2008 National Emissions Inventory

Emissions Inventory System
Implementation Plan

Section 9
Reporting Instructions for
Onroad and Nonroad Activity Data

Final

December 18, 2008

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Section 9
Reporting Instructions for Onroad and Nonroad Activity Data

This section provides detailed instructions for reporting to the EIS only onroad and nonroad activity data from the National Mobile Inventory Mode (NMIM) County Database (NCD).

Onroad, or highway, sources include vehicles used on roads for transportation of passengers or freight. Nonroad sources include vehicles, engines, and equipment used off highways for construction, agriculture, transportation, recreation, and many other purposes. These were previously referred to collectively, along with other sources, as mobile sources.

EPA prefers to receive activity data instead of emissions as they allow for more in-depth analysis and consistent, integrated calculated emissions in the NEI. If you cannot report activity data, see Section 10, "Reporting Instructions for Onroad and Nonroad Emissions," to report emissions. If you do not report either activity or emissions for onroad or nonroad, EPA will generate emissions estimates using national defaults.

EPA will employ the updated NCD data to calculate onroad and nonroad emissions. NMIM is the model EPA currently is using to estimate onroad and nonroad emissions.

EPA will populate the NCD with default County-level activity data, which S/L/Ts are to review and update through the EIS. This section will guide you in performing this review and update. In addition, this section details an inclusive list of quality assurance checks that the EIS will perform on your submitted activity data in preparation for using them in the NMIM model.

Your submitted County data will replace EPA's default data and update the NCD. Once your submission has been successfully processed by the EIS, the updated NCD data reflecting your submission will be available for review and download from the EIS.

Tribal Agency reporting. For the 2008 cycle, the NCD does not have the capability to accept Tribal activity data. However, Tribes are encouraged to submit their onroad and nonroad emissions data in the 2008 cycle.

Open Dates for Submitting Activity and Emissions Data. The box below shows key dates related to onroad/nonroad activity and emissions submissions for the 2008 NEI. For more information, see Section 1, "Introduction to the NEI and EIS."

Open Dates for Submitting/Editing 2008 NEI Activity and Emissions Data	
EPA loads NCD activity inputs:	April 1 - July 1, 2009
EPA uses submitted NCD activity to run NMIM model once a month:	July 1, 2009 - June 30, 2010
Users submit activity and emissions data:	July 1, 2009 - June 1, 2010
Stakeholders review and comment on draft NEI:	July 19 - October 30, 2010

Explanations of key terms for this section are in the box below. Additional terms and acronyms may be found in Appendix 1, "EIS Glossary."

Key Terms

ASCII: *The American Standard Code for Information Interchange. A standard text file format that contains alphanumeric characters. Activity/Input Data are reported in this format.*

Activity: *A quantifiable action or function of an emissions process, whose magnitude is used to calculate emissions for the process. Replaces the narrower term "throughput" used in NIF.*

Data category: *A group of data that share similar EIS reporting requirements. The EIS data categories are: Facility Inventory, Point, Nonpoint, Onroad and Nonroad, and Event.*

Data type: *The form with which a data element must be compliant in order to be stored properly in the EIS, such as integer, decimal, or character.*

NCD dataset: *The set of ten tables and referenced external files that include a State's activity data and that are eligible for modification.*

NIF 3.0: *NEI Input Format Version 3.0. The format used to report NEI data in 2002.*

NMIM County Database (NCD): *NMIM is a consolidated emissions modeling system for EPA's MOBILE6 and NONROAD models.*

Referenced external files: *The ASCII files referenced in the NCD tables. These files must be included in a submission of the NCD dataset.*

VMT: *Vehicle Miles Traveled.*

9.1 Overview of the Submission Process

Figure 9-1 outlines the process steps to review and update NCD onroad and nonroad activity data in the EIS.

Figure 9-1
Submission Process for Onroad and Nonroad NCD Activity Data
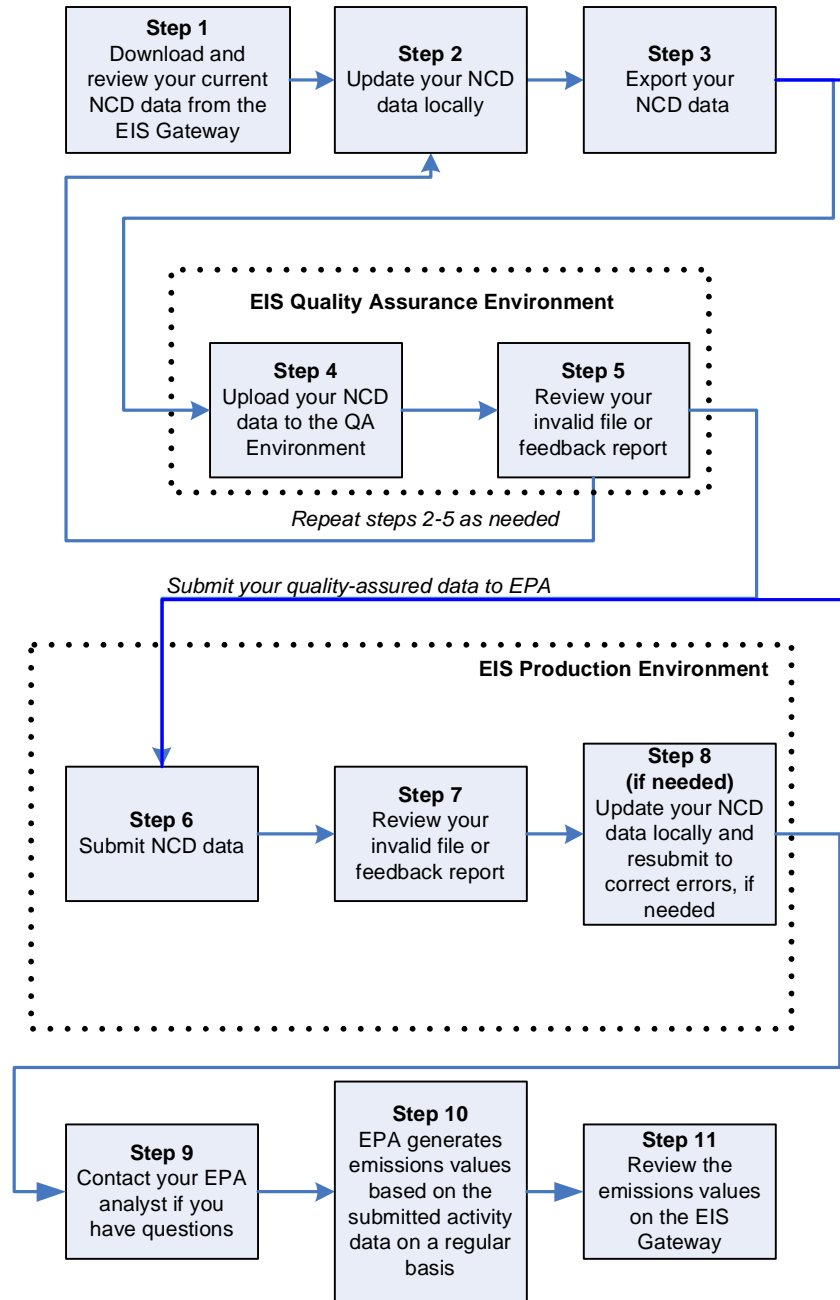
9.1.1 Step 1: Download and Review Current NCD Onroad and Nonroad Activity Data

The tables and referenced external files that constitute the NCD will be available for download from the EIS Gateway. Figure 9-2 shows the list of tables that are bundled in each State's downloadable package. You can query for a State, see the datestamp when files were last updated by the State, and select a download. If you wish to see all national data, the entire NCD

is also available for download. Only data for the current inventory cycle are included in the NCD download. You are encouraged to review these data for accuracy and completeness.

Figure 9-2
Tables in NCD Dataset

Table
baseyearvmt
county
countynrfile
countyvmtmonthallocation
countyyear
countyyearmonth
countyyearmonthhour
diesel
gasoline
naturalgas
state

You may also wish to update the activity data in your local system with these downloaded data. The tables are accessible by querying for one or more States. The downloaded report will include the date in which the NCD was last updated and the data source (EPA default or State supplied). While you will be permitted to download any State's data, you may download only one State's zipped NCD dataset at a time.

9.1.2 Step 2: Update Your NCD Data Locally

As you review and update your data, please note the following guiding principles and concepts:

Scope of NCD onroad and nonroad activities. EPA will make available the default activity data for the current inventory year. The NCD tables and files which you should review and update as necessary are listed in Sections 9.3 and 9.4.

You should not include the following emissions sources when reporting onroad and nonroad activity data:

- **Point sources.** See Section 7, "Reporting Instructions for Point Emissions."

- **Nonpoint sources.** See Section 8, "Reporting Instructions for Nonpoint Emissions."

- **Onroad and nonroad emissions.** To report emissions for onroad and nonroad sources, see Section 10, "Reporting Instructions for Onroad and Nonroad Emissions."

- **Airports.** No airport activities or emissions should be reported in onroad or nonroad activity data. See Section 6, "Reporting Instructions for Facility Inventory," Section 7, "Reporting Instruction for Point Emissions," and Section 12, "Reporting Instructions for Airports, Locomotives, and Commercial Marine Vessels." Refer to these sections to determine the correct reporting category for each airport process. Ground support equipment should be reported with airport emissions. These data will not be accepted in onroad or nonroad submissions and will not be automatically apportioned to airports. See Section 12.

- **Locomotives.** See Section 12, "Reporting Instructions for Airports, Locomotives, and Commercial Marine Vessels."

- **Commercial marine vessels.** See Section 12, "Reporting Instructions for Airports, Locomotives, and Commercial Marine Vessels."

- **Events.** These include wildfires, wildland use fires, prescribed burns, agricultural burns, natural disaster debris burning, and other significant, reportable air emissions that occur in short episodes or that have varying locations. However, for the 2008 inventory cycle, only wildfires, wildland use fires, prescribed burning, agricultural burning, and Native American land use will be accepted as Events. To report these emissions, see Section 11, "Reporting Instructions for Event Emissions."

- **Natural and biogenic emissions.** EPA is responsible for calculating all natural and biogenic emissions to provide consistency. EIS does not support the reporting by S/L/Ts of biogenic emissions.

Suggested process. The suggested process for updating your NCD dataset is to download the default data from the EIS Gateway, load the data into your local system, and modify only the files you intend to change while leaving the rest of the files unchanged. When you are ready to submit the files, overwrite only the files you modified. Re-submit the NCD dataset including your changes. For instructions on submitting the files, see Section 9.1.3, "Step 3: Export Your NCD Data."

File Formats. The NCD dataset that you downloaded contains the NCD tables in comma separated value (CSV) format and the referenced external files in ASCII format. For more information on the structure of the files see Section 9.4, "NCD-Referenced External Files."

9.1.3 Step 3: Export Your NCD Data

The files that should be submitted to the EIS include the ten tables of the NCD dataset (both the modified and unchanged ones) as well as referenced external files. Zip all these data into a package named after your FIPSStateID or your FIPSCountyID, as shown in Figure 9-3. You are also strongly encouraged to include a single text file that includes a summary of revisions made to your activity data. This is used for tracking purposes only. Name this text file *FIPSCountyID.txt* or *FIPSStateID.txt* and place in the top level of the zipped folder. These files should be zipped and attached to the submission file as a binary object file. See Section 5,

"Submitting XML Data to the EIS," for instructions on reporting attached files in your XML document.

Figure 9-3
NCD Zipped Files

```
┌─────────────────────────┐
│   NCD Activity Data     │
│      12000.zip          │
└───────────┬─────────────┘
            │
            │    ┌──────────────────────────────────┐
            ├────│        External Files            │
            │    │ (Onroad and nonroad referenced   │
            │    │        external files)           │
            │    └──────────────────────────────────┘
            │
            │    ┌──────────────────────────────────┐
            └────│          Tables                  │
                 │  (CSV exports of the NCD Tables) │
                 └──────────────────────────────────┘
```
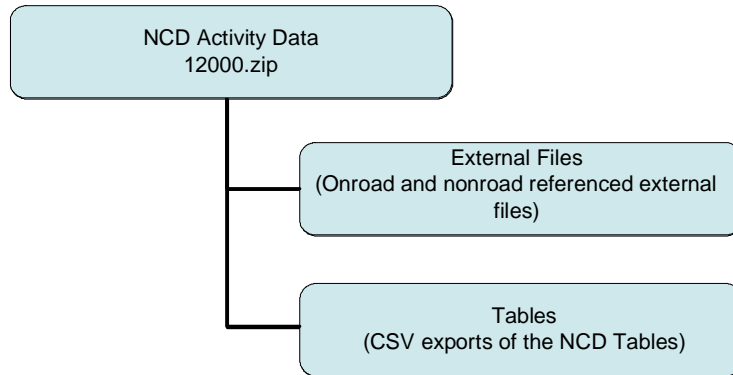
If you have used a MySQL database to update your NCD, see Appendix 9, "Preparing NMIM County Database for Export" for more information.

9.1.4 Step 4: Upload Your NCD Data to the Quality Assurance (QA) Environment

To check the data you have prepared and formatted for submission to the EIS, you are strongly encouraged to use the EIS Quality Assurance (QA) Environment. Only the NCD tables and completeness of the submission will be checked. Any referenced external files provided will not be inspected for format or values within the QA Environment. The file that you submit to the QA Environment will be stored and tracked only long enough to be evaluated and for you to receive feedback on the results. There will be no permanent record or log of these uploads or the results of the checks. You are encouraged to use this environment as many times as necessary to help you ensure the submission of high-quality data. For more information, see Section 1, "Introduction to the NEI and EIS."

The QA Environment does not allow you to edit your data or to "promote" your data to the EIS Production Environment. You must make changes to your data in your local system or files and use EPA's Central Data Exchange (CDX) node to submit these data to the EIS.

