Commonwealth of Pennsylvania

Department of Environmental Protection

Bureau of Information Technology

Bureau of Air Quality

Spreadsheet Reporting Guide for Conventional and Unconventional Midstream Natural Gas Compressor Station Emissions Reporting System

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Supplemental Spreadsheet Reporting Guide

Using the steps and procedures specified in this document, you are reporting supplemental Midstream Natural Gas Compressor Station air data by filling out a spreadsheet and attaching it to your AES*Online or AES*XML submittal through the GreenPort. To do so, you must use Microsoft Excel 2007 or a more recent version.

The owners or operators of midstream facilities must submit emissions through the Department of Environmental Protection's AES*Online or AES*XML emission inventory system no later than March 1, 2016. This supplemental spreadsheet and other documents, including emissions factors and actual calculations, must be attached to the submittal. Facility owners or operators must request access to the Greenport by contacting Robert Bihl at rbihl@pa.gov or 717-772-3950 as soon as possible but no later than two weeks prior to accessing the system. Subsequent source reports and annual emissions inventories will be due to the Department by March 1 each year for operations during the preceding calendar year.

The *Basic Steps* section of this document outlines the typical procedures that must be followed to download your spreadsheet. Training for submittal through the GreenPort was provided during the week of November 14, 2016. Training information for online submittals can be found here. If you need further assistance, please contact Robert Bihl at rbihl@pa.gov.

The *Workbook Structure* section of this document provides the procedures and data needed to validate and accept your data.

The *Do's and Don'ts* section provides guidelines that are essential for you to understand as you enter your Air Emissions data into the spreadsheet.

Contacts

Questions related to the emission inventory may be directed to the following:

Mark Houser, Chief	or	Robert Bonner, Air Quality Program Specialist
Air Information Section		Air Information Section
Bureau of Air Quality		Bureau of Air Quality
P.O. Box 8468		P.O. Box 8468
Harrisburg, PA 17105-8468		Harrisburg, PA 17105-8468
Telephone: 717-783-9241		Telephone: 717-772-3429
E-mail: mahouser@pa.gov		E-mail: rbonner@pa.gov

Basic Steps

1. Begin by navigating to the following link and download the blank spreadsheet:

   http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission

2. Your browser should present you with a dialog box from which you can save the workbook to the location of your choice on your computer. If your browser allows you to open the workbook directly without saving it to your local computer, **do not open it** since you would then only be opening a temporary copy. It is also a safe browsing practice to not open such files directly in your web browser. Always save the file to your local computer.

3. Open your local copy of the file using Microsoft Excel 2007 or a more recent version. Other spreadsheet products are not compatible with regards to dropdown lists inside the workbook.

4. Add data to your workbook according to the rules listed in the section titled *Workbook Structure* and in the *Tool Tips* located in each cell of the workbook. Save your workbook file locally on your computer.

5. Attach the spreadsheet and a second spreadsheet containing emissions calculations and emissions factors to the AES submittal through the GreenPort.

6. Pigging operations that are not included in the single-source determination for midstream compressor station must have their data submitted via e-mail, using the pigging spreadsheet located at http://www.dep.pa.gov/Business/Air/BAQ/BusinessTopics/Emission.

7. All data must be submitted by a Responsible Official, as defined in 25 Pa. Code §121.1 (definitions).

Workbook Structure

The workbook that is downloaded consists of nine worksheets on which you must supply data. All items are required, unless otherwise noted. These worksheets are called *Summary, Source ID - Name, Pigging Operations, Stationary Engines, Heaters-Reboilers, Tanks-Vessels, Dehydrators, Pneumatic Pumps, Venting-Blowdowns, and Fugitives*.

Summary worksheet

The Summary worksheet is where all comments related to Air Emissions reporting will be entered by the operator.

