                                TREFT477
      DETNC(J,M,N) = 1.0                                                TREFT478
  155 CONTINUE                                                          TREFT479
      GO TO 160                                                         TREFT480
  156 DO 157 M=1,21                                                     TREFT481
      DETCO(J,M,N) = (FDETCO(M,N1,IAD)-FDETCO(M,N1-1,IAD))/             TREFT482
     .    (CM(N1)-CM(N1-1))*(XM-CM(N1-1)) + FDETCO(M,N1-1,IAD)          TREFT483
      DETHC(J,M,N) = (FDETHC(M,N1,IAD)-FDETHC(M,N1-1,IAD))/             TREFT484
     .    (CM(N1)-CM(N1-1))*(XM-CM(N1-1)) + FDETHC(M,N1-1,IAD)          TREFT485
      DETNC(J,M,N) = (FDETNC(M,N1,IAD)-FDETNO(M,N1-1,IAD))/             TREFT486
     .    (CM(N1)-CM(N1-1))*(XM-CM(N1-1)) + FDETNO(M,N1-1,IAD)          TREFT487
  157 CONTINUE                                                          TREFT488
      DO 158 M=22,31                                                    TREFT489
      DETCO(J,M,N) = DETCO(J,21,N)                                      TREFT490
      DETHC(J,M,N) = DETHC(J,21,N)                                      TREFT491
      DETNO(J,M,N) = DETNO(J,21,N)                                      TREFT492
  158 CONTINUE                                                          TREFT493
  160 CONTINUE                                                          TREFT494
      DO 161 J=3,6                                                      TREFT495
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      DO 161 M=1,31                                                    TREFT496
      DO 161 N=1,16                                                    TREFT497
      DETCC(J,M,N) = 1.0                                               TREFT498
      DETHC(J,M,N) = 1.0                                               TREFT499
      DETNC(J,M,N) = 1.0                                               TREFT500
  161 CONTINUE                                                         TREFT501
      IF (IAREA.NE.3) GO TO 199                                        TREFT502
C                                                                      TREFT503
      DO 170 J=3,5                                                     TREFT504
      XMILES = 0.0                                                     TREFT505
      DO 170 N=1,16                                                    TREFT506
      XMILES = XMILES + AAT(N,J)                                       TREFT507
      XM = XMILES - AAT(N,J)*(1.-PAAT(N,J))                            TREFT508
      DO 162 N1=1,16                                                   TREFT509
      IF (XM.LE.CMH(N1)) GO TO 164                                     TREFT510
  162 CONTINUE                                                         TREFT511
      DO 163 M=16,31                                                   TREFT512
      DETCO(J,M,N) = FCHDCO(16)                                        TREFT513
      DETHC(J,M,N) = FCHDHC(16)                                        TREFT514
      DETNO(J,M,N) = FCHDNO(16)                                        TREFT515
  163 CONTINUE                                                         TREFT516
      GO TO 170                                                        TREFT517
  164 IF (N1.EQ.1) GO TO 170                                           TREFT518
      DO 165 M=16,31                                                   TREFT519
      DETCC(J,M,N) = (FCHDCC(N1)-FCHDCO(N1-1))/(CMH(N1)-CMH(N1-1))     TREFT520
     .   *(XM-CMH(N1-1))  +  FCHDCO(N1-1)                              TREFT521
      DETHC(J,M,N) = (FCHDHC(N1)-FCHDHC(N1-1))/(CMH(N1)-CMH(N1-1))     TREFT522
     .   *(XM-CMH(N1-1))  +  FCHDHC(N1-1)                              TREFT523
      DETNO(J,M,N) = (FCHDNO(N1)-FCHDNO(N1-1))/(CMH(N1)-CMH(N1-1))     TREFT524
     .   *(XM-CMH(N1-1))  +  FCHDNO(N1-1)                              TREFT525
  165 CONTINUE                                                         TREFT526
  170 CONTINUE                                                         TREFT527
  199 CONTINUE                                                         TREFT528
C                                                                      TREFT529
      ENTRY TFENTR(CLDSTR,EXEMI,CSCO,CSHC,EVAP,CRANK)                  TREFT530
C                                                                      TREFT531
