



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE

4949A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Michael P. Murphy
Regional Director

June 17, 2016

Mr. Mark D. Mitchell
Vice President
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, VA 23060

Location: Greensville County
Registration No.: 52525

Dear Mr. Mitchell:

Attached is a permit to construct and operate an electric power generation facility in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution.

In the course of evaluating the application and arriving at a final decision to approve the project, the Department of Environmental Quality (DEQ) deemed the application complete on February 10, 2016 and solicited written public comments by placing newspaper advertisements in the Emporia Independent Messenger on February 14, 2016. A public hearing was held on March 16, 2016. The required comment period, provided by 9 VAC 5-80-1775 F expired on March 31, 2016.

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and/or civil charges. Please read all permit conditions carefully.

This permit approval to construct and operate shall not relieve Virginia Electric and Power Company of the responsibility to comply with all other local, state, and federal permit regulations. Please note that the combustion turbines are affected facilities under 40 CFR 60, New Source Performance Standard (NSPS), Subpart TTTT. Also, your proposed diesel emergency generator (EG-1) and diesel emergency fire water pump (FWP-1) may be affected facilities under 40 CFR 60, New Source Performance Standard (NSPS), Subpart IIII and the propane emergency generators (EG-2 and EG-3) may be affected facilities under NSPS, Subpart JJJJ. Therefore, these units may be subject to owner/operator requirements of the NSPS and 40 CFR 63, Maximum Achievable Control Technology (MACT), Subpart ZZZZ. In summary, the units could be required to comply with certain federal emission standards and operating limitations over their useful life. The DEQ advises you to review the attached NSPS and MACT to ensure compliance with applicable emission and operational limitations. As the owner/operator you are also responsible for monitoring, notification, reporting and recordkeeping requirements of the NSPS and MACT. Notifications shall be sent to both EPA, Region III and Virginia DEQ.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this case decision notice was mailed or delivered to you. Please consult the relevant regulations for additional requirements for such requests.

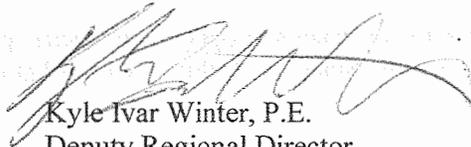
As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

If you have any questions concerning this permit, please contact the regional office at (804) 527-5020.

Sincerely,



Kyle Ivar Winter, P.E.
Deputy Regional Director

KIW/AMS/52525_001_16_PSD.docx

Attachments: Permit
Source Testing Report Format

The following federal regulations can be found at <http://www.gpo.gov/fdsys/search/showcitation.action>

Code of Federal Regulations Title 40
Part 60, NSPS, Subparts Db, Dc, IIII, JJJJ, KKKK, and TTTT
Part 63, MACT, Subpart ZZZZ

cc: Chief, Office of Air Enforcement and Compliance Assistance, U.S. EPA, Region III (electronic file submission)
Inspector, Air Compliance



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE

4949A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Michael P. Murphy
Regional Director

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE

**This permit includes designated equipment subject to
New Source Performance Standards (NSPS).**

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia
Regulations for the Control and Abatement of Air Pollution,

Virginia Electric and Power Company

5000 Dominion Boulevard

Glen Allen, Virginia 23060

Registration No.: 52525

County-Plant ID: 081-00061

is authorized to construct and operate

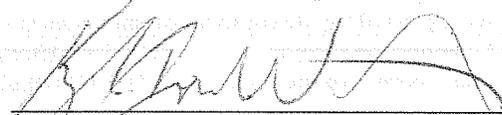
an electric power generation facility

located at

2500 Rogers Rd., Emporia, VA

in accordance with the Conditions of this permit.

Approved on June 17, 2016.



Deputy Regional Director
Department of Environmental Quality

Permit consists of 34 pages.

Permit Conditions 1 to 86.

INTRODUCTION

This permit approval is based on the permit application dated November 24, 2014; including amendment information dated August 27, 2015, December 9, 2015, and February 10, 2016. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

Equipment List - Equipment at this facility consists of:

Equipment to be Constructed			
Ref. No.	Equipment Description	Rated Capacity	Federal Requirements
Three on one power block with three natural gas-fired combustion turbine generators, each with a duct-fired heat recovery steam generator (HRSG) , providing steam to a common steam turbine generator			
CT-1	MHPS M501J combustion turbine generator with duct burner (natural gas-fired)	3,227 MMBtu/hr CT 500 MMBtu/hr DB	NSPS, Subpart KKKK
CT-2	MHPS M501J combustion turbine generator with duct burner (natural gas-fired)	3,227 MMBtu/hr CT 500 MMBtu/hr DB	NSPS, Subpart KKKK
CT-3	MHPS M501J combustion turbine generator with duct burner (natural gas-fired)	3,227 MMBtu/hr CT 500 MMBtu/hr DB	NSPS, Subpart KKKK
Ancillary Equipment			
B-1	Auxiliary Boiler (natural gas-fired)	185 MMBtu/hr	NSPS Subpart Db
FGH-1,2,3	Three Fuel Gas Heaters (natural gas-fired)	16.1 MMBtu/hr each	NSPS Subpart Dc

Equipment to be Constructed			
Ref. No.	Equipment Description	Rated Capacity	Federal Requirements
FGH-4,5,6	Three Fuel Gas Heaters (natural gas-fired)	7.8 MMBtu/hr each	None
EG-1	Emergency Generator (S15 ULSD)	3000 kW	NSPS III, MACT ZZZZ
EG-2 & 3	Two Emergency Generators (propane)	150 kW (230 hp) each	NSPS JJJJ, MACT ZZZZ
FWP-1	Fire Water Pump (S15 ULSD)	376 bhp	NSPS III, MACT ZZZZ
DC-1	Delugeable Auxiliary Equipment Cooler	180,000 gallons of water/hr	None
IC-1 through 4	Four Turbine Inlet Air Chillers (mechanical draft cooling towers)	581,400 gallons of water/hr each	None
CB-1 through CB-11	Eleven Electrical Circuit Breakers	1,645 lbs SF ₆ per breaker	None
CB-12 through CB-14	Three Generator Breakers	110 lbs SF ₆ per breaker	None
FUG-1	Fugitive equipment leaks from natural gas piping components	-	None
T-1	ULSD storage tank	6,000 gallons	None

Specifications included in the above table are for informational purposes only and do not form enforceable terms or conditions of the permit.

PROCESS REQUIREMENTS

Combined-cycle gas turbine generators and duct-fired HRSG (CT-1, CT-2, CT-3)

1. **Emission Controls: Turbine Generators - Nitrogen oxide (NO_x)** emissions from each of the combined cycle gas turbine generators and associated duct-fired heat recovery steam generators (HRSG) (CT-1, CT-2, CT-3) shall be controlled by dry, low NO_x burners and selective catalytic reduction (SCR) with a NO_x performance of 2.0 ppmvd at 15% O₂. The low NO_x burners shall be installed and operated in accordance with manufacturer's specifications. The SCR shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 9).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
2. **Monitoring Devices: Turbine Generators - SCR** - Each SCR system shall be equipped with devices to continuously measure, or allow calculation of, and record ammonia feed rate and catalyst bed inlet gas temperature. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that shall include, as a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the SCR system is operating. To ensure good performance of the SCR, the devices used to continuously measure the ammonia feed rate and catalyst bed inlet temperature on the SCR shall be monitored by the permittee.
(9 VAC 5-50-20 C, 9 VAC 5-50-50H and 9 VAC 5-80-1705 B)