> **Limited QA Checks**
>
> QA checks will only be applied to the NCD tables and completeness of submission. The format and values in the referenced external files will not be checked.

To use the QA Environment, you must have an EIS user account and your agency must have assigned responsibility for the data contained in your submission. For more information on requesting an EIS account and accessing the EIS Gateway, see the section of the EIS User's manual entitled "How Do I Request Access to the EIS Gateway."

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9.1.5 Step 5: Review Your Feedback Report from the QA Environment

The checks performed on your data in the QA Environment are the same checks that will be performed on your data submitted to the Production Environment.

Quality assurance checks and feedback. The quality assurance checks for NCD activity data can be initiated at two points during the process:

(1) In the QA Environment, as a preliminary quality assurance step prior to making a submission to the Production Environment. The QA Environment will apply checks to your NCD tables and verify the completeness of the submission to ensure the integrity of the files. Most important, this is the stage of quality assurance that will tell you in advance if your submission will be rejected if they are submitted to the Production Environment. It will provide you an efficient way to improve your data outside of the submission process itself.

EPA strongly encourages you to use this environment as your primary quality assurance practice.

(2) In the Production Environment, as part of the submission. The same checks as those described above will be run on your data during the submission process. The results of these checks will be logged in the EIS.

Rejecting the data file. The activity data submitted will be used by NMIM to generate emissions. It relies on inputs of quality data. Therefore, the NCD tables must pass all the checks listed in Section 9.4 in order to be processed by the model. **The rejection of any activity data will cause the rejection of the entire submission**. All rejected data will be clearly identified in the feedback report. The referenced external files must be present and follow the naming convention but will not have the criteria from 9.4 checked in the EIS.

Even though the contents of the referenced external files are not checked by the EIS, they will be checked outside of the EIS and are subject to the checks defined in Section 9.4. Your submission is subject to rejection if your referenced external files do not meet these check specifications.

Interpreting and responding to quality assurance results. The submitter is responsible for ensuring the quality of data. It is expected that achieving this quality will be an iterative process. The feedback reports, this documentation, and the detailed information about processes, pollutants, and methodologies are the resources EPA has provided to assist you. You are encouraged to take advantage of these resources and to make changes in your local information system and procedures that will adhere to the standards contained in these materials.

The QA Environment is the first line of quality assurance for the EIS. It is provided to allow checks to be run on all data prior to making a submission to the Production Environment. Information about the specific checks performed on onroad and nonroad activity data submissions are found later in this section , as well as in Appendix 5, "Checks and Analysis."

For more specific information on the QA approach within the EIS, see Section 1, "Introduction to the NEI and EIS."

9.1.6 Step 6: Submitting Your NCD Activity Data

Methods of submission. EPA expects that you will submit your onroad and nonroad activity data using the EIS CERS XML format and the batch submission process. You will do this by reporting the EIS CERS Root and Location components, along with all the external files and data tables. All the files (XML file, external files, data tables) are then zipped into a singles file and submitted to the EIS. For more information on batch submissions, see Section 5, "Submitting XML Data to the EIS."

Official Submissions

Your "official submission" is comprised of all the activity data submitted through batch submission or provided online in the EIS when the submission window for the inventory cycle closes.

Until the submission window closes, you may continually update your data in the Production Environment without notifying EPA.

County vs. State submissions. You are encouraged to submit all activity data updates in a single submission. While it is possible to submit updates for a single County, you may not submit for a group of Counties. That is, a submission may be for only a single County or the entire State. Since NMIM is not set up to accommodate multiple County or Tribal boundaries, no Tribal or multiple County data can be accepted at this time. Tribes are encouraged to submit emissions data (see Section 10, "Reporting Instructions for Onroad and Nonroad Emissions"). EIS will bundle County data based on agency authorization.

If you modify any data in any file or table, the entire NCD dataset plus referenced external files must be submitted, including those tables and files that were not changed.

9.1.7 Step 7: Review Your Feedback Report from the Production Environment

The checks performed on your data in the Production Environment are the same that were run in the QA Environment. For more details, see Step 5.

9.1.8 Step 8: Correcting Any Errors in Previously Submitted Data

You may correct errors in previously submitted data during the submission period for an inventory cycle by updating your local copy of the NCD and resubmitting the entire set of NCD tables and files.

9.1.9 Step 9: Communicate with EPA Analysts

Throughout this process you are encouraged to contact an EPA analyst by submitting a support request through the EIS Gateway. This process is intended to ensure that all questions, issues, and problems are tracked and responded to on a timely basis. For more information see the section of the EIS Users Manual entitled "How Do I Submit a Support Request?"

9.1.10 Step 10: EPA Generates Emissions Values

EPA will generate emissions estimates based on the updated activity data on a regular schedule. For more information on, see Section 1, "Introduction to the NEI and EIS."

9.1.11 Step 11: Review the Generated Emissions Values

After EPA has generated emissions estimates based on the updated activity data, you will be notified when your NCD revisions are available on the EIS Gateway for review. If you want to revise these values, you must update and resubmit your activity data for reprocessing by EPA. The EIS copy of the NCD will incorporate your revised updates and EPA will generate new emission estimates using NMIM. You will receive a feedback report of the results of these generated emissions.

9.2 User Roles and Responsibilities

The following is a summary of S/L/T submitter and EPA roles and responsibilities during the pre-submission and submission periods for onroad and nonroad activity data:

S/L/T Submitter

- Review the default activity data through the EIS Gateway and make changes as necessary.

- Submit onroad and nonroad activity data for all onroad and nonroad sources and activities for the inventory year *before the close of the submission period*.

- Use the QA Environment to check activity data prior to submission to the Production Environment.

- Review onroad and nonroad emissions data generated from the updated activity data submitted to the EIS.

- Provide corrections to NCD data.

EPA Staff

- Publish reporting instructions and code lists in advance of the inventory submission period.

- Provide S/L/T submitters access to the EIS and to current NCD.

- Provide support to S/L/Ts submitters to assist with inventory preparation, quality assurance, and submission.

- Generate emission estimates based on the updated activity data provided by S/L/T submitters.

- Provide the default values found in the NCD that States may update in an ASCII format suitable for editing and submittal.

9.3 NMIM County Database (NCD) Tables

Onroad and nonroad activity data that you intend to submit should be formatted as NCD files and tables in comma separated value (CSV) format. If any file is invalid or if any table's format is incorrect, the entire submission will be rejected.

The following figures detail which records may be appended or edited in the NCD MySQL tables. Including additional records in a table which can only be edited will not be accepted and will cause the entire table to be rejected. For each table, there is an explanatory figure with the following columns:

- **Column 1: Data element.** The name of the data element.

- **Column 2: Description.** Information needed by the inventory developer to understand the content and purpose of the data element.

- **Column 3: Check description.** Information needed by the inventory developer to understand the checks that will be applied to the data element. For more information on quality assurance checks, see Section 1, "Introduction to the NEI and EIS."

- **Column 4: Check type.** Information on the type of check applied to the data element. For more information on quality assurance checks, see Section 1, "Introduction to the NEI and EIS."

- **Column 5: Check level.** The criticality level of the check. "Critical" checks that are failed result in the rejection of the affected data and all dependent data. "Warning" checks produce a warning message to the submitter, but the data are stored. For more information on quality assurance checks, see Section 1, "Introduction to the NEI and EIS."

- **Column 6: Check number.** The number of the check. For a complete listing of all quality assurance checks, see Appendix 5, "Quality Assurance Checks."

    Key to Abbreviations:

    SS   = State FIPS code

    CCC   = County FIPS code

    YY   = The last two digits of the year

9.3.1 BaseYearVMT

The BaseYearVMT table contains information on miles traveled by a class of highway vehicles in a County on Federal Highway Administration's (FHWA) Highway Performance Monitoring System (HPMS) roadway type during a "Base Year." 2008 will be the base year in NMIM. This table is used by MOBILE6. You may append records to the table or edit existing records in this table.

Figure 9-4
BaseYearVMT Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
BaseYear	The base year being modeled.	This element must be reported as an integer.	Format	Critical	617
		Must be 2008.	Range	Critical	619
FIPSCountyId	The County FIPS code.	Must match value in code list.	Code	Critical	620
FIPSStateId	The State FIPS code.	Must match value in code list.	Code	Critical	621
RoadType	Represents one of the twelve HPMS roadway types.	Must match value in HPMSRoadType Table code list	Code	Critical	622
VClass	Represents one of the 28 MOBILE6 vehicle classes.	Must match value in M6VClass Table code list.	Code	Critical	624
VMT	Represents Highway Vehicle Miles Traveled, expressed in annual millions of miles.	This element must be reported as a float or null.	Format	Critical	625
		Must be greater than or equal to zero.	Range	Critical	626

9.3.2 County

The County table contains only the information that varies by the Counties in the United States and U.S. territories. These are identified by Federal Information Processing Standard (FIPS) codes. These code values are not globally unique, so both a FIPS State Code value and a FIPS County Code value are required to identify a County. This table is used by MOBILE6 within NMIM. You may edit existing records in this table.

Figure 9-5
County Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
Altitude	Low-altitude emission factors are based on conditions representative of approximately 500 feet above mean sea level. High-altitude emission factors are based on conditions representative of approximately 5,500 feet above mean sea level.	This element must be reported as a character.	Format	Critical	627
		Allowable values are 'H' or 'L'.	Range	Critical	628
BarometricPressure	Represents the average barometric pressure, expressed in inches of mercury.	This element must be reported as a float.	Format	Critical	629
		Must be between 13 to 33.	Range	Critical	630
HDVStage2Percent	Represents the percent efficiency for the HDGVs in a County Stage II program.	This element must be reported as a float or null.	Format	Critical	631
		Must be between 0 to 100.	Range	Critical	634
LDVStage2Percent	Represents the percent efficiency for the LDGVs and LDGTs in a County Stage II program.	This element must be reported as a float or null.	Format	Critical	635
		Must be between 0 to 100.	Range	Critical	636
NGVFractionFile Name	Base name of a file containing natural gas vehicle fleet fraction information for a County. The actual filename is assumed to have an extension of ".ngv".	Must match a valid State and County FIPS code.	Code	Critical	637
		Included in the submission must be a file with the value as the file name with the extension ".ngv".	Conditional	Critical	638
OzoneSeasonEnd Day	Represents the day of the OzoneSeasonEnd Month when the ozone season ends.	This element must be reported as an integer.	Format	Critical	639
		Must be within 0 to 31.	Range	Critical	640

(cont.)

Figure 9-5
County Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
OzoneSeasonEnd Month	Represents the month of the year when the ozone season ends.	This element must be reported as an integer.	Format	Critical	642
		Must be within 0 to 12.	Range	Critical	643
OzoneSeasonStart Day	Represents the day of the OzoneSeasonStart Month when the ozone season starts.	This element must be reported as an integer.	Format	Critical	644
		Must be within 0 to 31.	Range	Critical	645
OzoneSeasonStart Month	Represents the month of the year when the ozone season starts.	This element must be reported as an integer.	Format	Critical	646
		Must be within 0 to 12.	Range	Critical	647
PhaseInYears	Indicates the number of phase-in years in a County Stage II program.	This element must be reported as an integer or null.	Format	Critical	648
		Must be within 1 to 9.	Range	Critical	650
Stage2StartYear	Represents the last two digits of calendar year in which a Stage II program begins. Years covered include 1989 - 2050.	This element must be reported as an integer or null.	Format	Critical	651
		Must be within 0 to 50 or 89 to 99.	Range	Critical	652

9.3.3 CountyNRFile

The CountyNRFile table stores references to external nonroad files pertaining to a County. These referenced external files are used by NONROAD, within NMIM, for all calendar years. You may append records to the table.

Figure 9-6
CountyNRFile Table

Field Name		Check			
Name	Description	Description	Type	Criticality	Number
FileTypeID	This value is an identification of the file type. In some cases, this file type is expected to be the filename extension.	Must match value in FileType Table code list.	Code	Critical	653
FIPSCountyId	The County FIPS code.	Must match value in code list.	Code	Critical	620
FIPSStateId	The State FIPS code.	Must match value in code list.	Code	Critical	621
CountyNRFile Name	This value is the pointer to the external file. Examples: CountyNRFileName value: 01016 Associated External file: 01016.sea CountyNRFileName value: 22001oil Associated External file: 22001oil.alo	This element must be reported as 8 characters.	Format	Critical	654
		If the FileTypeID is "sea", "pop", or "grw", then this value must be SSCCC, and the external file it points to should be named SSCCCsea, or SSCCCpop, or SSCCCgrw (respectively).	Conditional	Critical	655
		If this is provided, then the associated file must be in the submission.	Conditional	Critical	656

9.3.4 CountyVMTMonthAllocation

The CountyVMTMonthAllocation table contains vehicle miles traveled (VMT) allocation factors for the twelve months of the year and are applicable to a specific County. This table is used by MOBILE6 within NMIM. Counties not listed in this table will use the NMIM default VMT allocation found in the NCD VMTMonthAllocation table. You may append records to the table or edit the AllocationFactor of existing records in this table.

Figure 9-7
CountyVMTMonthAllocation Table

Field Name		Check			
Name	Description	Description	Type	Criticality	Number
FIPSCountyId	The County FIPS code.	Must match value in code list.	Code	Critical	620
FIPSStateId	The State FIPS code.	Must match value in code list.	Code	Critical	621
Month	Represents one of the twelve calendar months of the year.	This element must be reported as an integer.	Format	Critical	657
		Must be within 1 to 12.	Range	Critical	658
RoadType	Represents one of the twelve HPMS roadway types.	Must match value in HPMSRoadType Table code list.	Code	Critical	622
VType	Represents one of the sixteen individual MOBILE6 vehicle types.	Must match value in M6VType Table code list.	Code	Critical	659
AllocFactor	Represents the mileage allocation factor.	This element must be reported as a float.	Format	Critical	660
		Value must be within one to 100.	Range	Critical	661
		The twelve monthly values must sum to 100 for each County-vtype-roadtype combination.	Calculation	Critical	662

9.3.5 CountyYear

The CountyYear table contains the references to the external files used in the NMIM model, which may vary by County and year. This table is used by MOBILE6 and NONROAD within NMIM. You may edit existing records in this table.

