



**City of Philadelphia
Department of Public Health
Air Management Services**

PLAN APPROVAL

Approval No: IP17-000009

Date: November 29, 2017

Plant ID: 01573

Owner: SEPTA
Address: 1234 Market Street
Philadelphia, PA 19107

Source: Roberts Complex
Location: 4301 Wissahickon Ave
Philadelphia, PA 19140

Attention: Richard Harris
Phone: 215-580-8144
Email: RHarris@septa.org

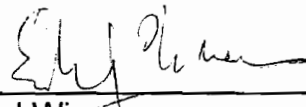
Pursuant to the provisions of Title 3 of the Philadelphia Code, the Air Management Code of February 17, 1995, as amended, and after due consideration of a plan approval application received under the rules and regulations of the Philadelphia Air Pollution Control Board, the City of Philadelphia, Department of Public Health, Air Management Services (AMS) on November 29, 2017, approved plans for the installation and temporary operation of the air contamination device(s) described below:

Source Location	Source Description	Rated Capacity	Type of fuel
Outside	<u>Combined heat and power (CHP) Generator Unit G-01 with Steuler SCR (urea injection) and Oxidation Catalyst (OC) System</u> Manufacturer: GE Jenbacher Model: JMS624H01 Engine Model Year : 2016 Serial No: XXXX	6113 HP	Natural gas (4- Stroke lean burn)
Outside	<u>Combined heat and power (CHP) Generator Unit G-02 with Steuler SCR (urea injection) and Oxidation (OC) Catalyst System</u> Manufacturer: GE Jenbacher Model: JMS624H01 Engine Model Year : 2016 Serial No: XXXX	6113 HP	Natural gas (4- Stroke lean burn)

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This Plan Approval expires on May 29, 2019. If construction has not been completed by this date, an application for either an extension or new plan approval must be made. The conditions of this plan approval will remain in effect until they are incorporated in an operating permit.

This Plan Approval is subject to conditions prescribed in the attachment.

 11/29/17

Edward Wiener
Chief of Source Registration
(215) 685-9426

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1. Each combined heat and power generator (CHP) and its associated selective catalytic reduction (SCR) and oxidation catalyst shall be installed, operated and maintained in accordance with both the manufacturer's specification and the specifications in the application (as approved herein).
2. Nitrogen Oxides (NO_x) emissions from the facility shall be less than 25 tons per rolling 12-month period calculated monthly. [Permit restriction taken to qualify for Synthetic Minor permit]
3. NO_x emissions from each CHP unit shall not exceed 0.2 grams per brake horsepower hour (g/bhp-hr). [25 Pa Code §127.1, Assures compliance with 40 CFR 60 Subpart JJJJ, Table 1]
4. NO_x emissions from each CHP unit shall not exceed 10.9 tons per rolling 12-month period. [Application]
5. Volatile Organic Compound (VOC) emissions from the facility shall be less than 25 tons per rolling 12-month period. [Permit restriction taken to qualify for Synthetic Minor permit]
6. VOC emissions from each CHP unit shall be less than 8.2 tons per rolling 12-month period. [Application]
7. Non Methane, Non Ethane Hydrocarbons (NMNEHC) emission as propane excluding Formaldehyde (HCHO) from each CHP unit shall not exceed 0.15 g/bhp-hr. [25 Pa Code §127.1, Assures compliance with 40 CFR Part 60, Subpart JJJJ Table 1]
8. Formaldehyde (HCHO) emissions from each CHP unit shall not exceed 0.05 g/bhp-hr. [25 Pa Code §127.1]
9. CO emissions from the facility shall be less than 28.5 tons per rolling 12-month period calculated monthly. [Application]
10. Carbon Monoxide (CO) emissions from each CHP unit shall not exceed either of the following:
 - (a) 0.25 g/bhp-hr [25 Pa Code 127.1, Assures compliance with 40 CFR 60 Subpart JJJJ, Table 1]
 - (b) 13.6 tons per rolling 12-month period. [Application]
11. Particulate Matter (PM) emissions from each CHP unit shall not exceed 0.04 grain per dry standard cubic foot. [25 Pa Code §123.13(c)(1)(i)]
12. Ammonia slip shall not exceed 5 ppmvd @ 15% O₂. Sufficient care must be exercised to ensure that urea associated with the SCR system will not be a safety problem. [25 Pa Code §127.1]
13. The Permittee may not permit the emission into the outdoor atmosphere of visible air contaminants in such a manner that the opacity of the emission is either of the following: [25 Pa Code §123.41]
 - (a) Equal to or greater than 20% for a period or periods aggregating more than three (3) minutes in any one hour;
 - (b) Equal to or greater than 60% at any time.

