Chapter 7   ***Trouble Shooting***

The NONROAD model does extensive validation of input data. Data initialization includes checking that each required input packet exists in the input option file and that the specified data values are within acceptable ranges. If the model detects unreasonable data, an error message is written and the program terminates. Specified data files must exist and include the necessary data elements. The messages written by the model are generally sufficient in determining where a problem exist.

MESSAGE FILE

The output message file should be reviewed after each model run. An example of an output message file is shown in Figure 7-1.

This file includes the NONROAD model title and version number, date and time of execution, and a summary of each packet in the input option file. In addition, warning messages may be seen informing you of <u>possible</u> problems. Consider the message, "WARNING: Cannot find CRANKCASE filename in /DETERIORATE FILES/ packet of options file. All factors for this species will be set to 1.0 (no deterioration)." You may determine that this is acceptable to you for your application. However, you may also want to review your data to determine if you can provide additional information.

In general, warning messages allow the model to make generalizations and provide a default action if a data item is not found; this includes skipping some records. It is important to note that although default action can occur it is meant to be the exception. Therefore, if the model issues the same warning message more than 50 times it will terminate processing. This ensures that lengthy runs will not process invalid data (remember, defaults are the exception).

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EPA`s NONROAD Emissions Model, Core Model Ver. 2.0, June 1998    Thu May 28 13:18:43 1998

                *** Output Files ***

        Output data file    :../outputs/50state.out

                *** Input Files ***

        Options file        :tst.opt
        Allocation XREF file:../data11/allocate/allocate.xrf
        Activity file       :../data11/activity/activity.dat
        State/Regions file  :../data11/season/season.dat
        Seasonality file    :../data11/season/season.dat
        Tech fractions file :../data11/tech/tech.dat

                *** Population Files ***

                    :../data/pop/us.pop

WARNING:  Cannot find CRANKCASE filename in /DETERIORATE FILES/ packet of options file.
          All factors for this species will be set to 1.0 (no deterioration).

WARNING:  Cannot find DIURNAL filename in /DETERIORATE FILES/ packet of options file.
          All factors for this species will be set to 1.0 (no deterioration).

WARNING:  Cannot find REFUELING filename in /DETERIORATE FILES/ packet of options file.
          All factors for this species will be set to 1.0 (no deterioration).

WARNING:  Cannot find SPILLAGE filename in /DETERIORATE FILES/ packet of options file.
          All factors for this species will be set to 1.0 (no deterioration).

                *** Emission Factors Files ***

        BSFC file           :../data11/emsfac/bsfc.emf
        THC EXHAUST file    :../data11/emsfac/exhthc.emf
        CO EXHAUST file     :../data11/emsfac/exhco.emf
        NOX EXHAUST file    :../data11/emsfac/exhnox.emf
        CO2 EXHAUST file    : Not Supplied.
        SOX EXHAUST file    : Not Supplied.
        PM EXHAUST file     :../data11/emsfac/exhpm.emf
        CRANKCASE file      :../data11/emsfac/crank.emf
        HOT SOAKS file      : Not Supplied.
        DIURNAL file        :../data11/emsfac/diurnal.emf
        REFUELING file      :../data11/emsfac/displace.emf
        SPILLAGE file       :../data11/emsfac/spillage.emf
        RUNINGLOSS file     : Not Supplied.
        RESTNGLOSS file     : Not Supplied.
```

Figure 7-1: Output message file.

```
        *** Deterioration Factors Files ***

    THC EXHAUST file    :../data11/detfac/exhthc.det
    CO EXHAUST file     :../data11/detfac/exhco.det
    NOX EXHAUST file    :../data11/detfac/exhnox.det
    CO2 EXHAUST file    : Not Supplied.
    SOX EXHAUST file    : Not Supplied.
    PM EXHAUST file     :../data11/detfac/exhpm.det
    CRANKCASE file      : Not Supplied.
    HOT SOAKS file      : Not Supplied.
    DIURNAL file        : Not Supplied.
    REFUELING file      : Not Supplied.
    SPILLAGE file       : Not Supplied.
    RUNINGLOSS file     : Not Supplied.
    RESTNGLOSS file     : Not Supplied.


            *** Spatial Allocation Files ***

                    :../data11/allocate/us_pop.alo
                    :../data11/allocate/us_adelr.alo
                    :../data11/allocate/us_farms.alo
                    :../data11/allocate/us_loggn.alo
                    :../data11/allocate/us_const.alo
                    :../data11/allocate/us_holsl.alo
                    :../data11/allocate/us_lscap.alo
                    :../data11/allocate/us_house.alo
                    :../data11/allocate/us_mnfg.alo
                    :../data11/allocate/us_water.alo


            *** Growth Indicator Files ***

                    :../data11/growth/nation.grw

            *** Scenario Specific Parameters ***

    First Title line    :Check of hand calculations
    Second Title line   :BASE YEAR 1997
    Fuel RVP (psi)      :  9.00
    Fuel Oxygen weight %:  0.00
    Gasoline Sulfur %   :  0.03
    Diesel Sulfur %     :  0.33
    LPG/CNG Sulfur %    :  0.00
    Minimum Temperature : 60.00
    Maximum Temperature : 84.00
    Average Ambient Temp: 75.00
    Altitude of region  :LOW
```

Figure 7-1: Continued.

```
              *** Period Parameters ***

     Year of Inventory    :1995
     Inventory for         :ANNUAL period
     Emissions summed for:PERIOD TOTAL

              *** Region of Interest ***

     Region level          : State-level estimates
     States of Interest   :All 50 states

              *** Equipment Types ***

     All equipment types.

 WARNING:  Could not find any technology fractions for equipment:
          SCC code           Average HP
          2267006025            13.5
          Skipping...

 WARNING:  Could not find any technology fractions for equipment:
          SCC code           Average HP
          2268006005            13.5
          Skipping...

   **** Number of Population Records Found ****

              Entire U.S. National Rec: 1820
```

Figure 7-1: Concluded.

DATA FILE RELATIONSHIPS

One of the difficulties a novice user may have is understanding the relationships between different input files. The following is an example of possible problems as a result of providing some new data but not enough.

Allocation Files

The allocation cross reference file specifies for each source category which indicator and corresponding coefficient should be used to allocate equipment population. If you specify a new indicator code then you must also provide the allocation data for the new code. For example, changing 2260008000, airport service equipment, from POP (human population) to AIR means you must provide an allocation file for the AIR indicator. In addition, you must remember to update the options file packet /ALLOC FILES/ and include any new files required.

Population Data

The equipment population data can contain records of any or mixed region levels and the model will use the most detailed provided. If you want to estimate county total emissions, then you can either provide state level equipment populations and state/county allocation data or you can provide county equipment populations. If equipment population is provided at the level for which emissions are being reported then, no allocation is needed. If equipment populations are provided at a coarser level of detail than the level you are estimating, then allocation data must also be provided.

In addition to defining equipment populations and corresponding allocation data you must also include the data file names in the /POP FILES/ and /ALLOC FILES/ packets of the input option file.