**Figure 9-8
CountyYear Table**

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
ATPFileName	The name of file containing MOBILE6 anti-tampering command information.	Value must be "SSCCCYY.atp" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	663
		If a value is reported for this file name, the file must exist in the submission.	Conditional	Critical	678
AvgSpeed DistBaseFile Name	The base name of set of eighteen files containing average vehicle speed distribution information for a year in a County. The actual set of filenames is assumed to have extensions of ".fwX" and ".arX" where "X" is from "1" to "9".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	664
		If a value is reported for this file name, there must be 18 files that match this name with extensions of ".fwX" and ".arX" where "X" is an integer 1 to 9.	Conditional	Critical	679
DieselFractFile Name	The base name of a file containing diesel sales fraction information for a year in a County. The actual filename is assumed to have an extension of ".dsf".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	666
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".dsf".	Conditional	Critical	680
DiurnSoak ActivityFile Name	The base name of a file containing diurnal evaporative soak duration information for a year in a County. The actual filename is assumed to have an extension of ".dsa".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	667
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".dsa".	Conditional	Critical	681

(cont.)

Figure 9-8
CountyYear Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
HotSoakFile Name	The base name of a file containing vehicle hot soak duration information for a year in a County. The actual filename is assumed to have an extension of ".hsa".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	668
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".hsa".	Conditional	Critical	682
IMFileName	The name of file containing MOBILE6 I/M command information. This file contains information about the entire set of I/M programs, not just an individual program.	Value must be "SSCCCYY.imp" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	669
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".imp".	Conditional	Critical	683
MileAccumFile Name	The base name of a file containing annual mileage accumulation information for a year in a County. The actual filename is assumed to have an extension of ".mil".	Value Must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	670
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".mil".	Conditional	Critical	684
NRACTFile Name	The base name of a file containing nonroad equipment activity (hours per year) information for a year in a County. The actual filename is assumed to have an extension of ".act".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	671
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".act".	Conditional	Critical	685

(cont.)

Figure 9-8
CountyYear Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
RegDistFile Name	The base name of a file containing vehicle age distribution information for a year in a County. The actual filename is assumed to have an extension of ".reg".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	672
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".reg".	Conditional	Critical	686
SoakDistFile Name	The base name of a file containing engine start soak time distribution information for a year in a County. The actual filename is assumed to have an extension of ".sok".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	673
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".sok".	Conditional	Critical	687
StartDistFile Name	The base name of a file containing trip temporal allocation information for a year in a County. The actual filename is assumed to have an extension of ".str".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	674
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".str".	Conditional	Critical	688
TripLengthFile Name	The base name of a file containing trip length duration information for a year in a County. The actual filename is assumed to have an extension of ".wdt".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	675
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".wdt".	Conditional	Critical	689

(cont.)

Figure 9-8
CountyYear Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
TripsPerDay FileName	The base name of a file containing daily trip information for a year in a County. The actual filename is assumed to have an extension of "tpd".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	676
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".tpd".	Conditional	Critical	690
VMTByHour FileName	The base name of a file containing the fractions of all vehicle miles traveled by hour of the day. The actual filename is assumed to have an extension of "vmt".	Value must be "SSCCCYY" where SS = State FIPS Code, CCC = County FIPS Code, and YY = Year.	Format	Critical	677
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".vmt".	Conditional	Critical	691

9.3.6 CountyYearMonth

The CountyYearMonth table contains gasoline, diesel, and natural gas fuel identifications for each County for each year and month. This table is used by MOBILE6 and NONROAD within NMIM. You may edit existing records in this table.

Figure 9-9
CountyYearMonth Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
HwyDieselId	Identifies a highway diesel fuel supply having a single set of fuel property values.	Must match a diesel identification value in the diesel table or be null.	Code	Critical	692
HwyGasolineId	Identifies a gasoline fuel supply having a single set of fuel property values.	Must match a gasoline identification value in the gasoline table or be null.	Code	Critical	693
NGId	Identifies a CNG/LPG fuel supply having a single set of fuel property values.	Must match a natural gas identification value in the natural gas table or be null.	Code	Critical	694
NRDieselId	Identifies a non-road diesel fuel supply having a single set of fuel property values.	Must match a diesel identification value in the diesel table or be null.	Code	Critical	698
NRGasolineId	Identifies a gasoline fuel supply having a single set of fuel property values.	Must match a gasoline identification value in the gasoline table or be null.	Code	Critical	695
RMDieselId	Identifies a (recreational) marine diesel fuel supply having a single set of fuel property values.	Must match a diesel identification value in the diesel table or be null.	Code	Critical	696

9.3.7 CountyYearMonthHour

The CountyYearMonthHour table contains a combination of information on a County's historical year, a month of that year and an hour of the day. This table is used by MOBILE6 and NONROAD within NMIM. You can append new records or edit the relative humidity and temperature of an existing record.

The CountyYearMonthHour table contains ambient temperature and humidity averaged for each hour of the day in each month only for calendar year 2008. This table has been populated by EPA from meteorological data.

EPA is confident that in most cases the default temperature and humidity values in the NCD will be the best values to use in the inventory calculations for each County. However, EPA recognizes that there are circumstances under which State and Counties may have better temperature and humidity information. These circumstances include:

- The use of local temperature and humidity measurements that are not provided to the National Climatic Data Center (NCDC).

- Physical characteristics of the County (such as sea shores, valleys, and sudden changes in altitude) which make the centroid interpolation methodology used by EPA inappropriate.

In these cases, temperature and humidity values submitted by a State, Local, or Tribal Agency should meet the following criteria:

- Monthly average temperature and relative humidity values are submitted for each hour of the day for each month of the year for each County. Any change in temperature values will require a corresponding change in relative humidity.

- Dew point values have been obtained from the same data sources as the temperature data submitted.

- Monthly average hourly temperatures and relative humidity values have been calculated using the EPA recommended averaging methods. See "Instructions to State and Local Agencies for Updating the County-Level Database from EPA's National Mobile Inventory Model: Technical Memorandum."

- Documentation of the data sources and methods used to calculate the average temperatures and relative humidity values is provided. Please include this information in the FIPSCountyID.txt or FIPSStateID.txt file with your submission.

Figure 9-10
CountyYearMonthHour Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
FIPSCountyId	The County FIPS code.	Must match value in code list.	Code	Critical	620
FIPSStateId	The State FIPS code.	Must match value in code list.	Code	Critical	621
HourID	Represents one of the 24 hours in a day. 1 = 12:00 midnight through (but not including) 1:00 a.m. 24 = 11:00 p.m. through (but not including) 12:00 midnight.	This element must be reported as an integer.	Format	Critical	709
		Must be within 1 to 24.	Range	Critical	710

(cont.)

Figure 9-10
CountyYearMonthHour Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
Month	Represents one of the twelve calendar months of the year.	This element must be reported as an integer.	Format	Critical	657
		Must be within 1 to 12.	Range	Critical	658
Year	Represents the calendar year.	This element must be reported as an integer.	Format	Critical	711
		Must be 2008.	Range	Critical	712
RelativeHumidity	Historical relative humidity (expressed as a percentage) of this County, for the given month and year.	This element must be reported as a float.	Format	Critical	714
		Must be within 0 to 100.	Range	Critical	715
		If temperature or relative humidity change from the default NCD, both values must change.	Conditional	Critical	718
Temperature	This is an MOBILE6 limitation.	This element must be reported as a float.	Format	Critical	716
		Must be within 0 to 120.	Range	Critical	717
		If temperature or relative humidity change from the default NCD, both values must change.	Conditional	Critical	718

9.3.8 Diesel

The Diesel table contains the identification and the fuel property values for the diesel fuels. This table is used by MOBILE6 and NONROAD within NMIM. All DieselID values must equal the integer value of the sulfur content value for that fuel. As a result, all DieselSulfur values must be rounded to the nearest integer value. You may append records to the table.

Figure 9-11
Diesel Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
DieselId	Identifies a diesel fuel supply having a single set of fuel property values.	This element must be reported as an integer.	Format	Critical	719
		Must be greater than or equal to zero.	Range	Critical	720
DieselSulfur	Identifies the sulfur content of diesel fuel. Expressed in parts per million.	This element must be reported as a float.	Format	Critical	721
		Must be greater than or equal to zero.	Range	Critical	722

9.3.9 Gasoline

The Gasoline table contains the identification and the fuel property values for the gasoline fuels. This table is used by MOBILE6 and NONROAD within NMIM. When adding new gasoline IDs to the table the naming convention is SSNNNN, where SS indicates the State number and NNNN is a unique number chosen by the State. You may append records to the table.

Figure 9-12
Gasoline Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
GasolineId	Identifies a gasoline fuel supply having a single set of fuel property values.	This element must be reported as an integer.	Format	Critical	723
		Must match reference in CountyYearMonth table.	Conditional	Critical	724
AromaticContent	Represents the aromatic content of gasoline, expressed as a percentage.	This element must be reported as a float.	Format	Critical	725
		Must be within 10 to 55.	Range	Critical	726
BenzeneContent	Represents the benzene content of gasoline, expressed as a percentage.	This element must be reported as a float.	Format	Critical	727
		Must be within 0 to 5.	Range	Critical	728
E200	The percentage of vapor of the gasoline fuel at 200 degrees F.	This element must be reported as a float.	Format	Critical	729
		Must be within 30 to 70.	Range	Critical	730

(cont.)

Figure 9-12
Gasoline Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
E300	The percentage of vapor of the gasoline fuel at 300 degrees F.	This element must be reported as a float.	Format	Critical	731
		Must be within 70 to 100.	Range	Critical	732
ETBEMktShare	Represents the market share of the MTBE oxygenate.	This element must be reported as a float.	Format	Critical	733
		Must be within 0 to 1.	Range	Critical	734
		The sum of ETBE Mkt Share, ETOH Mkt Share, MTBE Mkt Share, and TAME Mkt Share must be less than or equal to 1.	Calculation	Critical	760
		If either ETBE Mkt Share or ETBE Volume is zero, the other must also be 0.	Conditional	Critical	761
ETBEVolume	Represents the percent by volume of ethyl tertiary butyl ether (ETBE) in the fuel.	This element must be reported as a float.	Format	Critical	735
		Must be within 0 to 17.6.	Range	Critical	736
		If either ETBE Mkt Share or ETBE Volume is zero, the other must also be 0.	Conditional	Critical	761
ETOHMktShare	Represents the market share of the ETOH oxygenate.	This element must be reported as a float.	Format	Critical	737
		Must be within 0 to 1.	Range	Critical	738
		The sum of ETBE Mkt Share, ETOH Mkt Share, MTBE Mkt Share, and TAME Mkt Share must be less than or equal to 1.	Calculation	Critical	760
		If either ETOH Mkt Share or ETOH Volume is zero, the other must also be 0.	Conditional	Critical	762
ETOHVolume	Represents the percent by volume of ethanol in the fuel.	This element must be reported as a float.	Format	Critical	739
		Must be within 0 to 10.6.	Range	Critical	740
		If either ETOH Mkt Share or ETOH Volume is zero, the other must also be 0.	Conditional	Critical	762

(cont.)

Figure 9-12
Gasoline Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
GasMaxSulfur	Represents the maximum sulfur content of gasoline fuel experienced by highway vehicles. Expressed in parts per million.	This element must be reported as a float.	Format	Critical	741
		Must be greater than or equal to the Gas Sulfur value.	Range	Critical	742
GasSulfur	Represents the sulfur content of gasoline fuel. Expressed in parts per million.	This element must be reported as a float.	Format	Critical	743
		Must be greater than or equal to zero.	Range	Critical	744
MTBEMktShare	Represents the market share of the MTBE oxygenate.	This element must be reported as a float.	Format	Critical	745
		Must be within 0 to 1.	Range	Critical	746
		The sum of ETBE Mkt Share, ETOH Mkt Share, MTBE Mkt Share, and TAME Mkt Share must be less than or equal to 1.	Calculation	Critical	760
		If either MTBE Mkt Share or MTBE Volume is zero, the other must also be 0.	Conditional	Critical	763
MTBEVolume	Represents the percent by volume of methyl tertiary butyl ether (MTBE) in the fuel.	This element must be reported as a float.	Format	Critical	747
		Must be within 0 to 15.1.	Range	Critical	748
		If either MTBE Mkt Share or MTBE Volume is zero, the other must also be 0.	Conditional	Critical	763
OlefinContent	Represents the olefin content of gasoline, expressed as a percentage.	This element must be reported as a float.	Format	Critical	749
		Must be within 0 to 30.	Range	Critical	750
RFG	Indicates whether or not the fuel is RFG.	Must be 'Y' or 'N' single character.	Range	Critical	751
RVP	MOBILE6 will truncate to the range 6.5 - 15.2.	This element must be reported as a float.	Format	Critical	752
		Must be within 6 to 17.	Range	Critical	754

(cont.)

Figure 9-12
Gasoline Table (cont.)

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
RVPOxyWaiver	Indicates whether or not a waiver has been granted to allow alcohol-based oxygenated fuels to exceed the RVP standards by one psi.	Value must be 1.	Range	Critical	755
TAMEMktShare	Represents the market share of the TAME oxygenate.	This element must be reported as a float.	Format	Critical	756
		Must be within 0 to 1.	Range	Critical	757
		The sum of ETBE Mkt Share, ETOH Mkt Share, MTBE Mkt Share, and TAME Mkt Share must be less than or equal to 1.	Calculation	Critical	760
		If either TAME Mkt Share or TAME Volume is zero, the other must also be 0.	Conditional	Critical	764
TAMEVolume	Represents the percent by volume of tertiary amine methyl ether (TAME) in the fuel.	This element must be reported as a float.	Format	Critical	758
		Must be within 0 to 16.5.	Range	Critical	759
		If either TAME Mkt Share or TAME Volume is zero, the other must also be 0.	Conditional	Critical	764

9.3.10 NaturalGas

The NaturalGas table contains the identification and the fuel property values for the natural gasoline, CNG and LPG, fuels. All NGId values must equal the integer value of the sulfur content value for that fuel. As a result, all NGSulfur values must be rounded to the nearest integer value. This table is used by MOBILE6 and NONROAD within NMIM. You may append records to the table.

