

Form Series F1100 provides a series of forms for use in reporting Federal Operating Permit (Permit) emissions fees to Lane Regional Air Protection Agency (LRAPA), as described in OAR 340-220-0010 through OAR 340-220-0190.

The forms are organized as follows:

- Form F1101, Total Assessable Emissions: Regulated Pollutant Summary;
- Form F1102, Total Assessable Emissions: Summary by Assessable Emission;
- Form F1103, Actual Emissions by Verified Emission Factor;
- Form F1104, Total Emissions of Volatile Organic Compounds: Material Balance;
- Form F 1105, Total Sulfur Dioxide Emissions: Material Balance; and
- Form F1106, Emissions Based on Continuous Monitoring System Data.

### **Assessable Emissions**

The owner/operator must pay the emission fee for each assessable emission. An assessable emission is defined as a *pollutant* emitted by a particular *device/process* during the reporting year. In other words, each device/process-pollutant combination, as established in the Title V Permit, creates an assessable emission.

### **Aggregate Insignificant Emissions**

Emissions associated with aggregate insignificant emissions should be reported at permitted levels. If, for example, the owner/operator has been permitted for aggregate insignificant emissions of lead at the 120 pound/year threshold, then the owner/operator would identify an assessable emission of 120 pounds associated with aggregate insignificant lead emissions (120 pounds per year being the aggregate insignificant threshold for lead and the level established in the Permit). Aggregate insignificant emissions should be identified as pollutant-specific line items on Form F1102, as described in the instructions associated with that form.

### **Paying On Permitted Or Actual Emissions**

The owner/operator has the choice of paying the emissions fee based on either *permitted* Plant Site Emission Limit (PSEL) levels or on *actual* emissions. The owner/operator may make this choice for *each* assessable emission. In other words, for one assessable emission, the owner/operator may choose to pay based on the PSEL. For another, the owner/operator may choose to pay based on actual emissions.

#### Permitted Levels

If the owner/operator chooses to pay for an assessable emission based on the PSEL, he/she will identify that assessable emission on Form F 1102. The owner/operator will select as the "method" **1**, as described in the instructions for Form F 1102.

The owner/operator should take careful note of whether any excess emissions were experienced during the reporting year that caused an exceedance of the annual PSEL. As with any excess emissions, whether short-term or annual, these must be reported on the Upset Log. It is not necessary to report those excess emissions on Form F1102 when choosing to pay emissions fees based on the PSEL.

Actual Levels

If the owner/operator chooses to pay based on actual emissions, he/she must complete the fee form appropriate to the assessable emission in question. The following choices are available:

- Form F1103, if the owner/operator will be using a verified emission factor, based on source test data, to quantify actual emissions;
- Form F1104, for VOC emissions calculated through material balance;
- Form F1105, for sulfur dioxide emissions calculated through material balance; and
- Form F1106, for emissions calculated based on continuous monitoring system data.

**Completing Form Series F1100**

In completing Form Series F1100, the owner/operator first should determine for which assessable emissions he/she will pay on permitted versus actual levels and then complete the appropriate forms. The owner/operator should begin by addressing those assessable emissions for which he/she will pay on **actual** emissions. To do so, the owner/operator should complete Forms F1103, F1104, F1105, or F1106, as appropriate to the pollutant and the means of calculation.

*After* completing the relevant Forms F1103, F1104, F1105, and/or F1106, the owner/operator should complete Form F 1102. The owner/operator should begin by listing *all* assessable emissions, regardless of whether they are to be based on actual or permitted levels. The owner/operator also should list all aggregate insignificant pollutants for which he/she has been permitted (e.g., lead, particulate, etc.). For those assessable emissions for which the owner/operator will pay on permitted levels, the owner/operator should enter the PSELs. For the aggregate insignificant pollutants, the owner/operator also should enter the permitted levels. For those assessable emissions to be paid based on actual emissions, the owner/operator should *copy* the actual emissions data from the appropriate Forms F1103, F1104, F1105, and F1106.

In this way, Form F1102 documents *all* assessable emissions for the facility.

**Summary Data**

Form F1101, Total Emissions: Regulated Pollutant Summary, summarizes, *by regulated air pollutant*, all emissions listed on Form F1102. This form should be completed *last*.

The owner/operator should complete this form to summarize, by pollutant, all assessable emissions listed on Form F1102, Total Emissions: Assessable Emission Summary.

**Instructions**

1. Enter the facility name. Include a site identifier if the corporation has more than one site by the same name in Oregon.
2. Enter the permit number.
3. Provide the mailing address of the facility.
  - a. Enter the PO Box or street and number.
  - b. Enter the city name, state, and zip code.
4. Provide the following information about the individual who should be contacted regarding this report.
  - a. Enter the name and title of the individual.
  - b. Enter the area code and telephone number of the individual.
5. Identify all regulated air pollutants for which assessable emissions have been listed on Form F1102. Ten pollutants already are identified. The owner/operator should identify any others emitted during the reporting year. A continuation sheet of the form is provided if additional space is needed.
6. For *each* regulated air pollutant identified in question **5**, summarize the assessable emissions data reported on Form F1102. Use units of tons.
7. Sum the total assessable emissions from *all* regulated air pollutants. If the owner/operator has used the continuation sheet, then the quantity entered in this question **7** should sum the emissions on the primary form and the continuation sheet(s).
8. Statement of Certification:  
  
Per OAR 340-218-0050(3)(c)(D) and 340-218-0040(5), applicants are required to certify their fee reports. Carefully read the Statement of Certification on the form. The certification should be signed by the official at the source responsible for the source's compliance with state and federal air quality regulations and knowledgeable of the veracity of the contents of this application.  
  