The following fields are present in the Summary worksheet and their meanings are described:

Column Name	Description
PF ID	The DEP Primary Facility ID must be entered. This number is in the AES GreenPort data. If you are uncertain of what this number is, please contact the appropriate DEP Regional Office.
Primary Facility Name	The DEP Primary Facility Name, as it appears on the air permit application or general permit authorization application, must be entered. This entry is required and must be reported.
AQ Reporting Year	The AQ Reporting Year is pre-loaded at time of download of the Air Emissions workbook and set to the reporting period being submitted. This entry cannot be modified by the user.
Start Date	The Start Date is pre-loaded at time of download and determined by the AQ Reporting Year being submitted. This entry cannot be modified by the user.
End Date	The End Date is pre-loaded at time of download and determined by the AQ Reporting Year being submitted. This entry cannot be modified by the user.
Contact Name, address, phone number, and email address	The name of the person preparing the data for submittal. This does not have to be the responsible official.
Report Comments	Other comments the operator may have on the data submission for any of the worksheets are to be entered here.

Source ID-Name worksheet

The Source ID - Name Inventory Worksheet is where operators/owners will enter source (subfacility) name and ID.

Column Name	Description
AIMS Source ID –Name	This is the source or subfacility name and ID. A source or subfacility is defined as a piece of equipment within the primary facility. These entries are used by other worksheets as drop-down items.

Pigging Operations Worksheet

The following columns are present in the Pigging Operations Worksheet and their meanings are described:

Column Name	Description
AIMS Source ID –Name	This is the source or subfacility name and ID. A source or subfacility is defined as a piece of equipment within the primary facility. These entries are used by other worksheets as drop-down items.
Type	Pick either Launch or Receiving from the drop-down menu.
Chamber Length (Ft.)	Enter the length of the chamber in feet.
Chamber Diam. (Ft.)	Enter the diameter of the chamber in feet.
Volume of Chamber (Ft^3)	The volume (cubic feet) of the chamber is calculated for you in the spreadsheet.
PSIG of Chamber	Enter the pounds per square inch, gage (PSIG).
Volume of Pressurized Gas (Ft^3)	The volume of pressure gas (cubic feet) is calculated for you in the spreadsheet, using the formula for the Ideal Gas Law.
Temp. of Chamber	Enter the average yearly temperature of the chamber.
Molecular Weight of gas mixture (lb/lb-mole)	Enter the molecular weight of the gas mixture in pounds per pound-mole.
Compressibility Factor	Enter the compressibility factor.
Pressurized Density (lb/ft^3)	The pressurized density is calculated for you in the spreadsheet.
Atmospheric Density (lb/ft^3)	The atmospheric density is calculated for you in the spreadsheet.
Delta Density (lb/ft^3)	The delta density is calculated for you in the spreadsheet.
Amount Gas Vented (lbs) Per	The amount of gas vented is calculated for you.

Column Name	Description
Event	
# of Events	Enter the number of gas venting event during the calendar year.
# of Purges Per Event	Enter the average number of purges for each gas venting event.
Total Amount Gas Vented (lbs)	The total amount of gas vented is calculated for you in the spreadsheet.

Stationary Engines Worksheet

The following columns are present in the Stationary Engines Worksheet, and their meanings are described.

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Engine Make	Enter the Make of Engine(s) air emissions are being reported on. Data in format of 1-25 characters.
Engine Model	Enter the Model of Engine(s) air emissions are being reported on. Data in format of 1-25 characters.
Engine Model Year	Enter the Model year of Engine(s) air emissions are being reported on. Data in format of 4 characters.
Engine Type	Select either Rich Burn or Lean Burn from Dropdown
Number of Engines	Enter a number of similar engines combined. Data in format of 1-99.
Fuel Type	Select one option from Dropdown.
Total Fuel Quantity	Enter Fuel Quantity number for similar engines combined between .01 and 999,999.99
Fuel % Sulfur	Enter percentage between 0 and 99.99 in the following format ##.##.
Total hp (hp)	Enter total horsepower for all engines combined between 0 and 999,999.99.
Average Load (%)	Enter average load for all engines combined between 0.01 and 100.00.
Total Hours (hrs)	Enter the total number of hours for all engines combined. Enter as whole number.

Column Name	Description
Emissions Factor Basis	Enter up to 50 characters (Manufacturer Spec./AP-42/Source Test/etc.).
Type of Control	Optional data entry: Enter up to 50 characters.

Heaters-Reboilers Worksheet

The following columns are present in the Heaters-Reboilers Worksheet and their meanings are described below:

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Heater/ Reboiler Hours	Enter total hours as whole number.
Total MMBTU/hr	Enter number between .01 and 99,999.99.
Number of Units	Enter how many heaters and how many reboilers are on site.