Figure 9-13
NaturalGas Table

Field Name		Check			
Name	Description	Description	Type	Criticality	Number
NGId	Identifies a CNG/LPG fuel supply having a single set of fuel property values.	This element must be reported as an integer.	Format	Critical	765
		Must match reference in CountyYearMonth table.	Conditional	Critical	766
NGSulfur	Represents the sulfur content of CNG/LPG fuel. Expressed in parts per million.	This element must be reported as a float.	Format	Critical	767
		Must be greater than or equal to zero.	Range	Critical	768
		Must be an integer value equal to the NGId.	Conditional	Critical	769

9.3.11 State

The State table associates State names and abbreviations with State FIPS codes used in other tables. This table is used by MOBILE6 within NMIM. You may edit existing records in this table.

Figure 9-14
State Table

Field Name		Check			
Name	**Description**	**Description**	**Type**	**Criticality**	**Number**
NLEVFileName	The name of a file containing standards phase-in information for a County.	Value must be "SSCCC.nlv" where SS = State FIPS Code and CCC = County FIPS Code.	Format	Critical	770
		If a value if reported for this file name, then the file must exist in the submission.	Conditional	Critical	771
T2CertFileName	The base name of a file containing alternateTier2 exhaust emission standards information for a County. The actual filename is assumed to have an extension of ".t2c".	Value must be "SSCCC" where SS = State FIPS Code and CCC = County FIPS Code.	Format	Critical	772
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".t2c".	Conditional	Critical	773
T2EvapPhaseIn FileName	The base name of a file containing Tier2 evaporative emission standard phase-in information for a County. The actual filename is assumed to have an extension of ".t2v".	Value must be "SSCCC" where SS = State FIPS Code and CCC = County FIPS Code.	Format	Critical	774
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".t2v".	Conditional	Critical	775
T2ExhPhaseInFi leName	The base name of a file containing Tier2 exhaust emission standard phase-in information for a County. The actual filename is assumed to have an extension of ".t2x".	Value must be "SSCCC" where SS = State FIPS Code and CCC = County FIPS Code.	Format	Critical	776
		If a value is reported for this file name, the file must exist in the submission. Extension must be ".t2x".	Conditional	Critical	777

9.4 NCD-Referenced External Files

The files described in this section contain more detailed activity data. These files are referenced from the County, CountyYear, State, and CountyNRFile tables. When updating the

activity data in these referenced external files, you must also update the table with the appropriate file naming convention to point to the file.

The referenced external files are the same files as used by the MOBILE6 and NONROAD models, with the exception of the average speed distribution file, diesel sales fraction file, and anti-tampering programs file. If the referenced external files work correctly in these models or the NMIM model, then they can be provided as is. For more information on MOBILE6, see http://www.epa.gov/otaq/m6.htm. For more information on NONROAD see http://www.epa.gov/omswww/nonrdmdl.htm.

Only the MOBILE6 and NONROAD external file inputs described in this document can be submitted by States. There are additional MOBILE6 external files you would use to run MOBILE6 outside of NMIM. Please do not submit them with your NCD inputs.

Referenced external files should be edited with a text editor that will not format or place tabs in the file. Do not put tab characters in any of the files. These files are available as part of the installation of the NMIM model as well as the installation of the NCD. You can examine the structure of any of these files by opening them in a text editor.

Terminology for NCD External Files

Structure: *The structure of the file describes how the data are grouped within a file.*

Packet: *The packets are a logical group of related data; a file may contain one or more packets. The packets are formatted such that there is an opening tag such as "/POPULATION/" and a closing tag which is always "/END/." The data are inside these opening and closing tags. Each packet declares the format of the data contained within. Packets are primarily used for the NONROAD external files.*

Column: *In an ASCII file, a column is the position of the character in a row. Spaces are given column positions. For the files that are formatted with fixed positions for the data, columns are associated with the data sequence. The first column is the first data in the row. The second column is the second data in the row.*

Row: *In an ASCII file, this is the line in the file. The first row is the first line of the file. The second row is the second line of a file. For files that are formatted with fixed positions for the data, rows are the lines of data. The first row may not be the first row of the file if there are blank lines used as formatting to separate groups of data.*

Group: *A group of data is used to describe a logical set of data, and closely resembles the structure of a table with a fixed number of columns and rows. There may be multiple groups within a file. Groups within a file will follow the same format within the file but will represent different types. The group structure is primarily used in ONROAD external files.*

Fixed Length Location: *The fixed length location is the position of the data and the data are only allowed to be the prescribed fixed length.*

Fixed Position: *The fixed position is the position of the data associated with the data sequence but the data may be allowed to be a range of lengths.*

Abbreviations: *See the Appendices at the end of this section for abbreviations of vehicle classes and types.*

Command name: *A string in MOBILE6 referenced external files which indicates which command would be run for MOBILE6 if using that model.*

9.4.1 NCD-Referenced External File: Seasonality

This file contains the seasonality (temporal adjustment) data. This is used by NONROAD within NMIM.

Figure 9-15
Seasonality: File Description

Structure: There are two required packets: "Monthly" and "Daily." Inclusion of a "Regions" is optional.	
Value	**Field Description**
Values in Monthly packet	Provides the monthly adjustment factors used by the model to calculate the fraction of annual activity occurring in the given month.
Values in Daily Packet	Provides the day-of-the-week adjustments. The first of the two values on each line of this packet is the fraction of weekly activity in a typical (average) weekday day. This represents activity occurring on any single day, Monday - Friday. The second Daily value is the fraction of weekly activity occurring on a typical single weekend day - Saturday or Sunday.

Technical Information. The following information will assist you in creating this file.

- Each packet must end with the /END/tag.

- For Monthly: The sum of the values four to fifteen (inclusively) in each record must be one (1.0 +/- 0.01). Each of the values four to fifteen must be between zero (0.0) and one (1.0).

- For Daily: The sum of five times the fourth value and two times the fifth value in each record must be one (1.0 +/- 0.01).

- Comments are allowed outside the packets.

- Packet structure is as follows:

  /REGIONS/ ...

  /END/

  /MONTHLY/ ...

  /END/

  /DAILY/ ...

  /END/

- File extension is ".sea."

- The tags of "/REGIONS/," "/MONTHLY/," "/DAILY/," and "/END/" are the only tags for this file.

- See Chapter 6 of the NONROAD User Guide for more information.

Figure 9-16
Seasonality: File Format and Checks

Data Type	Columns	Description	Acceptable Values or Restrictions
Character	Columns 1 - 5 in Regions packet	User defined Region code.	If the columns are not blank, the value must match a value in /MONTHLY/.
Character	Columns 6 - 45 in Regions packet	Region Description.	
Character	Columns 46 - 50 in Regions packet	State and Country FIPS code.	Must match FIPS code in the County table.
Character	Columns 1 - 5 in Monthly packet	User defined Region code.	If the columns are not blank, the value must match a value in /Regions/.
Character	Columns 7 - 16 in Monthly packet	SCC code.	Must match a code from SCC code table.
Character	Columns 18 - 52 in Monthly packet	Equipment description.	
Real	Columns 52 - 61 in Monthly packet	Represents activity in January.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 62 - 71 in Monthly packet	Represents activity in February.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 72 - 81 in Monthly packet	Represents activity in March.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 82 - 91 in Monthly packet	Represents activity in April.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 92 - 101 in Monthly packet	Represents activity in May.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 102 - 111 in Monthly packet	Represents activity in June.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 112 - 121 in Monthly packet	Represents activity in July.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 122 - 131 in Monthly packet	Represents activity in August.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 132 - 141 in Monthly packet	Represents activity in September.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 142 - 151 in Monthly packet	Represents activity in October.	Must be a fraction between 0.0 and 1.0 (inclusively).

(cont.)

Figure 9-16
Seasonality: File Format and Checks (cont.)

Data Type	Columns	Description	Acceptable Values or Restrictions
Real	Columns 152 - 161 in Monthly packet	Represents activity in November.	Must be a fraction between 0.0 and 1.0 (inclusively).
Real	Columns 162 - 171 in Monthly packet	Represents activity in December.	Must be a fraction between 0.0 and 1.0 (inclusively).
Character	Columns 1 - 5 in Daily packet	User defined Region code.	If the columns are not blank, the value must match a value in /Regions/.
Character	Columns 7 - 16 in Daily packet	SCC code.	Must match a code from SCC code table.
Character	Columns 18 - 52 in Daily packet	Equipment description.	
Real	Columns 52 - 61 in Monthly packet	Fraction of weekly activity in a typical weekday day.	Must be a fraction between 0.0 and 0.2 (inclusively).
Real	Columns 62 - 71 in Monthly packet	Fraction of weekly activity in a typical weekend day.	Must be a fraction between 0.0 and 0.5 (inclusively).

9.4.2 NCD-Referenced External File: Population

This file contains the equipment population estimates. This is used by NONROAD within NMIM.

Figure 9-17
Population: File Description

Structure: There is one packet: "Population."	
Value	**Description**
Values in Population packet	Provides the SCCs, equipment description, minimum and maximum horsepower, median expected life in hours at full load, flag for scrappage distribution curve, and the population estimate.

Technical Information. The following information will assist you in creating this file.

- Packet starts with /POPULATION/ and ends with /END/.
- File extension is ".pop."
- See Chapter 6 of the NONROAD User Guide for more information.

Figure 9-18
Population: File Format and Checks

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
Integer	Columns 1 - 5	State and County FIPS code.	Must match FIPS code in the County table.
Integer	Columns 7 - 11	Subregion code (used for subcounty estimates).	Must be blank for the NEI.
Integer	Columns 13 - 16	Year of population estimates.	Year between 1970 and 2050 (inclusively).
Integer	Columns 18 - 27	SCC code.	Must match a valid SCC code and be at the equipment power level of detail.
Character	Columns 29 - 68	Equipment description.	Not used.
Real	Columns 70 - 74	Minimum horsepower.	Must match a minimum HP value from Figure A10-5 in Appendix 10. Must be less than Maximum HP.
Real	Columns 76 - 80	Maximum horsepower.	Must match a maximum HP value from Figure A10-5 in Appendix 10.
Real	Columns 82 - 86	Weighted average horsepower.	May be blank. Must be between minimum and maximum. These data are optional.
Integer	Columns 88 - 92	Median expected life in hours of use at full load.	Must be greater than zero.
Character	Columns 93 - 102	Flag for scrappage distribution curve (DEFAULT = standard curve).	Must match a name in the /ALTERNATE SCRAPPAGE/ packet of the Population Growth file or can be "DEFAULT."
Real	Columns 106 - 122	Population estimate.	Must be greater than or equal to zero.

9.4.3 NCD-Referenced External File: Growth

This file contains the growth data used in the NONROAD model. The data included is based on national growth estimates for the various source category groups.

Figure 9-19
Growth: File Description

Structure	
Structure: There are four packets: "Indicators," "Growth," "Scrappage," and "Alternate Scrappage." The inclusion of the "Alternate Scrappage" package is optional.	
Value	**Description**
Values in Indicators packet	Provides a cross reference of equipment code (SCC) to growth indicator. The indicator code is an arbitrary code that can identify an actual predicted value such as human population or employment. The indicator codes may be defined by SCC (or SCC grouping following the hierarchy), power level range, and technology type.
Values in Growth Packet	Contains the estimated values used to compute growth factors for each of the indicator codes. The growth may be defined by State or County through the FIPS code. At least two years need to be provided to indicate a growth rate, but more may be included to provide for a variable rate over certain periods.
Values in Scrappage Packet	Contains the definition of the default scrappage curve used for the model year distribution calculations. All equipment types in which the scrappage flag in the population file is set to DEFAULT will use this scrappage curve. The scrappage curve is the percentage of equipment scrapped as a function of the fraction of useful life consumed.
Values in Alternate Scrappage Packet	This optional packet can be used to define scrappage curves that are used in place of the default scrappage curve for selected equipment types. The packet is similar to the /SCRAPPAGE/ packet in form, but allows for multiple columns for defining up to ten alternate scrappage curves for various equipment groups. The first field is the fraction of useful life consumed.

Technical Information. The following information will assist you in creating this file.

- Indicator codes must be in the list in Figure A10-4 in Appendix 10.

- To apply the /ALTERNATE SCRAPPAGE/ curve to an equipment type, you must first modify the records of the population file for the selected equipment type by changing the scrappage flag from DEFAULT to some user-defined name.

- Rows two through ten may be blank in the Alternate Scrappage packet.

- File extension is ".grw."

- See Chapter 6 of the NONROAD User Guide for more information.