The certification must be signed in blue ink. The owner/operator may type or write the name and title of the designated official and the date. The signature, however, must be just that -- a signature.

**Total Emissions: Assessable Emission Summary**

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The owner/operator should complete this form to identify *all* assessable emissions for the facility. This will include all assessable emissions calculated on Forms F1103, F1104, F1105, and F1106 as well as all assessable emissions and aggregate insignificant emissions to be addressed based on permitted levels. Additional space to list assessable emissions is provided on the continuation sheet of the form. The owner/operator should complete the form and as many copies of the continuation sheet of the form as needed.

**Instructions**

1. Enter the facility name. Include a site identifier if the corporation has more than one site by the same name in Oregon.
2. Enter the permit number.

The owner/operator should review questions 3, 4, 5, 6, and 7 and assemble the information requested *before* completing any part of those questions on the form.

3. The owner/operator should identify the emissions units for which assessable emissions are being listed on this form.  
  
For aggregate insignificant emissions--i.e., emissions associated with permitted aggregate insignificant activities--the owner/operator should enter, instead of an emissions unit ID number, the abbreviated words "agg. insign."
4. For each emissions unit identified in question 3, the owner/operator should list the ID numbers for the devices/processes that make up the assessable emissions being reported. If the device/process ID does not indicate the type of device (e.g., a device identified as "boiler #1" clearly is a boiler), the owner/operator should add a word or two that describes the type of device.
5. For each device/process identified in question 4, the owner/operator should list each regulated air pollutant emitted. For aggregate insignificant emissions identified in question 3 (question 4 should be blank for aggregate insignificant emissions), the owner/operator should identify each regulated air pollutant for which he/she has been permitted at an aggregate insignificant level.
6. Enter the total assessable emission quantity, in tons. If the assessable emission is being based on the PSEL, then enter the PSEL. If the assessable emission is being based on actual emissions, enter the quantity as reported on the appropriate Form F1103, F1104, F1105, or F1106. For aggregate insignificant emissions, the owner/operator should enter the permitted level (e.g., 120 pounds for lead) *converted to tons* (e.g., 120 pounds for lead would equal 0.06 tons).
7. Indicate the method used for calculating the total assessable emission identified in questions 4 and 5. Enter the numeral that represents the appropriate method from the list below.

**Method**

- 1 permitted level based on the Plant Site Emission Limit (PSEL)
- 3 verified emission factor, as documented through Form F1103
- 4 VOC material balance, as documented through Form F1104
- 5 SO<sub>2</sub> material balance, as documented through Form F1105
- 6 continuous monitoring system data, as documented through Form F 1106

For aggregate insignificant emissions, the owner/operator should select Method 1.

**Total Emissions: Assessable Emission Summary**

The owner/operator's information in questions 3-6, as portrayed on the form, should be presented to resemble the following layout.

3. Emissions Unit ID	4. Device/process ID	5. Pollutant	6. Quantity	7. Method
EU #1	Boiler #1	PM-10	25.1	1
""	""	NO <sub>x</sub>	12.4	3
""	""	SO <sub>x</sub>	2.1	5
""	""	VOC	6.0	1
""	Boiler #2	PM-10	25.1	1
""	""	NO <sub>x</sub>	12.4	3
""	""	SO <sub>x</sub>	2.1	5
""	""	VOC	6.0	1
EU #2	Green Dryer #3	PM-10	5.7	1
""	""	NO <sub>x</sub>	86	1
""	""	VOC	126	1
EU #3	Paint Booth	VOC	492	4
Agg Insign	--	Pb	.06	1
Agg Insign	--	PM-10	1	1

8. The owner/operator should provide the page numbers on which documentation supporting these data is found in the submittal package. Depending on the method, different documentation will have been included in the package, as described below.

Method Reference (page number)

- 1 relevant Permit page numbers
- 3 page numbers of appropriate Form F1103 and any accompanying documentation, including source test report summaries and process data
- 4 page numbers of appropriate Form F1104 and any accompanying documentation, including summaries of purchase records and waste manifests
- 5 page numbers of appropriate Form F 1105 and summaries of purchase records or analyses
- 6 page numbers of appropriate Form F1106

The owner/operator should complete this form *if* he/she has determined to report actual emissions by using emission factors derived from source tests (OAR 340-220-0170). The owner/operator will complete one (1) Form F1103 for *each* assessable emission to be calculated in this manner.

To use this method of fee reporting, the owner/operator must have source test data as described below.

- The owner/operator must have data from at least three (3) source tests. The source tests need not have been conducted within the reporting year.
- Each source test shall have three (3) test runs.
- If the device/process is subject to seasonal variations, then the source tests shall have been conducted in at least three (3) quarters of a year, with no two (2) successive source tests performed within 30 days of one another.
- If the device/process is not subject to seasonal variations, then the source tests shall have been conducted during equal intervals over the annual operating period (e.g., if it is a three-month operation, then the owner/operator should have conducted one (1) test per month; if it is a full-year operation, then the owner/operator should have conducted one (1) test in each of the four-month periods).
- If the device/process's operating level is variable, then the owner/operator shall have conducted the source tests at three (3) different operating levels (e.g., production levels): one (1) source test at minimum operating level; one (1) source test at normal operating level; and one (1) source test at maximum operating level.
- If the device/process's operating level remains constant, then all tests shall have been conducted at that constant rate.
- The owner/operator shall have monitored and recorded applicable process and control device operating data during each source test.

