



## EDMS 5.1.4 Release Notes

EDMS is a combined emissions and dispersion model for assessing air quality at civilian airports and military air bases. The model was developed by the Federal Aviation Administration (FAA) in cooperation with the United States Air Force (USAF).

These release notes provide a summary of the improvements and bug fixes for EDMS 5.1.4 from the previous version (EDMS 5.1.3). For more information on EDMS please check the EDMS User's Manual and Technical Manual.

### New Functionalities

1. In the Stationary Sources window, users can enter a "PM-2.5 : PM-10 Ratio" value for the categories: Other, Boiler/Space Heater, Emergency Generators, and Incinerators. The default values for this field are the same values which were effectively hardcoded in the previous version. The default values were previously stored in the MISCFACT.DBF system table; but are now stored in STN\_PROP.DBF.
2. In the emissions inventory, new columns appear in the summary, aircraft by mode and the aircraft/GSE/APU reports. All aircraft PM emissions are assumed to be PM<sub>2.5</sub>; therefore, PM<sub>10</sub> and PM<sub>2.5</sub> equal the total PM.
  - a. Previously, PM<sub>10</sub> and PM<sub>2.5</sub> were reported for aircraft engine emissions, but the constituent components were not. Moreover, if a system aircraft engine's smoke number was 0 or unavailable, then the total PM was reported as "N/A."
  - b. In version 5.1.4, the three components of PM emissions from aircraft (i.e., non-volatile, volatile sulfates and volatile organics) are reported separately in addition to PM<sub>10</sub> and PM<sub>2.5</sub>. The sum of the three components is equals the total PM (both PM<sub>10</sub> and PM<sub>2.5</sub>) for aircraft even if the non-volatile component is 0 or "N/A". Moreover, zero (0) is a valid value for smoke number. A smoke number of 0 results in zero non-volatile PM emissions.
  - c. H<sub>2</sub>O emissions from aircraft are reported.
3. Added "Get EDMS Technical Support..." to the "Help" menu. This selection takes users directly to the FAA EDMS technical support email webpage.
4. Users can open a study by dragging and dropping the study folder into the EDMS window. EDMS locates and opens the first .EDM file it finds in the directory. Users no longer need to open folders, find the .EDM file and double-click on them to open them.

# Updates

1. The VALE Emissions Reduction (ER) report (Figure 1). The changes include:
  - (1) Generated date left justified.
  - (2) Study name included in report header under the airport name & units.
  - (3) Column names given pale yellow (#FFFFCC) background color.
  - (4) New “No.” column indicating the sequential number of the year starting with 1.
  - (5) Blank line inserted above every year.
  - (6) Years appear in blue boxes with thick black borders.
  - (7) Asterisk on years where a piece of equipment has reached the end of its useful life with corresponding end note “\*One or more pieces of equipment have come to the end of their first useful life.”
  - (8) In the subtotal lines, “Subtotal” text replaced with scenario “Total” text.
  - (9) Each year’s “Net Change” sections replaced with single annual “Net ER” lines with a light yellow background.

**Figure 1. New ER Report example.**

Generated: Wed Aug 08 14:33:30 2012									
<b>Emissions Reduction Report</b>									
Airport: My Airport									
Units: Short Tons (2,000 pounds)									
Project: ValeReport									
No.	Year	Scenario	Source Group	CO	VOC	NOx	SOx	PM-10	PM-2.5
1	2012	Baseline	Aircraft	2.705	1.664	0.856	0.090	0	0
			APUs	0	0	0	0	0	0
			GSE Population	0.000	0.000	0.000	0.000	0.000	0.000
			Parking Facilities	0.003	0.005	0.000	0.001	0.001	0.000
			Roadways	0.000	0.000	0.000	0.000	0.000	0.000
			Stationary Sources	0	0	0	0	0	0
			Training Fires	0	0	0	0	0	0
			<b>Baseline Total</b>	<b>2.708</b>	<b>1.670</b>	<b>0.856</b>	<b>0.091</b>	<b>0.001</b>	<b>0.000</b>
		Second Baseline	Aircraft	7.567	4.654	2.551	0.261	0	0
			APUs	0	0	0	0	0	0
			GSE Population	0.000	0.000	0.000	0.000	0.000	0.000
			Parking Facilities	0.003	0.005	0.000	0.001	0.001	0.000
			Roadways	0.000	0.000	0	0	0	0
			Stationary Sources	0	0	0	0	0	0
			Training Fires	0	0	0	0	0	0
			<b>Second Baseline Total</b>	<b>7.570</b>	<b>4.659</b>	<b>2.552</b>	<b>0.262</b>	<b>0.001</b>	<b>0.000</b>
			<b>2012 Net ER</b>	<b>4.861</b>	<b>2.989</b>	<b>1.696</b>	<b>0.171</b>	<b>0.000</b>	<b>0.000</b>
2	2013	Baseline	Aircraft	2.705	1.664	0.856	0.090	0	0
			APUs	0	0	0	0	0	0
			GSE Population	0.000	0.000	0.000	0.000	0.000	0.000
			Parking Facilities	0.003	0.005	0.000	0.001	0.001	0.000

