



Connecticut Department of  
**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

**BUREAU OF AIR MANAGEMENT  
NEW SOURCE REVIEW PERMIT  
TO CONSTRUCT AND OPERATE A STATIONARY SOURCE**

Issued pursuant to Title 22a of the Connecticut General Statutes (CGS) and Section 22a-174-3a of the Regulations of Connecticut State Agencies (RCSA).

<b>Owner/Operator</b>	Norwalk Hospital Association
<b>Address</b>	34 Maple Street, Norwalk, Connecticut 06856
<b>Equipment Location</b>	24 Stevens Street, Norwalk, Connecticut 06856
<b>Equipment Description</b>	Combustion Turbine No. 2
<b>Town-Permit Numbers</b>	137-0052
<b>Premises Number</b>	003
<b>Stack Number</b>	03
<b>Modification Issue Date</b>	June 5, 2015
<b>Prior Permit Issue Date(s)</b>	August 5, 1992 (Original) June 12, 2008 (Modification)
<b>Expiration Date</b>	None

/s/ Anne Gobin for  
Robert J. Klee  
Commissioner

June 5, 2015  
Date

This permit specifies necessary terms and conditions for the operation of this equipment to comply with state and federal air quality standards. The Permittee shall at all times comply with the terms and conditions stated herein.

## **PART I. DESIGN SPECIFICATIONS**

### **A. General Description**

Norwalk Hospital Association owns and operates Norwalk Hospital, a general medical and surgical hospital located in Norwalk, Connecticut. Norwalk Hospital houses an energy generation and distribution center ("The Center") to supplement its power requirements. The Center currently consists of generators driven by a gas turbine (Permit No. 137-0052), two boilers (Permit Nos. 137-0053 and 137-0054) and a 3MW cogeneration engine (Permit No. 137-0164). Emissions resulting from the operation of the aforementioned units are exhausted through the same stack, Stack No. 3. All power and steam generated by the Center is supplied to the hospital.

Combustion Turbine No. 2 (Permit No. 137-0052) uses water injection for control of NO<sub>x</sub> emissions.

### **B. Equipment Design Specifications**

1. Make and Model: 1.25 MW Kawasaki M1A-13
2. Maximum Gross Heat Input (MMBTU/hr):  
21.61 (Natural Gas)  
20.81 (Fuel Oil No. 2)

### **C. Control Equipment Design Specifications**

1. Water Injection for the Turbine

### **D. Stack Parameters**

1. Minimum Stack Height (ft): 115
2. Minimum Exhaust Gas Flow Rate at 100% load (acfm): 20,179
3. Minimum Stack Exit Temperature at 100% load (°F): 332
4. Minimum Distance from Stack to Property Line (ft): 175

## **PART II. OPERATIONAL CONDITIONS**

### **A. Equipment**

1. Allowable Fuel Type(s): Natural Gas, Distillate Fuel Oil No. 2
2. Maximum Fuel Firing Rate (MCF/hr, gal/hr):  
21.61 MCF/hr (Natural Gas)  
148.64 gal/hr (Oil No. 2)
3. Maximum Fuel Consumption over any Consecutive 12 Month Period for Combustion Turbine No. 2 (MMcf, gal):  
189.3 MMcf (Natural Gas)  
433, 500 gal (Oil No. 2)

4. Notwithstanding the fuel consumption limitations listed in Part II.A.3 of this permit, the Maximum Heat Input over any Consecutive 12 Month Period for Combustion Turbine No. 2 shall not exceed 189,303.6 MMBtu.
5. The Permittee shall only burn fuel with a sulfur content no greater than the applicable limits set forth in RCSA Section 22a-174-19b and 40 CFR Part 60.333(b).

**B. Control Equipment**

1. The Permittee shall use Water Injection at a rate of 0.8 pounds per pound of fuel or such other amount demonstrated to be sufficient to maintain compliance with the applicable NO<sub>x</sub> emission limits.

**PART III. ALLOWABLE EMISSION LIMITS**

The Permittee shall not cause or allow this equipment to exceed the emission limits stated herein at any time.