To use the results from these source tests to calculate actual emissions, the owner/operator should refer to Worksheet 1 and Worksheet 2, on pages 14 and 19, respectively. Worksheet 1 provides assistance in applying the equations set forth in OAR 340-220-0170 to calculate assessable emissions from normal operations based on source test data. Worksheet 2 guides the owner/operator in calculating excess emissions. The owner/operator will need to complete one copy of Worksheet 1 (and Worksheet 2, if appropriate) for *each* assessable emission to be reported on this form. After completing Worksheet 1 (and Worksheet 2, if appropriate), the owner/operator then may complete this form as requested below.

### Instructions

1. Enter the facility name. Include a site identifier if the corporation has more than one (1) site by the same name in Oregon.
2. Enter the permit number.
3. Enter the device/process ID number for the assessable emission being calculated on this form. If the device/process ID does not indicate the type of device (e.g., a device identified as "boiler #1" clearly is a boiler), the owner/operator should add a word or two that describes the type of device.
4. Specify the pollutant for the assessable emission.
5. Provide the following information about the source tests for the assessable emission identified in questions 3 and 4. Subparts a through e will be completed for *each* of the three source tests. Subparts f through i are based on the three (3) source tests and calculations in Worksheet 1.
  - a. Enter the date(s) of the source test.
  - b. Specify who conducted the test.

**Actual Emissions by Verified Emission Factor**

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- c. Identify the method used for the source test. Refer to Table CP702 in Form CP702 of the Federal Operating Permit application for a list of methods.
- d. Describe the operating conditions (e.g., process rate) under which the source test was conducted.
- e. Enter the results of *each* of the three (3) runs of the source test.
- f. Enter the Emission Estimate Adjustment Factor **EEAF** calculated in Worksheet 1 (either question **B-3, C-1, or D-4** of Worksheet 1).
- g. Enter production **P** calculated in Worksheet 1 (either question **B-4, C-3** or the three production values calculated in **D-3** of Worksheet 1).
- h. Enter the verified emissions factor(s) **EF** calculated in Worksheet 1 (either question **B-2, C-2, or the three (3) emission factors** calculated in **D-2** of Worksheet 1).
- i. Enter the actual emissions, in tons, calculated in Worksheet 1 (either question **B-5, C-4, or D-5** of Worksheet 1).

Attach Worksheet 1 and any related calculations.

**If the assessable emission identified in questions 3 and 4 experienced periods of excess emissions during the reporting year, then the owner/operator should complete *either* question 6 or question 7, as appropriate. If no excess emissions were experienced, then the owner/operator should skip to question 8 and copy the quantity from question 5.i to question 8. The owner/operator then will have completed this form for the assessable emission in question.**

**Question 6 summarizes excess emissions calculations based on source test data. Question 7 calculates excess emissions by assuming their equivalence to operation without a pollution control device. A continuation sheet of the form provides space to report additional periods of excess emissions. The owner/operator should complete as many copies of the form continuation sheet as necessary to report emissions associated with all periods of excess emissions.**

- 6. Provide the following information for each excess emission period for which emissions are being calculated through source test data (from Part D or E of Worksheet 2). Space has been provided on the answer sheet to calculate excess emissions for two (2) upset periods; if the owner/operator needs to report additional periods, he/she should complete and attach as many copies of the answer as necessary.

The owner/operator should note that subparts **a** through **e** will be completed for *each* of the three (3) source tests. Subparts **f** through **i** are based on the three (3) source tests and calculations in Worksheet 2.

- a. Enter the date of the source test.
- b. Specify who conducted the test.
- c. Identify the method used for the source test. Refer to Table CP702 in Form CP702 of the Federal Operating Permit application for a list of methods.
- d. Describe the operating conditions (e.g., process rate) under which the source test was conducted.
- e. Enter the results of *each* of the three (3) runs of the source test.
- f. Enter the Emission Estimate Adjustment Factor **EEAF** calculated in Worksheet 2 (question **D-3 or E-1** of Worksheet 2).

- g. Enter production **P** used in Worksheet 2 (question **D-4** or **E-3** of Worksheet 2). Specify units of measure (e.g., hours, tons of output, etc.).
- h. Enter the verified emission factor  $E_{Favg}$  calculated in Worksheet 2 (question **D-2** or **E-2** of Worksheet 2).
- i. Enter the actual emissions, in tons, calculated in Worksheet 2 (question **D-5** or **E-4** of Worksheet 2).

Attach Worksheet 2 and any related calculations.

- 7. Provide the following information for *each* excess emission period for which emissions are being calculated by assuming equivalence to operation without a control device (Part B of Worksheet 2). Space is provided to use this calculation method for 10 excess emission periods. If the owner/operator needs additional space, he/she should attach copies of the form.
  - a. Enter the control device ID number associated with this emission.
  - b. Enter the pollution control device efficiency. If the owner/operator is assuming an efficiency other than one set forth by LRAPA in Worksheet 2, then the owner/operator should attach a justification and request for LRAPA approval.
  - c. Enter production **P** used in Worksheet 2 (question **B-3**).. Specify units of measure (e.g., hours, tons of output, etc.).
  - d. Enter the actual excess emissions calculated in Worksheet 2 (question **B-4**).

Attach Worksheet 2 and any related calculations.

- 8. Enter the total assessable emissions, in tons. This should represent the sum of question(s) **5.i**, **6.i**, and **7.d**, above.

The owner/operator should complete this form *if* he/she is quantifying emissions of Volatile Organic Compounds (VOCs) through material balance, per OAR 340-220-0150.

The owner/operator may use either of two (2) material balance methods to report assessable emissions on this form.

- The owner/operator may use EPA Method 18, 24, or 25 (per 40 CFR Part 60) to determine the amount of VOC added to the process, the amount of VOC consumed in the process, and/or the amount of VOC recovered in the process.
- The owner/operator may use a facility-specific method specified in the owner/operator's Federal Operating Permit (Permit).