## 2. Importing operations.

- a. Previously, when a user attempted to import something with explicitly 0 operations for the first year and some positive number of operations for the next year, both the first year would get the same number of operations as the next year. This happened because EDMS erroneously interpolated the input data rather than ingesting the data literally. If the first year had 0 operations in the imported data, then EDMS

ignored this because the operations are 0 by default. When the next year with positive operations was imported, then all years, past and future, were given the same level of operations.

- b. In version 5.1.4, when users import operational data, EDMS ingests it literally as is without any interpolation or other interpretation of the provided data; versus, when users enter operations via the GUI, operations are typically copied to all succeeding years. The reasoning is that when users prepare data for import, they make their inputs explicit; and when users use the GUI, they accept the implicit behavior to save tedious keystrokes.
3. Fleet database.
    - a. Version 5.1.4 incorporates all aircraft engine emission data from Issue 19 of the ICAO Aircraft Engine Emission Database (released April 15, 2013).
    - b. Version 5.1.4 is updated with the data from the current version (as of March 1, 2013) of Aviation Environmental Design Tool's (AEDT) fleet database for consistency in future user transitions from EDMS to AEDT, EDMS's successor. Moreover, engine emission data from ICAO Aircraft Engine Database Issue 19 was imported to the Fleet database's emission factors.
  4. AERMOD, AERMET and AERMAP. Version 5.1.4 is updated with the most current versions as of January 1, 2013:
    - AERMOD version 12345
    - AERMET version 12345
    - AERMAP version 11103
  5. "Check Taxipaths" on the "Airport" menu performs a new test in addition to all the tests it previously performed. The new test checks that no two distinct taxiways intersect more than twice. EDMS assumes more than two intersection points between two distinct taxiways is an error in data entry.

## **Bug Fixes**

1. Previously, if zero (0) operations were entered in the GUI for the first year and some positive number of operations was entered for a succeeding year, then the zero operations on the first year were ignored. Similar behavior happened with importing files. The behavior is corrected.
2. Previously, the emissions values for training fires and stationary sources were switched around in the VALE ER report. The behavior is corrected.

3. Previously, the hourly ambient atmospheric pressure was set to zero for each modeled hour when generating the emissions inventory. The behavior is corrected.
  - a. Previously, if both (1) “ICAO/USEPA Defaults” was selected for “System Aircraft Times in Mode Basis” in the Scenario Properties window and (2) “Use Hourly Meteorological Data” was selected in the Weather window, then aircraft engine emissions are not computed (except for emissions due to engine startup).
  - b. Previously, if “Use Hourly Meteorological Data” was selected in the Weather window, then aircraft engine testing stationary source emissions are not computed (except for emissions due to engine startup).
  - c. Previously, if “Use Hourly Meteorological Data” was selected in the Weather window, then fuel tank stationary source emissions tend to be inaccurately high due to a lack of atmospheric pressure in the model.
  - d. In version 5.1.4, when using hourly meteorological data, the hourly ambient atmospheric pressure is updated for each modeled hour. This corrects the emissions for aircraft operations, aircraft engine testing, and fuel tanks modeled with hourly meteorological data.
4. Previously, fuel tank stationary source emissions were overpredicted by as much as a factor six (6) due to throughput volume miscalculation which affected the “working loss” component of the tank emissions. The behavior is corrected.
5. Previously in the User-Created GSE window, three data entry fields were given inappropriate limits. The behavior is corrected.
  - a. Previously, the maximum limit for Annual Operating Time (hours), Power Rating (horsepower) and Load Factor (%) was 1,000 for all three parameters.
  - b. In version 5.1.4, the maximum limit for Annual Operating Time (hours) is 8,784; the maximum limit for Power Rating (horsepower) is 10,000; and the maximum limit for Load Factor (%) is 100.
6. Previously, viewing the system tables and/or home page crashed EDMS. The behavior is corrected.
7. Previously, EDMS constructed an internal taxiway network from all of the taxiways regardless if they were in the study or not. This behavior is corrected such that the internal taxiway network consists only of taxiways in the study.