**A. Short-term Emissions**

1. Natural Gas

Pollutant	lb/hr	ppmvd @ 15% O <sub>2</sub>	lb/MMBtu HHV
PM	0.30		
PM <sub>10</sub>	0.30		
PM <sub>2.5</sub>	0.30		
SO <sub>2</sub>	0.07		
NO <sub>x</sub>	3.46	42	0.16
VOC	0.91		
CO	1.60	32	

2. Oil No. 2

Pollutant	lb/hr	ppmvd @ 15% O <sub>2</sub>	lb/MMBtu
PM	0.75		
PM <sub>10</sub>	0.75		
PM <sub>2.5</sub>	0.75		
SO <sub>2</sub>	1.05		
NO <sub>x</sub>	5.20	65	0.25
VOC	0.83		
CO	0.62	12	

**B. Annual Emission Limits**

<b>Pollutant</b>	<b>tons per 12 consecutive months</b>
PM	1.98
PM <sub>10</sub>	1.98
PM <sub>2.5</sub>	1.98
SO <sub>2</sub>	1.75
NO <sub>x</sub>	17.69
VOC	3.98
CO	7.01

**C. Hazardous Air Pollutants**

This equipment shall not cause an exceedance of the Maximum Allowable Stack Concentration (MASC) for any hazardous air pollutant (HAP) emitted and listed in RCSA Section 22a-174-29. [STATE ONLY REQUIREMENT]

**D. Opacity**

This equipment shall not exceed 10% opacity during any six minute block average as measured by 40 CFR 60, Appendix A, Reference Method 9.

**E. Demonstration of compliance with the above emission limits shall be met by calculating the emission rates using emission factors from the following sources:**

1. NO<sub>x</sub>: Most Recent Stack Test Data
2. CO: Manufacturer's Data (Emission Factor for Natural Gas: 74.07 lb/MMcf  
Emission Factor for Oil No. 2: 4.01 lb/10<sup>3</sup> gal)
3. PM/PM<sub>10</sub>/PM<sub>2.5</sub> and VOC: Compilation of Air Pollutant Emission Factors, AP-42, 4<sup>th</sup> Edition, Volume I, Section 3.1, October 1986.
4. SO<sub>x</sub>: Compilation of Air Pollutant Emission Factors, AP-42, 5<sup>th</sup> Edition, Volume I, Section 3.1, April 2000.

The commissioner may require other means (e.g. stack testing) to demonstrate compliance with the above emission limits, as allowed by state or federal statute, law or regulation.

**PART IV. MONITORING, RECORD KEEPING AND REPORTING REQUIREMENTS**

**A. Monitoring**

1. The Permittee shall install, calibrate, maintain and operate continuous monitoring systems to monitor and record the hourly fuel consumption and the hourly rate of water injection to Combustion Turbine No. 2.

**B. Record Keeping**

1. The Permittee shall calculate and record the hourly ratio of water injection to fuel use on a pound per pound basis.
2. The Permittee shall keep records of monthly and consecutive 12 month fuel consumption for each fuel. The consecutive 12 month fuel consumption shall be determined by adding

(for each fuel) the current month's fuel consumption to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.

3. The Permittee shall calculate and record the monthly and consecutive 12 month heat input for Combustion Turbine No. 2. The monthly heat input shall be calculated using a Natural Gas Heating Value of 1000 Btu/ft<sup>3</sup> and a Distillate Fuel Oil No. 2 Heating Value of 140,000 Btu/gal. The consecutive 12 month heat input shall be determined by adding the current month's heat input to that of the previous 11 months. The Permittee shall make these calculations within 30 days of the end of the previous month.
4. The Permittee shall calculate and record the monthly and consecutive 12 month PM, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, VOC, and CO emissions in units of tons. The consecutive 12 month emissions shall be determined by adding (for each pollutant) the current month's emissions to that of the previous 11 months. Such records shall include a sample calculation for each pollutant. The Permittee shall make these calculations within 30 days of the end of the previous month.
5. The Permittee shall keep records of fuel supplier certification for each delivery of fuel or a copy of the current contract with the fuel supplier supplying the fuel used by the equipment that includes the applicable sulfur content of the fuel as a condition of each shipment. These records shall include: the date of delivery, the name of the fuel supplier, type of fuel delivered, the percentage of sulfur in such fuel (by weight, dry basis), the method used to determine such sulfur content, and the quantity purchased for combustion.
6. The Permittee shall keep records of the occurrence and duration of any malfunction in the operation of the stationary gas turbine [40 CFR §60.7(b)]. Such records shall contain the following information: date of event; duration of event (minutes) and fuel being used during event.
7. The Permittee shall comply with all applicable record keeping requirements set forth in RCSA Section 22a-174-22 and 40 CFR Part 60 Subpart GG.
8. The Permittee shall keep all records required by this permit for a period of no less than five years and shall submit such records to the commissioner upon request.

### **C. Reporting**

1. The Permittee shall notify the commissioner in writing of any malfunction of the stationary gas turbine. The Permittee shall submit such notification within ten days of the malfunction. The notification shall include the following:
  - a. a description of the malfunction and a description of the circumstances surrounding the cause or likely cause of such malfunction; and
  - b. a description of all corrective actions and preventive measures taken and/or planned with respect to such malfunction and the dates of such actions and measures.
2. The Permittee shall submit to the Administrator and the commissioner all applicable notifications and reports as required by RCSA Section 22a-174-22 and 40 CFR Part 60 Subpart GG.