### **Instructions**

1. Enter the facility name. Include a site identifier if the corporation has more than one (1) site by the same name in Oregon.
2. Enter the permit number.

**VOC emissions from the usage of paints, coatings, and inks should be reported in question 3. VOC emissions from other solvent uses should be reported in question 4.**

3. For each device/process for which assessable emissions of VOCs from paints/coatings/inks are being quantified, provide the following information:
  - a. The device/process ID number. If the device/process ID does not indicate the type of device (e.g., a device identified as "paint booth #1" clearly is a paint booth), the owner/operator should add a word or two to describe the device.
  - b. The name of the paint/coating/ink.
  - c. The quantity of paint/coating/ink used during the reporting year, in gallons.
  - d. The density of the paint/coating/ink, in pounds per gallon (lbs/gal).
  - e. The percentage by weight of nonexempt solvents. (See OAR 340-200-0020 for a discussion of exempted solvents under the definition of Volatile Organic Compounds.)
  - f. The percent efficiency of any control device used for the device/process. If a control device is used, the owner/operator should attach a page that references by ID number the device/process in question, specifies the control device by ID number, and explains the calculations of the device's efficiency. Enter the percent in the form as a decimal (e.g., 90 percent is "0.90" *NOT* "90").
  - g. The quantity of VOC-containing waste generated through the application of the paint/coating/ink identified in **b**. If the VOC content of the waste generated is negligible, then the owner/operator may choose not to deduct the waste quantity from the overall usage quantity and VOC emissions calculation. If the owner/operator does wish to deduct the VOC content of the waste, however, then he/she will need to know the following information: the waste quantity, in pounds, generated during the reporting year as a result of the paint/coating/ink usage; the density of the waste; and the VOC content of the waste. The owner/operator should attach supporting data and assumptions to document the following calculation. Enter the product, in units of *pounds*, into column **g** on the answer sheet.

**Total Emissions of Volatile Organic Compounds: Material Balance**

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$$g = \text{waste quantity} \times \text{waste density} \times \text{waste VOC content}$$

- h. The quantity of VOCs emitted through the use of the paint/coating/ink in this device/process during the reporting year, in pounds. Column **h** is calculated through the equation:

$$h = [(c \times d \times e) - g] \times (1 - f)$$

- i. The quantity of VOCs emitted by the device/process during the reporting year, in tons. Column **i** is calculated by dividing the quantity in column **h** by 2,000 pounds.
- j. The total quantity of VOCs emitted by all paint/coating/ink usage, in tons.

4. For each device/process for which assessable emissions of VOCs from other solvent uses are being quantified, provide the following information:

- a. The device/process ID number. If the device/process ID does not indicate the type of device (e.g., a device identified as "boiler #1" clearly is a boiler), the owner/operator should add a word or two that describes the type of device.
- b. The name of the solvent.
- c. The quantity of solvent used during the reporting year, in gallons.
- d. The density of the solvent, in pounds per gallon (lbs/gal).
- e. The percentage by weight of nonexempt solvents. (See OAR 340-200-0020 for a discussion of exempted solvents under the definition of Volatile Organic Compounds.)
- f. The percent efficiency of the VOC control device used on the device/process. If a control device is used, the owner/operator should attach a page that references by ID number the device/process in question, specifies the control device by ID number, and explains the calculations of the device's efficiency. Enter the percent in the form as a decimal (e.g., 90 percent is "0.90" **NOT** "90").
- g. The quantity of solvent consumed by or recovered from the device/process (e.g., spent solvents). The emissions associated with the VOC content of this quantity should be deducted from the overall emissions calculations. The owner/operator should enter the total quantity, in units of *gallons*, of solvent consumed by or recovered from the device/process during the year. The owner/operator should attach supporting data and calculations.
- h. The quantity of VOCs emitted by the device/process during the reporting year, in pounds. Column **h** is calculated through the equation:

$$h = (c - g) \times d \times e \times (1 - f)$$

- i. The quantity of VOCs emitted by the device/process during the reporting year, in tons. Column **i** is calculated by dividing the quantity in column **h** by 2,000 pounds.
- j. The total quantity of VOCs emitted by other solvent usage, in tons.

5. The total quantity of VOCs emitted, in tons. This quantity is calculated by summing **3.j** and **4.j**.

**Total Sulfur Dioxide Emissions: Material Balance**

The owner/operator should complete this form *if* he/she is quantifying emissions of Sulfur Dioxide (SO<sub>2</sub>) through material balance, per OAR 340-220-0160.

The owner/operator should quantify SO<sub>2</sub> emissions by calculating the sulfur content of all fuels used during the reporting year against total fuel usage. The owner/operator must use ASTM methods to measure the fuel sulfur content for each quantity of fuel burned. Alternately, the owner/operator may purchase fuel from a dealer that certifies the fuel content. In either case, the owner/operator should attach records attesting the sulfur content of all fuels used during the year and identified on this form.