C     CALCULATE EMISSION FACTORS                                       TREFT532
C                                                                      TREFT533
      SPDCC = 12.5 * ((SPEED)**(-0.845))                               TREFT534
      IF (SPEED.EQ.19.6) SPDCO = 1.0                                   TREFT535
      SPDHC =  7.0 * ((SPEED)**(-0.649))                               TREFT536
      IF (SPEED.EQ.19.6) SPDHC = 1.0                                   TREFT537
      SPDNO = 1.0 + (SPEED-19.6)*0.01262                               TREFT538
      DO 11 J=1,5                                                      TREFT539
      SCC(J)=SPDCC                                                     TREFT540
      SHC(J)=SPDHC                                                     TREFT541
      SNC(J)=SPDNC                                                     TREFT542
   11 CONTINUE                                                         TREFT543
      SCC(6)=1.0                                                       TREFT544
      SHC(6)=1.0                                                       TREFT545
      SNO(6)=1.0                                                       TREFT546
C                                                                      TREFT547
C     INITIALIZE YEARLY EMISSION FACTORS                               TREFT548
C                                                                      TREFT549
      DO 12 I = 1,31                                                   TREFT550
      DO 12 K = 1,6                                                    TREFT551
      YEFCO(K,I) = BYEFCO(K,I)                                         TREFT552
      YEFHC(K,I) = BYEFHC(K,I)                                         TREFT553
      YEFNC(K,I) = BYEFNO(K,I)                                         TREFT554
   12 CONTINUE                                                         TREFT555
      IF (RTROFT) 21,25,23                                             TREFT556
   21 DO 22 J=1,6                                                      TREFT557
```

```
      READ 210, (RTROCO(J,M),M=1,31)                                    TREFT558
      READ 210, (RTROHC(J,M),M=1,31)                                    TREFT559
      READ 210, (RTRONO(J,M),M=1,31)                                    TREFT560
   22 CONTINUE                                                          TREFT561
   23 DO 24 M=1,31                                                      TREFT562
      DO 24 J=1,6                                                       TREFT563
      YEFCO(J,M)=YEFCO(J,M)*(1.-RTROCO(J,M))                            TREFT564
      YEFHC(J,M)=YEFHC(J,M)*(1.-RTROHC(J,M))                            TREFT565
      YEFNO(J,M)=YEFNO(J,M)*(1.-RTRONO(J,M))                            TREFT566
   24 CONTINUE                                                          TREFT567
   25 DO 26 J=1,6                                                       TREFT568
      CSCO(J)=0.0                                                       TREFT569
      CSHC(J)=0.0                                                       TREFT570
   26 CONTINUE                                                          TREFT571
C                                                                       TREFT572
   30 IF (CLDSTR.EQ.0) GO TO 40                                         TREFT573
      DO 33 M=1,31                                                      TREFT574
      DO 31 J=1,6                                                       TREFT575
      YEFCSC(J,M)=YEFCO(J,M)*7.5*RCSCO(J,M)                             TREFT576
      YEFCSH(J,M)=YEFHC(J,M)*7.5*RCSHC(J,M)                             TREFT577
   31 CONTINUE                                                          TREFT578
      DO 32 J=1,2                                                       TREFT579
      YEFCC(J,M)=YEFCO(J,M)*(1.-.43*RCSCO(J,M))                         TREFT580
      YEFHC(J,M)=YEFHC(J,M)*(1.-.43*RCSHC(J,M))                         TREFT581
   32 CONTINUE                                                          TREFT582
   33 CONTINUE                                                          TREFT583
      DO 35 J=1,6                                                       TREFT584
      K=YEAR-1958+ITIME                                                 TREFT585
      DO 35 N=1,16                                                      TREFT586
      K=MAXO(K-1,1)                                                     TREFT587
