STANDARD PROTOCOL (SP-001)
Gas and No. 2 Oil Fired Small Combustion Units

SECTION A. GENERAL REQUIREMENTS

1. Regulatory Authority and General Description

All performance testing shall be conducted in accordance with the provisions of BAQ-GPA/GP-1, 40 CFR Part 60 Subpart Dc or 40 CFR Part 63, Subparts DDDDD and JJJJJJ, and other applicable regulatory requirements. As an alternative to a site-specific protocol, Natural Gas or No. 2 Oil Fired Small Combustion Units that operate under GP-1 may opt to utilize this Standard Protocol (SP), whose conditions are described herein.

2. Contents

3. Definitions

Words and terms that are not otherwise defined in this SP shall have the meanings set forth in 40 CFR Part 60 Subpart Dc or 40 CFR Part 63, Subparts DDDDD and JJJJJJ and BAQ-GPA/GP-1 unless the context indicates otherwise. The meanings set forth in applicable definitions codified in the Code of Federal Regulations (CFR), included in the aforementioned subpart shall also apply to this SP.

Combustion Unit — A stationary equipment used to burn fuel primarily for the purpose of producing power or heat by indirect heat transfer.

Gas-fired Boiler — Includes any boiler that burns gaseous fuels not combined with any solid fuels and burns fuel oil only during periods of gas curtailment, gas supply interruption, startups, or for periodic testing, maintenance, or operator training on fuel oil. Periodic testing, maintenance, or operator training on fuel oil shall not exceed a combined total of 48 hours during any calendar year.

Maximum Routine Operating Conditions (MROC) – For the purposes of this SP, the facility is expected to test at 90.0% or higher of either the maximum routine heat input measured in MMBtu/hr or steam production measured in units of lb/hr. *The Clean Air Act National Stack Testing Guidance* contains more clarification on “REPRESENTATIVE TESTING CONDITIONS”

Natural Gaseous Fuel —

(a) Natural gas, a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; **or**

(b) Liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835 (incorporated by reference, see § 63.14); **or**

(c) A mixture of hydrocarbons that maintains a gaseous state at ISO conditions (i.e., a temperature of 288 Kelvin, a relative humidity of 60 percent, and a pressure of 101.3 kilopascals). Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 35 and 41 megajoules per dry standard cubic meter (950 and 1,100 Btu per dry standard cubic foot); **or**

(d) Propane or propane-derived synthetic natural gas. Propane means a colorless gas derived from petroleum and natural gas, with the molecular structure C_3H_8.

Rated Capacity – Highest heat input rate, measured in MMBtu/hr, or steam production rate, measured in lb/hr, a combustion unit can achieve as determined by the manufacturer.

Small Combustion Unit — A combustion unit with rated capacity equal to or less than 100 million Btu per hour of heat input fueled by gaseous fuel, or by No. 2 or lighter (viscosity less than or equal to 5.82 cSt) commercial fuel oils.

Source — An air contamination source.

4. Applicability/Scope

This Standard Protocol may not be used for sources other than Gas or No. 2 Oil Fired Small Combustion Units, subject to BAQ-GPA/GP-1. 40 CFR Part 60 Subpart Dc or 40 CFR Part 63, Subparts DDDDD and JJJJJJ takes precedence over applicable state requirements.

5. Authorization to Use SP-001

(a) *Notification for Authorization to Use SP-001.* Any facility subject to GP-1 that agrees to meet the requirements of this SP is authorized to use it.

(b) *Terms of Authorization to Use SP-001.* This SP authorizes performance testing at the specific facility detailed in the Test Notification for the specified performance test program. DEP's authorization to use this Standard Protocol will expire 6 months from the date of the test notification if the owner or operator fails to commence testing. The expiration of the authorization to use this Standard Protocol will require a new test notification.

(c) *Lapse in Testing.* If there is a lapse in testing, DEP must be notified.

(d) *Transfer of Ownership.* The Authorization to Use this SP may be transferred from the owner or operator of a facility.

(e) *Modification, Suspension, or Revocation of SP-001 or Authorizations to Use SP-001.*

(i) DEP may modify, suspend, or revoke and reissue this Standard Protocol.

(ii) This Standard Protocol may be modified, suspended, or revoked if DEP determines that the Small Combustion Unit cannot be accurately tested under this Standard Protocol.

(iii) An Authorization to Use SP-001 may be suspended or revoked if DEP determines that, at any time, the owner, operator, and/or their subcontractor(s) has failed to test the source(s) in accordance with the terms and conditions of this Standard Protocol.

(iv) Upon suspension or revocation of an Authorization to Use SP-001, the owner or operator shall immediately cease use of this Standard Protocol.

(v) Failure to strictly adhere to this Standard Protocol will likely result in a rejection of the test results and may lead to a requirement to retest.