The owner/operator will use the following equation to calculate SO<sub>2</sub> emissions from fuel usage:

$$SO_2 = \%S \times F \times 2$$

Where: SO<sub>2</sub> = sulfur dioxide emission for each quantity of fuel, in tons  
 %S = percent sulfur content in the fuel being burned  
 F = quantity of fuel burned, in tons  
 2 = pounds of sulfur dioxide per pound of sulfur

**Instructions**

1. Enter the facility name. Include a site identifier if the corporation has more than one site by the same name in Oregon.
2. Enter the permit number.
3. For *each* device/process for which assessable emissions of SO<sub>2</sub> from fuel usage are being quantified, provide the following information. A continuation sheet of the form is provided if the owner/operator needs additional space to list the devices/processes and associated fuels.
  - a. The device/process ID number. If the device/process ID does not indicate the type of device (e.g., a device identified as "boiler #1" clearly is a boiler), the owner/operator should add a word or two that describes the type of device.
  - b. The name(s) of the fuel(s) (e.g., residual oil, natural gas, etc.) burned in the device/process identified in **3.a**. The owner/operator should identify one (1) fuel per line.
  - c. The quantity of fuel burned, in common units (e.g., gallons for residual oil, cubic feet for natural gas). Specify the units.
  - d. The quantity of fuel in column **c**, *converted to tons*.
  - e. The percent sulfur content of the fuel specified in column **b**. Enter the percent in *decimals* (e.g., 20 percent should be entered as "0.20", **NOT** as "20").  
  
 If the device/process is a coal-fired steam-generating unit with an ESP, then the owner/operator should multiply the sulfur content of the fuel by 0.97 *before* entering the product into column **e** (e.g., 0.20 x 0.97).
  - f. The ASTM method used to verify the fuel sulfur content. If the dealer certified the content, enter "dealer."
  - g. The quantity of SO<sub>2</sub> emitted by the device/process during the reporting year, in tons. Column **g** is calculated through the equation:

$$g = e \times d \times 2$$

**Total Sulfur Dioxide Emissions: Material Balance**

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- 4. The total quantity of SO<sub>2</sub> emitted from all devices/processes identified, in tons. If the owner/operator has used a continuation sheet of the form, then the quantity entered in this question **4** should sum the emissions from the devices/processes identified on the primary form and the form continuation sheet(s).

The owner/operator should complete this form if emissions are being quantified based on continuous monitoring system (CMS) data.

**Instructions**

1. Enter the facility name. Include a site identifier if the corporation has more than one site by the same name in Oregon.
2. Enter the permit number.
3. For each assessable emission for which emissions are quantified through CMS data, provide the following information.
  - a. Enter the device/process ID number. If the device/process ID does not indicate the type of device (e.g., a device identified as "boiler #1" clearly is a boiler), the owner/operator should add a word or two that describes the type of device.
  - b. Identify the regulated air pollutant being quantified for the device/process identified in **3.a**.
  - c. Indicate (yes or no) whether the CMS was operated in accordance with ODEQ's *Continuous Monitoring Manual*, with the owner/operator's Permit conditions, and with all applicable rules from OAR Chapter 340. If the owner/operator indicates "no," then the owner/operator may not use CMS data to calculate actual emissions and should not proceed with this form.
  - d. Reference the page of the appropriate Form CP701, Compliance Demonstration by Continuous Monitoring System, from the owner/operator's Federal Operating Permit (Permit) application, on which the CMS for the emissions unit to which this device/process belongs is described.
  - e. List the monthly emissions totals.
  - f. Sum the monthly emissions listed under **3.e**. This is the CMS subtotal.
  - g. Enter the total operating time (in hours) of the device/process identified in question **3.a** during the reporting year.
  - h. Enter the period of time (in hours) for which the CMS data are unacceptable and/or during which the CMS was not operating.
  - i. Calculate the actual data availability, in percent. This information demonstrates that the monitor has worked properly and that the data is adequate for purposes of calculating fees based on continuous emissions monitoring. To calculate the data availability, follow the steps below.
    - i. Subtract the quantity in question **3.h** from the total operating time identified in question **3.g**.
    - ii. Divide the result of item **i** by the total operating time identified in question **3.g**.
    - iii. Multiply that by 100.

$$\{[(\text{total operating time } \mathbf{3.g}) - (\text{unacceptable data \& downtime } \mathbf{3.h})] / \text{total operating time } \mathbf{3.g}\} \times 100$$

Enter the result as a *decimal* (i.e., 90 percent is "0.90" NOT "90"). If the data availability is greater than or equal to 0.90, then skip **3.j** and enter a zero in **3.k**.

**Emissions Based on Continuous Monitoring System Data**

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j. If the CMS data comprises less than 90 percent of the device/process operating time for the reporting year, determine the 90th percentile value for the available CMS data for the device/process identified in **3.a**. This is the monitoring value below which 90 percent of the data fall.

k. Calculate emissions during monitor downtime. This is equal to:

$$(90\text{th percentile value } \mathbf{3.j}) \times (\text{monitor downtime } \mathbf{3.h})$$

l. Calculate the total emissions. This is equal to:

$$(\text{CMS subtotal } \mathbf{3.f}) + (\text{emissions during downtime } \mathbf{3.k})$$

The owner/operator should complete this worksheet *only* if he/she has determined to use Form F1103, Verified Emission Factor, to report emissions for fee purposes. The owner/operator will need to complete this worksheet *once* for *each* assessable emission to be reported on Form F1103. This worksheet helps the owner/operator apply the equations identified in OAR 340-220-0170 to determine actual emissions using a verified emission factor for the assessable emissions in question. The owner/operator should attach the completed worksheet to Form F1103.

The owner/operator will need to have data from a minimum of three (3) source tests, for which three (3) runs *each* have been conducted, for the assessable emission in question.

All owners/operators completing this worksheet should begin by completing Part A. Based on the results of Part A, some owners/operators will proceed to Part B while others will proceed to Part C or Part D.

**Part A**

- A-1. Identify the assessable emission for which this worksheet is being completed.
- A-2. In the space below, determine the emission factor for each source test run. Use an identifier (e.g., T1R1 for test 1, run 1) for each source test run. To calculate the emission factor, divide the emissions (in pounds per hour) for the test run by the applicable process rate during that test run.

