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**MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY
SOURCE EMISSION TESTING GUIDANCE**

A compliance emissions test or “stack test” is conducted to measure the amount of air pollution that is emitted from an emissions point at a stationary source. The emissions test is performed following specific procedures developed by the US Environmental Protection Agency (EPA) or depending on the pollutant and facility involved, by an acceptable method developed by EPA or another organization. Alternative methods or deviations from a promulgated method must receive approval prior to the test. A complete listing of test methods is available under EPA’s bulletin board system at <http://www.epa.gov/ttn/emc/>. The emissions test and report must provide data that is adequate to determine compliance with the emissions standards specified in the facility’s Air Emission License or by State or Federal Regulations.

The Bureau of Air Quality, Division of Licensing and Compliance, Emissions Testing Unit oversees the submittal, review and data entry and control of all emissions tests performed in the State of Maine. The Emission testing process consists of the following steps;

Emissions Test Protocol

The emissions test protocol (protocol) must be submitted to the BAQ Emissions Testing Unit thirty (30) days prior to the date of the actual emissions test. The thirty day timeframe may be waived for a good cause and upon approval of the Emissions Testing Unit. The protocol, at a minimum must contain the following;

1. Identification and description of the stationary source to be tested. At a minimum, the description shall include:
 - a) Type of combustion or process being tested at the facility;
 - b) Type and quantity of all fuel consumed in the process including schematics of fuel flow from delivery through all tanks, pumps, and meters to the burners; where appropriate, the type and quantity of raw and finished materials used in the process, including schematics of material flow through all relevant equipment from delivery through finished product;
 - c) Description of any cyclical or batch operations which would tend to produce variable emissions with time and the impact of such variable emissions on the tested emission rate;
 - d) All relevant operating parameters used to regulate the process, and parameter values representative of the facility's normal process and operating conditions;



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- e) Design operating capacity and operating capacities of the process(es) representative of the facility's normal process and operating conditions which will be maintained during the test;
 - f) Where applicable, the identification and description of any and all soot blowing equipment found on each boiler and a soot blow schedule (including duration of soot blow cycles) representative of normal operation for each boiler;
 - g) Sufficient documentation to demonstrate the validity of the data submitted pursuant to paragraphs (a) through (f) above.
2. Identification and description of the emission control equipment associated with the source to be tested including:
 - a) Type of emission control device(s), including design capacity and efficiency;
 - b) Pollutant(s) controlled by the emission control device;
 - c) All relevant operating parameters used to monitor the performance of the emission control device(s) and parameter values representative of the emission control device's normal operating condition;
 - d) Identification of all factors having an impact on emission control device performance;
 - e) Manner in which control equipment is to be operated during the test;
 - f) Sufficient documentation to demonstrate the validity of the data submitted pursuant to paragraphs (a) through (e) above.
 3. Type of pollutant(s) to be tested (e.g. particulate matter (PM), NO_x, SO₂, VOC, etc.)
 4. A description of the emission testing equipment including a schematic diagram of the sampling train.
 5. A description of the sampling and analysis procedures. Any variation from an applicable standard Reference Test Method shall be indicated, and justification for each variation from the Reference Test Method shall be supplied and approval requested from the Department or EPA.
 6. A detailed sketch, with dimensions, indicating the flow of exhaust gases from the process, through the emission control equipment and associated ductwork, to the stack.



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7. Pursuant to 40 CFR, Part 60, Reference Method 1:

- a) An elevation view with dimensions of the stack configuration indicating the location of the sampling ports and distances to the nearest upstream and downstream flow interferences.
 - b) A cross sectional sketch of the stack at the sampling location with dimensions indicating the location of the sampling traverse points.
8. Estimated flue gas conditions at sampling locations, including temperature, moisture content and velocity pressure.
9. A list of the process and control equipment logs and operating data required to document the representativeness of normal process and operating conditions, and which will be collected at regular intervals during the sampling periods.
10. Copies of all field data sheet forms to be used during the tests including those used to monitor process and emission control equipment operations.
11. Name of Emission Testing Company Project Manager.
12. A description of the procedures for maintaining the integrity of the samples collected, including chain of custody and quality control assurance.

The protocol will be reviewed by the emissions test unit and/or the compliance inspector assigned to the facility and if there are any errors or omissions that need to be addressed they will let the test company know either in writing or by email.

Protocol Meeting

1. A protocol meeting may be held at the request of the facility or the regulatory agency. This meeting may be waived on the concurrence of the facility and the acceptance of the draft by the regulatory agency.