      CSCO(J)=CSCO(J)+PTRVL(J,N)*YEFCSC(J,K)*DETCO(J,K,N)               TREFT588
      CSHC(J)=CSHC(J)+PTRVL(J,N)*YEFCSH(J,K)*DETHC(J,K,N)               TREFT589
   35 CONTINUE                                                          TREFT590
C                                                                       TREFT591
   40 DO 41 J=1,6                                                       TREFT592
      DO 41 L=1,3                                                       TREFT593
      EXEMI(J,L)=0.0                                                    TREFT594
   41 CONTINUE                                                          TREFT595
      DO 42 J=1,6                                                       TREFT596
      K=YEAR-1958+ITIME                                                 TREFT597
      DO 42 N=1,16                                                      TREFT598
      K=MAXO(K-1,1)                                                     TREFT599
      EXEMI(J,1)=EXEMI(J,1)+YEFCO(J,K)*DETCO(J,K,N)*SCO(J)*PTRVL(J,N)   TREFT600
      EXEMI(J,2)=EXEMI(J,2)+YEFHC(J,K)*DETHC(J,K,N)*SHC(J)*PTRVL(J,N)   TREFT601
      EXEMI(J,3)=EXEMI(J,3)+YEFNO(J,K)*DETNO(J,K,N)*SNO(J)*PTRVL(J,N)   TREFT602
   42 CONTINUE                                                          TREFT603
      DO 61 J=1,6                                                       TREFT604
      CRANK(J)=0.0                                                      TREFT605
      DO 61 I=1,3                                                       TREFT606
      EVAP(J,I)=0.0                                                     TREFT607
   61 CONTINUE                                                          TREFT608
      DO 62 J=1,6                                                       TREFT609
      K=YEAR-1958+ITIME                                                 TREFT610
      DO 62 N=1,16                                                      TREFT611
      K=MAXO(K-1,1)                                                     TREFT612
      CRANK(J)=CRANK(J)+CREF(J,K)*PTRVL(J,N)                            TREFT613
      DO 62 I=1,3                                                       TREFT614
      EVAP(J,I)=EVAP(J,I)+EVEF(J,K,I)*PTRVL(J,N)                        TREFT615
   62 CONTINUE                                                          TREFT616
      WEXCO=0.0                                                         TREFT617
      WEXHC=0.0                                                         TREFT618
      WEXNO=0.0                                                         TREFT619
```

```
      WCSCC=0.0                                                          TREFT620
      WCSHC=0.0                                                          TREFT621
      WCRNK=0.0                                                          TREFT622
      DO 81 I=1,3                                                        TREFT623
      WEVAP(I)=0.0                                                       TREFT624
   81 CONTINUE                                                           TREFT625
      DO 82 J=1,6                                                        TREFT626
      WEXCC=WEXCC+EXEMI(J,1)*WFCTR(J)                                    TREFT627
      WEXHC=WEXHC+EXEMI(J,2)*WFCTR(J)                                    TREFT628
      WEXNC=WEXNC+EXEMI(J,3)*WFCTR(J)                                    TREFT629
      WCSCC=WCSCC+CSCC(J)    *WFCTR(J)                                   TREFT630
      WCSHC=WCSHC+CSHC(J)    *WFCTR(J)                                   TREFT631
      WCRNK=WCRNK+CRANK(J)   *WFCTR(J)                                   TREFT632
      DO 82 I=1,3                                                        TREFT633
      WEVAP(I)=WEVAP(I)+EVAP(J,I)*WFCTR(J)                               TREFT634
   82 CONTINUE                                                           TREFT635
   99 RETURN                                                             TREFT636
      END                                                                TREFT637
```

SUBROUTINE TRNFLT

Purpose:

This subroutine sets up a training flight path for each aircraft type used at airbase and calculates the annual emissions due to training flight operations.

Input:

Basic aircraft data, annual training flights.

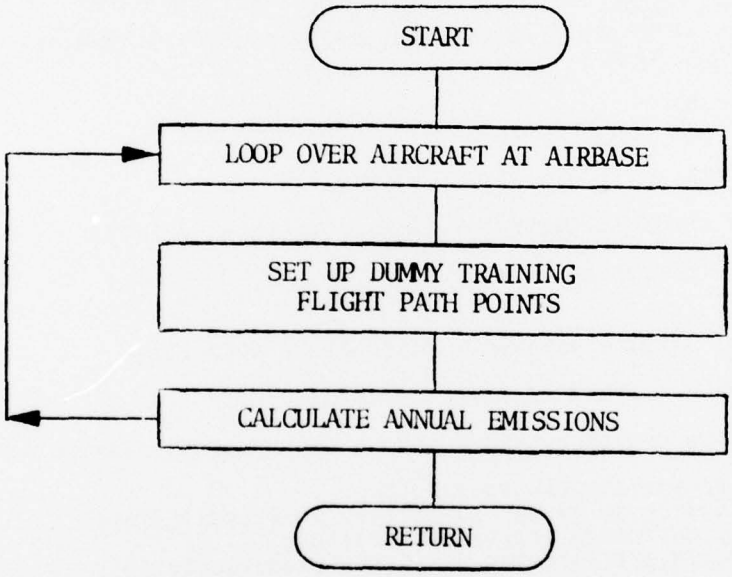
Output:

Points in training flight path, annual training flight emissions.