<u>Run</u>	<u>Emissions</u> (lbs/hr)	<u>Process Rate</u> (specify units/hr)	<u>Emission Factor</u> (specify units)
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- A-3. Perform a regression analysis on the emission factors calculated in question A-2. The regression analysis will determine the best-fit equation and the correlation coefficient  $R^2$ . Enter the results of the calculation on the line provided.

$R^2 =$

If  $R^2$  is less than 0.50, then the owner/operator should proceed to **Part B**.

If  $R^2$  is greater than 0.50, then the owner/operator should answer question **A-4**.

- A-4. If question A-3 calculated a correlation coefficient  $R^2$  of greater than 0.50, then indicate whether the process operation is *constant* or *variable*.

If the owner/operator indicates constant, then he/she should proceed to Part C. If

the owner/operator indicates variable, then he/she should proceed to Part D.

Part B

The owner/operator should complete this part of Worksheet 1 **IF**  $R^2$  (question A-3) is less than 0.50. This part of Worksheet 1 helps the owner/operator determine the Emissions Estimate Adjustment Factor (EEAF) and the actual emissions in a manner that recognizes the relatively weak relationship between emissions and process rates, as revealed by the fact that the correlation coefficient  $R^2$  is less than 0.50.

The owner/operator will need to solve two (2) equations.

The EEAF equation is as follows:

$$EEAF = 1 + SD/EF_{avg} \quad \text{Where: } \begin{array}{l} EEAF = \text{Emissions Estimate Adjustment Factor} \\ SD = \text{standard deviation of the test run emission factors} \\ EF_{avg} = \text{average of the test run emission factors} \end{array}$$

Actual emissions will be calculated as follows:

$$AE = EF_{avg} \times EEAF \times P \quad \text{Where: } \begin{array}{l} AE = \text{actual emissions} \\ EF_{avg} = \text{average of the test run emission factors} \\ EEAF = \text{emissions estimate adjustment factor} \\ P = \text{total production for the year} \end{array}$$

B-1. Calculate **SD**. Enter **SD** on the line provided. **SD** =

B-2. Calculate  $EF_{avg}$ . Enter  $EF_{avg}$  on the line provided.  **$EF_{avg}$**  =

**The owner/operator should copy the verified emission factor  $EF_{avg}$  into question 5.h on Form F1103.**

B-3. Determine EEAF. Enter the calculation on the line provided.  **$EEAF = SD/EF_{avg} + 1 =$**

**The owner/operator should copy EEAF into question 5.f on Form F1103.**

B-4. Determine the total annual production **P** for the device/process in question during the reporting year. If the device/process in question experienced any periods of excess emissions, then the production that took place during those periods should be *excluded* from **P** here. Enter the total production **P** on the line provided. **P** =

**The owner/operator should copy P into question 5.g on Form F1103.**

B-5. Determine the actual emissions **AE** by multiplying  $EF_{avg}$  (question B-2) by **EEAF** (question B-3) by **P** (question B-4). Enter the calculation on the line provided.  **$AE = EF_{avg} \times EEAF \times P =$**

**The answer to question B-5 is the actual emissions during the reporting year. The owner/operator should enter this quantity into question 5.i on Form F1103.**

**Part C**

The owner/operator should complete this part of Worksheet 1 **IF** question A-3 calculated  $R^2$  of greater than 0.50 **AND** question A-4 indicated that the process operates at a constant, rather than variable rate.

The owner/operator will need to solve the following equations.

The EEAF equation is as follows:

$$EEAF = 1 + (1 - R^2) \quad \text{Where: } \begin{array}{l} EEAF = \text{Emissions Estimate Adjustment Factor} \\ R_2 = \text{correlation coefficient (from question A-3)} \end{array}$$

Actual emissions will be calculated as follows:

$$AE = EF_{avg} \times EEAF \times P \quad \text{Where: } \begin{array}{l} AE = \text{actual emissions} \\ EF_{avg} = \text{average of the test run emission factors} \\ EEAF = \text{emissions estimate adjustment factor} \\ P = \text{total production for the year} \end{array}$$

**C-1.** Calculate EEAF. Enter EEAF on the line provided.  $EEAF = 1 + (1 - R^2) =$

**The owner/operator should copy EEAF into question 5.f on Form F1103.**

**C-2.** Calculate  $EF_{avg}$ . Enter  $EF_{avg}$  on the line provided.  $EF_{avg} =$

**The owner/operator should copy  $EF_{avg}$  into question 5.h on Form F1103.**

**C-3.** Determine the total annual production **P** for the operation in question during the reporting year. If the device/process in question experienced any periods of excess emissions, then the production that took place during those periods should be *excluded* from **P** here. Enter the total production **P** on the line provided.  $P =$

**The owner/operator should copy P into question 5.g on Form F1103.**

**C-4.** Calculate **AE** by multiplying **EEAF** (question **C-1**) by  $EF_{avg}$  (question **C-2**) by **P** (question **C-3**). Enter **AE** on the line provided.  $AE = EEAF \times EF_{avg} \times P =$

**The answer to question C-4 is the actual emissions during the reporting year. The owner/operator should enter this quantity into question 5.i on Form F1103.**

**Part D**

**The owner/operator should complete this part of Worksheet 1 IF question A-3 calculated  $R^2$  of greater than 0.50 AND question A-4 indicated that the process operates at a variable, rather than constant, rate.**

Because the process rate of operation is variable, the owner/operator will need to identify annual production at three (3) different levels of operation: minimum, normal, and maximum.

D-1. Determine production rate **PR** levels from the source tests, as follows:

- PR<sub>max</sub>** = average maximum production rates from at least three (3) source test runs =
- PR<sub>norm</sub>** = average of normal production rates from at least three (3) source test runs =
- PR<sub>min</sub>** = average of minimum production rates from at least three (3) source test runs =

D-2. Determine average emission factors **EF** for each production rate.