6. Applicable Regulations

(a) Applicable Federal regulations may include, but are not limited to, the following New Source Performance Standards (NSPS), codified at 40 CFR Part 60 and incorporated by reference in 25 Pa. Code § 122.3, and National Emission Standards for Hazardous Air Pollutants (NESHAP), codified at 40 CFR Part 63 and incorporated by reference in 25 Pa. Code § 127.35.

(i) **40 CFR Part 60, Subpart Dc –** Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

(ii) **40 CFR Part 63, Subpart DDDDD** – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

(iii) **40 CFR Part 63, Subpart JJJJJJ** – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.

(b) Applicable state regulations include, but are not limited to, 25 Pa. Code Chapter 139 Sampling and Testing.

(i) Per 25 Pa. Code Chapter 139.11(1), "[p]erformance tests shall be conducted while the source is operating at maximum routine operating conditions or under such other conditions, within the capacity of the equipment, as may be requested by the Department."

(c) General Permit BAQ-GPA/GP-1:

(i) For each small combustion unit constructed under and authorized to operate under GP-1 approved by the Department on or after December 2, 1995 and prior to the date of issuance of GP-1 (January 1, 2023) are subject to GP-1, Section B1(a). Refer to Table 1 in this SP.

(ii) For each small combustion unit constructed under and authorized to operate under GP-1 approved by the Department on or after the date of issuance of GP-1 (January 1, 2023) are subject to GP-1, Section B1(B). Refer to Table 2 in this SP.

7. Test Notifications

Any person proposing to use this SP shall submit a test notification (as discussed in the *Source Testing FAQs* and Section 3 of EPA's *Clean Air ACT National Stack Testing Guidance*) to the applicable DEP Regional Office and DEP's Source Testing Section at least 30-days in advance of the target test date, unless otherwise approved by DEP, who will respond if the notification is inadequate.

Acceptance of all testing is contingent upon the review of, and conformance to, the information in the Source Testing FAQs. Failure to obtain DEP approval may result in rejection of test results and possible enforcement action. Final acceptance of the test results is also contingent upon fulfillment of all the applicable requirements specified in the most current version of DEP's Source Testing Manual.

Postponement or stoppage of a scheduled performance test must be communicated as soon as possible to the Source Testing Section and the applicable Regional Office. A thorough and complete justification in writing via email of the postponement or stoppage must be provided. This would include all preliminary or pretesting, if conducted, that was used in making the decision to postpone or stop. Stoppages/Postponements and their ramifications are addressed in Sections 6 and 7 of EPA's *Clean Air Act National Stack Testing Guidance*.

8. Recordkeeping Requirements

The process parameters listed in Table 3. Process Data Summary (see Section 9. Reporting Requirements) must be monitored and recorded every 15-minutes during performance testing. If a parameter is not applicable, "N/A" must be entered into Table 3.

Quality assurance conducted for the performance testing program must include the following, at a minimum:

(1) maximum routine operating condition (MROC, in terms of heat input measured in MMBtu/hr or steam production rate measured in lb/hr).

(2) date and name of the servicing company and technician that performed the most recent burner tuning.

(3) EPA Methods 3A, 7E and 10 analyzer response time, calibrations, calibration error, drift checks, and bias check (as applicable).

(4) calibration gas certificates.

(5) sampling system (15-minute interval) temperature checks.

9. Reporting Requirements

(a) The test report must conform to (1) the requirements in the Source Test Reports section of the current version of DEP's Source Testing Manual (Revision 3.3, November 2000) and (2) this Standard Protocol.

(b) For test report submittals, refer to the current information in the Source Testing FAQs.

(c) The test report must contain all data collected relating to the performance testing program, such as pre-compliance, preliminary, and informational testing in preparation of the performance test.

(d) If DEP develops a document on the preparation of emission test reports, the submitted report should be formatted as specified in that document. Until then, the submitted report should be formatted as specified in EPA Emission Measurement Center Guideline Document (GD-043) Preparation and Review of Emission Test Reports (December 1998).

(e) Reported test results must be rounded to two or three significant figures. See EPA Emission Measurement Center Technical Information Document (TID-024) Memo on Rounding and Significant Figures (June 6, 1990).

(f) In accordance with 40 CFR §§ 60.4 and 63.10, copies of all test notifications, reports, and other communications shall also be submitted to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI) accessible at https://cdx.epa.gov

(g) The following tables (see Section 6(c) for applicability) must appear in the test report:

Table 1. Source Name (Source ID Number) Test Results Summary (TRS)
Constructed prior to January 1, 2023

Run No.	1	2	3	**Average**	**Standard**	**Compliance Status Pass/Fail**
Test Date						
Fuel Type [NG or No. 2]						
Flow [dscfm]						
Heat Input/Steam Production [MMBtu/hr or lb/hr]						
Heat Input [%MROC]					**90.0**	
Nitrogen Oxides [ppmvd] [ppmvd @ 3% O_2] * [lbs./hour]					**≤30 OR ≤90 ***	
Carbon Monoxide [ppmvd] [ppmvd @ 3% O_2] [lbs./hour]					**≤300.**	
Visible Emissions [Average %] [Highest %]					**≤10% ≤30%**	

*30 ppmvd for gaseous fuel, 90 ppmvd for No. 2 fuel oil.