Subroutines Called:

None

Subroutine TRNFLT



```
      SUBROUTINE TRNFLT                                                 TRNFT000
C                                                                       TRNFT001
C     THIS ROUTINE SETS UP THE TRAINING FLIGHT PATHS FOR ALL            TRNFT002
C     AIRCRAFT TYPES USED AT THE AIRBASE AND CALCULATES THE             TRNFT003
C     ANNUAL EMISSIONS DUE TO THESE OPERATIONS                          TRNFT004
C                                                                       TRNFT005
C                                                                       TRNFT006
      REAL LNDSPD                                                       TRNFT007
      INTEGER ENGNO                                                     TRNFT008
      REAL*8 ACNAME,EGNAME                                              TRNFT009
C                                                                       TRNFT010
      COMMON /ACEDB1/ ACEMFC(50,10,6),ACNAME(50),EGNAME(50),ENGNO(50,2),TRNFT011
     . ASCNT1(50),ASCNT2(50),TXISPD(50),LNDSPD(50),APSPD1(50),COHT1(50),TRNFT012
     . APSPD2(50),TOSPD(50),COSPD1(50),COSPD2(50),SRTUPT(50),DSCNT1(50),TRNFT013
     . EGCHKT(50),SHTDNT(50),DSCNT2(50),APPHT,APPHT2(50),CLMBHT,TOWT(50) TRNFT014
      COMMON /ACEDB2/ NACTYP,NRNWYS,NPKAR,IEGFLG,IACTYP(8),ANNARR(8),   TRNFT015
     . ANNDEP(8),ANNTGO(8),ARRFCN(24,8,6),DEPFCN(24,8,6),TGO(3,4,8),    TRNFT016
     . DISRNW(6),RNWY(7,6),IUSWD(20,6),RNWYAR(8,6),RNWYDP(8,6),ACFUEL(8) TRNFT017
     ., ARFLVT(8),DPFLVT(8),ACSPIL(8),ARSVEM(6,8,5),DPSVEM(6,8,5),      TRNFT018
     . NIBTT(6),NIBSEG(8,6),TIBSEG(16,8,6),IDIBTW(8,6),TTARFR(8,8,6),   TRNFT019
     . NOBTT(6),NOBSEG(8,6),TOBSEG(16,8,6),IDOBTW(8,6),TTDPFR(8,8,6),   TRNFT020
     . NPASQ(6),IDPRKA(6),PAREA(6,3,3),IDIBPA(8,6),IDOBPA(8,6),         TRNFT021
     . NLSEGS,ACLNSG(12,25)                                             TRNFT022
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10),EMISS(8,15,6),ACEM(8,6)      TRNFT023
      COMMON /DEFALT/ NPLTS                                             TRNFT024
C                                                                       TRNFT025
      DO 10 I=1,NACTYP                                                  TRNFT026
      DO 11 J=1,3                                                       TRNFT027
      DO 11 K=1,4                                                       TRNFT028
   11 TGO(J,K,I)=0.0                                                    TRNFT029
C                                                                       TRNFT030
C     CONSIDER ONLY THOSE AIRCRAFT INVOLVED IN TRAINING FLIGHTS         TRNFT031
C                                                                       TRNFT032
      IF(ANNTGO(I).LE.0.0) GO TO 10                                     TRNFT033
      ID=IACTYP(I)                                                      TRNFT034
C                                                                       TRNFT035
C     TIME SPENT ON RUNWAY - ASSUMES A DISTANCE OF 1000 FEET            TRNFT036
C                                                                       TRNFT037
      TIM=2.0*0.3048/(1.3*LNDSPD(ID)+0.7*TOSPD(ID))                     TRNFT038
C                                                                       TRNFT039
C     GROUND PROJECTED DISTANCES FOR APPROACH AND CLIMBOUT PATH PHASES  TRNFT040
C                                                                       TRNFT041
      TGO(1,2,I)=-APPHT2(ID)/TAN(DSCNT2(ID))                           TRNFT042
      TGO(1,1,I)=TGO(1,2,I)-(APPHT-APPHT2(ID))/TAN(DSCNT1(ID))         TRNFT043
      TGO(1,3,I)=0.3048+COHT1(ID)/TAN(ASCNT1(ID))                       TRNFT044
      TGO(1,4,I)=TGO(1,3,I)+(CLMBHT-COHT1(ID))/TAN(ASCNT2(ID))         TRNFT045