- EF<sub>max</sub>** = average emission factor at maximum production rate from at least three (3) test runs =
- EF<sub>norm</sub>** = average emission factor at normal production rate from at least three (3) test runs =
- EF<sub>min</sub>** = average emission factor at minimum production rate from at least three (3) test runs =

**The owner/operator should enter all three (3) emissions factors calculated above into the space provided for question 5.h on Form F1103.**

D-3. Calculate the total annual production **P** that occurred at each of the three (3) production levels (maximum, normal, and minimum). If the device/process in question experienced any periods of excess emissions, then the production that took place during those periods should be *excluded* from the production calculations here. The production levels are defined as follows:

- Maximum level = any production level *greater than*  $[(PR_{max} + PR_{norm})/2]$
- Normal level = any production rate *less than*  $[(PR_{max} + PR_{norm})/2]$  and *greater than*  $[(PR_{norm} + PR_{min})/2]$
- Minimum level = any production rate *less than*  $[(PR_{norm} + PR_{min})/2]$

- P<sub>max</sub>** = total production at maximum level of operation =
- P<sub>norm</sub>** = total production at normal level of operation =
- P<sub>min</sub>** = total production at minimum level of operation =

**The owner/operator should enter all three (3) production levels calculated above into the space provided for question 5.g on Form F1103.**

D-4. Calculate **EEAF** and enter it on the line provided. **EEAF** =  $1 + (1 - R^2) =$

**The owner/operator should enter this value in question 5.f on Form F1103.**

D-5. Calculate **AE** and enter it on the line provided.

**AE** =  $EEAF \times [(EF_{max} \times P_{max}) + (EF_{norm} \times P_{norm}) + (EF_{min} \times P_{min})]$   
**AE** =

**The owner/operator should enter this in question 5.i on Form F1103.**

The owner/operator should complete this worksheet *only* if he/she has determined to use Form F1103, Verified Emission Factor, to report emissions for fee purposes. The owner/operator will need to complete this worksheet *once* for *each* assessable emission to be reported on Form F1103 that experienced excess emissions during periods of startup and shutdown, or upsets during the reporting year. This worksheet helps the owner/operator conduct the calculations described in OAR 340-220-0170 to quantify those excess, startup, and shutdown emissions. The owner/operator need not calculate special emissions factors for startup or shutdown if he/she can demonstrate to LRAPA that emissions do not increase during startup or shutdown. If the owner/operator is unable to so demonstrate, then he/she must calculate emissions factors for those startup and shutdown periods using the methodology described in this worksheet.

The owner/operator should attach the completed worksheet to Form F1103.

All owners/operators completing this worksheet should begin by completing Part A.

**Part A**

- A-1. Identify the assessable emission for which this worksheet is being completed.
- A-2. Indicate which method (method a or method b, below) the owner/operator will use to calculate excess emissions for the assessable emission identified in question A-1.
  - a. The owner/operator will assume that excess emissions are equivalent to operation without a control device.
  - b. The owner/operator will use source test data to calculate excess emissions. If the owner/operator selects a, then he/she should proceed to Part B. If the owner/operator selects b, then he/she should proceed to Part C.

**Part B**

The owner/operator should complete this part of Worksheet 2 *only* if, in question A-2, he/she selected method "a." In this section of Worksheet 2, the owner/operator will calculate the excess emissions as equivalent to operation without a control device. To do so, the owner/operator will adjust the normal emissions factor for this assessable emission, as calculated in Worksheet 1, by the Emissions Estimate Adjustment Factor and the efficiency of the control device.

- B-1. Enter the control device ID number for this assessable emission.
- B-2. Calculate the actual emission factor as follows:

$$\text{Actual emission factor} = (\text{EF}) / (1 - \text{PCDE})$$

Where: EF = Emissions Factor calculated for this assessable emission on Worksheet 1  
 PCDE = Pollution Control Device Efficiency for the control device identified in question B-1\*

\* The owner/operator should note the standard efficiencies for the control devices and pollutants below. If the owner/operator believes that the efficiency of his/her control device is different than the standard identified here, he/she may provide LRAPA information by which to approve or disapprove an alternate PCDE.

<u>Particulate matter:</u>	ESP or baghouse	0.90
	High energy wet scrubber	0.80
	Low energy wet scrubber	0.70
	Cyclonic separator	0.50

## Calculating Startup, Shutdown, and Excess Emissions

## WORKSHEET 2

<u>Acidic gases:</u>	Wet or dry scrubber	0.90
<u>VOCs:</u>	Incinerator	0.98
	Carbon absorber	0.95

Enter the actual emission factor  $EF_A$  on the line provided.  $EF_A =$

- B-3. Specify **P**, the production or production time for which excess emissions are being calculated. If emissions are being calculated for startup and/or shutdown, then **P** may be represented as the period of time for startup/shutdown, rather than in terms of production, since the device/process may not have been actually producing during that time. If emissions are being calculated for an upset, however, then **P** would represent the total production (e.g., number of tons of aluminum) produced during the upset period. **P** =

**The owner/operator should copy the production P into question 7.c of Form F1103.**

- B-4. Calculate the actual excess emissions **AE**. Enter **AE** on the line provided.  $AE = EF_A \times EEF \times P =$

**The answer to question B-4 is the actual emissions for the excess emissions period in question. The owner/operator should copy this quantity to question 7.d of Form F1103.**

### Part C

**The owner/operator should complete this part of Worksheet 2 *only* if he/she will be using source test data to quantify the excess emissions for the assessable emission identified in question A-1. In performing these calculations, the owner/operator will need to have source test data for all periods of excess emissions: startup, shutdown, routine maintenance, and upsets. The owner/operator will need to have a minimum of one (1) source test, with three (3) source test runs, for *each* type of occurrence--startup, shutdown, maintenance, and upset. The process for calculating the excess emissions using source test data is similar to that used on Worksheet 1. The steps identified in this and the following sections thus should be familiar to you.**

- C-1. In the space below, determine the emission factor for each source test RUN. Use an identifier (e.g., T1R1 for test 1, run 1) for each source test run. To calculate the emission factor, divide the emissions (in pounds per hour) for the test run by the applicable process rate during that test run.