Figure 9-20
Growth: File Format and Checks

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
Integer	Columns 1 - 5 in INDICATOR packet	State and County FIPS code.	Must match FIPS code in the County table.
Character	Columns 7 - 10 in INDICATOR packet	Indicator code.	Must match code in the Growth packet. Codes are listed in Figure A10-4 in Appendix 10.
Integer	Columns 12 - 21 in INDICATOR packet	Equipment code (SCC).	Must match a code from SCC code table.
Real	Columns 23 - 27 in INDICATOR packet	Minimum horsepower of a range.	Must match a minimum HP value from Figure A10-5 in Appendix 10. Must be less than Maximum HP.
Real	Columns 28 - 32 in INDICATOR packet	Maximum horsepower of a range.	Must match a maximum HP value from Figure A10-5 in Appendix 10.
Character	Columns 34 - 43 in INDICATOR packet	Technology type.	May report ALL to indicate applicable to all technology types.
Integer	Columns 1 - 5 in GROWTH packet	State and County FIPS code.	Must match FIPS code in the County table.
Integer	Columns 6 - 10 in GROWTH packet	Subregion code.	Must be blank for NEI. This indicates it applies to all subregions.
Integer	Columns 11 - 15 in GROWTH packet	Year of estimate.	Calendar year between 1970 and 2050 inclusive. Must be a four digit year.
Character	Columns 17 - 20 in GROWTH packet	Indicator code.	Must match code in the Indicators packet.
Real	Columns 26 - 45 in GROWTH packet	Estimated value.	Indicator value must be greater than or equal to zero (0.0).
Real	Columns 1 - 10 in SCRAPPAGE packet	Fraction of median expected life already consumed.	Fraction must be between 0.0 and 2.0 (inclusively).
Real	Columns 11 - 20 in SCRAPPAGE packet	Percentage of equipment scrapped.	Percentage must be between 0.0 and 100.0 (inclusively).
Character	Row 1, Columns 1 - 10 in ALTERNATE SCRAPPAGE packet		Not used.
Character	Row 1, Columns 11 - 20 in ALTERNATE SCRAPPAGE packet	Name used to identify alternate scrappage curve one.	Optional, but needed if fractions are provided in rows 2+.
Character	Row 1, Columns 21 - 30 in ALTERNATE SCRAPPAGE packet	Name used to identify alternate scrappage curve two.	Optional, but needed if fractions are provided in rows 2+.

(cont.)

Figure 9-20
Growth: File Format and Checks (cont.)

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
Character	Row 1, Columns 31 - 40, 41 - 50 until 91 - 100 in ALTERNATE SCRAPPAGE packet	Names used to identify alternate scrappage curves three through ten. Up to ten curves.	Optional, but needed if fractions are provided in rows 2+.
Real	Row 2+, Columns1 - 10 in ALTERNATE SCRAPPAGE packet	Fraction of median expected life already consumed.	Fraction must be between 0.0 and 2.0 (inclusively). Optional, but needed if name is provided in row 1.
Real	Row 2+, Columns 11 - 20 in ALTERNATE SCRAPPAGE packet	Percentage of equipment scrapped in scrappage curve one.	Percentage must be between 0.0 and 100.0 (inclusively). Optional, but needed if name is provided in row 1.
Real	Row 2+, Columns 21 - 30 in ALTERNATE SCRAPPAGE packet	Percentage of equipment scrapped in scrappage curve ten.	Percentage must be between 0.0 and 100.0 (inclusively). Optional, but needed if name is provided in row 1.
Real	Row 2+, Columns 31 - 40, 41 - 50 until 91 - 100 in ALTERNATE SCRAPPAGE packet	Up to ten curves. Percentage of equipment scrappage in scrappage curves three through ten.	Percentage must be between 0.0 and 100.0 (inclusively). Optional, but needed if names are provided in row 1.

9.4.4 NCD-Referenced External File: Allocations

The values in this packet are used to allocate equipment populations from State-level to County-level. It could also be used to allocate national-level equipment populations to State-level. This is used by NONROAD within NMIM.

Figure 9-21
Allocations: File Description

Structure: There is one packet: "Indicator."	
Value	**Description**
Values in Indicator Packet	Contains an indicator code, FIPS code, and indicator value.

Technical Information. The following information will assist you in creating this file.

- Packet starts with /INDICATORS/ and ends with /END/.
- Within a file there is only the "Indicator" packet.
- The file extension is ".alo."
- See Chapter 6 of the NONROAD User Guide for more information.

Figure 9-22
Allocations: File Format and Checks

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
Character	Columns 1 - 3	Indicator code.	See Figure A10-4 in Appendix 10 for list of codes.
Integer	Columns 6 - 10	State and County FIPS code.	Must match FIPS code in the County table.
Integer	Columns 11 - 15	Subregion code.	Must be blank for the NEI.
Integer	Columns 16 - 20	Year of estimate or prediction.	Year between 1996 and 2050 (inclusively).
Integer	Columns 21 - 40	Indicator value.	Value must be greater than or equal to zero (0).
Character	Columns 41 - 45	Blank.	
Character	Columns 46 +	Optional description.	Not used.

(cont.)

Figure 9-22
Allocations: File Format and Checks (cont.)

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
File names			File may have any of the following file names where SSCCC is the FIPS code. SSCCCair Airport equipment allocations. SSCCCpop Human population allocations. SSCCCcom Wholesale establishment allocations. SSCCCcon Construction equipment allocations. SSCCCfrm Farming equipment allocations. SSCCCgc Golf equipment allocations. SSCCChou Household allocations. SSCCClog Logging equipment allocations. SSCCClsc Commercial landscaping equipment allocations. SSCCCmfg Manufacturing equipment allocations. SSCCCmin Coal mining equipment allocations. SSCCCoil Oil production equipment allocations. SSCCCrr Railroad equipment allocations. SSCCCrvp Recreational vehicle park allocations. SSCCCsbc Commercial snowblower allocations. SSCCCsbr Residential snowblower allocations. SSCCCsnm Snowmobile allocations. SSCCCwib Inboard watercraft allocations. SSCCCwob Outboard watercraft allocations.

9.4.5 NCD-Referenced External File: Anti-tampering Programs

This file contains information on the anti-tampering programs (ATPS), which reduce the frequency and emissions impact of emission control system tampering, such as misfueling, removal, or disablement of catalytic converters. Note that this file does not match the inputs used by MOBILE6.

Figure 9-23
Anti-tampering Programs: File Description

Structure: The file format is 28 numeric values in a fixed format.	
Value	**Description**
Values in the Anti-tampering file	Values include calendar year, earliest model year covered by the program, final model year covered, numeric values for coverage of LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B, and Gas Bus, the ATP inspection frequency, program compliance rate, and which inspections the ATP will conduct.

Technical Information. The following information will assist you in creating this file.

- The first line of the file with data must contain the string "ANTI-TAMP PROG" (Not case sensitive).

- The file may contain any number of blank records or records beginning with the "*" character. These are comments and will be ignored.

- The data in this file must follow the exact length and spacing of three sets of two characters with an ignored character after each set, five characters then an ignored character, eight characters then an ignored character, two characters then an ignored character, a floating-point real which is three numeric characters then a decimal point, an ignored character then eight characters. Blank spaces are the recommended ignored character.

- File extension is ".atp."

- Note: this file does not match the inputs used by MOBILE6.

Figure 9-24
Anti-tampering Programs: File Format and Checks

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Integer	Location 1	The calendar year in which the anti-tampering program began or will begin.	Two digit integer value between 0 and 50 or between 60 and 99 which represent the calendar years from 1960 to 2050.
Integer	Location 2	The earliest model year to be covered by the program.	Two digit integer value between 0 and 50 or between 60 and 99 which represent the calendar years from 1960 to 2050.

(cont.)

Figure 9-24
Anti-tampering Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Integer	Location 3	The final model year covered by the program.	Two digit integer value between 0 and 50 or between 60 and 99 which represent the calendar years from 1960 to 2050.
Integer	Locations 4 - 8	Toggle values for coverage of LDGV, LDGT1, LDGT2, LDGT3, LDGT4.	Integer values must be one or two. A value of one indicates that the particular vehicle type is NOT subject to an ATP inspection, and a two indicates that the particular vehicle type is subject to the inspection.
Integer	Locations 9 - 16	Toggle values for coverage of HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B.	Integer values must be one or two. A value of one indicates that the particular vehicle type is NOT subject to an ATP inspection, and a two indicates that the particular vehicle type is subject to the inspection.
Integer	Location 17	Toggle value for GAS BUS.	Integer values must be one or two. A value of one indicates that the particular vehicle type is NOT subject to an ATP inspection, and a two indicates that the particular vehicle type is subject to the inspection.
Integer	Location 18		Must be one.
Integer	Location 19	The ATP inspection frequency.	Integer values must be one or two. A value must be either 'one' (annual frequency) or 'two' (biennial - every other year frequency).
Real	Location 20	The program compliance rate.	This value must be a real number (with a decimal) between zero (0.0) and one hundred (100.0).
Integer	Location 21	Toggle for which inspections the ATP will conduct - Air pump system disablement.	The value must be either an integer value of one (no) or two (yes).
Integer	Location 22	Toggle for which inspections the ATP will conduct - Catalyst removal.	The value must be either an integer value of one (no) or two (yes).
Integer	Location 23	Toggle for which inspections the ATP will conduct - Fuel inlet restrictor disablement (requiring catalyst replacement).	The value must be either an integer value of one (no) or two (yes).

(cont.)

Figure 9-24
Anti-tampering Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Integer	Location 24	Toggle for which inspections the ATP will conduct - Tailpipe lead deposit test (requiring catalyst replacement).	The value must be either an integer value of one (no) or two (yes).
Integer	Location 25	Toggle for which inspections the ATP will conduct - EGR disablement.	The value must be either an integer value of one (no) or two (yes).
Integer	Location 26	Toggle for which inspections the ATP will conduct - Evaporative system disablement.	The value must be either an integer value of one (no) or two (yes).
Integer	Location 27	Toggle for which inspections the ATP will conduct - PCV system disablement.	The value must be either an integer value of one (no) or two (yes).
Integer	Location 28	Toggle for which inspections the ATP will conduct - Missing gas cap.	The value must be either an integer value of one (no) or two (yes).

9.4.6 NCD-Referenced External File: Activity

This file contains the activity data for the core NONROAD model. The activity is defined as how often a piece of equipment is used in a year. This file also contains other information about the equipment, such as average load factor. This is used by NONROAD within NMIM.

Figure 9-25
Activity: File Description

Structure: There is one packet: "Activity."	
Value	**Description**
Values in Activity packet	Packet contains values for Equipment code (SCC), Region code, Minimum horsepower, Maximum horsepower, Load factor, Activity level units (Hrs/Yr), Activity level, Identifier for age adjustment curve.

Technical Information. The following information will assist you in creating this file.

- Packet starts with /ACTIVITY/ and ends with /END/.
- File extension is ".act."
- See Chapter 6 of the NONROAD User Guide for more information.

Figure 9-26
Activity: File Format and Checks

Data Type	Columns	Descriptions	Acceptable Values or Restrictions
Character	Columns 1 - 10	Equipment code (SCC).	Must match a code from SCC code table.
Character	Columns 12 - 51	Equipment description.	Not used.
Character	Columns 52 - 56	Region code.	Must be consistent with code in Seasonal file.
Character	Columns 57 - 76		Not used.
Real	Columns 77 - 81	Minimum horsepower.	Must match a minimum HP value from Figure A10-5 in Appendix 10. Must be less than Maximum HP.
Real	Columns 82 - 86	Maximum horsepower.	Must match a maximum HP value from Figure A10-5 in Appendix 10.
Real	Columns 87 - 91	Load factor.	Must be between 0.0 and 1.0 inclusive.
Real	Columns 92 - 96		Not used.
Character	Columns 97 - 106	Activity level units.	Must be from list. Reported in Hrs/Yr.
Real	Columns 107 - 116	Activity level.	Must be greater than or equal to zero (0.0).
Character	Columns 117 - 126	Identifier for age adjustment curve.	Default = no adjustment.

9.4.7 NCD-Referenced External File: Average Speed Distributions

This file contains the vehicle miles traveled (VMT) by average speed on freeways and arterial roads. There is a value for each hour for each of the fourteen average speed ranges. Note that these files do not match the inputs used by MOBILE6.

Figure 9-27
Average Speed Distributions: File Description

Structure: There are eighteen separate files of identical format. The data are stored in 24 groups of sixteen values. There must be 18 of these files. See Figure A10-5 in Appendix 10 for file descriptions.	
Value	**Description**
Value 1 of each group	Indication of road type.
Value 2 of each group	The earliest model year to be covered by the program.
Values 3 - 16 of each group	Average speed fractions in order corresponding to Figure A10-3 in Appendix 10.

Technical Information. The following information will assist you in creating this file.

- The fourteen average speed fractions (0.0000 through 1.0000) must add up to one.

- The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the values are separated by at least one space. Groups of identical values may be stored in a FORTRAN format (i.e., 25*0.57).

- The first integer value must be one for files with the FW* extensions and must be 2 for files with the AR* extension.

- File extension is ".ar*" or ".fw*" where * is a value from one to nine. See Figure A10-6 in Appendix 10 for file descriptions.

- There must be 18 files. If a single speed distribution applies to all roadways and vehicle classes in the County, that distribution must be repeated in each of the 18 files, using the proper naming convention.

- Note: These files do not match the inputs used by MOBILE6.

Figure 9-28
Average Speed Distributions: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
Integer	First fixed position of each group	Indicator of type.	A value of one (1) represents freeway and a value of two (2) represents arterial.
Integer	Second fixed position of each group	Hour of the day, with 6 a.m. = "one."	Range is 1 through 24. Each value appears only once per file.
Real	Third and all subsequent fixed positions of each group	Average speed fractions in order corresponding to Figure A10-3 in Appendix 10.	Between zero (0.0) and one (1.0). Must be 14 speed fractions.

9.4.8 NCD-Referenced External File: Diesel Fractions

This file contains the locality-specific diesel fractions for fourteen of the sixteen composite vehicle categories by vehicle age. This is used by MOBILE6 within NMIM.

Figure 9-29
Diesel Fractions: File Description

Structure: There are fourteen groups of 25 values. This file does not match the inputs used by MOBILE6.	
Value	**Description**
Groups	The groups represent LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B, and HDBS.
Values in a group	The 25 values represent the 25 age groups.

Technical Information. The following information will assist you in creating this file.

- The numbers may appear in as many rows as desired with as many values in each row as desired, as long as the values appear in the proper sequence.

- No comments may appear between the rows containing diesel fraction values.

- All values must be greater than or equal to 0.0 and less than or equal to 1.0

- File extension is ".dsf."

- Note: This file does not match the inputs used by MOBILE6.