C                                                                       TRNFT046
C     DISTANCES FOR EACH PHASE                                          TRNFT047
C                                                                       TRNFT048
      TGO(2,1,I)=(APPHT-APPHT2(ID))/SIN(DSCNT1(ID))                    TRNFT049
      TGO(2,2,I)=APPHT2(ID)/SIN(DSCNT2(ID))                            TRNFT050
      TGO(2,3,I)=COHT1(ID)/SIN(ASCNT1(ID))                             TRNFT051
      TGO(2,4,I)=(CLMBHT-COHT1(ID))/SIN(ASCNT2(ID))                    TRNFT052
C                                                                       TRNFT053
C     TIME SPENT IN EACH PHASE                                          TRNFT054
C                                                                       TRNFT055
      TGO(3,1,I)=2.0*TGO(2,1,I)/(APSPD1(ID)+APSPD2(ID))                TRNFT056
      TGO(3,2,I)=2.0*TGO(2,2,I)/(APSPD2(ID)+LNDSPD(ID))                TRNFT057
      TGO(3,3,I)=2.0*TGO(2,3,I)/(TOSPD(ID)+COSPD1(ID))                 TRNFT058
      TGO(3,4,I)=2.0*TGO(2,4,I)/(COSPD1(ID)+COSPD2(ID))                TRNFT059
C                                                                       TRNFT060
C     CALCULATE ANNUAL EMISSION FOR EACH OF THE 5 PHASES AND            TRNFT061
```

```
C     ACCUMULATE IN AIRCRAFT EMISSIONS MODE 15                          TRNFT062
C                                                                       TRNFT063
      DO 20 K=1,NPLTS                                                   TRNFT064
      EMISS(I,15,K)=EMISS(I,15,K)+(0.3*TIM*ACEMFC(ID,9,K)+              TRNFT065
     . 0.7*TIM*ACEMFC(ID,4,K))*ANNTGO(I)*ENGNO(ID,1)                    TRNFT066
C                                                                       TRNFT067
      DO 20 J=1,4                                                       TRNFT068
      GO TO (21,22,23,24),J                                             TRNFT069
   21 KD=7                                                              TRNFT070
      GO TO 25                                                          TRNFT071
   22 KD=8                                                              TRNFT072
      GO TO 25                                                          TRNFT073
   23 KD=5                                                              TRNFT074
      GO TO 25                                                          TRNFT075
   24 KD=6                                                              TRNFT076
   25 EMISS(I,15,K)=EMISS(I,15,K)+TGO(3,J,I)*ANNTGO(I)*ACEMFC(ID,KD,K)  TRNFT077
     . *ENGNO(ID,1)                                                     TRNFT078
   20 CONTINUE                                                          TRNFT079
C                                                                       TRNFT080
C     ACCUMULATE TOTAL ANNUAL EMISSIONS FROM AIRCRAFT OPERATIONS        TRNFT081
C                                                                       TRNFT082
      DO 30 K=1,NPLTS                                                   TRNFT083
   30 ACEM(I,K)=ACEM(I,K)+EMISS(I,15,K)                                 TRNFT084
   10 CONTINUE                                                          TRNFT085
      RETURN                                                            TRNFT086
      END                                                               TRNFT087
```

SUBROUTINE VEFCTR

Purpose:

A subdriver to set up automobile and truck emission factors and to call TREFCT with the appropriate arguments.

Input:

None

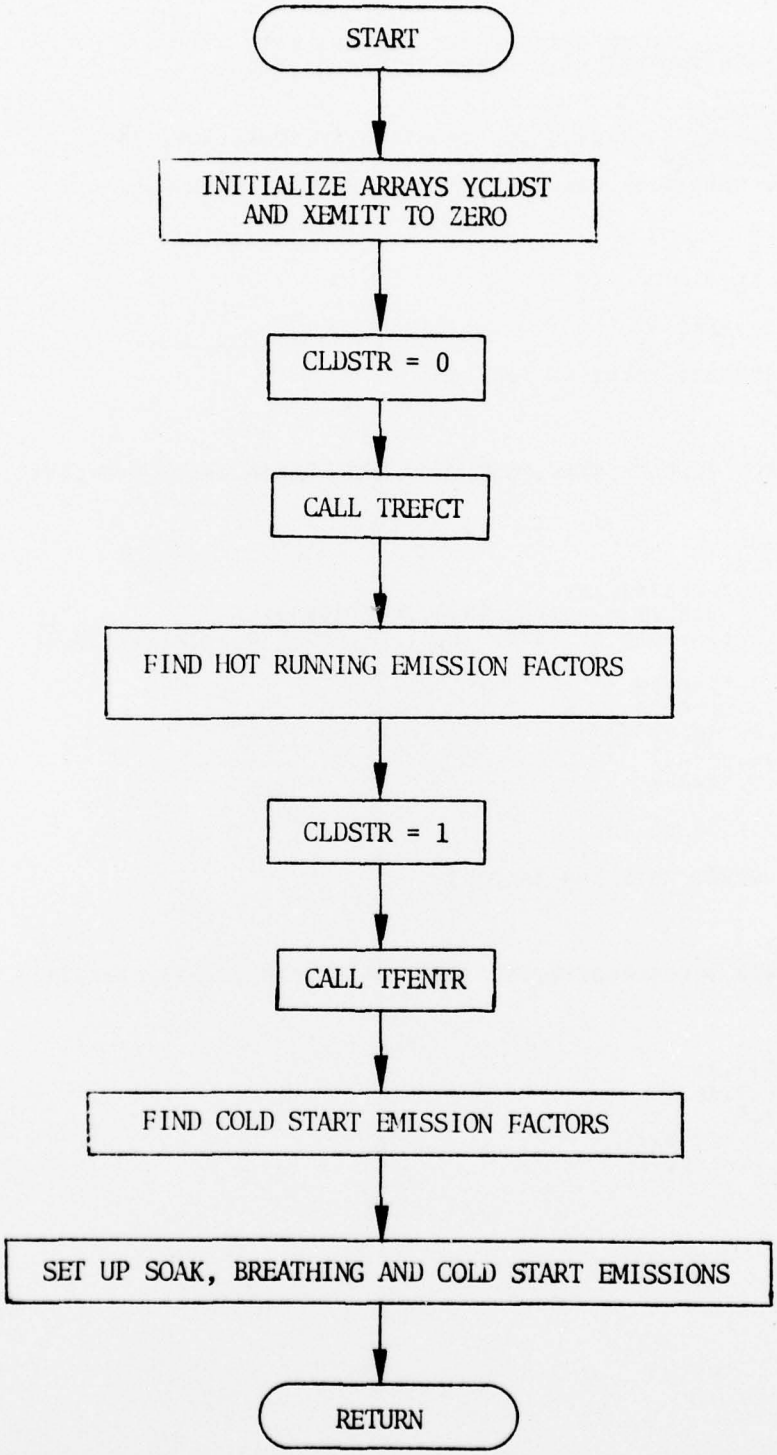
Output:

Automobile and truck emission factor arrays for both military and civilian vehicles set up for use by the source emission routines.