Table 2. Source Name (Source ID Number) Test Results Summary (TRS)
Constructed on or after January 1, 2023

Run No.	1	2	3	**Average**	**Standard**	**Compliance Status Pass/Fail**
Test Date						
Fuel Type [NG or No. 2]						
Flow [dscfm]						
Heat Input/Steam Production [MMBtu/hr or lb/hr]						
Heat Input [%MROC]					**90.0**	
Nitrogen Oxides [ppmvd] [ppmvd @ 3% O_2]* [lbs./hour]					**≤9 OR ≤90 ***	
Carbon Monoxide [ppmvd] [ppmvd @ 3% O_2] [lbs./hour]					**≤130.**	
Visible Emissions [Average %] [Highest %]					**≤10% ≤30%**	

*9 ppmvd for gaseous fuel, 90 ppmvd for No. 2 fuel oil.

Table 3. Source Name (Source ID Number) Process Data Summary

Run No.	1	2	3	Averages
Test Date				
Test Times				
Fuel Type				
Fuel Usage [scfh or gph]				
Higher Heating Value [Btu/scf]				
Calculated Heat Input [MMBtu/hr]				
Boiler Temperature [°F]				
Manifold Pressure [psi]				
Steam Temperature [°F]				

Table 4. Source Name (Source ID Number) Methods 3A/7E/10 Calibration Summary[1]

Pollutants	Cv	Cdir	ACE	Allowable ACE	Pass (Yes/No)
Oxygen Low (or Zero) Mid High Span Value					
Carbon Dioxide Low (or Zero) Mid High Span Value					
Nitrogen Oxide Low (or Zero) Mid High Span Value					
Carbon Monoxide Low (or Zero) Mid High Span Value					

1. All quality assurance documentation and calculations for the performance test must be included in the test report to provide evidence that the process and testing data is accurate and representative of actual testing conditions.

Table 5. Source Name (Source ID Number) QA Summary[1]

Run No.	1	2	3	**Standard**	**Pass** (Yes/No)
Test Date					
Oxygen					
Span (%)					
Low Bias (% of span)				±5	
Upscale Bias (% of span)				±5	
Low Drift (% of span)				±3	
Upscale Drift (% of span)				±3	
Carbon Dioxide					
Span (%)					
Low Bias (% of span)				±5	
Upscale Bias (% of span)				±5	
Low Drift (% of span)				±3	
Upscale Drift (% of span)				±3	
Nitrogen Oxides					
Span (ppm)					
Low Bias (% of span)				±5	
Upscale Bias (% of span)				±5	
Low Drift (% of span)				±3	
Upscale Drift (% of span)				±3	
Carbon Monoxide					
Span (ppm)					
Low Bias (% of span)				±5	
Upscale Bias (% of span)				±5	
Low Drift (% of span)				±3	
Upscale Drift (% of span)				±3	

1. All quality assurance documentation and calculations for the performance test must be included in the test report to provide evidence that the process and testing data is accurate and representative of actual testing conditions.

10. Source Testing Requirements

(a) Federal Requirements – All performance testing shall be in accordance with EPA Methods 1, 2, 3A, 4, 7E, 9, 10 and 19.

(b) State Requirements – Specific State requirements and common reminders are as follows:

(i) EPA Method 1: Cyclonic flow checks must be conducted and recorded at each testing location. Checks must take place at each traverse point and be consistent with conditions during testing. All sampling ports, meeting EPA Method 1 criteria for spacing, must be accessible. Additionally, all sampling ports must remain stuffed/blocked during all testing activities.

(ii) EPA Method 2: Pitot tube openings must be of proper shape and undamaged. A damaged pitot will void all volumetric flow and mass emission rate data.

(iii) EPA Method 7E: A NO_2 converter efficiency test must be conducted and recorded for each test program but is recommended to be conducted at least daily. A stratification test is required to be conducted and recorded prior to testing.

(iv) EPA Method 7E and 10: Average concentrations must be 20-100% of the span. A NO_x and CO outlet span of 10 ppm is **required** and must be used when the average concentration during any test run is <2 ppm but should be used when the average run concentrations are ≤ 10 ppm. (i.e. Acceptable NO_x Conc. Ranges = Span 20 ppm x 0.2 (or 20%) and 1.0 (100%) = 4-20 ppm.)

(v) All gases must be prepared in accordance with EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards, when commercially available.