Figure 9-30
Diesel Fractions: File Format and Checks

Data Type	Grouping	Descriptions
	Fourteen Groups of data with 25 numeric values	This group of data has 25 diesel fractions by age in order from the youngest to oldest. The groups are 1972 and before, yearly through 1995, and 1996-current.
Real	Group 1	LDV Light-Duty Vehicles (Passenger Cars).
Real	Group 2	LDT1 Light-Duty Trucks 1 (0 - 6,000 lbs. GVWR, 0 - 3750 lbs. LVW).
Real	Group 3	LDT2 Light-Duty Trucks 2 (0 - 6,000 lbs. GVWR, 3751 - 5750 lbs. LVW).
Real	Group 4	LDT3 Light-Duty Trucks 3 (6,001 - 8,500 lbs. GVWR, 0 - 5750 lbs. ALVW).
Real	Group 5	LDT4 Light-Duty Trucks 4 (6,001 - 8,500 lbs. GVWR, 5,751 lbs., and greater ALVW).
Real	Group 6	HDV2B Class 2b Heavy-Duty Vehicles (8,501 - 10,000 lbs. GVWR).
Real	Group 7	HDV3 Class 3 Heavy-Duty Vehicles (10,001 - 14,000 lbs. GVWR).
Real	Group 8	HDV4 Class 4 Heavy-Duty Vehicles (14,001 - 16,000 lbs. GVWR).
Real	Group 9	HDV5 Class 5 Heavy-Duty Vehicles (16,001 - 19,500 lbs. GVWR).
Real	Group 10	HDV6 Class 6 Heavy-Duty Vehicles (19,501 - 26,000 lbs. GVWR).
Real	Group 11	HDV7 Class 7 Heavy-Duty Vehicles (26,001 - 33,000 lbs. GVWR).
Real	Group 12	HDV8A Class 8a Heavy-Duty Vehicles (33,001 - 60,000 lbs. GVWR).
Real	Group 13	HDV8B Class 8b Heavy-Duty Vehicles (>60,000 lbs. GVWR).
Real	Group 14	HDBS School Buses.

9.4.9 NCD-Referenced External File: Diurnal Soak Activity

This file contains diurnal soak time distribution values for each of eighteen daily time periods. This is used by MOBILE6 within NMIM.

Figure 9-31
Diurnal Soak Activity: File Description

Structure: There are 72 rows of eighteen values.	
Value	**Description**
Rows	The 72 rows represent the 72 MOBILE6 diurnal soak durations.
Columns	The eighteen values in each row represent the time chosen time periods.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records or records beginning with the "*" character. These records are ignored.

- The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the values are separated by at least one space. Groups of identical values may be stored in a FORTRAN format (i.e., 24*0.57).

- File extension is ".dsa."

- See Chapter 2.8.8.7 of the MOBILE6 User Guide for more information.

Figure 9-32
Diurnal Soak Activity: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the content of the Diurnal Soak Activity file.	Must contain the string "DIURN SOAK ACTIVITY." The value is not case sensitive.
Real	Rows	The 72 rows represent the 72 MOBILE6 diurnal soak durations.	All values must be between zero and one.
Real	Columns	The eighteen values in each row represent the time chosen time periods. The first column is 6 a.m.	All values must be between zero and one.

9.4.10 NCD-Referenced External File: Hot Soak Activity

This file contains hot soak duration distribution values for each of fourteen daily time periods used for onroad vehicles. This is used by MOBILE6 within NMIM.

Figure 9-33
Hot Soak Activity: File Description

Structure: There are 60 groups of fourteen values.	
Value	**Description**
Rows	The 60 row represent the time frames from one minute to 60 minutes.
Columns	The fourteen values in each row represent the time periods.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records or records beginning with the "*" character. These records are ignored.

- The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the values are separated by at least one space. Groups of identical values may be stored in a FORTRAN format (i.e., 24*0.57).

- The sum of the values in each group of 14 values must be one (1.0 +/- 0.01).

- File extension is ".hsa."

- See Chapter 2.8.8.6 of the MOBILE6 User Guide for more information.

Figure 9-34
Hot Soak Activity: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the content of the onroad vehicles Hot Soak Activity file.	Must contain the string "HOT SOAK ACTIVITY." The value is not case sensitive.
Real	Rows	The 60 row represent the time frames from one minute to 60 minutes.	All values must be between zero and one.
Real	Columns	The fourteen values in each row represent the time periods.	All values must be between zero and one.

9.4.11 NCD-Referenced External File: Inspection and Maintenance Programs

This file contains the parameters to be used when modeling the impact of the Inspection and Maintenance Programs on calculated emission factors. This is used by MOBILE6 within NMIM.

Figure 9-35
Inspection and Maintenance Programs: File Description

Structure: The file contains one or more rows of data that follow the structure described in the table.	
Value	**Description**
1	One of the valid data commands: I/M COMPLIANCE, I/M CUTPOINTS, I/M EFFECTIVENESS, I/M EXEMPTION AGE, I/M GRACE PERIOD, I/M MODEL YEARS, I/M PROGRAM, I/M STRINGENCY, I/M VEHICLES, I/M WAIVER RATES, NO I/M TTC CREDITS.
2	The I/M program number.
3+	Additional values are based on the valid data commands. See technical section for details.

Technical Information. The following information will assist you in creating this file.

- There is a blank space between the first five fields and the next eight fields and between the eight fields and the final gas bus field for values 3 - 16 in the "I/M VEHICLES" row.

- File extension is ".imp."

- See Chapter 2.8.9.4 of the MOBILE6 User Guide for more information.

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Characters	Columns 1 - 19 of a row	The valid data commands.	Acceptable values are: I/M COMPLIANCE, I/M CUTPOINTS, I/M EFFECTIVENESS, I/M EXEMPTION AGE, I/M GRACE PERIOD, I/M MODEL YEARS, I/M PROGRAM, I/M STRINGENCY, I/M VEHICLES, I/M WAIVER RATES, NO I/M TTC CREDITS.
Characters	Location 1 in a "I/M COMPLIANCE" row		The IM Compliance row is required for exhaust I/M programs. It is highly recommended for evaporative I/M programs.
Integer	Location 2 in a "I/M COMPLIANCE" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.

(cont.)

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Real	Location 3 in a "I/M COMPLIANCE" row	The entered value indicates the percentage of the fleet subject to I/M that actually goes through the entire I/M process to receive a "pass" or waiver. The I/M credit is reduced in proportion to a reduction in the compliance rate.	Must be between zero (0.0) and one hundred (100.0). Must contain a decimal.
Characters	Location 1 in a "I/M CUTPOINTS" row	This command specifies the emission level "cutpoints," which determine whether a vehicle passes or fails an I/M test.	This row is required for IM240 programs. Do not use with other exhaust or evaporative I/M programs.
Integer	Location 2 in a "I/M CUTPOINTS" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Real	Location 3 in a "I/M CUTPOINTS" row	The name of an external file that contains the cutpoint information.	Cutpoint file must accompany submission.
Characters	Location 1 in a "I/M EFFECTIVENESS" row	Effectiveness values for each of the three pollutants. These values will apply to all exhaust I/M programs in that run.	
Real	Location 2 in a "I/M EFFECTIVENESS" row	I/M effectiveness values for HC.	Must be between zero (0.0) and one (1.0). Must contain a decimal.
Real	Location 3 in a "I/M EFFECTIVENESS" row	I/M effectiveness values for CO.	Must be between zero (0.0) and one (1.0). Must contain a decimal.
Real	Location 4 in a "I/M EFFECTIVENESS" row	I/M effectiveness values for NO_x.	Must be between zero (0.0) and one (1.0). Must contain a decimal.
Characters	Location 1 in a "I/M EXEMPTION AGE" row	Specify the age at which vehicles become exempt from the I/M program they wish to model.	
Integer	Location 2 in a "I/M EXEMPTION AGE" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.

(cont.)

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Integer	Location 3 in a "I/M EXEMPTION AGE" row	This is the age at which vehicles are no longer subject to mandatory I/M requirements.	The range is one through 25 (inclusive).
Characters	Location 1 in a "I/M GRACE PERIOD" row	This command allows users to specify the age at which vehicles first become subject to I/M testing (newer vehicles are exempt).	
Integer	Location 2 in a "I/M GRACE PERIOD" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Integer	Location 3 in a "I/M GRACE PERIOD" row	The I/M grace period. This is the age at which vehicles are first subject to mandatory I/M requirements. This input allows users to model programs that exempt the newest vehicles from the requirements.	The range is one through 25 (inclusive).
Characters	Location 1 in a "I/M MODEL YEARS" row	This command allows the user to provide the first and last model years that will be covered by the I/M program to be modeled.	This command is required if the user is modeling exhaust or evaporative I/M. The file must contain an I/M PROGRAM command.
Integer	Location 2 in a "I/M MODEL YEARS" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Integer	Location 3 in a "I/M MODEL YEARS" row	First model year.	Must be four digits. Range is model year 1941 through model year 2050. The first model year of coverage value must precede or be the same as the last model year of coverage.
Integer	Location 4 in a "I/M MODEL YEARS" row	Last model year.	Must be four digits. Range is model year 1941 through model year 2050. The first model year of coverage value must precede or be the same as the last model year of coverage.

(cont.)

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Characters	Location 1 in a "I/M PROGRAM" row	This command directs MOBILE6 to model an I/M program and defines some basic information about the program to be modeled.	Required if the user is modeling exhaust or evaporative I/M.
Integer	Location 2 in a "I/M PROGRAM" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Integer	Location 3 in a "I/M PROGRAM" row	I/M program start year.	Must be four digits. Range is model year 1960 through model year 2051. The I/M program start year must precede or be the same as the I/M program end year.
Integer	Location 4 in a "I/M PROGRAM" row	I/M program end year.	Must be four digits. Range is model year 1960 through model year 2051. The I/M program start year must precede or be the same as the I/M program end year.
Integer	Location 5 in a "I/M PROGRAM" row	The I/M frequency parameter.	Value of one represents an annual program and a value of two represents a biennial program (vehicles are inspected every other year).
Characters	Location 6 in a "I/M PROGRAM" row	The I/M program type.	An entry is required, but has no effect on the exhaust I/M program benefits unless the I/M EFFECTIVENESS command is used. Acceptable values are: TRC for a "Test and Repair (computerized)" program, TRM for a "Test and Repair (manual)" program, T/O for a "Test Only" program. The I/M program type must be TRC or TRM if the I/M EFFECTIVENESS command is to be used.
Characters	Location 7 in a "I/M PROGRAM" row	The I/M inspection test type.	Acceptable values are: IDLE, 2500/IDLE, LOADED/IDLE, IM240, ASM 2525 PHASE-IN, ASM 2525 FINAL, ASM 5015 PHASE-IN, ASM 5015 FINAL, ASM 2525/5015 PHASE-IN, ASM 2525/5015 FINAL, OBD I/M. Evaporative I/M program choices: EVAP OBD, EVAP OBD & GC, FP & GC, GC.

(cont.)

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Characters	Location 1 in a "I/M STRINGENCY" row	This command defines the expected exhaust inspection failure rate for pre-1981 model year vehicles covered by the I/M program.	This command is required if the user is modeling exhaust I/M. Do not use for evaporative I/M programs.
Integer	Location 2 in a "I/M STRINGENCY" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Real	Location 3 in a "I/M STRINGENCY" row	The level of I/M stringency. The I/M stringency rate is the test failure rate expected in pre-1981 model year passenger cars or light trucks expressed as a percentage of tests administered. This does not affect model years greater than 1980.	The range is ten to 50 percent. Must include a decimal.
Characters	Location 1 in a "I/M VEHICLES" row	This command specifies which vehicle types are subject to the specified I/M program.	This command is required when modeling exhaust or evaporative I/M.
Integer	Location 2 in a "I/M VEHICLES" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Integer	Locations three through seven in a "I/M VEHICLES" row	The first five vehicle I/M program coverage fields correspond to the light-duty gasoline vehicle classes beginning in column 24. LDGV, LDGT1, LDGT2, LDGT3, LDGT4.	A value of one indicates that the particular vehicle type is not subject to an I/M inspection, and a two indicates that the particular vehicle type is subject to the inspection.
Integer	Locations 8 - 15 in a "I/M VEHICLES" row	The next eight vehicle I/M program coverage fields correspond to the eight heavy-duty gasoline vehicle classes beginning in column 30. HDGV2B, HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDGV8A, HDGV8B.	A value of one indicates that the particular vehicle type is not subject to an I/M inspection, and a two indicates that the particular vehicle type is subject to the inspection.
Integer	Locations 16 in a "I/M VEHICLES" row	The final vehicle I/M program coverage field corresponds to the gasoline buses in column 39. GAS BUS.	A value of one indicates that the particular vehicle type is not subject to an I/M inspection, and a two indicates that the particular vehicle type is subject to the inspection.

(cont.)

Figure 9-36
Inspection and Maintenance Programs: File Format and Checks (cont.)

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
Characters	Location 1 in a "I/M WAIVER RATES" row	The percentage of vehicles that fail an initial I/M test and do not pass a retest but receive a certificate of compliance.	This command is required for modeling exhaust I/M programs. It is highly recommended for evaporative I/M programs.
Integer	Location 2 in a "I/M WAIVER RATES" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.
Real	Location 3 in a "I/M WAIVER RATES" row	The waiver rate for the pre-1981 model year vehicles.	The range is zero to 50 percent. Must include a decimal.
Real	Location 4 in a "I/M WAIVER RATES" row	The waiver rate for 1981 and later model year vehicles.	The range is zero to 50 percent. Must include a decimal.
Characters	Location 1 in a "NO I/M TTC CREDITS" row	This command eliminates the I/M credit that MOBILE6 assigns to a technician training program.	This command is optional for exhaust I/M programs. It is not used for evaporative I/M programs.
Integer	Location 2 in a "NO I/M TTC CREDITS" row	The I/M program number.	The range is one to seven (inclusive). Must go in numeric order if more than one row occurs in the file.