3. **Emission Controls: Turbine Generators** – Carbon monoxide (CO) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall be controlled by an oxidation catalyst and good combustion practices (eg., controlled fuel/air mixing, adequate temperature, and gas residence time). The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 9).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
4. **Emission Controls: Turbine Generators** – Volatile organic compound (VOC) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall be controlled by an oxidation catalyst and good combustion practices (eg., controlled fuel/air mixing, adequate temperature, and gas residence time). The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 9).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
5. **Monitoring Devices: Oxidation Catalyst** - Each oxidation catalyst shall be equipped with a device to continuously measure and record temperature at the catalyst bed inlet and outlet. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that shall include, at a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the oxidation catalyst is operating. To ensure good performance of the oxidation catalyst system, the device used to continuously measure and record the catalyst bed inlet and outlet gas temperature on the oxidation catalyst shall be monitored by the permittee.
(9 VAC 5-50-20 C, 9 VAC 5-50-50 H and 9 VAC 5-80-1705 B)
6. **Emission Controls: Turbine Generators** – Sulfur dioxide (SO₂) and sulfuric acid mist (H₂SO₄) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall be controlled by the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average. Compliance will be based on fuel monitoring results as required by Condition 27.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
7. **Emission Controls: Turbine Generators** – Particulate Matter (PM₁₀, PM_{2.5}) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall be controlled by good combustion practices (eg., controlled fuel/air mixing, adequate temperature, and gas residence time) and the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

8. **Emission Controls: Turbine Generators** – Greenhouse gas emissions (carbon dioxide, methane, and nitrous oxide), as CO₂e from the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall be controlled by the use of low carbon fuel (natural gas) and high efficiency design and operation of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3 and steam turbine generator). The efficiency of the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3 and steam turbine generator) at full load without duct burning, corrected to ISO conditions, and providing for incremental degradation of the units, shall not exceed the following:

	Btu/kWh net (HHV) output
Initial Test	6,457
Year 6	6,583
Year 12	6,709
Year 18	6,835
Year 24	6,961
Year 30	7,087
Year 31 and later	7,212

Compliance shall be demonstrated as contained in Conditions 67 and 70. The Year is defined in Condition 40.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

9. **Startup/Shutdown: Turbine Generators** –The permittee shall comply with the requirements of this permit at all times except where noted by a specific condition. For the purpose of this permit, this condition defines startup and shutdown operating scenarios for the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3).
- a. Startup periods are defined as follows:
- For the purpose of this permit, startup is defined as the period of time beginning the first fuel feed after a shutdown event and ending at the earlier of the unit (CT-1, CT-2, or CT-3) reaching 50 percent load or the following time:
 - For Cold Startup defined as restarts made 72 hours or more after shutdown, startup periods shall not exceed 436 minutes per occurrence.
 - For Warm Startup defined as restarts made more than 8 but less than 72 hours after shutdown, startup periods shall not exceed 166 minutes per occurrence.
 - For Hot Startup restarts made 8 hours or less after shutdown, startup periods shall not exceed 84 minutes per occurrence.

- v. If the SCR was not engaged during startup of a particular combustion turbine (including ammonia injection), the subsequent startup of that turbine shall be a cold start.
 - b. For the purpose of this permit, shutdown is defined as the period of time beginning when the unit (CT-1, CT-2, or CT-3) falls and remains below 50 percent load until the cessation of fuel feeding, not to exceed 30 minutes; or the 30 minutes of operation directly preceding the cessation of fuel feeding, whichever is shorter.
 - c. The permittee shall operate the CEMS during periods of startup and shutdown.
 - d. The permittee shall record the time, date and duration of each startup and shutdown event. The records must include calculations of NO_x and CO emissions during each event based on the CEMS data. These records must be kept for five years following the date of such event.
 - e. During startup and shutdown, the combustion turbine SCR system, including ammonia injection, and oxidation catalyst shall be operated in a manner to minimize emissions, as technologically feasible, and following the SCR manufacturer's written protocol or best engineering practices for minimizing emissions. Where best practices are used, the permittee shall maintain written documentation explaining the sufficiency of such practices. If such practices are used in lieu of the manufacturer's protocol, the documentation shall justify why the practices are at least equivalent to manufacturer's protocols with respect to minimizing emissions.
 - f. The permittee shall operate the facility so as to minimize the frequency and duration of startup and shutdown events.
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
10. **Alternate Operating Scenario: Turbine Generators - Tuning** – The permittee shall comply with the requirements of this permit at all times except where noted by a specific condition. For the purpose of this permit, this condition defines the tuning operating scenario for the combined cycle gas turbine generators and associated HRSG (CT-1, CT-2, CT-3).
- a. For the purpose of this permit, tuning is defined as the manipulation of the units and the associated emission controls by a qualified professional to ensure optimized operation and minimized emissions.
 - b. No tuning event shall last more than 18 consecutive hours.
 - c. Annual tuning events shall be limited to 96 hours per CT per 12-month rolling period.
 - d. The permittee shall notify the Piedmont Regional Air Compliance Manager at the address below, or by email, 24 hours prior to each declared CT tuning event unless approval for a shorter notice is given by DEQ. The notification shall include, but is not limited to, the following information:
 - i. Identification of the specific CT to be tuned.
 - ii. Reason for the declared tuning event

iii. Measures that will be taken to minimize the length of the declared tuning event.

iv. Justification why the person performing the tuning is qualified.

DEQ Regional Air Compliance Manager
Piedmont Regional Office
4949-A Cox Rd.
Glen Allen, VA 23060

- e. The permittee shall furnish a written report to the Regional Air Compliance Manager at the address above, including all pertinent facts concerning any declared tuning event, as soon as practicable but not less than 14 business days after the retuning event. The notification shall include, but is not limited to, the following information:
- i. Identification of the CT that was tuned.
 - ii. The date and time of commencement and completion of the declared tuning events.
 - iii. NO_x and CO emissions during the declared tuning events.
- f. NO_x and CO emissions during CT tuning events shall be recorded and included in the associated quarterly excess emission report if the applicable emission limits are exceeded. Emissions during tuning shall be included in the facility-wide total.
(9 VAC 5-20-180J and 9 VAC 5-50-20E)

11. Alternate Operating Scenario: Turbine Generators – On-line Water Wash –The

permittee shall comply with the requirements of this permit at all times except where noted by a specific condition. For the purpose of this permit, this condition defines the on-line water wash operating scenario for the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3)

- a. On-line water washing is defined as spraying water through the turbine while a unit (CT-1, CT-2, CT-3) is operating
- b. No on-line water wash event shall last for more than 60 minutes in a calendar day.
- c. Annual on-line water wash events shall not exceed 52 hours per CT per 12-month rolling period.
- d. The permittee shall notify the Piedmont Regional Air Compliance Manager at the address below, or by email, 24 hours prior to each declared on-line CT water wash event unless approval for a shorter notice is given by DEQ. The notification shall include, but is not limited to, the following information:
 - i. Identification of the specific CT to be washed.
 - ii. Reason for the declared washing event

DEQ Regional Air Compliance Manager
Piedmont Regional Office
4949-A Cox Rd.