Subroutine Called:

TREFCT, TFENTR (an entry in TREFCT)

SUBROUTINE VEFCTR



```
      SUBROUTINE VEFCTR                                                 VEFCT000
C                                                                       VEFCT001
C     THIS ROUTINE CALLS TREFCT AND SETS UP THE AUTO AND                VEFCT002
C     TRUCK HOT RUNNING AND COLD START EMISSION FACTORS                 VEFCT003
C                                                                       VEFCT004
      INTEGER CLDSTR                                                    VEFCT005
      COMMON /AUTCS/ XEMITT(2,6,6),YCLDST(6,6),SOAK,BRTH,IAREA,         VEFCT006
     . IHDV,IAAT,IYEAR                                                  VEFCT007
      DIMENSION EXEM(6,3),CSCO(6),CSHC(6),CRANK(6),EVAP(6,3)            VEFCT008
C                                                                       VEFCT009
      DO 1 J=1,6                                                        VEFCT010
      DO 1 K=1,6                                                        VEFCT011
      YCLDST(J,K)=0.0                                                   VEFCT012
      DO 1 I=1,2                                                        VEFCT013
    1 XEMITT(I,J,K)=0.0                                                 VEFCT014
C                                                                       VEFCT015
C     FIND HOT RUNNING EMISSION FACTORS                                 VEFCT016
C                                                                       VEFCT017
      M=2                                                               VEFCT018
      CLDSTR=0                                                          VEFCT019
      CALL TREFCT (CLDSTR,EXEM,CSCO,CSHC,EVAP,CRANK,IAREA,IHDV,IAAT,    VEFCT020
     . IYEAR)                                                           VEFCT021
C                                                                       VEFCT022
    5 DO 10 J=1,6                                                       VEFCT023
      DO 11 K=1,3                                                       VEFCT024
      XEMITT(M,J,K)=EXEM(J,K)                                           VEFCT025
      IF (K.EQ.2) XEMITT(M,J,2)=EXEM(J,2)+CRANK(J)                      VEFCT026
      IF (J.GT.2.AND.K.EQ.2) XEMITT(M,J,2)=XEMITT(M,J,2)+EVAP(J,2)      VEFCT027
   11 CONTINUE                                                          VEFCT028
      XEMITT(M,J,4)=0.58                                                VEFCT029
      XEMITT(M,J,5)=0.20                                                VEFCT030
      IF (J.LT.6) GO TO 10                                              VEFCT031
      XEMITT(M,6,4)=1.2                                                 VEFCT032
      XEMITT(M,6,5)=2.4                                                 VEFCT033
   10 CONTINUE                                                          VEFCT034
      IF (M.EQ.1) GO TO 15                                              VEFCT035
C                                                                       VEFCT036
C     FIND COLD START EMISSION FACTORS                                  VEFCT037
C                                                                       VEFCT038
      M=1                                                               VEFCT039
      CLDSTR=1                                                          VEFCT040
      CALL TFENTR (CLDSTR,EXEM,CSCO,CSHC,EVAP,CRANK,IAREA,IHDV,IAAT,    VEFCT041
     . IYEAR)                                                           VEFCT042
      GO TO 5                                                           VEFCT043
C                                                                       VEFCT044
   15 SOAK=EVAP(1,3)                                                    VEFCT045
      BRTH=EVAP(1,1)                                                    VEFCT046
      DO 20 J=1,6                                                       VEFCT047
      YCLDST(J,1)=CSCO(J)                                               VEFCT048
   20 YCLDST(J,2)=CSHC(J)                                               VEFCT049
      RETURN                                                            VEFCT050
      END                                                               VEFCT051
```

SUBROUTINE VEHIC

Purpose:

1. To input basic vehicle data.
2. To calculate speed corrections and annual emissions from vehicles.

Input:

Basic vehicle input data.