9.4.12 NCD-Referenced External File: Inspection and Maintenance Cutpoints

The file contains the emission level "cutpoints," which determine whether a vehicle passes or fails an I/M test. This is used by MOBILE6 within NMIM.

Figure 9-37
Inspection and Maintenance Cutpoints: File Description

Structure: The command name must be followed by four groups of 75 values.	
Value	**Description**
First line in the file	Contains the command name.
Group 1	The passenger car and light-duty gas truck 1 vehicle classes (LDGV and LDGT1).
Group 2	The light-duty gas truck 2 and 3 classes (LDGT2 and LDGT3).
Group 3	The light-duty gas truck 4 class (LDGT4).
Group 4	The heavy-duty gas vehicle class (HDGV).
Sub groups	Each group contains three sub groups of 25 values for HC, CO, and NO_x.
Sub group values	The 25 values in each sub group are the vehicle age ranges starting with the youngest.

Technical Information. The following information will assist you in creating this file.

- See Chapter 2.8.9.4.g of the MOBILE6 User Guide for more information.

Figure 9-38
Inspection and Maintenance Cutpoints: File Format and Checks

Data Type	Groupings	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Inspection and Maintenance Cutpoints file.	Must contain the string "I/M CUTPOINTS." The value is not case sensitive.
	Group 1	The passenger car and light-duty gas truck 1 vehicle classes (LDGV and LDGT1).	
	Group 2	The light-duty gas truck 2 and 3 classes (LDGT2 and LDGT3).	
	Group 3	The light-duty gas truck 4 class (LDGT4).	
	Group 4	The heavy-duty gas vehicle class (HDGV).	
String	Sub groups	Each group contains three sub groups of 25 values for HC, CO, and NO_x.	HC values must be between 0.80 and 5.0 grams per mile. CO values must be between 15.0 and 100.0 grams per mile. NO_x values must be between 2.0 and 4.5 grams per mile.
Real	Sub group values	The 25 values in each sub group are the vehicle age ranges starting with the youngest.	

9.4.13 NCD-Referenced External File: Annual Mileage Accumulation Rates

This file contains the annual mileage accumulation rates by vehicle age for any or all of the 28 individual vehicle types. This is used by MOBILE6 within NMIM.

Figure 9-39
Annual Mileage Accumulation Rates: File Description

Value	Description
Structure: The command name must be followed by the data which may be from one to 28 groups of 26 numeric values separated by spaces. This file may contain from 26 to 728 values, in groups of 26 values.	
Value	**Description**
First line in the file	Contains the command name.
Value 1 in a group	One of 28 vehicle types listed in Figure A10-1 in Appendix 10.
Values 2 - 26 in a group	The mileage accumulations for each of the 25 ages.

Technical Information. The following information will assist you in creating this file.

- The numbers may appear in as many rows as desired with as many values in each row as desired, as long as the values appear in the proper sequence.

- No comments may appear between the rows containing diesel fraction values.

- File extension is ".mil."

- See Chapter 2.8.7.3 of the MOBILE6 User Guide for more information.

Figure 9-40
Annual Mileage Accumulation Rates: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the content of the Annual Mileage Accumulation Rates file.	Must contain the string "MILE ACCUM RATE." The value is not case sensitive.
Integer	First fixed position of each group	One of 28 vehicle types listed in Figure A10-1 in Appendix 10.	Each vehicle type may be used no more than once. Not all types need to be included. The range is 1 - 28.
Real	Second and all subsequent positions of each group	Mileage accumulations for each of the 25 ages, starting with the youngest. The unit of measure is as miles divided by 100,000.	Must be between zero (0.0) and one (1.0). Must include a decimal.

9.4.14 NCD-Referenced External File: Natural Gas Vehicles (NGVs) Fraction

This file contains the percent of vehicles in the fleet certified to operate on (not retrofitted for) either compressed or liquefied natural gas. This is used by MOBILE6 within NMIM.

Figure 9-41
Natural Gas Vehicles (NGVs) Fraction: File Description

Structure: The command name must be followed by 28 separate groups of 57 values.	
Value	**Description**
First line in the file	Contains the command name.
Rows	The rows represent the 28 vehicle types.
Columns	The 57 values in a row represent the 57 years being modeled from 1994 to 2050.

Technical Information. The following information will assist you in creating this file.

- Blank rows and comment rows can be added to the external NGV data file prior to the data to the data groups or between data groups, but not inside the individual data groups.

- All 28 rows must be present.

- File extension is ".ngv."

- See Chapter 2.8.7.5 of the MOBILE6 User Guide for more information.

Figure 9-42
Natural Gas Vehicles (NGVs) Fraction: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable values/restrictions
String	Header row of the file	Identifies the content of the Natural Gas Vehicles Fraction file.	Must contain the string "NGV Fraction." The value is not case sensitive.
	Rows 1 - 28	See Figure A10-1 in Appendix 10.	Must be in order by vehicle class number. Each row must contain all 57 values.
Real	Values 1 - 57 in a row	The values for each calendar year for that vehicle type.	No individual value may be less than zero (0.0) or greater than one hundred (100.0). Each value must be separated from the next value by a blank space.

9.4.15 NCD-Referenced External File: Alternative Schedule for 1994 and Later Model Year Light Duty Gasoline Vehicle Standards

This file name contains the optional 1994 and later fleet penetration fractions for light-duty gasoline vehicles under the Tier 1, NLEV (or California LEV 1), and Tier 2 emission standard programs. This is used by MOBILE6 within NMIM.

Figure 9-43
Alternative Schedule for 1994 and Later Model Year Light Duty Gasoline Vehicle Standards: File Description

Structure: The command name must be followed by 5 groups of data. In each group there are 32 rows with eleven values in each row.	
Value	**Description**
First line in the file	Contains the command name.
Groups	The five groups represent LDGV, LDGT1, LDGT2, LDGT3, and LDGT4.
Rows	In each group there is a row for each year 1994 through 2025.
Columns	The phase-in values for Tier0, Intermediate Tier1, Tier1, Tier2, Intermediate TLEV, TLEV, Intermediate LEV I, LEV I, Intermediate ULEV I, ULEV I, ZEV (zero emitting vehicle).

Technical Information. The following information will assist you in creating this file.

- For rows 11 - 32 (inclusive), 43 - 64 (inclusive), 75 - 96 (inclusive), 107 - 128 (inclusive), and 139 - 160 (inclusive) the values in spots one, two, three, five, six, seven, eight, nine, ten in each of these rows must equal zero.

- The file may contain any number of blank rows. These rows are ignored.

- The file may contain any number of rows beginning with the "*" character. These rows are ignored.

- The sum of the eleven values in each row must equal one (1.000).

- Each row is in the FORTRAN Format of F5.3,10(1X, F5.3) which means that the record starts with five characters that represent a floating point number and that three are to the right of the decimal point. Then repeated ten times there is a character that is ignored and another five character floating point number with the last three being after the decimal point.

- File extension is ".nlv."

- See Chapter 2.8.11.4 of the MOBILE6 User Guide for more information.

Figure 9-44
Alterative Schedule for 1994 and Later Model Year Light Duty Gasoline Vehicle
Standards: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Alterative Schedule for 1994 and Later Model Year Light Duty Gasoline Vehicle Standards file.	Must contain the string "94+ LDG IMP." The value is not case sensitive.
	Groups	The five groups represent LDGV, LDGT1, LDGT2, LDGT3, and LDGT4.	
	Rows	In each group there is a row for each year 1994 through 2025.	
Real	First fixed position of each row	Tier0.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Second fixed position of each row	Intermediate Tier1.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Third fixed position of each row	Tier1.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Fourth fixed position of each row	Tier2.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Fifth fixed position of each row	Intermediate TLEV.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Sixth fixed position of each row	TLEV.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Seventh fixed position of each row	Intermediate LEV I.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Eighth fixed position of each row	LEV I.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.

(cont.)

Figure 9-44
Alterative Schedule for 1994 and Later Model Year Light Duty Gasoline Vehicle
Standards: File Format and Checks (cont.)

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
Real	Ninth fixed position of each row	Intermediate ULEV I.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Tenth fixed position of each row	ULEV I.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.
Real	Eleventh fixed position of each row	ZEV (zero emitting vehicle).	All values must be greater than or equal to 0.0 and less than or equal to 1.0.

9.4.16 NCD-Referenced External File: Distribution of Vehicle Registrations

This file contains the vehicle registration distributions by vehicle age for any of the sixteen composite (combined gas and diesel) vehicle types. This is used by MOBILE6 within NMIM.

Figure 9-45
Distribution of Vehicle Registrations: File Description

Structure: The command name must be followed by the data which may be from one to sixteen groups of 25 numeric values separated by spaces.	
Value	**Description**
First line in the file	Contains the command name.
Value 1 in a group	One of sixteen vehicle types listed in Figure A10-2 in Appendix 10.
Values 2 - 26 in a group	The fraction of vehicles of that age in that composite vehicle class in July.

Technical Information. The following information will assist you in creating this file.

- The values may appear in any row with as many characters as needed, as long as 25 values follow the integer value and each value is separated by at least one blank space.

- Comment lines may not appear within the rows containing the 25 values for each vehicle class. However, comments may occur between the data for each vehicle class.

- Each vehicle type may be used no more than once.

- Not all types need to be included.

- File extension is ".reg."

- See Chapter 2.8.7.1 of the MOBILE6 User Guide for more information.

Figure 9-46
Distribution of Vehicle Registrations: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Distribution of Vehicle Registrations file.	Must contain the string "REG DIST." The value is not case sensitive.
Integer	First fixed position of each row.	Represents the vehicle type.	Must be one of sixteen vehicle types from Figure A10-2 in Appendix 10. The range is 1 - 16.
Real	Second and all subsequent fixed positions of each row.	Represents the fraction of vehicles of that age in that composite vehicle class in July for each of the 25 model years starting with the youngest.	Each value must be between 0.000 and 1.000. Must be 25 values. The sum of the 25 values must equal 1.0.

9.4.17 NCD-Referenced External File: Soak Distribution

This file contains vehicle soak duration distributions that override MOBILE6 defaults. The soak time affects exhaust start emissions. This is used by MOBILE6 within NMIM.

Figure 9-47
Soak Distribution: File Description

Structure: The command name must be followed by two groups of 70 rows with 24 values per row.	
Value	**Description**
First line in the file	Contains the command name.
Group 1	This represents weekday values.
Group 2	This represents weekend day values.
Rows	The 70 rows represent the soak time intervals.
Columns	The first column represents 6 a.m. - 6:59 a.m., second column represents 7 a.m. - 7:59 a.m. The rest follow this pattern.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records or records beginning with the "*" character. These records are ignored.

- The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the values are separated by at least one space. Groups of identical values may be stored in a FORTRAN format (i.e., 24*0.57).

- The sum of the 70 first values in each group of 24 values in the first group must be one (1.0 +/- 0.01). Each grouping of 70 values (second, third, fourth, etc. values in each group in each group) must be one (1.0 +/- 0.01).

- File extension is ".sok."

- See Chapter 2.8.8.5 of the MOBILE6 User Guide for more information.

Figure 9-48
Soak Distribution: File Format and Checks

Data Type	Locations	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the onroad vehicle Soak Distribution file.	Must contain the string "SOAK DISTRIBUTION." The value is not case sensitive.
	Groups 1 - 70	These represent the 70 soak time intervals for the weekdays.	
	Groups 71 - 140	These represent the 70 soak time intervals for the weekend days.	
	Columns 1 - 24	The first column represents 6 a.m. - 6:59 a.m., second column represents 7 a.m. - 7:59 a.m. The rest follow this pattern.	
Real	Location 1	(Greater than .01) to 1.0 minutes.	Must be a real with a decimal between 0.0 and 1.0.
Real	Locations 2 - 30	(Greater than N-1) to N minutes where N is the interval number.	Must be a real with a decimal between 0.0 and 1.0.
Real	Locations 31 - 45	(Greater than 2N-32) to (2N-30) minutes where N is the interval number.	Must be a real with a decimal between 0.0 and 1.0.

(cont.)

Figure 9-48
Soak Distribution: File Format and Checks (cont.)

Data Type	Locations	Descriptions	Acceptable Values or Restrictions
Real	Locations 46 - 67	(Greater than 30N-1320) to (30N-1290) minutes where N is the interval number.	Must be a real with a decimal between 0.0 and 1.0.
Real	Location 68	Greater than 720 minutes.	Must be a real with a decimal between 0.0 and 1.0.
Real	Location 69	(Greater than zero) to .1 minutes (Restarts).	Must be a real with a decimal between 0.0 and 1.0.
Real	Location 70	Zero Minutes (Stalls, not used).	Must be a real with a decimal between 0.0 and 1.0.
Real	Locations 71 - 140	Follows the same pattern as 1 - 70.	Must be a real with a decimal between 0.0 and 1.0.

9.4.18 NCD-Referenced External File: Start Distribution

This file contains engine starts by hour of the day. This is used by MOBILE6 within NMIM.

Figure 9-49
Start Distribution: File Description

Structure: The command name must be followed by two groups of 24 values.	
Value	**Description**
First line in the file	Contains the command name.
Group 1	This represents weekday values.
Group 2	This represents weekend day values.
Values in a group	Each value represents the average fraction of all engine starts that occur in each hour of a 24 hour day.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records. These records are ignored.

- The file may contain any number of records beginning with the "*" character. These records are ignored.

- The data in the file must contain 48 values. The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the values are separated by at least one space.

- The sum of the first 24 values must be one (1.0 +/- 0.01). The sum of the second 24 values must also be one (1.0 +/- 0.01).

- File extension is ".str."

- See Chapter 2.8.8.4 of the MOBILE6 User Guide for more information.