## PART V. STACK EMISSION TEST REQUIREMENTS

Stack emission testing shall be performed in accordance with the [Emission Test Guidelines](#) available on the DEEP website.

A. Stack testing shall be required for the following pollutant(s):

PM       PM<sub>10</sub>       PM<sub>2.5</sub>       SO<sub>2</sub>       NO<sub>x</sub>       CO  
 VOC       Opacity       Other (HAPs):

Stack testing shall be conducted for the following operating modes: turbine only on oil and turbine only on natural gas.

B. The Permittee shall conduct stack testing within 180 days from the modification issue date of this permit. The Permittee shall submit test results within 30 days after completion of testing.

C. Recurring stack testing for the above pollutant(s) shall be conducted within five years from the date of the last performance test.

D. Stack test results shall be reported in units of lb/hr, lb/MMBtu and ppmvd at 15% O<sub>2</sub>.

## PART VI. OPERATION AND MAINTENANCE REQUIREMENTS

A. The Permittee shall operate and maintain this equipment in accordance with the manufacturer's specifications and written recommendations.

B. The Permittee shall operate and maintain this equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during malfunction.

## PART VII. SPECIAL REQUIREMENTS

A. The Permittee shall comply with all applicable sections of the following New Source Performance Standard at all times.

Title 40 CFR Part 60, Subparts GG and A.

Copies of the Code of Federal Regulations (CFR) are available online at the U.S. Government Printing Office website.

B. In the event that a malfunction causing either an emission exceedance or a parameter monitored out of recommended range is not corrected within three hours, the Permittee shall immediately institute shutdown of the turbine.

C. The Permittee shall not cause or permit the emission of any substance or combination of substances which creates or contributes to an odor beyond the property boundary of the premises that constitutes a nuisance as set forth in RCSA Section 22a-174-23. [STATE ONLY REQUIREMENT]

D. The Permittee shall operate this facility at all times in a manner so as not to violate or contribute significantly to the violation of any applicable state noise control regulations, as set forth in RCSA Sections 22a-69-1 through 22a-69-7.4. [STATE ONLY REQUIREMENT]

## **PART VIII. ADDITIONAL TERMS AND CONDITIONS**

- A.** This permit does not relieve the Permittee of the responsibility to conduct, maintain and operate the regulated activity in compliance with all applicable requirements of any federal, municipal or other state agency. Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- B.** Any representative of the DEEP may enter the Permittee's site in accordance with constitutional limitations at all reasonable times without prior notice, for the purposes of inspecting, monitoring and enforcing the terms and conditions of this permit and applicable state law.
- C.** This permit may be revoked, suspended, modified or transferred in accordance with applicable law.
- D.** This permit is subject to and in no way derogates from any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material, nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the facility or regulated activity affected thereby. This permit shall neither create nor affect any rights of persons or municipalities who are not parties to this permit.
- E.** Any document, including any notice, which is required to be submitted to the commissioner under this permit shall be signed by a duly authorized representative of the Permittee and by the person who is responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense under section 22a-175 of the Connecticut General Statutes, under section 53a-157b of the Connecticut General Statutes, and in accordance with any applicable statute."
- F.** Nothing in this permit shall affect the commissioner's authority to institute any proceeding or take any other action to prevent or abate violations of law, prevent or abate pollution, recover costs and natural resource damages, and to impose penalties for violations of law, including but not limited to violations of this or any other permit issued to the Permittee by the commissioner.
- G.** Within 15 days of the date the Permittee becomes aware of a change in any information submitted to the commissioner under this permit, or that any such information was inaccurate or misleading or that any relevant information was omitted, the Permittee shall submit the correct or omitted information to the commissioner.
- H.** The date of submission to the commissioner of any document required by this permit shall be the date such document is received by the commissioner. The date of any notice by the commissioner under this permit, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the commissioner, whichever is earlier. Except as otherwise specified in this permit, the word "day" means calendar day. Any document or action which is required by this permit to be submitted or performed by a date which falls on a Saturday, Sunday or legal holiday shall be submitted or performed by the next business day thereafter.

- I. Any document required to be submitted to the commissioner under this permit shall, unless otherwise specified in writing by the commissioner, be directed to: Office of Director; Engineering & Enforcement Division; Bureau of Air Management; Department of Energy and Environmental Protection; 79 Elm Street, 5th Floor; Hartford, Connecticut 06106-5127.