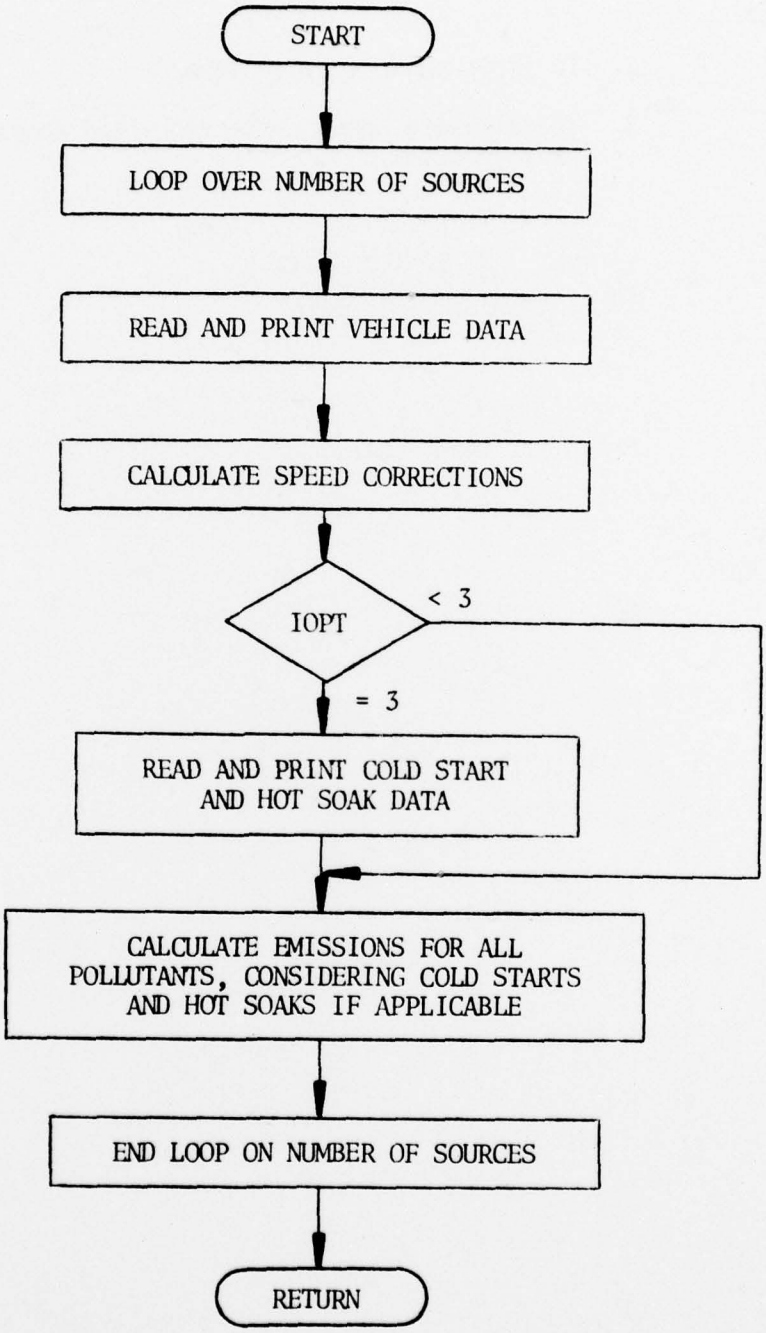
Output:

Print all input data.

Subroutines Called:

None

SUBROUTINE VEHIC



```
      SUBROUTINE VEHIC(GM,IO,AVH,EMFC,CSEM,I1,I2,SOAK)                  VEHIC000
C                                                                       VEHIC001
C     THIS ROUTINE READS THE AIRBASE VEHICLE DATA AND                   VEHIC002
C     COMPUTES ANNUAL EMISSIONS                                         VEHIC003
C                                                                       VEHIC004
      COMMON /POINTP/ M,NSRCES,NMAX,NMAXE,LSRCES,NTOT                   VEHIC005
      COMMON /TOTS/ TOTEM(20,6),TOTEVP(10)                              VEHIC006
      COMMON /DEFALT/ NPLTS                                             VEHIC007
      DIMENSION AVH(8,150),EMFC(2,6,6),CSEM(6,6),VM(6),SPDC(6),NCDST(6),VEHIC008
     . GM(I1,I2)                                                        VEHIC009
C                                                                       VEHIC010
      PRINT 1                                                           VEHIC011
    1 FORMAT(1H-,61X,13HVEHICLE INPUT/1H0,20X,5HSPEED,6X,               VEHIC012
     . 45HTHOUSANDS OF MILES PER VEHICLE CLASS PER YEAR,5X,             VEHIC013
     . 38HCOLD STARTS PER VEHICLE CLASS PER YEAR,3X, 8HANN. HOT/        VEHIC014
     . 1H ,3X,2HID,5X,6HOPTION,4X,5H(MPH),7X,3H(1),5X,3H(2),5X,3H(3),5X,VEHIC015
     . 3H(4),5X,3H(5),5X,3H(6),6X,3H(1),4X,3H(2),4X,3H(3),4X,3H(4),4X,  VEHIC016
     . 3H(5),4X,3H(6),5X,5HSOAKS)                                       VEHIC017
      DO 10 J=4,NPLTS                                                   VEHIC018
   10 SPDC(J)=1.0                                                       VEHIC019
C                                                                       VEHIC020
      DO 70 N=LSRCES,NSRCES                                             VEHIC021
      DO 20 J=1,3                                                       VEHIC022
   20 SPDC(J)=1.0                                                       VEHIC023
      READ 21,SID,IOPT,SPEED,(VM(J),J=1,6)                              VEHIC024
   21 FORMAT(F4.0,I4,9F8.2)                                             VEHIC025
      PRINT 31,SID,IOPT,SPEED,(VM(J),J=1,6)                             VEHIC026
   31 FORMAT(1H ,F7.0,I6,F12.2,3X,6F8.2)                                VEHIC027
      DO 30 J=1,NMAX                                                    VEHIC028
      IF (SID.EQ.GM(1,J)) GO TO 40                                      VEHIC029
   30 CONTINUE                                                          VEHIC030
      RETURN                                                            VEHIC031
C                                                                       VEHIC032
   40 AVH(1,N)=SID                                                      VEHIC033
      AVH(2,N)=J                                                        VEHIC034
      IF (SPEED.NE.19.6) SPDC(1)=12.5*(SPEED**(-0.845))                 VEHIC035
      IF (SPEED.NE.19.6) SPDC(2)=7.0*(SPEED**(-0.649))                  VEHIC036
      IF (SPEED.NE.19.6) SPDC(3)=1.0+(SPEED-19.6)*0.01262               VEHIC037
      K=IOPT                                                            VEHIC038
      IF (IOPT.NE.3) GO TO 50                                           VEHIC039
      READ 41,SID,(NCDST(J),J=1,6)                                      VEHIC040