Figure 9-50
Start Distribution: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the onroad vehicle Start Distribution file.	Must contain the string "START DIST." The value is not case sensitive.
Real	Fixed positions one to 24.	Each value represents the average fraction of all engine starts that occur in each hour of a 24 hour day for weekdays. The first values represents 6 a.m. - 6:59 a.m., second value represents 7 a.m. - 7:59 a.m. The rest follow this pattern.	Must be a real with a decimal between 0.0 and 1.0.
Real	Fixed positions 25 to 49.	Each value represents the average fraction of all engine starts that occur in each hour of a 24 hour day for weekend days. The first values represents 6 a.m. - 6:59 a.m., second value represents 7 a.m. - 7:59 a.m. The rest follow this pattern.	Must be a real with a decimal between 0.0 and 1.0.

9.4.19 NCD-Referenced External File: Tier2 Certification Standards

This file contains alternative Tier 2 50,000 mile certification standards. This is used by MOBILE6 within NMIM.

Figure 9-51
Tier2 Certification Standards: File Description

Structure: The command name must be followed by 36 rows of five values per row.	
Value	**Description**
First line in the file	Contains the command name.
Rows 1 - 12	Represent the twelve certification bins for HC.
Rows 13 - 24	Represent the twelve certification bins for CO.
Rows 25 - 36	Represent the twelve certification bins for NO_x.
Columns	The columns reflect 5 light-duty vehicle classes (LDV/LDT1/LDT2/LDT3/LDT4).

Technical Information. The following information will assist you in creating this file.

- No individual value may be less than zero (0.0).

- The next 36 rows with data must contain five numerical values in each row separated by either commas or spaces, for a total of 180 data values.

- The values in data rows seventeen through 22 (inclusively) must be either zero (0.0) or 3.4.

- Each group of twelve rows should be separated by a blank row.

- File extension is ".t2c."

- See Chapter 2.8.11.3.d of the MOBILE6 User Guide for more information.

Figure 9-52
Tier2 Certification Standards: File Format and Checks

Data Type	Fixed Location	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Tier2 Certification Standards file.	Must contain the string "T2 CERT." The value is not case sensitive.
	Columns	The columns reflect five light-duty vehicle classes. (LDV/LDT1/LDT2/LDT3/LDT4).	
	Rows 1 - 12	Represent the twelve certification bins for HC.	
	Rows 13 - 24	Represent the twelve certification bins for CO.	

(cont.)

Figure 9-52
Tier2 Certification Standards: File Format and Checks (cont.)

Data Type	Fixed Location	Descriptions	Acceptable Values or Restrictions
String (cont.)	Rows 25 - 36	Represent the twelve certification bins for NO$_x$.	
	Certification Bins 1 - 12	Bins one through eight are the final bins (lowest standard to highest), and Bins nine through ten are the interim standards.	Under the default scenario of MOBILE6, bins eleven through twelve are used only to account for provisions of the HC interim standards for LDT3s and LDT4s which necessitate multiple standards being assigned to one bin.

9.4.20   NCD-Referenced External File: Tier2 Certification Standard Phase-In Schedule for Evaporative Emission Standards

This file contains phase-in fractions (by certification bin) for the Tier 2 evaporative emission standards. This is used by MOBILE6 within NMIM.

Figure 9-53
Tier2 Certification Standard Phase-in Schedule for Evaporative Emission Standards: File Description

Structure: The command name must be followed by five rows of twelve values.	
Value	**Description**
First line in the file	Contains the command name.
Rows	The rows reflect phase-in percentages by the five light-duty vehicle classes (LDV/LDT1/LDT2/LDT3/LDT4).
Columns	The columns reflect model years 2004 through 2015, inclusive.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records. These records are ignored.

- The sum of the phase-in fractions must be between 0.999 and 1.001 (inclusive) for a given vehicle, model year, and pollutant.

- File extension is ".t2v."

- See Chapter 2.8.11.3.b of the MOBILE6 User Guide for more information.

Figure 9-54
Tier2 Certification Standard Phase-in Schedule for Evaporative Emission Standards: File Format and Checks

Data Type	Fixed Positions	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Tier2 Certification Standards file.	Must contain the string "T2 EVAP PHASE-IN." The value is not case sensitive.
	Columns	The columns reflect model years 2004 through 2015, inclusive.	
	Rows	The rows reflect phase-in percentages by the five light-duty vehicle classes (LDV/LDT1/LDT2/LDT3/LDT4).	
	Values		All values must be greater than or equal to 0.0 and less than or equal to 1.0.

9.4.21   NCD-Referenced External File: Tier2 Certification Standard Phase-In Schedule for Exhaust Emission Standards

This file contains phase-in fractions (by certification bin) for the Tier 2 exhaust emission standards. This is used by MOBILE6 within NMIM.

Figure 9-55
Tier2 Certification Standard Phase-in Schedule for Exhaust Emission Standards: File Description

Structure: The command name must be followed by 180 rows of twelve values.	
Value	**Description**
First line in the file	Contains the command name.
Rows 1 - 12	Represent the certification bins one through twelve for LDV HC.
Rows 13 - 24	Represent the certification bins one through twelve for LDV CO.
Rows 25 - 36	Represent the certification bins one through twelve for LDV NO_x.
Rows 37 - 48	Represent the certification bins one through twelve for LDT1 HC.
Rows 49 - 60	Represent the certification bins one through twelve for LDT1 CO.
Rows 61 - 72	Represent the certification bins one through twelve for LDT1 NO_x.
Rows 73 - 84	Represent the certification bins one through twelve for LDT2 HC.

(cont.)

Figure 9-55
Tier2 Certification Standard Phase-in Schedule for Exhaust Emission Standards: File Description (cont.)

Structure: The command name must be followed by 180 rows of twelve values.	
Value	**Description**
Rows 85 - 96	Represent the certification bins one through twelve for LDT2 CO.
Rows 97 - 108	Represent the certification bins one through twelve for LDT2 NO_x.
Rows 109 - 120	Represent the certification bins one through twelve for LDT3 HC.
Rows 121 - 132	Represent the certification bins one through twelve for LDT3 CO.
Rows 133 - 144	Represent the certification bins one through twelve for LDT3 NO_x.
Rows 145 - 156	Represent the certification bins one through twelve for LDT4 HC.
Rows 157 - 168	Represent the certification bins one through twelve for LDT4 CO.
Rows 169 - 180	Represent the certification bins one through twelve for LDT4 NO_x.
Columns	The columns reflect model years 2004 through 2015, inclusive.

Technical Information. The following information will assist you in creating this file.

- All values must be greater than or equal to 0.0 and less than or equal to 1.0.
- The file may contain any number of blank records. These records are ignored.
- File extension is ".t2x."
- See Chapter 2.8.11.3.c of the MOBILE6 User Guide for more information.

Figure 9-56
Tier2 Certification Standard Phase-in Schedule for Exhaust Emission Standards: File Format and Checks

Data Type	Fixed Locations	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Tier2 Certification Standard Phase-in Schedule for Exhaust Emission Standards file.	Must contain the string "T2 EXH PHASE-IN." The value is not case sensitive.
	Columns	The columns reflect model years 2004 through 2015, inclusive.	
	Rows 1 - 12	Represent the certification bins one through twelve for LDV HC.	
	Rows 13 - 24	Represent the certification bins one through twelve for LDV CO.	
	Rows 25 - 36	Represent the certification bins one through twelve for LDV NO_x.	
	Rows 37 - 48	Represent the certification bins one through twelve for LDT1 HC.	
	Rows 49 - 60	Represent the certification bins one through twelve for LDT1 CO.	
	Rows 61 - 72	Represent the certification bins one through twelve for LDT1 NO_x.	
	Rows 73 - 84	Represent the certification bins one through twelve for LDT2 HC.	
	Rows 85 - 96	Represent the certification bins one through twelve for LDT2 CO.	
	Rows 97 - 108	Represent the certification bins one through twelve for LDT2 NO_x.	
	Rows 109 - 120	Represent the certification bins one through twelve for LDT3 HC.	
	Rows 121 - 132	Represent the certification bins one through twelve for LDT3 CO.	

(cont.)

Figure 9-56
Tier2 Certification Standard Phase-in Schedule for Exhaust Emission Standards: File Format and Checks (cont.)

Data Type	Fixed Locations	Descriptions	Acceptable Values or Restrictions
String	Rows 133 - 144	Represent the certification bins one through twelve for LDT3 NO_x.	
	Rows 145 - 156	Represent the certification bins one through twelve for LDT4 HC.	
	Rows 157 - 168	Represent the certification bins one through twelve for LDT4 CO.	
	Rows 169 - 180	Represent the certification bins one through twelve for LDT4 NO_x.	
	Bins	Bins one through eight are the final bins (lowest standard to highest), and Bins nine through ten are the interim standards.	Under the default scenario of MOBILE6, bins eleven through twelve are used only to account for provisions of the HC interim standards for LDT3s and LDT4s which necessitate multiple standards being assigned to one bin.

9.4.22 NCD-Referenced External File: Trip Length Distribution

This file contains the fraction of VMT that occurs during trips of various durations at each hour of the day. States should submit a single Trip Length Distribution that will be used for all days. This is used by MOBILE6 within NMIM.

Figure 9-57
Trip Length Distribution: File Description

Structure: The command name must be followed by fourteen groups of 6 values.	
Value	**Description**
First line in the file	Contains the command name.
Rows	Represents fourteen time categories.
Columns	Represents the six groups of trip lengths.

Technical Information. The following information will assist you in creating this file.

- Each data row contains six groups of numbers. The first character of each group is left blank and the remaining five characters are in the format of two characters, a decimal point, then two more characters.

- The file may contain any number of blank records. These records are ignored.

- The file may contain any number of records beginning with the "*" character. These records are ignored.

- File extension is ".wdt."

- See Chapter 2.8.8.8 of the MOBILE6 User Guide for more information.

Figure 9-58
Trip Length Distribution: File Format and Checks

Data Type	Fixed Length Location	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Trip Length Distribution file.	Must contain the string "WE DA TRI LEN DI." The value is not case sensitive.
	Rows 1 - 13	The rows represent hour ranges with the first being 6 a.m. - 7 a.m., second being 7 a.m. - 8 a.m., continuing until the 13 row ends at 7 p.m.	The six values in a row must add up to 100.0.
	Row 14	Average distribution for the 11-hour group from 7 p.m. to 6 a.m.	The six values in a row must add up to 100.0.
Real	Location 1	The trip length range of ten minutes or less.	Must be between 0.0 percent and 100.0 percent.
Real	Location 2	The trip length range of 11 to 20 minutes.	Must be between 0.0 percent and 100.0 percent.
Real	Location 3	The trip length range of 21 to 30 minutes.	Must be between 0.0 percent and 100.0 percent.
Real	Location 4	The trip length range of 31 to 40 minutes.	Must be between 0.0 percent and 100.0 percent.
Real	Location 5	The trip length range of 41 to 50 minutes.	Must be between 0.0 percent and 100.0 percent.
Real	Location 6	The trip length range of 51 or more minutes.	Must be between 0.0 percent and 100.0 percent.

9.4.23 NCD-Referenced External File: Starts per Day

This file contains the average number of engine starts (trips) per vehicle per day for specific vehicle classes and ages for weekend days and/or weekdays. This is used by MOBILE6 within NMIM.

Figure 9-59
Starts per Day: File Description

Structure: The command name must be followed by 28 groups of 27 values.	
Value	**Description**
First line in the file	Contains the command name.
Groups	The 28 groups represent the 28 vehicle classes.
Value 1 in each group	Indicator for weekday or weekend.
Value 2 in each group	Indicator for vehicle class.
Value 3 - 27	The 25 values are the average number of engine starts per day by vehicle age.

Technical Information. The following information will assist you in creating this file.

- The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as 25 values follow the initial integer value and are separated by at least one space or expressed in FORTRAN format.

- The file may contain any number of records beginning with the "*" character. These records are ignored.

- The file may contain any number of blank records. These records are ignored.

- File extension is ".tpd."

- See Chapter 2.8.8.3.d of the MOBILE6 User Guide for more information.

Figure 9-60
Starts Per Day: File Format and Checks

Data Type	Fixed Length Locations	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Starts Per Day file.	Must contain the string "STARTS PER DAY." The value is not case sensitive.
	Groups	The 28 groups represent the 28 vehicle classes.	See Figure A10-1 in Appendix 10.
Integer	Location 1 in each group	Indicator for weekday or weekend. Weekday = "1" and weekend day = "2."	Must be a one or two.
Integer	Location 2 in each group	Indicator for vehicle class.	Values 1 through 28. See Figure A10-1 in Appendix 10 for code mappings.
Real	Locations 3 - 27	The 25 values are the average number of engine starts per day by vehicle age, beginning with age zero ending with age 24.	Values must be between 0.0 and 100.0.

9.4.24 NCD-Referenced External File: VMT by Hour

This file contains the fraction of VMT that occurs at each hour of the day. This is used by MOBILE6 within NMIM.

Figure 9-61
VMT by Hour: File Description

Structure: The command name must be followed by 24 values.	
Value	**Description**
First line in the file	Contains the command name.
Values 1 - 24	Represent the fraction of VMT at each hour of the day.

Technical Information. The following information will assist you in creating this file.

- The file may contain any number of blank records. These records are ignored.

- The file may contain any number of records beginning with the "*" character. These records are ignored.

- These data in the file must contain 24 numeric values. The values are read "free format," meaning any number may appear in any row with as many characters as needed (including a decimal) as long as the 24 values are separated by at least one space.

- The sum of the 24 values must be one (1.0 +/- 0.01).

- File extension is ".vmt."

- See Chapter 2.8.8.2.b of the MOBILE6 User Guide for more information.

Figure 9-62
VMT by Hour: File Format and Checks

Data Type	Location/ Technical Spacing/ Groups of Data	Descriptions	Acceptable Values or Restrictions
String	Header row of the file	Identifies the contents of the Starts Per Day file.	Must contain the string "VMT BY HOUR." The value is not case sensitive.
Real	Values 1 - 24	Represent the fraction of VMT at each hour of the day. Starting with 6 a.m.	All values must be greater than or equal to 0.0 and less than or equal to 1.0.

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