Emission Test

The emissions test must follow the preapproved protocol and follow the reference methods and operating parameters in it as well as the following general conditions;

1. All emissions testing shall be performed in accordance with the procedures specified in the Code of Federal Regulations, Title 40, Part 60, Appendix A, Standards of Performance for New Stationary Sources, as amended or other applicable federal or state regulation. A satisfactory test shall consist of three repetitive runs. A fourth "soot-blow" run may be required for combustion sources



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having intermittent soot blowing. Any variation in the sampling or analytical procedure or alternate test method shall be indicated in the pretest information and receive approval by the Bureau of Air Quality prior to testing.

2. The Bureau of Air Quality may require that an agency observer(s) be present during all testing and laboratory analysis.
3. The test location shall be safe for all concerned.
4. Prior to the protocol meeting the sampling location shall be inspected by the source for acceptable test conditions and modified if necessary before the compliance test(s).
5. All emission data submitted to or obtained by the Bureau of Air Quality, including the Protocol and the Emission Test Report, shall be available to the public.
6. All information required to be logged during testing shall be recorded at regular time intervals:
 - a) For a run of 90 minutes or less - 10 minute intervals
 - b) For a run greater than 90 minutes- 15 minute intervals
7. A cyclonic flow check shall be performed prior to each compliance test.
8. All testing shall be conducted under circumstances representative of the source's normal process and operating conditions.

Emission Test Report

The Emission Test Report shall contain all pertinent data concerning the tests, including a description of the process and operating conditions under which the tests were conducted, the results of the tests (including a conclusion of compliance or non-compliance with the applicable standard), and test procedures. While the exact format of the test report may vary according to the source being tested and the Reference Test Method employed for the test, listed below are the elements minimally required in the test report submittal. The report should also note if there where any deviations from the emissions test protocol and the reasons for them. Note that this list is not necessarily inclusive; additional elements of the test report may be required as necessary to ensure the completeness of the report.

1. Introduction
 - a) Source identification, location, and date(s) of tests.
 - b) Purpose of tests.
 - c) Description of source being tested.
 - d) Name and affiliation of person in charge of conducting the source test.
 - e) Data attesting to the representativeness of source or processes in operation during the testing.



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2. Summary of results

- a) Operating and emission data reported in the units of the applicable emission standard(s).
- b) Comparison with the applicable emission standard.
- c) Summary sheet of results.

3. Source description

- a) Description of process including operation of emission control equipment.
- b) Type and quantity of all fuel consumed in the process during the test(s); and where appropriate, the type and quantity of raw and finished materials used in the process during the test(s).
- c) All relevant operating parameters used to regulate the process, and parameter values recorded during the test(s).
- d) All relevant operating parameters used to monitor the performance of the emission control device(s) and parameter values recorded during the test(s).

4. Sampling and analytical procedure

- a) Description of the sampling train and field procedures.
- b) Description of recovery and analytical procedures.
- c) Sketch indicating sampling port locations relative to process, emission control equipment, upstream and downstream flow disturbances.
- d) Sketch of cross-sectional view of stack indicating traverse point locations.

5. Test results and discussion

- a) Detailed tabulation of results including process operating conditions and flue gas conditions.
- b) Discussion of the results relative to operating parameters and applicable emission standards.
- c) Detailed discussion of and justification for any divergence from normal sampling procedures or operating conditions which could have affected test results or the representativeness of the test results.

6. Calculation and data reduction methods

- a) Description and presentation of computational methods, including equation format used to obtain final emission results from field data.

7. Copies of all field data collected during the test(s), including sampling data sheets and process operating logs and charts.

8. Copies of all analytical laboratory data, including oil samples, where appropriate.

9. Calculation sheets or computer input and output data.

10. Sampling equipment and laboratory calibration data.



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11. Names and titles of all personnel (including operators and supervisory staff) and organizations participating in the test(s).
12. Visible Emission observations performed during the test(s) (as applicable).
13. Cyclonic flow check data.
14. Copies of Continuous Emission Monitor data and/or Continuous Opacity Monitor data collected during the test(s) as applicable.
15. Calibration sheets for the dry gas meter, orifice meter, pitot tube, and temperature thermocouples.
16. Calibration sheets for all process equipment and parameter monitors from which required data will be recorded.
17. A list of pre-weighed filters that were used (where applicable) during emission testing, including identification and tare weights.

All charts, logs, and data sheets shall be clearly marked such that all required information is easily ascertained. All charts, logs, and data sheets shall be clearly marked to indicate the beginning and end of each test run as well as all periods of delay during test sampling.

If at any point, either prior to, during or after the emissions test, there are any questions please feel free to contact the Department's Emissions Testing Unit either at 207-287-7644 or at StackTestDEP@maine.gov