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14. Sound levels produced from each CHP unit shall not exceed the following:
- (a) 5 decibels above background level measured at the property boundary of the nearest occupied residential property; or
 - (b) 10 decibels above background level measured at the property boundary of the nearest occupied non-residential property.
- [Philadelphia Code Chapter 10-400 (Noise and Excessive Vibration) §10-403(3)]
15. Vibration levels shall not exceed 0.15 inches per second beyond any source property boundary. [Philadelphia Code Chapter 10-400 (Noise and Excessive Vibration) §10-403(11)]
16. The Permittee shall comply with the following work practice standards:
- (a) The combined natural gas usage for CHP Unit G-01 and CHP Unit G-02 shall not exceed 572.67 million cubic feet (mmft³) per 12-month rolling period. [Application]
 - (b) Natural gas usage for all other sources at Roberts Complex shall not exceed 20.12 mmft³ per rolling 12-month period.
 - (c) The facility-wide No. 2 fuel oil usage shall not exceed 116,790 gallons per rolling 12-month period. [Application]
 - (d) Source COMB-07 and Source COMB-08 are limited to a combined total of 4.86 mmft³ of natural gas and 7,210 gallons of #2 fuel oil per 12-month rolling period, which is equivalent to 250 hours of operation at the maximum rated capacity using natural gas and 50 hours of operation of each boiler at the maximum rated capacity using #2 fuel oil. All fuel combusted by Sources COMB-07 and COMB-08 are subject to the facility-wide limits of (b) and (c) of this condition.
 - (e) Source COMB-07 (Boiler 7) and Source COMB-08 (Boiler 8) are back-up units and shall not operate while either CHP Unit G-01 or CHP Unit G-02 is operating, except as follows:
 - (i) For maintenance and testing of COMB-07 and COMB-08 as required under good engineering practices and/or manufacturer's recommendations..
 - (ii) During periods when both CHP G-01 and G-02 are not providing heat to the Midvale Maintenance Facility due to shut down or maintenance of both CHP G-01 and G-02 or the associated heat transfer system between the CHP and the Midvale Maintenance Facility.
17. The Permittee shall comply with the applicable requirements of 40 CFR 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Internal Combustion Engines for stationary spark ignition internal combustion engines. Each affected source that is a new or reconstructed stationary RICE located at an area source shall meet the requirements of this part by meeting the requirement of 40 CFR Part 60 Subpart JJJJ, for spark ignition engines. [40 CFR §63.6590(c)(1)]
18. The Permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate each engine in a manner consistent with good air pollution control practice for minimizing emissions. [40 CFR §60.4243(b)(2)(ii)].
19. The Permittee shall comply with the following:
- (a) The allowable Nitrogen Oxide (NO_x) emissions from each CHP unit, a spark-ignited stationary internal combustion engine, shall be 3 grams per brake horsepower-hour during

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the period of May 1 through September 30 ("ozone season"). If the actual NO_x emissions during the ozone season exceed the allowable NO_x emission, NO_x allowance(s) may be purchased to demonstrate compliance. [25 PA Code §129.203]

- (b) The Permittee shall surrender to the Department one CAIR NO_x allowance and one CAIR NO_x Ozone Season allowance, as defined in 40 CFR 96.102 and 96.302 (relating to definitions), for each ton of NO_x by which the combined actual emissions exceed the allowable emissions of the units subject to this section at a facility from May 1 through September 30. The surrendered allowances shall be of current year vintage. For the purpose of determining the amount of allowances to surrender, any remaining fraction of a ton equal to or greater than 0.50 ton is deemed to equal 1 ton and any fraction of a ton less than 0.50 ton is deemed to equal zero tons. [25 PA Code §129.204(c)]
- (c) If the combined allowable emissions from each CHP unit or other units subject to 25 PA Code §129.201-205 at the facility from May 1 to September 30 exceed the combined actual emissions from each CHP unit or other units subject to 25 PA Code §129.201-205 at the facility during the same period, the Permittee may deduct the difference or any portion of the difference from the amount of the actual emissions from other units subject to 25 PA Code §129.201-205 at the Permittee's other facilities. [25 PA Code §129.204(d)]

20. Each CHP unit shall only burn natural gas.

21. Each SCR and Oxidation Catalyst System shall be used whenever each CHP is in operation.

22. The Permittee shall perform quarterly NO_x and CO portable analyzer tests on each CHP using an AMS-approved procedure to verify that the SCR and OC for each unit are working properly. (Replaces the annual catalytic activities test requirement).