Tanks/Vessels Worksheet

The following columns are present in the Tanks/Vessels Worksheet and their meanings are described below:

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Unit Type	Select either Tank, Impoundments, or Pressurized Vessels from Dropdown.
Number of Units	Enter number between 1 and 999.
Total Hours Operated (hrs)	Enter Hours as whole number.
Controlled	Select either Y or N from Dropdown.
Control Type	If you chose "Y" for Controlled, then you must select an option from list of options. Select either VRU, Flared, or Other from Dropdown. If Other, please explain in comments on Summary sheet.

Column Name	Description
Total Hours of Controlled Operations (hrs)	If you choose "Y" for Controlled then enter Hours as whole number.

Dehys (dehydration) Worksheet

The following columns are present in the Dehys Worksheet and their meanings are described below:

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Gas Processed (mcf)	Enter thousand cubic feet as a whole number between 1 and 99,999,999.
Dehydration Unit design Rating (MMSCFD)	Enter million standard cubic feet per day as a whole number between 1 and 99,999,999.
Actual Operating Hours (hrs)	Enter Hours as whole number between 1 and (days between Start Date and End Date) * 24.
Actual Lean Glycol Circulation Rate (gpm)	Enter gallons per minute as a whole number between 1 and 99,999,999.
Controlled	Data Entry Required: Select either Y or N from Dropdown.
Control Type	If you chose "Y" for Controlled, then you must select an option from list of options. Select either VRU, Flared, or Other from Dropdown list. If you choose Other, please explain in the Summary sheet.
Total Hours of Controlled Operations (hrs)	If you choose "Y" for Controlled then enter Hours as whole number.

Pneumatic Devices Worksheet

The following columns are present in the Pneumatic Devices Worksheet and their meanings are described below:

Column Name	Description

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Gas Processed (mcf)	Enter thousand cubic feet as a whole number between 1 and 99,999,999
Condensate Processed (bbls)	Enter barrels as a whole number between 0 and 99,999,999.
Unit Type	Choose the unit type from the drop-down list. Pumps, Controllers, and Valves are the options.
Number of Devices	Enter the number between 1 and 999.
Total Operated Hours	Enter Hours as whole number between 1 and ((days between Start Date and End Date)* Number of Pumps) * 24.
Controlled	Select either Y or N from Dropdown list.
Control Type	If you chose "Y" for Controlled, then you must select an option from list of options. Select either VRU, Flared or Other from Dropdown list. If you choose Other, please explain in the Summary sheet.
Total Hours of Controlled Operations (hrs)	If you choose "Y" for Controlled then enter Hours as whole number.

Venting/Blowdowns Worksheet

The following columns are present in the Venting/Blowdowns Worksheet and their meanings are described below:

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Number of Blowdowns	Enter the number between 1 and 999.
Purpose of Blowdown	Enter purpose of Blowdown
Average Blowdown rate (scf/hr)	Enter standard cubic feet per hour as a whole number between 1 and 99,999,999.
Average Blowdown Length (hrs)	Enter Hours as whole number between 1 and (days between Start Date and End Date) * 24.
Controlled	Select either Y or N from Dropdown list.
Control Type	If you choose "Y" for Controlled then you must select an option from list of options. Select either VRU or Flared from Dropdown.
Total Hours of Controlled Operations (hrs)	If you chose "Y" for Controlled, then enter Hours as whole number.

Fugitives Worksheet

The following columns are present in the Fugitives worksheet and their meaning is described:

Column Name	Description
AIMS Source ID –Name	This is a drop-down menu item related to the Station ID – Name Worksheet.
Component Type	Select a component type from dropdown list.
Product	Select a product from dropdown list.
Component Count	Enter the number of this type of component as a whole number between 1 and 999,999.
Operating Days per year	Enter days as whole number between 1 and (days between Start Date and End Date).
See Emissions Calculations	Follow this link to see how DEP will calculate the emissions for these

Column Name	Description
	components. NOTE: If you disagree with these calculations, you may enter your own calculations. If you choose to enter your own values, then you must enter values for all of the remaining fields. Please include these calculations on your calculation spreadsheet that is submitted to DEP with this supplementary sheet in AES.

When user clicks the **See Emissions Calculations link** within the spreadsheet the following screen is shown with the DEP Calculation results. Below is just an example of what the screen could look like.