Glen Allen, VA 23060

- e. The permittee shall furnish a written report to the Regional Air Compliance Manager at the address above, including all pertinent facts concerning the declared on-line water wash event, as soon as practicable but not less than 14 business days after the declared on-line water wash event. The notification shall include, but is not limited to, the following information:
 - i. Identification of the CT that was washed.
 - ii. The date and time of commencement and completion of the declared on-line water wash event.
 - iii. NO_x and CO emissions during the declared on-line water wash event.
- f. NO_x and CO emissions during each declared CT on-line water wash event shall be recorded and included in the associated quarterly excess emission report if the applicable emission limits are exceeded. Emissions during on-line water wash events shall be included in the facility-wide total.
(9 VAC 5-20-180J and 9 VAC 5-50-20E)

Auxiliary boiler (B-1) and fuel gas heaters (FGH-1 through FGH-6)

12. **Emission Controls: Fuel Gas Heaters and Auxiliary Boiler** – NO_x emissions from the auxiliary boiler (B-1) and six fuel gas heaters (FGH-1 through FGH-6) shall be controlled by ultra low-NO_x burners with a NO_x performance of 0.011 lbs/MMBtu (equivalent to 9 ppmvd at 3% O₂). The low NO_x burners shall be installed and operated in accordance with manufacturer's specifications.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)
13. **Emission Controls: Fuel Gas Heaters and Auxiliary Boiler** – CO and VOC emissions from the auxiliary boiler (B-1) and six fuel gas heaters (FGH-1 through FGH-6) shall be controlled by good combustion practices, operator training, and proper emissions unit design, construction and maintenance to achieve a maximum CO emission rate of 0.035 lb/MMBtu (B-1) and 0.037 lb/MMBtu (FGH-1 through FGH-6) (equivalent to 50 ppmvd at 3% O₂) and a maximum VOC emission rate of 0.005 lb/MMBtu. Boiler and heater operators shall be trained in the proper operation of all such equipment. Training shall consist of a review and familiarization of the manufacturer's operating instructions, at a minimum. The permittee shall maintain records of the required training including a statement of time, place and nature of training provided. The permittee shall have available good written operating procedures and a maintenance schedule for the boiler and heater. These procedures shall be based on the manufacturer's recommendations and/or best engineering practices, at a minimum. All records required by this condition shall be kept on site and made available for inspection by the DEQ.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)

14. **Emission Controls: Fuel Gas Heaters and Auxiliary Boiler** – SO₂ and H₂SO₄ emissions from auxiliary boiler (B-1) and six fuel gas heaters (FGH-1 through FGH-6) shall be controlled by the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average. Compliance will be based on fuel monitoring results as required by Condition 27.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
15. **Emission Controls: Fuel Gas Heaters and Auxiliary Boiler** – PM₁₀ and PM_{2.5} emissions from the auxiliary boiler (B-1) and six fuel gas heaters (FGH-1 through FGH-6) shall be controlled by good combustion practices and the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 scf, on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
16. **Emission Controls: Fuel Gas Heaters and Auxiliary Boiler** – CO_{2e} from the auxiliary boiler (B-1) and six fuel gas heaters (FGH-1 through FGH-6) shall be controlled by the use of natural gas fuel and high efficiency design and operation.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

Emergency Units (EG-1, EG-2, EG-3 and FWP-1)

17. **Emission Controls: EG-1, FWP-1** - PM₁₀, PM_{2.5}, NO_x, CO, SO₂, VOC, and H₂SO₄ emissions from the diesel emergency units (EG-1 and FWP-1) shall be controlled by good combustion practices and the use of ultra low sulfur diesel (S15 ULSD) fuel oil with a maximum sulfur content of 15 ppmw.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
18. **Emission Controls: EG-2 and EG-3** - PM₁₀, PM_{2.5}, NO_x, CO, SO₂, VOC, and H₂SO₄ emissions from the propane emergency units (EG-2 and EG-3) shall be controlled by good combustion practices and demonstrated compliance with NSPS Subpart JJJJ.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
19. **Emission Controls: EG-1, FWP-1** – CO_{2e} emissions from the diesel emergency units (EG-1 and FWP-1) shall be controlled by the use of S15 ULSD and high efficiency design and operation.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
20. **Monitoring Devices: EG-1, EG-2, EG-3** – The permittee must install a non-resettable hour meter on the emergency generators (EG-1, EG-2, and EG3) and the emergency fire water pump (FWP-1) prior to the startup of each unit. The hour meters shall be provided with adequate access for inspection.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)

Miscellaneous Processes

21. **Emission Controls: Inlet Chillers** – Particulate matter emissions from the four, 9,690-gallon/minute inlet chillers (CH-1 through CH-4) shall be controlled to a drift rate of 0.0005

percent of the circulating water flow and a total dissolved solids content of the cooling water of no more than 1500 mg/l. The permittee shall keep a log of weekly testing for total dissolved solids content of the cooling water. Weekly testing for dissolved solids shall be done when the Chiller Package is in service for more than eight consecutive hours during a calendar week.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

22. **Emission Controls: Delugeable Auxiliary Equipment Cooler** – Particulate matter emissions from the 3,000 gallon/minute delugeable auxiliary equipment cooler (AEC-1) shall be controlled to a drift rate of 0.010 percent of the circulating water flow and a total dissolved solids content of the cooling water of no more than 300 mg/l. The permittee shall keep a log of weekly testing for total dissolved solids content of the cooling water. Weekly testing for total dissolved solids shall be done when the Deluge System is in service for more than two consecutive hours during a calendar week.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

23. **Emission Controls: Equipment Leaks** – Fugitive emissions from natural gas piping components (valves and flanges) located on the power plant property (FUG-1) shall be minimized by using best management practices to prevent, detect and repair leaks of natural gas from the piping components. The permittee shall implement a daily auditory/visual/olfactory (AVO) inspection program for detecting leaking in natural gas piping components. The first attempt to repair any component found to be leaking during an AVO inspection shall be made within 5 days. The leaking component shall be repaired within 15 days of discovery. The permittee shall maintain a list of difficult to repair components, which when leaking, the repair requires facility shutdown or cannot otherwise be completed within 15 days of discovery. Documentation justifying the inclusion of a component on the list shall be included. Records of the daily AVO inspection results, repair attempts, and the list of long-term leaking components and reason for each delay shall be maintained on site. The AVO plan shall be submitted for review no later than 60 prior to start-up of the facility.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

24. **Emission Controls: Electrical Breakers** – Greenhouse gas emissions (including SF₆) from the fourteen electrical circuit breakers and generator breakers (CB-1 through CB-14) shall be controlled by an enclosed-pressure circuit breaker, with a maximum annual leakage rate of 0.5 percent, and a low pressure detection system (with alarm). The low pressure detection system shall be in operation when the circuit breakers are in use.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

OPERATING LIMITATIONS

25. **Fuel: Gas turbines, Fuel Gas Heaters, and Auxiliary boiler** - The approved fuel for the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3), fuel gas heaters (FGH-1 through FGH-6) and the auxiliary boiler (B-1) is pipeline quality natural gas with a maximum sulfur content of 0.4 grains per 100 scf, on a 12-month rolling average basis. A change in the fuel may require a permit to modify and operate.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

26. **Fuel Throughput: Turbine Generators** -The three combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) combined shall consume no more than a total of $97,948.2 \times 10^6$ scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
27. **Fuel Monitoring: Turbine Generators**– The permittee shall conduct tests for the total sulfur content of the natural gas being fired at the electric power generation facility to verify that the sulfur content of the natural gas is less than or equal to 0.4 grains of total sulfur per 100 scf on a 12-month rolling average in order to demonstrate that potential sulfur dioxide and sulfuric acid mist emissions shall not exceed the limits specified in Condition 39.a for the combustions turbines (CT-1, CT-2, CT-3). The permittee shall demonstrate compliance with the sulfur content limit in Condition 25 using one of the following:
- Determine and record the total sulfur content of the natural gas each month. A monthly sample is not required for months when the turbines operated for 48 hours or less, or
 - Develop custom schedules for determination of the sulfur content of the natural gas based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR 60.4370(c)(1) and (c)(2), custom schedules shall be substantiated with data and shall receive prior EPA approval.
(9 VAC 5-50-410, 9 VAC 5-50-280, 40 CFR 60.4365(a), 40 CFR 60.4370(b), and 40 CFR 60.4370(c))
28. **Fuel Throughput: Auxiliary Boiler** -The auxiliary boiler (B-1) shall consume no more than 158.9×10^6 scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
29. **Fuel: EG-1 and FWP-1** - The approved fuel for the emergency diesel fire water pump (FWP-1) and emergency diesel generator (EG-1) is ultra low sulfur diesel (S15 ULSD). A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
30. **Fuel: EG-2 and EG-3** - The approved fuel for the emergency propane generators (EG-2 and EG-3) is liquid petroleum gas (LPG)(as propane). A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
31. **Fuel: EG-1, EG-2, EG-3, and FWP-1**- The fuels for the fire pump (FWP-1) and generators (EG-1, EG-2, and EG3) shall meet the specifications below:

ULTRA LOW SULFUR DIESEL FUEL (S15 ULSD) which meets the ASTM D975-10b specification for S15 fuel oil:

Maximum sulfur content per shipment: 0.0015%

LPG, including butane and propane, which meets ASTM specification D1835.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

32. **Operating Hours: EG-1, EG-2, EG-3, and FWP-1** - The emergency generators (EG-1, EG-2, and EG-3) and emergency fire water pump (FWP-1) shall not operate more than 500 hours each per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

33. **Emergency Operation: EG-1, EG-2, EG-3, and FWP-1** – The operation of the emergency generators (EG-1, EG-2, and EG-3) and emergency fire water pump (FWP-1) is limited to emergency situations. Emergency situations include a) emergency generator use to produce power for critical networks or equipment (including power supplied to portions of the facility) when electric power from the local utility (or the normal source, if the facility runs on its own power production) is interrupted and b) emergency engine use to pump water in the case of fire or flood, etc. The emergency generators (EG-1, EG-2, and EG-3) and emergency fire water pump (FWP-1) may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per calendar year for each unit.

(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

34. **Fuel Certification: EG-1 and FWP-1** - The permittee shall obtain a certification from the fuel supplier with each shipment of S15 ULSD oil. Each fuel supplier certification shall include the following:

- a. The name of the fuel supplier;
- b. The date on which the S15 ULSD oil was received;
- c. The quantity of S15 ULSD oil delivered in the shipment;
- d. A statement from the supplier that the fuel oil is S15 ULSD oil;

Fuel sampling and analysis, independent of that used for certification, as may be periodically required or conducted by DEQ may be used to determine compliance with the fuel specifications stipulated in Condition 31. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.

(9 VAC 5-50-280)

35. **Maintenance and Operation: EG-1, EG-2, EG-3, and FWP-1** – The permittee must maintain and operate the emergency fire pump (FWP-1) and emergency generators (EG-1, EG-2, and EG-3) according to the manufacturer's recommendations and/or procedures developed by the permittee using best engineering practices, over the entire life of the engine. (9 VAC 5-50-280 and 9 VAC 5-80-1705 B)
36. **Fuel Throughput: Fuel Gas Heaters** -The three 16.1 MMBtu/hr fuel gas heaters (FGH-1 through FGH-3) combined shall consume no more than a total of 415×10^6 scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9 VAC 5-50-280)
37. **Fuel Throughput: Fuel Gas Heaters** -The three 7.8 MMBtu/hr fuel gas heaters (FGH-4 through FGH-6) combined shall consume no more than a total of 201×10^6 scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9 VAC 5-50-280)
38. **Requirements by Reference: NSPS** - Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in the equipment table in the Introduction on page 2 of this permit shall be operated in compliance with the requirements of 40 CFR 60, Subparts Db, Dc and KKKK. (9 VAC 5-50-400 and 9 VAC 5-50-410)

EMISSION LIMITS

39. **Short-Term Emission Limits: Turbine Generators** -Emissions from the operation of each combined-cycle gas turbine generator and associated HRSG duct burner (CT-1, CT-2, CT-3), shall not exceed the limits specified below:
- a. Normal operation – Unless otherwise specified, the limits in this paragraph apply during all operation except for periods considered startup and shutdown as defined in Condition 9 of this permit, and alternate operating scenarios as defined in Conditions 10 and 11.

Pollutant	Short term emission limits
PM ₁₀ (including condensable PM)	0.0030 lb/MMBtu and 9.2 lb/hr as an average of three test runs without duct burner firing 0.0039 lb/MMBtu and 14.1 lb/hr as an average of three test runs with duct burner firing.
PM _{2.5} (including condensable PM)	0.0030 lb/MMBtu and 9.2 lb/hr as an average of three test runs without duct burner firing 0.0039 lb/MMBtu and 14.1 lb/hr as an average of three test runs with duct burner firing.
Sulfur dioxide	0.00114 lb/MMBtu (this limit applies at all times)
Nitrogen Oxides (as NO ₂)	2.0 ppmvd @ 15% O ₂ as a one-hour average with or without duct burning
Carbon monoxide	1.0 ppmvd @ 15% O ₂ as a three-hour rolling average without duct burning 1.6 ppmvd @ 15% O ₂ as a three-hour rolling average with duct burning
Volatile organic compounds	0.7 ppmvd @ 15% O ₂ without duct burner firing 1.4 ppmvd @ 15% O ₂ with duct burner firing
Sulfuric acid mist	0.00053 lb/MMBtu without duct burner firing 0.00060 lb/MMBtu with duct burner firing (These limits apply at all times)

Where:

ppmvd = parts per million by volume on a dry gas basis, corrected to 15 percent O₂.

Short-term emission limits represent averages for a three-hour sampling period for CO, VOC, SO₂ and H₂SO₄. Nitrogen oxides shall be calculated as a one-hour average. PM₁₀ and PM_{2.5} limits represent the average of three test runs.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 1, 3, 4, 25, 48, 52, 61, and 62.

- b. During each CT (CT-1, CT-2 and CT-3) tuning event or on-line water wash event, emissions shall not exceed the following limits. Operating periods considered tuning are defined in Condition 10. Operating periods considered on-line water washes are defined in Condition 11.

Pollutant	Limitations for Maintenance Activities (Tuning/Water Washing)
NO _x	Tuning or water washing: 648 lb/turbine/calendar day
CO	Tuning or water washing: 436 lb/turbine/calendar day

The emissions limits for tuning and on-line water wash events do not include emissions from startup and/or shutdown that may occur on the same calendar day.

- c. NO_x emission concentrations shall not exceed the NO_x standards of the NSPS Subpart KKKK of 15 ppm at loads > 75% or 96 ppm at loads ≤ 75% corrected to 15% O₂ (on a rolling 30-day average basis).
- d. During each startup or shutdown event, emissions shall not exceed the following:

Pollutant	Startup/Shutdown Limitations
NO _x	cold start event - 1,231 lb/turbine warm start event - 395 lb/turbine hot start event - 148 lb/turbine shutdown event - 65 lb/turbine
CO	cold start event - 6,944 lb/turbine warm start event - 3,316 lb/turbine hot start event - 1,771 lb/turbine shutdown event - 1,004 lb/turbine

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 9 and 52.

(9 VAC 5-50-280, 9 VAC 5-80-1705, 9 VAC 5-80-1715)

- 40. **Emission Limits: Turbine Generators** – CO_{2e} emissions from the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) and the steam turbine, providing for incremental degradation of the units, shall not exceed the following:

Degradation Period	Applicable limit in lb CO _{2e} /MWh net output
Years 1-6	812
Years 7-12	828
Years 13-18	843
Years 19-24	859
Years 25-30	875
Years 31 and later	890

For the purposes of determining which limit is applicable, Year 1 begins upon commencement of commercial operation and ends on December 31 of the first full calendar year after that date. Each limit increments on January 1 of the respective year. For example, if the facility commences commercial operation on April 15, 2019, Year 1 begins on April 15, 2019 and ends on December 31, 2020. Year 7 begins, and the increased limit becomes effective, on January 1, 2026.

Compliance with the applicable limit shall be calculated monthly on a 12- month rolling basis. The applicable limit applies at all times. Compliance shall be determined each month by summing the calculated CO_{2e} emissions from the combined cycle gas turbine generators

and associated duct-fired HRSG (CT-1, CT-2, CT-3) during the previous 12 months and dividing that value by the sum of the plant net electrical energy output over that same period. (9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

41. **Annual Process Emission Limits: Turbine Generators** – Emissions from the operation of each of the three combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall not exceed the limits specified below:

PM ₁₀	61.5	tons/yr (on a 12-month, rolling total)
PM _{2.5}	61.5	tons/yr (on a 12-month, rolling total)
Sulfur Dioxide	18.7	tons/yr (on a 12-month, rolling total)
Nitrogen Oxides (as NO ₂)	118.3	tons/yr (on a 12-month, rolling total)
Carbon Monoxide	286.0	tons/yr (on a 12-month, rolling total)
Volatile Organic Compounds	214.8	tons/yr (on a 12-month, rolling total)
Sulfuric Acid Mist	9.9	tons/yr (on a 12-month, rolling total)
CO _{2e}	1,911,596	tons/yr (on a 12-month, rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 1, 3, 4, 6, 7, 26, 27, 50, 52 and 55. (9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

42. **Process Emission Limits: Auxiliary Boiler** – Emissions from the operation of the auxiliary boiler (B-1) shall not exceed the limits specified below:

PM ₁₀	1.4 lbs/hr	0.6	tons/yr (on a 12-month, rolling total)
PM _{2.5}	1.4 lbs/hr	0.6	tons/yr (on a 12-month, rolling total)
Nitrogen Oxides (as NO ₂)	2.1 lbs/hr	0.9	tons/yr (on a 12-month, rolling total)
Carbon Monoxide	6.6 lbs/hr	2.9	tons/yr (on a 12-month, rolling total)
Volatile Organic Compounds	0.005 lbs/MMBtu	0.5	tons/yr (on a 12-month, rolling total)
CO _{2e}		9,489	tons/yr (on a 12-month, rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be

considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 12, 13, 25 and 28.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

43. **Process Emission Limits: Electrical Breakers** - Emissions from the operation of the electrical circuit breakers and generator breakers (CB-1 through CB-14) shall not exceed the limits specified below:

Circuit Breakers CB1-CB11 combined	1032 tons of CO ₂ e/year (12 month rolling average)
Circuit Breakers CB12-CB14 combined	19 tons of CO ₂ e/year (12-month rolling average)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 24.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

44. **Process Emission Limits: FWP-1** - Emissions from the operation of the fire water pump (FWP-1) shall not exceed the limits specified below:

PM (filterable only)	0.15 g/hp-hr
PM ₁₀	0.30 g/hp-hr
PM _{2.5}	0.30 g/hp-hr
Nitrogen Oxides (as NO ₂) + Non-methane hydrocarbons	3.0 g/hp-hr
Carbon Monoxide	2.6 g/hp-hr
Sulfur Dioxide	0.00154 lb/MMBtu
Sulfuric Acid Mist	0.00012 lb/MMBtu
CO ₂ e	104 tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 29, 31, 32, 33, 35 and 50.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

45. **Process Emission Limits: EG-1** - Emissions from the operation of the diesel emergency generator (EG-1) shall not exceed the limits specified below:

PM (filterable only)	0.2 g/kW-hr
----------------------	-------------

PM ₁₀	0.4	g/kW-hr	0.7 tons/yr (on a 12-month rolling total)
PM _{2.5}	0.4	g/kW-hr	0.7 tons/yr (on a 12-month rolling total)
Sulfur Dioxide	0.00154	lb/MMBtu	
Nitrogen Oxides (as NO ₂) + Non-methane hydrocarbons	6.4	g/kW-hr	10.6 tons/yr (on a 12-month rolling total)
Carbon Monoxide	3.5	g/kW-hr	5.8 tons/yr (on a 12-month rolling total)
Sulfuric Acid Mist	0.00012	lb/MMBtu	
CO _{2e}			1178 tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 29, 31, 33, 35, and 50.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

46. **Process Emission Limits: EG-2, EG-3** - Emissions from the operation of the propane emergency generators (EG-2 and EG-3) combined shall not exceed the limits specified below:

PM ₁₀ (including condensable)	0.019	g/hp-hr	
PM _{2.5} (including condensable)	0.019	g/hp-hr	
Sulfur Dioxide	0.00059	lb/MMBtu	
Nitrogen Oxides (as NO ₂)	2.0	g/hp-hr	0.5 tons/yr (on a 12-month rolling total)
Carbon Monoxide	4.0	g/hp-hr	1.0 tons/yr (on a 12-month rolling total)
Volatile Organic Compounds	1.0	g/hp-hr	
Sulfuric Acid Mist	0.00005	lb/MMBtu	
CO _{2e}			121 tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 29, 31, 33, 35, and 51.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

47. **Process Emission Limits: Fuel Gas Heaters** – Emissions from the operation of each of the fuel gas heaters (FGH-1 through FGH-6) shall not exceed the limits specified below:

	PM ₁₀	PM _{2.5}	Nitrogen Oxides (as NO ₂)	Carbon Monoxide	Volatile Organic Compounds	CO ₂ e
FGH-1 through FGH-3	0.007 lb/MMBtu	0.007 lb/MMBtu	0.011 lb/MMBtu	0.037 lb/MMBtu	0.005 lb/MMBtu	-
	0.6 tons/yr	0.6 tons/yr	0.8 tons/yr	2.6 tons/yr	0.4 tons/yr	8,258 tons/yr
FGH-4 through FGH-6	0.007 lb/MMBtu	0.007 lb/MMBtu	0.011 lb/MMBtu	0.037 lb/MMBtu	0.005 lb/MMBtu	-
	0.3 tons/yr	0.3 tons/yr	0.4 tons/yr	1.3 tons/yr	0.2 tons/yr	4,001 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 12, 13, 14, 15, 16, 25, 36, 37 and 49.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

48. **Visible Emission Limit: Turbine Generators** - Visible emissions from the combined cycle gas turbine generators and associated duct-fired HRSG (CT-1, CT-2, CT-3) shall not exceed 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 20 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

(9 VAC 5-50-80 and 9 VAC 5-50-280)

49. **Visible Emission Limit: Fuel Gas Heaters** - Visible emissions from the fuel gas heaters (FGH-1 through FGH-3 and FGH-4 through FGH-6) and auxiliary boiler (B-1) shall not exceed 10 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

(9 VAC 5-50-80 and 9 VAC 5-50-280)

50. **Visible Emission Limit: EG-1 and FWP-1** - Visible emissions from the emergency fire water pump (FWP-1) and diesel emergency generator (EG-1) shall not exceed 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 20 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

(9 VAC 5-50-80 and 9 VAC 5-50-280)

51. **Visible Emission Limit: EG-2 and EG-3** - Visible emissions from the propane-fired emergency generators (EG-2 and EG-3) shall not exceed 10 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).

(9 VAC 5-50-80 and 9 VAC 5-50-280)

CEMS

52. **CEMS: Turbine Generators** - Continuous Emission Monitoring Systems (CEMS) shall be installed to measure and record the emissions of NO_x (measured as NO₂), CO₂, and CO from each combined cycle combustion turbine and associated duct-fired HRSG (CT-1, CT-2, CT-

3) in ppmvd, corrected to 15 percent O₂. CEMS for NO_x shall meet the design specifications of 40 CFR Part 75 whereas CEMS for CO shall be installed, evaluated, and operated according to the monitoring requirements in 40 CFR 60.13. The CEMS shall also measure and record the oxygen content of the flue gas at each location where NO_x and CO emissions are monitored and measure heat input and power output. A CEMS or alternative method as allowed by 40 CFR 75 shall be used to measure sulfur dioxide emissions to comply with the requirements of 40 CFR 75 (acid rain program monitoring). For compliance with the emission limits contained in Condition 39.a, CO₂ and NO_x data shall be reduced to 1-hour block averages. CO data shall be reduced to 3-hour rolling averages.
(9 VAC 5-50-350 and 9 VAC 5-50-40)

53. **CEMS Performance Evaluations** - Performance evaluations of the NO_x and, if applicable, SO₂ CEMS shall be conducted in accordance with 40 CFR Part 75, Appendix A, and shall take place during the performance tests under 9 VAC 5-50-30 or within 30 days thereafter. Two copies of the performance evaluations report shall be submitted to the Piedmont Region within 45 days of the evaluation. The continuous monitoring systems shall be installed and operational prior to conducting initial performance tests. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device. A 30 day notification, prior to the demonstration of continuous monitoring system's performance, and subsequent notifications shall be submitted to the Piedmont Region.
(9 VAC 5-50-350 and 9 VAC 5-50-40)

54. **CEMS Quality Control Program** - A CEMS quality control program which is equivalent to the requirements of 40 CFR 75 Appendix B shall be implemented for all continuous monitoring systems.
(9 VAC 5-50-350 and 9 VAC 5-50-40)

55. **CEMS Emissions Data** – For the purposes of this permit and DEQ's emissions inventory, CEMS data shall be used to report annual emissions of NO_x, CO, and CO₂ from the stack of each combined cycle combustion turbine and associated duct-fired HRSG (CT-1, CT-2, CT-3) in tons/yr.
(9 VAC 5-50-50)

56. **CEMS: Excess Emissions and Monitor Downtime for NO_x** - For the purpose of this permit, periods of excess emissions and monitor downtime that must be reported under Condition 58 are defined as follows:

- a. An excess emission period is a normal unit operating period (does not apply to startup, shutdown, malfunction, or alternative operating scenarios) in which the average one-hour NO_x emission rate exceeds the applicable emission limit in Condition 39.a; and
- b. A period of monitor downtime is any unit operating hour in which the data for any of the following parameters are either missing or invalid: NO_x concentration, O₂ concentration,

fuel flow rate, steam pressure, or megawatts. The steam flow rate is only required if the permittee uses this information for compliance purposes.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4380)

57. **CEMS: Excess Emissions and Monitor Downtime for SO₂** - Continuous Monitoring Systems Excess emissions and monitoring downtime are defined, for the purpose of this permit, as follows:

- a. For samples of gaseous fuel obtained using daily sampling or for proportional sampling, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit; and
- b. A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4385)

58. **CEMS: Reports** - The permittee shall furnish written reports to the Piedmont Region of excess emissions from any process monitored by a continuous monitoring system (CEMS) on a quarterly basis, postmarked no later than the 30th day following the end of the calendar quarter. These reports shall include, but are not limited to the following information:

- a. The magnitude of excess emissions, any conversion factors used in the calculation of excess emissions, and the date and time of commencement and completion of each period of excess emissions;
- b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the process, the nature and cause of the malfunction (if known), the corrective action taken or preventative measures adopted;
- c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments; and
- d. When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired or adjusted, such information shall be stated in that report.
- e. Excess emission reports for sulfur dioxide and nitrogen dioxide as required in 40 CFR 60.4395.

(9 VAC 5-50-50)

59. **CEMS: Excess Emissions** – For purposes of identifying excess emissions:

- a. All CEMS data must be reduced to hourly averages as specified in 40 CFR 60.13(h);

- b. For each operating hour in which a valid hourly average, as described in 40 CFR 60.4345(b), is obtained for both NO_x and diluent monitors, the data acquisition and handling system must calculate and record the hourly NO_x emission rate in units of ppm, using the appropriate equation in 40 CFR Part 60, Appendix A, Method 19. For any hour in which the hourly average O₂ concentration exceeds 19.0 percent O₂, a diluent cap value of 19.0 percent O₂ may be used in the emission calculations; and
- c. Only quality assured data from the CEMS shall be used to identify excess emissions. Periods where the missing data substitution procedures in 40 CFR 75, Subpart D are applied are to be reported as monitor downtime in the excess emissions and monitoring performance report required under 40 CFR 60.7(c).
(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4350)

INITIAL COMPLIANCE DETERMINATION

60. **Emissions Testing: Facility** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from excessive cyclonic flow as defined in 40 CFR 60 Appendix A. Sampling ports shall be provided at the appropriate locations (in accordance with the applicable performance specification in 40 CFR Part 60, Appendix B) and safe sampling platforms and access shall be provided.
(9 VAC 5-50-30 F and 9 VAC 5-80-1675)
61. **Initial Performance Test: Turbine Generators** - Initial performance tests shall be conducted for CO, PM₁₀ (including condensable PM), PM_{2.5} (including condensable PM), and total VOC from each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3) to determine compliance with the emission limits contained in Condition 39.a. The tests shall be performed and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. Tests shall be conducted for two different operating scenarios: natural gas firing at full load with the duct burners off; and natural gas firing at full load with the duct burners on. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format enclosed with this permit.
(9 VAC 5-50-30, 9 VAC 5-80-1675, and 9 VAC 5-50-410)
62. **Initial Performance Test: Turbine Generators** – Initial performance tests shall be conducted on each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3)

for NO_x (as NO₂) to determine compliance with the limits contained in Condition 39.a as follows:

- a. 40 CFR 60, Appendix A, Methods 7E or 20 shall be used to measure the NO_x concentration (in ppm). Sampling traverse points for NO_x and (if applicable) diluent gas are to be selected following EPA Method 20 or EPA Method 1 (non-particulate procedures), and sampled for equal time intervals. The sampling must be performed with a traversing single-hole probe, or, if feasible, with a stationary multi-hole probe that samples each of the points sequentially. Alternatively, a multi-hole probe designed and documented to sample equal volumes from each hole may be used to sample simultaneously at the required points.
- b. Notwithstanding Condition 62.a above, the permittee may test at fewer points than are specified in Method 1 or Method 20 if the following conditions are met: The permittee may perform a stratification test for NO_x and diluent pursuant to the procedures specified in 40 CFR 75, Appendix A, Section 6.5.6.1(a) through (e). Once the stratification sampling is completed, the permittee may use the following alternative sample point selection criteria for the performance test:
 - i. If each of the individual traverse point NO_x concentrations is within ± 10 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ± 5 ppm or ± 0.5 percent O₂ from the mean for all traverse points, three points (located either 16.7, 50.0 and 83.3 percent of the way across the stack or duct, or, for circular stacks or ducts greater than 2.4 meters (7.8 feet) in diameter, at 0.4, 1.2, and 2.0 meters from the wall) may be used. The three points must be located along the measurement line that exhibited the highest average NO_x concentration during the stratification test; or
 - ii. The permittee may sample at a single point, located at least 1 meter from the stack wall or at the stack centroid if each of the individual traverse point NO_x concentrations is within ± 2.5 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ± 1 ppm or ± 0.15 percent O₂ from the mean for all traverse points.
- c. The performance test must be done at any load condition as required by 40 CFR 60.4400(b). Testing may be performed at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. Three separate test runs for each performance test must be conducted. The minimum time per run is 20 minutes.
- d. The permittee must measure the total NO_x emissions after the duct burner rather than directly after the turbine. The duct burner must be in operation during the performance test.
- e. Compliance with the applicable NO_x emission limit in Condition 39.a must be demonstrated at each tested load level. Compliance is achieved if the three-run arithmetic average NO_x emission rate at each tested level meets the applicable emission limit in Condition 39.a.

- f. The performance evaluation of the CEMS may either be conducted separately or (as described in 40 CFR 60.4405) as part of the initial performance test of the affected unit.
- g. The ambient temperature must be greater than 0°F during the performance test.
- h. The permittee may use the following as alternatives to the reference methods and procedures specified in this condition:
 - i. Perform a minimum of nine RATA reference method runs, with a minimum time per run of 21 minutes, at a single load level, as required by 40 CFR 60.4400(b). The ambient temperature must be greater than 0°F during the RATA runs.
 - ii. Compliance with the applicable emission limit in Condition 39.a is achieved if the arithmetic average of all of the NO_x emission rates for the RATA runs, expressed in units of ppm at 15% O₂, does not exceed the emission limit.

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion but no later than 180 days after startup of the permitted unit and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-50-410, and 9 VAC 5-80-1675)

63. **Initial Performance Test: Turbine Generators** – Initial performance tests shall be conducted on each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3) for SO₂ to determine compliance with the limits contained in Condition 39.a. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:
- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17 or by manually sampling using Gas Process Association Standard 2166) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D5504, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).
 - b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO₂ concentration (in parts per million (ppm)). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and

Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.

- c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO₂ and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 19–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit. If fuel sampling is used, as described in 63.a above, no test protocol or test report is required.

(9 VAC 5-50-30, 9 VAC 5-50-410 and 9 VAC 5-80-1675)

64. **Initial Performance Test: Auxiliary Boiler and Fuel Gas Heater** - Initial performance tests shall be conducted for NO_x and CO from the auxiliary boiler (B-1) and each of the six fuel gas heaters (FGH-1 through FGH-6) to determine compliance with the emission limits contained in Conditions 42 or 47, as applicable. The tests shall be performed, reported and demonstrate compliance within 60 days after the boiler or fuel gas heater, as applicable, reach the maximum load level at which the unit will be operated but in no event later than 180 days after its initial start-up. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion but no later than 180 days after startup of the permitted unit and shall conform to the test report format enclosed with this permit.
(9 VAC 5-50-30, 9 VAC 5-80-1985 E, and 9 VAC 5-50-410)

65. **Visible Emissions Evaluation: Turbine Generators** - Concurrently with the initial performance tests, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3). Each test shall consist of 30 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. At least one VEE shall be conducted for each of the operating conditions and loads for which emissions tests are required for the stack tests contained in Condition 61. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. The evaluation shall be performed, reported, and demonstrate

compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit.

Should conditions prevent concurrent opacity observations, the Piedmont Regional Office shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. One copy of the test result shall be submitted to the Piedmont Regional Office within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

66. **Visible Emissions Evaluation: Auxiliary Boiler and Fuel Gas Heaters** - Concurrently with the initial performance tests in Condition 64, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on the auxiliary boiler (B-1) and fuel gas heaters (FGH-1 through FGH-6). Each test shall consist of 10 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. The evaluation shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the boiler will be operated but in no event later than 180 days after start-up of the boiler.

Should conditions prevent concurrent opacity observations, the Piedmont Regional Office shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. One copy of the test result shall be submitted to the Piedmont Regional Office within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

67. **Testing: Power Block Heat Rate** - Initial compliance testing, using ASME Performance Test Code on Overall Plant Performance (ASME PTC 46-1996) or equivalent method approved by the Piedmont Regional Office, shall be conducted for the heat rate of the power blocks (i.e., a combination of CT-1, CT-2, and CT-3 and the steam turbine generator) to show compliance with the initial limit contained in Condition 8. The testing shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after commencement of commercial operation of the permitted facility. Testing shall be conducted when combusting natural gas without duct burning. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format

enclosed with this permit. An initial exceedance of the applicable heat rate in Condition 8 triggers a requirement for the permittee to submit a maintenance plan to DEQ within 15 days that specifies the actions the permittee will take in order to achieve the heat rate limit. The details of this plan are to be arranged with the Piedmont Regional Office. A re-test shall be completed within 60 days. One copy of the re-test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format enclosed with this permit. A second exceedance of the applicable heat rate in Condition 8 shall be considered a violation.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

CONTINUING COMPLIANCE DETERMINATION

68. Continuing Compliance: Combustion Turbines – The permittee shall conduct additional performance tests for VOC, PM₁₀ and PM_{2.5} from the Combustion Turbines (CT-1, CT-2, CT-3) to demonstrate compliance with the emission limits contained in this permit. The tests shall occur no less than 54 months and no more than 66 months after the previous test. The details of the tests shall be arranged with the Piedmont Regional Office.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

69. Annual Performance Test: Turbine Generators – Annual performance tests shall be conducted on each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3) for SO₂ to determine compliance with the limits contained in Condition 39.a. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:

- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17 or by manual sampling using the Gas Process Association Standard 2166) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D5504, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).
- b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO₂ concentration (in parts per million (ppm)). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.
- c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO₂ and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 19–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be conducted on an annual basis (no more than 14 calendar months following the previous performance test). Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion and shall conform to the test report format enclosed with this permit. If fuel sampling is used, as described in 69.a above, no test protocol or test report is required.

(9 VAC 5-50-30, 9 VAC 5-50-410)

70. **Periodic Testing: Power Block Heat Rate**—The permittee shall conduct subsequent heat rate testing of the power blocks in accordance with Condition 67 to show compliance with the applicable heat rate contained in Condition 8 in Years 6, 12, 18, 24 and 30. After Year 30, additional tests shall be conducted between 60 and 73 months after the previous test. The details of the evaluation are to be arranged with the Piedmont Regional Office.
(9 VAC 5-50-30 and 9 VAC 5-80-1675)

71. **Stack Tests: Continuing Compliance** – Upon request by DEQ, the permittee shall conduct additional performance tests to determine compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Piedmont Regional Office.
(9 VAC 5-50-30 G)

RECORDS

72. **On Site Records: Facility** - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Piedmont Region. These records shall include, but are not limited to:
- Annual hours of operation of the emergency fire water pump (FWP-1) and emergency generators (EG-1, EG-2, and EG-3) for emergency purposes and for maintenance checks and readiness testing, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;
 - All fuel supplier certifications for the S15 ULSD fuel used in the diesel emergency units (EG-1 and FWP-1);
 - Monthly and annual throughput of natural gas to the three combustion turbines and associated duct burners (CT-1, CT-2, and CT-3), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;

- d. Monthly emissions calculations for PM₁₀, PM_{2.5} and VOC from the combined cycle combustion turbines and associated duct burners (CT-1, CT-2, CT-3) using calculation methods approved by the Piedmont Regional Office to verify compliance with the ton/yr emissions limitations in Condition 41;
- e. Monthly and annual records of plant net electrical energy output used in the demonstrations of compliance required in Condition 40;
- f. Monthly and annual emissions of CO₂ and CO_{2e}, calculated monthly as the sum of each consecutive 12-month period;
- g. Monthly and annual calculations of CO_{2e} emission rates (lb/MWh net) to demonstrate compliance with the requirements of Condition 40. Compliance for the consecutive 12-month period shall be demonstrated monthly as required in Condition 40;
- h. Monthly and annual throughput of natural gas to the auxiliary boiler (B-1) and the fuel gas heaters (FGH-1 through FGH-6), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;
- i. Fuel quality records for natural gas combusted in the combustion turbine and associated duct burner (CT-1, CT-2, and CT-3), auxiliary boiler (B-1), and fuel gas heaters (FGH-1 through FGH-6);
- j. Continuous monitoring system emissions data, calibrations and calibration checks, percent operating time, and excess emissions;
- k. Operation and control device monitoring records for each SCR system and oxidation catalyst as required in Conditions 2 and 5;
- l. Records of alternative operating scenarios as required by Conditions 10 and 11;
- m. The occurrence and duration of any startup, shutdown, or malfunction of the affected facility, any malfunction of the air pollution control equipment, or any periods during which a continuous emission monitoring system is inoperative;
- n. Weekly logs of dissolved solids content of cooling water to the four inlet coolers (IC-1 through IC-4) and the auxiliary equipment chiller (AEC-1).
- o. Scheduled and unscheduled maintenance, and operator training.
- p. Results of all stack tests, power block heat rate tests, visible emission evaluations, and performance evaluations.
- q. Manufacturer's instructions for proper operation of equipment.
- r. Results of daily AVO inspections for fugitive natural gas leak detection, dates and results of first and final repair attempt, any repairs performed to the piping components (valves and flanges), and the list of difficult to repair leaking components and reason for each delay.

- s. Records showing the circuit breakers are operating in accordance with the manufacturer's specifications (see Condition 24).

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50 and 9 VAC 5-50-410)

- 73. **Emissions Testing: Facility** - The electric generating facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from excessive cyclonic flow as defined in 40 CFR 60 Appendix A. Sampling ports shall be provided when requested at the appropriate locations and safe sampling platforms and access shall be provided.

(9 VAC 5-50-30 F and 9 VAC 5-80-1180)

NOTIFICATIONS

- 74. **Initial Notifications** - The permittee shall furnish written notification to the Piedmont Regional Office of:

- a. The actual date on which construction of the electric power generation facility commenced within 30 days after such date.
- b. The anticipated start-up date of the electric power generation facility postmarked not more than 60 days nor less than 30 days prior to such date.
- c. The actual start-up date of the electric power generation facility within 15 days after such date.
- d. The anticipated date of continuous monitoring system performance evaluations postmarked not less than 30 days prior to such date.
- e. The anticipated date of performance tests of the combustion turbines (CT-1, CT-2, and CT-3), auxiliary boiler (B-1), and six fuel gas heaters (FGH-1 through FGH-6), postmarked at least 30 days prior to such date.
- f. The actual date the electric power generation facility commenced commercial operation within 15 days after such date.

Copies of the written notification referenced in items a through e above are to be sent to:

Associate Director

Office of Air Enforcement and Compliance Assistance (3AP20)

U.S. Environmental Protection Agency

Region III

1650 Arch Street

Philadelphia, PA 19103-2029

(9 VAC 5-50-50 and 9 VAC 5-50-410)

GENERAL CONDITIONS

75. **Permit Invalidation** – This permit to construct the electric power generation facility shall become invalid, unless an extension is granted by the DEQ, if:

- a. A program of continuous construction or modification is not commenced within 18 months from the date of this permit.
- b. A program of construction or modification is discontinued for a period of 18 months or more, or is not completed within a reasonable time, except for a DEQ approved period between phases of the phased construction of a new stationary source or project.

(9 VAC 5-80-1985)

76. **Permit Suspension/Revocation** - This permit may be suspended or revoked if the permittee:

- a. Knowingly makes material misstatements in the permit application or any amendments to it;
- b. Fails to comply with the conditions of this permit;
- c. Fails to comply with any emission standards applicable to a permitted emissions unit;
- d. Causes emissions from the stationary source which result in violations of, or interfere with the attainment and maintenance of, any ambient air quality standard; or
- e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.

(9 VAC 5-80-1985 F)

77. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
- b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;
- c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
- d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(9 VAC 5-170-130 and 9 VAC 5-80-1180)

78. **Maintenance/Operating Procedures** – At all times, including periods of start-up, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the

affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment and process equipment which affect such emissions:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.
- d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures, prior to their first operation of such equipment. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.

(9 VAC 5-50-20 E)

79. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
(9VAC 5-20-180 J)
80. **Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the Piedmont Regional Office of malfunctions of the affected facility or, related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone, email, or telegraph. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Piedmont Regional Office.
(9 VAC 5-20-180 C)
81. **Violation of Ambient Air Quality Standard** - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I)

82. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Piedmont Regional Office of the change of ownership within 30 days of the transfer.

(9 VAC 5-80-1985 E)

83. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.

(9 VAC 5-80-1985 E)

STATE-ONLY ENFORCEABLE REQUIREMENTS

The following terms and conditions are included in this permit to implement the requirements of 9 VAC 5-40-130 et seq., 9 VAC 5-50-130 et seq., 9 VAC 5-60-200 et seq. and/or 9 VAC 5-60-300 et seq. and are enforceable only by the Virginia Air Pollution Control Board. Neither their inclusion in this permit nor any resulting public comment period make these terms federally enforceable.

84. **(SOE) Emission Limits: Toxic Air Pollutants** – Emissions from the electric power generation facility shall not exceed the limits specified below:

<u>Pollutant</u>	<u>CAS#</u>	<u>Lb/hr</u>	<u>Tons/yr</u>
Acrolein	107-02-8	0.050 lb/hr	0.18 tons/yr
Beryllium	7440-41-7	0.00014 lb/hr	0.00058 tons/yr
Cadmium*	7440-43-9	--	0.053 tons/yr
Chromium	7440-47-3	0.016 lb/hr	0.068 tons/yr
Formaldehyde	50-00-0	1.6 lb/hr	6.5 tons/yr
Lead*	7439-92-1	--	0.024 tons/yr
Mercury*	7439-97-6	--	0.013 tons/yr
Nickel	7440-02-0	0.024 lb/hr	0.11 tons/yr

*Hourly emissions of these pollutants are exempt

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 4, 7, 9, and 26.

(9 VAC 5-60-320 and 9 VAC 5-80-1625G)

85. **(SOE) Stack Test: Toxic Air Pollutants** – An initial performance test shall be conducted for formaldehyde from each combustion turbine and associated duct burner (CT-1, CT-2, and CT-3) to determine compliance with the emission limits contained in Condition 84. The tests shall be performed and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and reported and data reduced as

set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. Tests shall be conducted for two different operating scenarios: natural gas firing at full load with the duct burners off; and natural gas firing at full load with the duct burners on. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

86. **(SOE) On Site Records: Toxic Air Pollutants** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Piedmont Regional Office. These records shall include, but are not limited to the average hourly (in pounds), monthly (in tons), and annual emissions (in tons) of each toxic compound listed in Condition 84. Hourly emissions shall be calculated monthly. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These records shall be available for inspection by DEQ and current for at least the most recent five years.

(9 VAC 5-50-50 and 9 VAC 5-80-1625G)

SOURCE TESTING REPORT FORMAT

Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
 - a. Operating rate
 - b. Test Methods
 - c. Pollutants tested
 - d. Test results for each run and the run average
 - e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

* ¹Not applicable to visible emission evaluations