<u>Run</u>	<u>Emissions</u> <u>(lbs/hr)</u>	<u>Process Rate</u> <u>(specify units/hr)</u>	<u>Emission Factor</u> <u>(specify units)</u>
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C-2. Perform a regression analysis on the test run emission factors calculated in question C-1. The regression analysis will determine the best-fit equation and the correlation coefficient  $R^2$ . Enter  $R^2$  on the line provided.  $R^2 =$

If  $R^2$  is less than 0.50, then the owner/operator should proceed to **Part D**.

If  $R^2$  is greater than 0.50, then the owner/operator should proceed to **Part E**.

## Part D

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The owner/operator should complete this part of Worksheet 1 *only* if  $R^2$  (question C-2) is less than 0.50. This part of Worksheet 2 helps the owner/operator determine the Emissions Estimate Adjustment Factor (EEAF) and the actual emissions in a manner that recognizes the relatively weak relationship between emissions and process rates, as revealed by the fact that the correlation coefficient  $R^2$  is less than 0.50.

The owner/operator will need to solve two (2) equations. The EEAF equation is as follows:

$$EEAF = 1 + SD/EF_{avg} \quad \text{Where: } \begin{array}{l} EEAF = \text{Emissions Estimate Adjustment Factor} \\ SD = \text{standard deviation of the test run emission factors} \\ EF_{avg} = \text{average of the test run emission factors} \end{array}$$

Actual emissions will be calculated as follows:

$$AE = EF_{avg} \times EEAF \times P \quad \text{Where: } \begin{array}{l} AE = \text{actual emissions} \\ EF_{avg} = \text{average of the emission factors} \\ EEAF = \text{emissions estimate adjustment factor} \\ P = \text{production value or production time for which excess emissions are being calculated} \end{array}$$

D-1. Calculate **SD**. Enter **SD** on the line provided. **SD** =

D-2. Calculate  $EF_{avg}$ . Enter  $EF_{avg}$  on the line provided.  $EF_{avg} =$

**The owner/operator should copy  $EF_{avg}$  to question 6.h of Form F1103.**

D-3. Calculate **EEAF**. Enter **EEAF** on the line provided.

$$EEAF = SD/EF_{avg} + 1 =$$

**The owner/operator should copy EEAF to question 6.f of Form F1103.**

D-4. Specify **P**, the production or production time for which excess emissions are being calculated. If emissions are being calculated for startup and/or shutdown, then **P** may be represented as the period of time for startup/shutdown, rather than in terms of production, since the device/process may not have been actually producing during that time. If emissions are being calculated for an upset, however, then **P** would represent the total production (e.g., number of tons of aluminum) produced during the upset period. **P** =

**The owner/operator should copy P to question 6.g of Form F1103.**

D-5. Determine the actual emissions **AE**. Multiply  $EF_{avg}$  (question D-2) by **EAAF** (question D-3) by **P** (question D-4). Enter **AE** on the line provided.  $AE = EF_{avg} \times EAAF \times P =$

**The answer to question D-5 is the actual excess emissions during the reporting year. The owner/operator should enter this quantity in question 6.i on Form F1103.**

## Part E

**The owner/operator should complete this part of Worksheet 1 if question C-2 calculated  $R^2$  of greater than 0.50.**

The owner/operator will need to solve the following equations.

The EAAF equation is as follows:

$$EAAF = 1 + (1 - R^2) \quad \text{Where: EAAF = Emissions Estimate Adjustment Factor}$$

$R_2$  = correlation coefficient (from question C-2)

Actual emissions will be calculated as follows:

$$AE = EF_{avg} \times EAAF \times P \quad \text{Where: AE = actual emissions}$$

$EF_{avg}$  = average of the emission factors  
EAAF = emissions estimate adjustment factor  
P = production value/time for which excess emissions are being calculated

**E-1.** Calculate **EAAF**. Enter **EAAF** on the line provided.  $EAAF = 1 + (1 - R^2) =$

**The owner/operator should copy EAAF to question 6.f of Form F1103.**

E-2. Calculate  $EF_{avg}$ . Enter  $EF_{avg}$  on the line provided.  $EF_{avg} =$

**The owner/operator should copy  $EF_{avg}$  to question 6.h of Form F1103.**

E-3. Specify **P**, the production or production time for which excess emissions are being calculated. If emissions are being calculated for startup and/or shutdown, then **P** may be represented as the period of time for startup/shutdown, rather than in terms of production, since the emission unit may not have been actually producing during that time. If emissions are being calculated for an upset, however, then **P** would represent the total production (e.g., number of tons of aluminum) produced during the upset period. **P** =

**The owner/operator should copy P to question 6.g of Form F1103.**

E-4. Calculate **AE** by multiplying **EEAF** (question **E-1**) by  $E_{Favg}$  (question **E-2**) by **P** (question **E-3**). Enter **AE** on the line provided.  $AE = EEAF \times E_{Favg} \times P =$

**The owner/operator should copy AE to question 6.i of Form F1103.**