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DEPARTMENT OF ENVIRONMENTAL PROTECTION

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PA STATE AGENCIES   **ONLINE SERVICES**
Tom Corbett, Governor Michael Krancer, Secretary

DEP Oil and Gas Reporting - Electronic

DEP FUGITIVES AIR EMISSION CALCULATION

NOTE: The values shown below are the values DEP will calculate after the spreadsheet is submitted. If the user does not accept the calculated values, the user must:

- Manually enter their calculated values for every emission column on the fugitives tab.
- Describe how the emissions were calculated in the comments field on the Summary tab.

Input Values

Component Type: Connector

Component Count: 365

Product Type: Gas

Operating (day / year): 100

THC Leak Factor - see:http://www.epa.gov/ttn/chief/efdocs/equiplks.pdf

THC Leak Factor (lb/day/compoment): 0.011000

Emissions
The formula used to calculate the emissions for each pollutant is as follows.
(((Component Count * THC leak Factor)* Weight Fraction)* Operating Days)/2000 = Tons

VOCs Weight Fraction: 0.083800

VOCs Tons: 0.01682

Methane Weight Fraction: 0.813200

Methane Tons: 0.16325

Ethane Weight Fraction: 0.086400

Ethane Tons: 0.01734

Propane Weight Fraction: 0.037500

Propane Tons: 0.00753

i-Butane Weight Fraction: 0.011600

i-Butane Tons: 0.00233

n-Butane Weight Fraction: 0.010200

n-Butane Tons: 0.00205

Pentane Weight Fraction: 0.009400

Pentane Tons: 0.00189

Methyl- & Cyclo- Hexanes Weight Fraction: 0.002500

Methyl- & Cyclo- Hexanes Tons: 0.00050

n-Hexane Weight Fraction: 0.002000

n-Hexane Tons: 0.00040

Benzene Weight Fraction: 0.000600

Benzene Tons: 0.00012

Toluene Weight Fraction: 0.001400

Toluene Tons: 0.00028

Ethyl-Benzene Weight Fraction: 0.000000

Ethyl-Benzene Tons: 0.00000

Xylene Weight Fraction: 0.000900

Xylene Tons: 0.00018

Heptane Weight Fraction: 0.005200

Heptane Tons: 0.00104

Octane Weight Fraction: 0.001200

Octane Tons: 0.00024

Nonane Weight Fraction: 0.000400

Nonane Tons: 0.00008

2,2,4-Trimethylpentane Weight Fraction: 0.000200

2,2,4-Trimethylpentane Tons: 0.00004

Decane + Weight Fraction: 0.000700

Decane + Tons: 0.00014

Do's and Don'ts

- **Do not** add columns or modify column headers in any worksheet.

- **Do not** add data anywhere outside the provided columns. It will be ignored.

- **Do not** expect Microsoft Excel to validate your data when you copy and paste cell values from one worksheet to another. The product does not support data validations on copy/paste operations.

- **Do not** use Microsoft Excel standard copy/paste. If you do so, you will lose all local validations and dropdown list values. Instead, **do** use copy/paste values. This is represented (in Microsoft Excel 2010) as the paste icon with a simple 123 symbol on a clipboard, as in: See the Paste Values section:
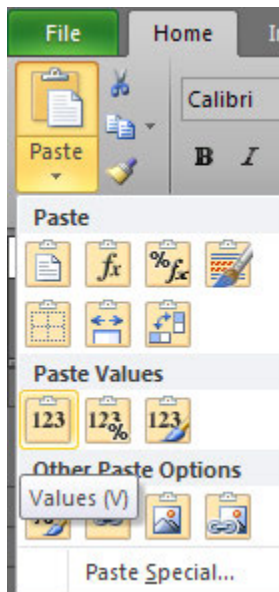
- **Do not** edit your workbook using multiple versions of Microsoft Excel. If you begin editing using Excel 2010, for instance, do not later try to use it in an earlier version such as Excel 2007. The versions are not compatible.

- **Do** use either Microsoft Excel 2010 for Windows (recommended) or Microsoft Excel 2007 for Windows. Those are the only versions for which the workbook export/import has been tested. Earlier versions will not work. Versions for other operating systems and spreadsheet products other than Microsoft Excel are not supported as they are not compatible with the data validations that have been built into your workbook.