



Entergy Nuclear Northeast  
Entergy Nuclear Operations, Inc.  
Vermont Yankee  
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COPY

26 January 2006

Mr. Daniel Riley, Environmental Engineer  
Vermont Agency of Natural Resources  
Department of Environmental Conservation  
Air Pollution Control Division  
Building 3 South  
103 South Main Street  
Waterbury, VT 05671-0402

**Subject: 2005 Air Pollutant Emissions Inventory Report for Entergy Nuclear Vermont Yankee, LLC. Facility ID WM 2335.**

Dear Mr. Riley:

Enclosed is Entergy Nuclear Vermont Yankee's air emissions inventory report for 2005. Total air emissions from significant activities, which includes the house heating boilers and the waste oil burners, was 9.07 tons for the year. Vermont Yankee does not include emissions from the emergency diesel generators (A and B), the John Deere diesel, or the emergency diesel fire pump toward the total tonnage in this inventory report as these emergency generators, each of which operate less than one hundred hours per year, are considered insignificant activities under the State regulations.

The cooling tower particulate emissions calculations for the mechanical draft cooling towers are based on the drift and drift rate, and as in 2004, remain conservatively high. The cooling towers operated for 2,149 hours during 2005. The operating hours were utilized in calculating the 2005 PM emissions.

$$\begin{aligned}\text{PM Emissions (TPY)} &= \text{Drift gpm} \times 8.33 \text{ lbs/gal} \times \text{TDS} \times 60 \text{ min/hr} \times \text{hrs/yr of operation} \\ &\quad \times 1 \text{ ton/2000 lbs} \\ &= 72.0 \text{ gpm} \times 8.33 \text{ lbs/gal} \times (62 \text{ lbs/1000000 lbs}) \times 60 \text{ min/hr} \times \\ &\quad 2149 \times 1 \text{ ton/2000 lbs}\end{aligned}$$

The calculations for the 2005 emission data for cooling tower hazardous air contaminants (HAC) consider the miscibility of the product constituent and the water circulated through the cooling towers versus percentage of water loss through evaporation when the towers are running. The circulating water flow through the cooling towers is approximately 360,000 gallons per minute (gpm), and based on the *Final Environmental Statement Related to the Operation of Vermont Yankee Nuclear Power Corporation*


published by the Nuclear Regulatory Commission, 5,000 gpm is lost through cooling tower evaporation. The HAC emissions from the cooling towers are insignificant and do not exceed any action levels outlined in Appendix C of the Vermont Air Pollution Control Regulations.


Pollutant	Cooling Towers		
	Tons	lbs/8 hours	Action level (lbs/8hrs)
Particulate Matter	2.4		
Dodecylguanidine Hydrochloride	0.001	0.002	0.025
Ethyl Alcohol	0.0004	0.001	2,330
Glutaraldehyde	0.008	0.015	340
Isopropyl Alcohol	0.0005	0.001	63
Total	2.41		

This submittal does not include additional hazardous air contaminant (HAC) emissions inventory, as those would be associated with routine maintenance activities, such as painting and cleaning, and are therefore not subject to any State reporting requirements.

Please do not hesitate to call if you have questions or concerns with the enclosed information.

Sincerely,  
*Entergy Nuclear Vermont Yankee, LLC*

  
Lynn DeWald  
Environmental Specialist  
802-258-5526

  
Samuel A. Wender IV  
Chemistry Superintendent  
802-258-5650

## Supporting Calculations

### A. SPECTRUS NX-1104

#### