



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 21 2015

Mr. Maxwell George
Environmental Affairs Manager
Virgin Islands Water and Power Authority
P.O. Box 1450
St. Thomas, U.S. Virgin Islands 00804

Re: Administrative Amendment- Combustion Turbine Unit 18-Prevention of Significant Deterioration (PSD) -Virgin Islands Water and Power Authority's (VIWAPA) -St. Thomas

Dear Mr. George:

On March 18, 2015, the Region 2 Office of the U.S. Environmental Protection Agency (EPA) received VIWAPA's letter and a consolidated briefing package requesting multiple changes to the St. Thomas permit. VIWAPA made its initial request on October, 21, 2014, and provided additional information on January 30, 2015 and February 5, 2015. The requests are related to: 1) Sulfuric Acid Mist emission measurement and limit for the Combustion Turbine Unit 23; 2) Particulate matter emission limit for the Combustion Turbine Unit 18; 3) Volatile Organic Compound emission limit for Combustion Turbine Unit 18; 4) Removal of Continuous Opacity Monitoring requirements from St. Thomas and St. Croix units and, 5) PSD non-applicability analyses for installing two duct burners at the St. Thomas Plant. Today's response covers only the request to amend the Volatile Organic Compounds' (VOC) emission limit in the PSD permit for Unit 18 at the St. Thomas plant.

VIWAPA's Unit 18 PSD permit currently requires that VIWAPA comply with the VOC concentration limits in ppm with oxygen correction. However, VIWAPA informed Region 2 that it could not comply with the VOC limit because the original application it submitted in the early 1990s did not account for any oxygen correction. VIWAPA exceeds the emission limits only when an oxygen correction is applied to the measured VOC concentration. Additionally, variability in measurements and the instrument's 10% error made compliance with the 4.8 ppm VOC emission limit with oxygen correction infeasible. VIWAPA also provided on February 16, 2015, a revised Best Available Control Technology review for the VOC emissions and demonstrated that combustion control still remains the BACT for VOC emissions from Unit 18. VIWAPA further stated that other identical units at its St. Croix plant have higher VOC limits in their PSD permits when any oxygen correction is taken into account. It should be noted that the EPA had increased the VOC limits for the St. Croix units in early 2000s to account for the increase due to oxygen correction.

Based on the review of the information VIWAPA provided and the review of the records for the St. Croix permits, EPA has determined that this requested change is approvable. EPA further notes that this change will not result in any emission increase or cause any adverse air quality impacts. Therefore, we are approving VIWAPA's request to revise the VOC ppm limits for Unit 18 (see Enclosure A) at VIWAPA's St. Thomas plant to 13 ppm to make it identical to the VOC limits for Unit 19 and Unit 20 at the St. Croix plant. A project description is provided in Enclosure I. The revised permit conditions are found in Enclosure II. This PSD permit supersedes the previously amended PSD permit issued to VIWAPA on September 23, 2013.

This determination is final Agency action under the Clean Air Act (the Act). Under Section 307 (b)(1) of the Act, judicial review of this final action is available only by the filing of a petition for review in the United States Court of Appeals for the appropriate circuit within 60 days from the date on which this final permit decision is published in the Federal Register. Under Section 307 (b)(2) of the Act, this final permit decision shall not be subject to later judicial review in civil or criminal proceedings for enforcement. If you have any questions regarding this letter, please call Mr. Steven Riva, Chief, Permitting Section, Air Programs Branch, at (212) 637-4074.

Sincerely,



John Filippelli, Director
Clean Air and Sustainability Division

Enclosures

cc: Verline Marcellin, VIDPNR
Angela Arnold, VIDPNR
Robert Smith
Michael Lukey, ARCADIS

VIRGIN ISLANDS WATER AND POWER AUTHORITY, St. Thomas
December, 2015 Amendment – Combustion Turbine Unit 18

Enclosure A

Amended Permit Conditions:

I. EMISSION LIMITATIONS AND TESTING REQUIREMENTS:

B. Unit #18 - 23 MW GE Frame 5 (Model PG5371)

8. Volatile Organic Compounds (VOC) Emission Limitations:

- a. While operating in a simple or combined cycle mode, VOC emissions, measured as carbon, shall not exceed 2.0 lbs/hr when operating at base-load, or 67 lbs/hr when operating at low-load. While operating in a combined cycle mode with Unit 15, VOC emissions shall not exceed 4 lbs/hr at base-load and 146 lbs/hr at low-load. The VOC emission rate shall be tested while operating both in the simple and combined-cycle modes using EPA RM 25A (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average VOC emission rate of these three test runs. See Section V.A. for details on testing requirements.
- b. While operating in a simple or combined cycle mode, VOC emissions shall not exceed the following concentrations at various percent load levels, corrected to 15% oxygen. While both Units 15 and 18 operating in a combined cycle mode, the higher concentration limit of the two will apply. Percent load will be determined based on the amount of fuel-oil fired.

PERCENT LOAD	EMISSION RATE (ppmdv @ 15% O ₂)
0-24	268 ppmdv and 56.5 lbs/hour
25-49	89 ppmdv and 28 lbs/hour
50-74	37 ppmdv and 17.5 lbs/hour
75-99	13 ppmdv and 5.6 lbs/hour
100	10 ppmdv and 3.1 lbs/hour

- c. EPA reserves the right to require continuous emission monitoring for VOC in the future.

ENCLOSURE I
VIRGIN ISLANDS WATER AND POWER AUTHORITY
Krum Bay-ST. THOMAS
Amended Final Permit- December, 2015

PROJECT DESCRIPTION

The Virgin Islands Water and Power Authority (VIWAPA) is requesting that EPA amend the existing consolidated final permit issued on September 23, 2013, for Units 15, 18 and 22 located in St. Thomas. Today's action amends Unit 18's Volatile Organic Compounds' (VOC) emission limits in ppm_{dv} to reflect the 15% oxygen correction. The revised VOC limits are now consistent with the VOC limits for the identical turbines at VIWAPA's St. Croix plant. There is no revision made to any other units today.

Today's Revision:

VIWAPA is requesting a correction to the VOC limits in the permit. VIWAPA informed EPA that its application in the early 1990s did not account for 15% oxygen correction and, as such, the permit is not consistent with the VOC limits allowing for oxygen correction in its GE5371 turbines (Units 19 and 20) at its St. Croix plant. EPA is revising the VOC limits at all loads making them consistent with the limits required for the Units on St. Croix.

Language of September 2013 Revision:

VIWAPA is requesting that it be allowed to replace steam injection system with a water injection system to control NO_x at its Combustion Turbine Unit 18. This request is made because VIWAPA has been experiencing operational problems in the boilers and the corrosion problems in its Heat Recovery Steam Generator at this location. The other Units at this location use water injection system to control NO_x.

Language of February 2007 Revision

The Virgin Islands Water and Power Authority (VIWAPA) is requesting that EPA revise the existing PSD permits for Units 15, 18 and 22 located at Krum Bay Plant in St. Thomas. VIWAPA requested the revision because its sole supplier of fuel on the Island can no longer guarantee fuel oil with a nitrogen content less than 1000 ppm by weight. While VIWAPA's permit, except for Unit 22, did not limit the nitrogen content, the units were effectively limited to 150 ppm_w (0.015%) in order to meet the NO_x limit in the permit. VIWAPA therefore requested a new nitrogen content limit up to 1000 ppm_w (0.1%) (Note: The fuel's sulfur content remains unchanged at 0.2%). This change will also result in increasing the nitrogen oxide emission limits in all three PSD units. Further, VIWAPA agrees not to use duct burners in the Heat Recovery Steam Generator (HRSG). Currently, VIWAPA operates eight Units at this site. In addition to the PSD affected Units 15, 18 and 22, VIWAPA operates a PSD affected unit, Unit 23, as well as Units 11, 12, 13 and 14 which are not PSD affected units but operate pursuant to the Virgin

Islands Department of Natural Resources permits. VIWAPA retired and dismantled Units 9 and 10 a few years ago.

Units 15, 18 and 22 (revised in today's action)

EPA is revising these permits that will allow VIWAPA to use No. 2 fuel oil with a maximum fuel nitrogen content of 1000 ppm by weight. This change will result in the limits for nitrogen oxide emissions as follows:

Unit 15- a 23 MW General Electric (GE) Frame 5P, No. 2 oil-fired gas turbine which was installed in 1981. The NOx emission limit will change from 69 lbs/hr up to 115 lbs/hr.

Unit 18- a 23 MW GE frame 5PA, No. 2 oil-fired gas turbine which was installed in 1992. The NOx emission limit will change from 55 lbs/hr up to 103 lbs/hr.

Unit 22- a 24 MW Pratt and Whitney FT8, No. 2 oil fired gas turbine, which was installed in 2002. The NOx emission limit will change from 42 lbs/hr up to 77 lbs/hr.

A Heat Recovery Steam Generator- Unfired- installed in 1993 (exhaust gases from Units 15 and 18 are ducted to this unfired HRSG)

Units 11, 12, 13, 14 and 23

(No changes due to today's action-these units are listed for information purposes only)

Unit 11- a 18 MW residual oil fired steam boiler installed in 1968

Unit 12- a 15.1 MW GE Frame 5LA, No. 2 oil fired turbine installed in 1970

Unit 13- a 35 MW residual oil fired steam boiler installed in 1970

Unit 14- a 15.1 MW GE Frame 5LA, No. 2 oil fired turbine installed in 1972

Unit 23- a 39 MW GE Frame 6, No. 2 oil fired turbine installed in 2004

Units 15, 18, and 22 at this site are PSD sources with potential emissions of criteria pollutants in excess of 100 tons per year (TPY). Each unit was issued a PSD permit prior to the present action. All these units are PSD affected for oxides of nitrogen (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), and volatile organic compounds (VOC). The potential emissions from these units are as follows.

POLLUTANT	UNITS 15 and 18	UNIT 22
	(tons/year)	(tons/year)
Nitrogen Oxides (NO _x)	Revised from 459 to 809	Revised from 184 to 336
Sulfur Dioxide (SO ₂)	594	228
Carbon Monoxide (CO)	252 @ 100% load	149
Particulate matter less than 10 microns (PM ₁₀)	44	99
Volatile Organic Compounds (VOC)	14 @ 100% load	45

VIWAPA employs Best Available Control Technology to control the pollutants described above. NO_x emissions shall be controlled through the use of water or steam injection. SO₂ and PM₁₀ emissions will be controlled through the use of low sulfur distillate fuel oil. CO and VOC emissions will be controlled by implementing good combustion practices and performing intensive maintenance.

VIWAPA St. Thomas Air Quality Analysis (ug/m3)

Pollutant	Net change in impact	EPA's Sign. Impact Level	EPA's Monitoring de minimis Level	Modeled Cumulative Air Impact	Measured Background	Cum. Model + background	Modeled Increment	PSD Increment	NAAQS
NO ₂									
Annual	4.3	1	14	57	8	65	15	25	100

1. National Ambient Air Quality Standard is the EPA air quality standard for public health.
2. The Significant Impact Level is a fraction of the NAAQS and is used by EPA to determine whether a cumulative modeling analysis is required.
3. The Monitoring de minimis Level is used by EPA to determine whether preconstruction

ambient air quality monitoring is required. In this case, it was not required for the purpose of preconstruction concentrations. However, existing monitored background data measured in Puerto Rico site was obtained. This background concentration was added to the total modeled concentration modeled impact in order to determine a total concentration for comparison to the NAAQS.

Air Quality Analysis in St. John National Park - Class I Area

Pollutant Averaging Period	Net Change Impact	EPA's Significant Impact Level	Increment & NAAQS Required?
NO ₂ Annual	0.004	0.1	No

ENCLOSURE II

**Virgin Islands Water and Power Authority (VIWAPA)
Krum Bay Plant, St. Thomas
Final Amended Permit- December, 2015**

Units 15 and 18

The electric power generating units at the VIWAPA St. Thomas facility, as described in Enclosure I, are subject to the following conditions:

I. EMISSION LIMITATIONS AND TESTING REQUIREMENTS:

A. Unit #15 - 23 MW GE Frame 5 (Model PG5341)

1. The total fuel usage for Unit #15 shall not exceed 17,410,000 gallons during any period of 365 consecutive days. Daily compliance shall be determined by adding the amount of fuel-oil used during each calendar day to the total quantity of the fuel-oil used in the preceding 364 calendar days.
2. The maximum heat input shall not exceed 310 million British thermal units per hour (MMBtu/hr). Unit #15 is limited to a maximum fuel consumption rate of 2,352 gallons per hour.
3.
 - a. Operation of Unit #15 at low-loads (less than 25% capacity) cannot exceed 17 percent of the total annual operating time during a rolling 12-month period.
 - b. Operation of Unit #15 is allowed in a simple or a combined cycle mode. While operating in a combined cycle mode, the Heat Recovery Steam Generator (HRSG) shall be unfired.
 - c. The type of fuel is limited to No. 2 fuel oil or distillate fuel oil with a sulfur content of no more than 0.2% sulfur by weight and a nitrogen content of no more than 0.10% nitrogen by weight.
 - d. Tests for percent sulfur in fuel shall be conducted using testing methods established in 40 CFR 60.335. The test for nitrogen in fuel oil can be any one of the ASTM methods from ASTM D6366-99, D4629-02, or D5762-02. A fuel sample shall be drawn daily from the day or the holding tank that supplies fuel oil to this unit.

4. Oxides of Nitrogen (NO_x) Emission Limitations:

a. BACT is the use of water injection to control NO_x emissions. VIWAPA must use water injection at all times except when operating at low load (less than 25% capacity) as reserve.

b. NO_x Emission Limits (measured as NO₂)

Operating above low load-

When operating above low load, the concentration of NO_x in the exhaust gas shall not exceed by volume (ppmdv), on a dry basis, corrected to 15% oxygen (as determined by continuous emissions monitoring and stack testing) on an hourly average basis as follows:

NO_x (ppm) = 55, when fuel oil's nitrogen content is 150 ppm or below; or

NO_x (ppm) = 55 + [((N/10,000)-0.015) x 470.59], where N is the fuel oil's nitrogen content in ppm and it is above 150 ppm

The NO_x concentration value obtained from this equation then shall be used in the equation in 40 CFR 60, Appendix A, Method 19 to calculate the pounds per hour NO_x emission limit for that specific nitrogen content of the fuel oil.

VIWAPA shall comply with this pounds per hour emission limit when fuel nitrogen content is lower than 1000 ppmw and is operating the unit above low load. However, in no event, including operating at 1000 ppmw nitrogen in fuel, shall VIWAPA exceed 115 lbs/hr. Further, while operating this unit and Unit 18 in a combined cycle mode (with unfired HRSG), the NO_x emissions shall not exceed 218 lbs/hr.

Operating at low load-

When operating at low load, NO_x emissions shall not exceed 115 lbs/hr; while operating this unit and Unit 18 in a combined cycle mode (with unfired HRSG), the NO_x emissions shall not exceed 218 lbs/hr.

c. The compliance with NO_x emissions on an hourly average basis shall be determined as follows: VIWAPA shall analyze the nitrogen content of the fuel oil for each day when the NO_x CEM reading exceeded 55 ppm (15% oxygen dry) hourly average for any hour during the day when this turbine was operating. The analyses shall be done in accordance with condition (I)(A)(3)(d). The nitrogen content of the fuel oil in ppm shall be used to calculate the maximum allowable

hourly NOx emissions using the equations specified in (I)(A)(4)(b) and shall remain in effect for the whole day for which the sample was taken. If the NOx CEM reading on an hourly average does not exceed 55 ppm during the entire day, a fuel analysis for nitrogen is not required for that day. VIWAPA shall also obtain averages of the measured nitrogen oxide concentrations (in ppm_v) and lbs/hr rate for every hour.

d. The water-to-fuel ratio for various load conditions will be established during the initial performance testing for NOx and reestablished or verified during any subsequent testing. The water-to-fuel ratio values contained in the initial performance test reports required to be submitted to EPA must become enforceable condition of this permit. VIWAPA shall apply to Virgin Islands Department of Planning and Natural Resources to incorporate the water-to-fuel ratios into VIWAPA's operating permit.

5. **Sulfur Dioxide (SO₂) Emission Limitations:**

While operating in a simple or combined cycle mode, SO₂ emissions shall not exceed 66.8 lbs/hr. While operating in a combined cycle mode with Unit 18, SO₂ emissions shall not exceed 135.5 lbs/hr. The emission rate of SO₂ from each mode of operation shall be determined using EPA RM 20 (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average SO₂ emission rate of these three test runs. See Section V.A. for details on testing requirements.

6. **Carbon Monoxide (CO) Emission Limitations:**

- a. While operating in a simple or combined cycle mode, CO emissions shall not exceed 13 lbs/hr when operating at base-load, or 405 lbs/hr when operating at low-load. While operating in a combined cycle mode with Unit 18, CO emissions shall not exceed 68 lbs/hr at base-load and 729 lbs/hr at low-load. The CO emission rate shall be tested while operating both in the simple and combined-cycle modes using EPA RM 10 (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average CO emission rate of these three test runs. See Section V.A. for details on testing requirements.
- b. While operating in a simple or combined cycle mode, CO emissions shall not exceed the following concentrations at various percent load levels, corrected to

15% oxygen, as determined by continuous emission monitoring. While both Units 15 and 18 operating in a combined cycle mode, the higher concentration limit of the two will apply. Percent load will be determined based on the amount of fuel-oil fired.

PERCENT LOAD	CONCENTRATION OF CO (ppmdv @ 15% O ₂)
0-24	1618
25-49	1145
50-74	332
75-99	88
100	28

7. Particulate Matter/PM₁₀/Beryllium Emission Limitations:

- a. While operating in a simple or combined cycle mode, PM₁₀ emissions shall not exceed 5.0 lbs/hr. While operating in a combined cycle mode with Unit 18, PM₁₀ emissions shall not exceed 10 lbs/hr.
- b. While operating in a simple or combined cycle mode, Beryllium emissions shall not exceed 9E-4 lbs/hr. While operating in a combined cycle mode with Unit 18, Beryllium emissions shall not exceed 18E-4 lbs/hr.
- c. The emission rates of PM/PM₁₀ and Beryllium shall be determined using EPA RM 5, Method 201/201A (40 CFR §51, Appendix M), and EPA RM 104, respectively. These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average emission rate of these three test runs. See Section V.A. for details on testing requirements.

8. Volatile Organic Compounds (VOC) Emission Limitations:

- a. While operating in a simple or combined cycle mode, VOC emissions, measured as carbon, shall not exceed 2.0 lbs/hr when operating at base-load, or 79 lbs/hr when operating at low-load. While operating in a combined cycle mode with Unit 18, VOC emissions shall not exceed 4 lbs/hr at base-load and 146 lbs/hr at low-load. The VOC emission rate shall be tested while operating both in the simple and combined-cycle modes using EPA RM 25A (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA

prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average VOC emission rate of these three test runs. See Section V.A. for details on testing requirements.

- b. While operating in a simple or combined cycle mode, VOC emissions shall not exceed the following concentrations at various percent load levels, corrected to 15% oxygen. While both Units 15 and 18 operating in a combined cycle mode, the higher concentration limit of the two will apply. Percent load will be determined based on the amount of fuel-oil fired.

PERCENT LOAD	CONCENTRATION OF VOC (ppmdv @ 15% O ₂)
0-24	550
25-49	251
50-74	23
75-99	5
100	4

- c. EPA reserves the right to require continuous emission monitoring for VOC in the future.

9. **Opacity Limitations:**

The opacity shall not exceed 17 percent, as determined by continuous monitoring, except for 3 minutes in any consecutive 30-minute period, during which 40 percent opacity shall not be exceeded.

B. Unit #18 - 23 MW GE Frame 5 (Model PG5371)

1. The total fuel usage for Unit #18 shall not exceed 18,223,600 gallons during any period of 365 consecutive days. Daily compliance shall be determined by adding the amount of fuel-oil used during each calendar day to the total quantity of the fuel-oil used in the preceding 364 calendar days.
2. The maximum heat input shall not exceed 323 MMBtu/hr. Unit #18 is limited to a maximum fuel consumption rate of 2,454 gal/hr.
3. Operation of Unit #18 at low-loads (less than 25% capacity) cannot exceed 17 percent of the total annual operating time during a rolling 12-month period.

4. Operation of Unit #18 is allowed in a simple or a combined cycle mode. While operating in a combined cycle mode, the Heat Recovery Steam Generator (HRSG) shall be unfired.
5. The type of fuel is limited to No. 2 fuel oil or distillate fuel oil with a sulfur content of no more than 0.2% sulfur by weight and a nitrogen content of no more than 0.10% nitrogen by weight.
6. Tests for percent sulfur in fuel shall be conducted using testing methods established in 40 CFR 60.335. The test for nitrogen in fuel oil can be any one of the ASTM methods from ASTM D6366-99, D4629-02, or D5762-02. A fuel sample shall be drawn daily from the day or the holding tank that supplies fuel oil to this unit.

4. **Oxides of Nitrogen (NO_x) Emission Limitations:**

- a. BACT is the use of water injection to control NO_x emissions. VIWAPA must use water injection at all times except when operating at low load (less than 25% capacity) as reserve.

- b. NO_x Emission Limits (measured as NO₂)

Operating above low load-

When operating above low load, the concentration of NO_x in the exhaust gas shall not exceed by volume (ppmdv), on a dry basis, corrected to 15% oxygen (as determined by continuous emissions monitoring and stack testing) on an hourly average basis as follows:

NO_x (ppm) = 42, when fuel oil's nitrogen content is 150 ppm or below; or

NO_x (ppm) = 42 + [(N/10,000)-0.015] x 470.59], where N is the fuel oil's nitrogen content in ppm and it is above 150 ppm

The NO_x concentration value obtained from this equation then shall be used in the equation in 40 CFR 60, Appendix A, Method 19 to calculate the pounds per hour NO_x emission limit for that specific nitrogen content of the fuel oil. VIWAPA shall comply with this pounds per hour emission limit when fuel nitrogen content is lower than 1000 ppmw and is operating above low load. However, in no event, including operating at 1000 ppmw nitrogen in fuel, shall VIWAPA exceed 103 lbs/hr NO_x; while operating this unit and Unit 15 in a combined cycle mode (with unfired HRSG), the NO_x emissions shall not exceed 218 lbs/hr.

Operating below low load-

When operating below low load, NO_x emissions shall not exceed 103 lbs/hr calculated as NO₂; while operating this unit and Unit 15 in a combined cycle mode (with unfired HRSG), the NO_x emissions shall not exceed 218 lbs/hr.

- c. The compliance with NO_x emissions on an hourly average basis shall be determined as follows: VIWAPA shall analyze the nitrogen content of the fuel oil for each day when the NO_x CEM reading exceeded 42 ppm (15% oxygen dry) hourly average for any hour during the day when this turbine was operating. The analyses shall be done in accordance with condition (I)(B)(3)(d). The nitrogen content of the fuel oil in ppm shall be used to calculate the maximum allowable hourly NO_x emissions using the equations specified in (I)(B)(4)(b) and shall remain in effect for the whole day for which the sample was taken. If the NO_x CEM reading on an hourly average does not exceed 42 ppm during the entire day, a fuel analysis for nitrogen is not required for that day. VIWAPA shall also obtain averages of the measured nitrogen oxide concentrations (in ppm_{dv}) and lbs/hr rate for every hour.
- d. The water-to-fuel ratio for various load conditions will be established during the initial performance testing for NO_x and reestablished or verified during any subsequent testing. The water-to-fuel ratio values contained in the initial performance test reports required to be submitted to EPA must become enforceable condition of this permit. VIWAPA shall apply to Virgin Islands Department of Planning and Natural Resources to incorporate the water-to-fuel ratios into VIWAPA's operating permit.

5. Sulfur Dioxide (SO₂) Emission Limitations:

While operating in a simple or combined cycle mode, SO₂ emissions shall not exceed 68.7 lbs/hr. While operating in a combined cycle mode with Unit 15, SO₂ emissions shall not exceed 135.5 lbs/hr. The emission rate of SO₂ from each mode of operation shall be determined using EPA RM 20 (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average SO₂ emission rate of these three test runs. See Section V.A. for details on testing requirements.

6. Carbon Monoxide (CO) Emission Limitations:

- a. While operating in a simple or combined cycle mode, CO emissions shall not

exceed 55 lbs/hr when operating at base-load, or 324 lbs/hr when operating at low-load.. While operating in a combined cycle mode with Unit 15, CO emissions shall not exceed 68 lbs/hr at base-load and 729 lbs/hr at low-load. The CO emission rate shall be tested while operating both in the simple and combined-cycle modes using EPA RM 10 (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average CO emission rate of these three test runs. See Section V.A. for details on testing requirements.

- b. While operating in a simple-cycle or combined-cycle mode, CO emissions shall not exceed the following concentrations at various percent load levels, corrected to 15% oxygen, as determined by continuous emission monitoring. While both Units 15 and 18 operating in a combined cycle mode, the higher concentration limit of the two will apply. Percent load will be determined based on the amount of fuel-oil fired.

PERCENT LOAD	CONCENTRATION OF CO (ppmdv @ 15% O ₂)
0-24	1369
25-49	855
50-74	234
75-99	94
100	73

7. Particulate Matter/PM₁₀/Beryllium Emission Limitations:

- a. While operating in a simple or combined cycle mode, PM emissions shall not exceed 5.0 lbs/hr. While operating in a combined cycle mode with Unit 15, PM emissions shall not exceed 10 lbs/hr
- b. While operating in a simple or combined cycle mode, PM₁₀ emissions shall not exceed 5.0 lbs/hr. While operating in a combined cycle mode with Unit 18, PM₁₀ emissions shall not exceed 10 lbs/hr .
- c. While operating in a simple or combined cycle mode, Beryllium emissions shall not exceed 9E-4 lbs/hr. While operating in a combined cycle mode with Unit 18, Beryllium emissions shall not exceed 18E-4 lbs/hr.

- d. The emission rates of PM/PM₁₀ and Beryllium shall be determined using EPA RM 5, Method 201/201A (40 CFR §51, Appendix M), and EPA RM 104, respectively. These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average emission rate of these three test runs. See Section V.A. for details on testing requirements.

8. Volatile Organic Compounds (VOC) Emission Limitations:

- a. While operating in a simple or combined cycle mode, VOC emissions, measured as carbon, shall not exceed 2.0 lbs/hr when operating at base-load, or 67 lbs/hr when operating at low-load. While operating in a combined cycle mode with Unit 15, VOC emissions shall not exceed 4 lbs/hr at base-load and 146 lbs/hr at low-load. The VOC emission rate shall be tested while operating both in the simple and combined-cycle modes using EPA RM 25A (40 CFR §60, Appendix A). These tests shall be conducted according to a written protocol approved by EPA prior to any testing. Three test runs shall be conducted for each operating mode and compliance for each operating mode shall be based on the average VOC emission rate of these three test runs. See Section V.A. for details on testing requirements.
- b. While operating in a simple or combined cycle mode, VOC emissions shall not exceed the following concentrations at various percent load levels, corrected to 15% oxygen. While both Units 15 and 18 operating in a combined cycle mode, the higher concentration limit of the two will apply. Percent load will be determined based on the amount of fuel-oil fired.

PERCENT LOAD	EMISSION RATE (ppmdv @ 15% O ₂)
0-24	268 ppmdv and 56.5 lbs/hour
25-49	89 ppmdv and 28 lbs/hour
50-74	37 ppmdv and 17.5 lbs/hour
75-99	13 ppmdv and 5.6 lbs/hour
100	10 ppmdv and 3.1 lbs/hour

- c. EPA reserves the right to require continuous emission monitoring for VOC in the future.

9. **Opacity Limitations:**

The opacity shall not exceed 17 percent, as determined by continuous monitoring, except for 3 minutes in any consecutive 30-minute period, during which 40 percent opacity shall not be exceeded.

C. Heat Recovery Steam Generator

Heat Recovery Steam Generator shall be unfired and may be used with either Unit 15 or Unit 18 or both.

II. MONITORING, RECORDING, and RECORD KEEPING:

- A. Unit #15, Unit #18 shall be equipped with operable continuous emission monitors to measure the pollutants or operating parameters as indicated below:

Unit #15: CO, O₂, NO_x, and opacity

Unit #18: CO, O₂, NO_x, and opacity

(NO_x, CO and Opacity shall also need to be measured when the flow is diverted to the HRSG)

- B. VIWAPA shall install, calibrate and test each continuous emission monitor (CEM) and recorder listed in II.A. Monitors must comply with EPA performance and siting specifications pursuant to 40 CFR §60, Appendix B, Performance Specifications 1-4. Equipment specifications, calibration and operating procedures, and data evaluation and reporting procedures shall be submitted to EPA in a Performance Specification Test protocol. EPA reserves the right to require the auditing of the CEMs by independent agents. All CEMs and recorders required above shall be operational prior to initial start-up. Data collected from the CEMs will be quality controlled and quality assured in accordance with the procedures specified in 40 CFR §60, Appendix F.
- C. Log books shall be kept and updated daily to record the following:
- a. exceedance of emission limitations determined by continuous monitoring;
 - b. the sulfur content of all fuel-oil burned;
 - c. the sulfur content, ash content, and lead content of all waste-oil burned, and the list of generators for each shipment received (to be provided by the waste-oil generator or transporter). VIWAPA may petition EPA to modify this requirement after a minimum of 12 months from commencement of waste-oil burning;

- d. the amount of water consumed to control NO_x emissions from Unit #15 and Unit #18, respectively;
 - e. the amount of steam produced (pounds per hour) from Unit #15, Unit #18 and the HRSG, and the electrical output (MW) on an hourly basis from Unit #15 and Unit #18;
 - f. The amount of time that Unit #15 and Unit #18 are operated at low-load conditions, recorded on a rolling 12-month basis; and
 - g. The hourly blending ratio of fuel-oil to waste-oil in Unit #11 and Unit #13. VIWAPA shall submit such information to EPA quarterly from commencement of waste-oil burning.
 - h. hourly average of NO_x CEM measurements for each 24-hour period and nitrogen content of the fuel for each day it was measured
- D. All continuous monitoring records and log books specified in this section must be maintained for a period of five years after the date of record, and made available upon request.
- E. In each report quarter, 95% quality data availability shall be maintained for all opacity monitors and 90% quality data availability shall be maintained for all gaseous monitors. There shall be a quality assurance plan coupled with a calibration and maintenance program.

III. REPORTING REQUIREMENTS:

- A. All emission reports, testing reports and start-up notifications required under this permit shall be submitted to the EPA official named below. Three copies of the stack test report must be submitted within 60 days after completion of the test.

The Chief, Air Compliance Branch
U.S. EPA Region 2 Office
290 Broadway
New York, New York 10007

- B. Upsets/Malfunctions:

Upsets/malfunctions and actions taken on any unit must be reported by telephone within 24 hours with a follow-up letter within 5 calendar days to:

The Director
Division of Environmental Protection
Virgin Islands Department of Planning &
Natural Resources

45 Mars Hill
Frederiksted, St. Croix, USVI 00840-4474
(340) 773-1082

- C. VIWAPA shall submit a written report of excess emissions to EPA for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter and shall include the information specified below:
1. Specific identification of each period of excess emissions that occurred during start-ups, shutdowns, and malfunctions of the affected facility.
 2. The nature and cause of any malfunction (if known) of the affected facility and the corrective action taken or preventative measures adopted.
 3. For apparent excess emissions due to CEM malfunction, provide the date and time identifying each period during which the continuous monitoring system was inoperative (not including zero and span checks) and the nature of the system repairs or adjustments.
 4. When no excess emissions have occurred, or the continuous monitoring system(s) have not been inoperative, repaired or adjusted, such information shall be stated in the report.

The quarterly excess emission reports required in this section shall be sent to the following EPA personnel:

Region 2 CEM Coordinator
Air and Water Section
Monitoring and Management Branch
U.S. EPA Region 2
2890 Woodbridge Avenue
Edison, New Jersey 08837

with a copy going to Robert Buettner The Chief, Air Compliance Branch of U.S. EPA, Region II and Benjamin Nazario the Director of Division of Environmental Protection, Virgin Islands Department of Planning and Natural Resources at the addresses listed under Section III.A. and III.B.

IV. OTHER PERMIT CONDITIONS:

- A. This facility is subject to the General Provisions of the New Source Performance Standards (NSPS), codified at 40 CFR §60, Subpart A and the NSPS for Stationary Gas

Turbines (40 CFR §60, Subpart GG).

- B. VIWAPA shall meet all other applicable federal, state and local requirements, including those contained in the Virgin Islands State Implementation Plan (VI SIP).

V. TESTING REQUIREMENTS:

- A. VIWAPA shall perform the following:
 - 1. Conduct stack tests in accordance with the test methods published in 40 CFR §60, Appendix A. All tests on a given unit must be conducted within 60 days after achieving shakedown, but no later than 180 days after initial start-up.
 - 2. Obtain approval of a stack test protocol. A detailed description of the sampling point locations, sampling equipment, sampling and analytical procedures, data reporting forms, quality assurance procedures and operating conditions for such tests must be submitted to the EPA.
 - 3. Notify EPA and VIDPNR at least 30 days prior to actual testing.
 - 4. Provide permanent sampling and testing facilities as may be required by the EPA to determine the nature and quantity of emissions from each unit. Such facilities shall conform with all applicable laws and regulations concerning safe construction and safe practice.
- B. EPA reserves the right to require additional stack testing of the pollutants for which an emission limitation has been set in Section I of the permit.