23. Within sixty (60) days of achieving the maximum production rate but not later than 180 days after initial startup the Permittee shall conduct an initial performance test to demonstrate compliance with the NO_x, CO, NMNEHC, and HCHO emission limitation established in Conditions 3, 7, 8 and 10(a). [40 CFR §60.8(a), 40 CFR §60.4243(b)(2)(ii)]

24. Within sixty (60) days of achieving the maximum production rate but not later than 180 days after initial startup the Permittee shall conduct an initial performance test to demonstrate compliance with the ammonia slip emission limitation established in Condition 12.

- (a) During the initial and subsequent test, the minimum urea injection rate for the SCR shall be established to achieve the NO_x emissions in Condition 3. The test shall also establish the maximum urea injection rate for the SCR to achieve Compliance with Condition 12. For the OC, the test shall establish the pressure drop range.

25. The Permittee shall conduct the performance tests on each CHP unit following 25 PA Code Chapter 139, the Pennsylvania Source Testing Manual and procedures in 40 CFR 60 Subpart JJJJ;

- (a) Each performance test must be conducted within 10 percent of 100 percent peak (or the highest achievable) load.
- (b) The Permittee shall not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in 40 CFR §60.8(c). If the stationary SI internal combustion engine

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is non-operational, the Permittee does not need to startup the engine solely to conduct a performance test; however, the Permittee must conduct the performance test immediately upon startup of each engine.

- (c) The Permittee shall conduct three separate test runs for each performance test and each test run must be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour. [40 CFR §60.4244(a)-(c)]

26. The Permittee shall submit the following;

- (a) A test protocol to AMS for approval at least thirty (30) days prior to the test.
- (b) Completed test reports, including all operating conditions, within 60 days of completion of testing to AMS.

27. Following the initial performance tests, the Permittee shall conduct subsequent performance testing for NO_x, CO, HCHO, and NMNEHC every 8,760 hours of operation of each CHP or 3 years, whichever comes first, to demonstrate compliance with the emission limits in Conditions 3, 7, 8, and 10(a). [40 CFR §60.4243(b)(2)(ii)]

28. The Permittee shall meet the following requirements of 25 PA Code §129.201-205.

- (a) By October 31 of each year, the Permittee shall calculate the difference between the actual Nitrogen Oxide (NO_x) emissions and the allowable emissions for each CHP during the period from May 1 through September 30 ("ozone season"). The allowable emissions for the period shall be calculated by multiplying the cumulative hours of operation for each CHP for the period by the horsepower rating of the unit and by the applicable emission rate of 3.0 grams NO_x per brake horsepower-hour (Bhp-hr). [25 PA Code §129.203]
- (b) The Permittee shall calculate actual emissions of NO_x during the ozone season for each CHP based on one of the following: [25 PA Code §129.204]
 - (i) The 1-year average emission rate calculated from the most recent compliance demonstration test data for NO_x.
 - (ii) The maximum hourly allowable NO_x emission rate contained in the permit or the higher of the following:
 - (A) The highest rate determined by use of the emission factor for the unit class contained in the most up-to date version of the EPA publication, "*AP-42 Compilation of Air Pollution Emission Factors*."
 - (B) The highest rate determined by use of the emission factor for the unit class contained in the most up-to date version of EPA's "Factor Information Retrieval (FIRE)" data system.
 - (iii) The Permittee can elect to monitor NO_x emissions with CEMs. The owner or operator shall monitor emissions and report the data from this CEM in accordance with Chapter 139 or Chapter 145 (relating to interstate pollution transport reduction). Any data invalidated under Chapter 139 shall be substituted with data calculated using the potential emission rate for the unit or, if approved by AMS in writing, an alternative amount of emissions that is more representative of actual emissions that occurred during the period of invalid data.
 - (iv) The Permittee can use an alternate calculation and recordkeeping procedure based upon emissions testing and correlations with operating parameters if AMS, prior to implementation, approves the alternate calculation and recordkeeping procedures. The

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operator of the unit shall demonstrate that the alternate procedure does not underestimate actual emissions throughout the allowable range of operating conditions.