   41 FORMAT(F4.0,6I4)                                                  VEHIC041
      PRINT 42,(NCDST(J),J=1,6)                                         VEHIC042
   42 FORMAT(1H+,T78,6I7)                                               VEHIC043
      IF (SID.NE.AVH(1,N)) GO TO 9000                                   VEHIC044
      READ 41,SID,NHSOAK                                                VEHIC045
      IF (SID.NE.AVH(1,N)) GO TO 9000                                   VEHIC046
      PRINT 43,NHSOAK                                                   VEHIC047
   43 FORMAT(1H+,T122,I7)                                               VEHIC048
      K=1                                                               VEHIC049
C                                                                       VEHIC050
   50 CONTINUE                                                          VEHIC051
      IF(IOPT.EQ.3) GO TO 51                                            VEHIC052
      DO 150 IKL=1,6                                                    VEHIC053
  150 NCDST(IKL)=0                                                      VEHIC054
      NHSOAK=0                                                          VEHIC055
      PRINT 42, (NCDST(J),J=1,6)                                        VEHIC056
      PRINT 43, NHSOAK                                                  VEHIC057
   51 CONTINUE                                                          VEHIC058
      DO 70 I=1,NPLTS                                                   VEHIC059
      AVH(2+I,N)=0.0                                                    VEHIC060
      A=0.                                                              VEHIC061
```

```
      DO 60 J=1,6                                                          VEHIC062
      A=SPDC(I)*VM(J)*EMFC(K,J,I)+A                                        VEHIC063
      IF (IOPT.EQ.3.AND.J.NF.1)   A=A+CSEM(J,I)*NCDST(J)                   VEHIC064
      IF (IOPT.EQ.3.AND.J.EQ.1)   A=A+CSEM(J,I)*NCDST(J)+SOAK*NHSOAK       VEHIC065
   60 CONTINUE                                                             VEHIC066
      AVH(2+I,N)=AVH(2+I,N)+A*1000.                                        VEHIC067
      TOTEM(IO+M,I)=TOTEM(IO+M,I)+AVH(I+2,N)                               VEHIC068
   70 CONTINUE                                                             VEHIC069
      RETURN                                                               VEHIC070
C                                                                          VEHIC071
 9000 PRINT 9001, AVH(1,N),SID                                             VEHIC072
 9001 FORMAT(20H0VEHICLE SOURCE ID =,F6.0,19H, CONTINUATION ID =,F6.3)     VEHIC073
      STOP                                                                 VEHIC074
      RETURN                                                               VEHIC075
      END                                                                  VEHIC076
```

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1. Menicucci, D.F., "Air Quality Assessment Model (AQAM) Data Reduction and Operations Guide," Air Force Weapons Laboratory report number AFWL-75-307, October 1976.

2. Rote, Donald M., and L.E. Wangen, "A Generalized Air Quality Assessment Model for Air Force Operations - Technical Report," Air Force Weapons Laboratory report number AFWL-TR-74-304, February 1975.

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