- (c) By November 1 each year, the Permittee of a unit subject to 25 PA Code §129.201-205 shall surrender the required NO_x allowance to the PA DEP's NO_x allowance tracking system account and provide to AMS the following: [25 PA Code §129.204(e)]
 - (i) The serial number of each NO_x allowance surrendered;
 - (ii) Calculations used to determine the quantity of NO_x allowances required to be surrendered.
- (d) If the Permittee fails to comply with 25 PA Code 129.204(e), regarding the submission of NO_x allowances by November 1, the Permittee shall surrender by December 31 three NO_x allowances of the current or later year vintage for each NO_x allowance that was required to be surrendered by November 1 of that year. The surrender of NO_x allowances under this condition does not affect the liability of the owner or operator of the unit for any fine, penalty or assessment, or an obligation to comply with any other remedy for the same violation, under the Clean Air Act Amendments or the Clean Air Act. For purposes of determining the number of days of violation, if a facility has excess emissions for the period May 1 through September 30, each day in that period (153 days) constitutes a day in violation unless the Permittee demonstrates that a lesser number of days should be considered. Each ton of excess emissions is a separate violation. [25 PA Code § 129.204(f)-(g)]

29. The Permittee shall monitor and record the pressure drop across the oxidation catalyst continuously.

30. The Permittee shall monitor and record the inlet temperature to the oxidation catalyst continuously.

31. The Permittee shall monitor and keep records of the following:

- (a) Monthly verification of compliance with condition 2. The Permittee shall monitor and keep records of all verification that NO_x emissions are less than 25 tons per rolling 12-month period.
- (b) Monthly verification of compliance with condition 5. The Permittee shall monitor and keep records of all verification that VOC emissions are less than 25 tons per rolling 12-month period.
- (c) Monthly verification of compliance with condition 9. The Permittee shall monitor and keep records of all verification that CO emissions are less than 28.5 tons per rolling 12-month period.
- (d) The Permittee also shall monitor and keep records of the monthly verification of compliance with conditions 4, 6 and 10(b) for each engine.
- (e) The Permittee shall keep records of test results and manufacturer's emissions data for each engine;
- (f) Fuel type and amount of fuel used for each engine;
- (g) Facility wide natural gas and No. 2 fuel oil usage to demonstrate compliance with Condition 16(a)-(c);
- (h) Records sufficient to demonstrate compliance with Conditions 16(d) and 16(e), including but not limited to the combined fuel usage for Sources COMB-07 and COMB-08 on a monthly basis and the reason Sources COMB-07 and COMB-08 operated on a daily basis.

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- (i) Operating hours of each engine;
- (j) Generator electrical production for each engine;
- (k) Performance stack test results for each engine;
- (l) Quarterly portable analyzer test results;
- (m) Allowable and actual NO_x emissions, any other calculations or verification, and NO_x allowance surrendered to demonstrate compliance with conditions 19 and 28. Verification or calculations shall be based on the stack test data and electrical generation of the engine;
- (n) Urea injection Rate.

32. The Permittee shall keep records of the information in paragraphs (a) through (c). [40 CFR §60.4245(a)]

- (a) All notifications submitted to comply with 40 CFR Part 60 Subpart JJJJ and all documentation supporting any notification;
- (b) Maintenance conducted on each engine;
- (c) If the stationary SI internal combustion engine is not a certified engine or is a certified engine operating in a non-certified manner and subject to 40 CFR §60.4243(a)(2), documentation that the engine meets the emission standards.

33. The Permittee shall submit an initial notification as required in 40 CFR §60.7(a)(1). The notification must include the information below. [40 CFR §60.4245(c)]

- (a) Name and address of the owner or operator;
- (b) The address of the affected source;
- (c) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement;
- (d) Emission control equipment; and
- (e) Fuel used.

34. All records shall be kept for a period of (5) years and be produced upon request by Air Management Services.

Note:

Pursuant to § 5-1005 of the Philadelphia Home Rule Charter, an administrative appeal of this Permit/License may be filed with the Board of Licenses and Inspections Review (BLIR). Any such appeal should be filed within thirty (30) days, include a copy of this Permit/License and be directed to:

Board of License and Inspection Review
Municipal Services Building, 11th Floor
1401 JFK Blvd.
Philadelphia, PA 19102

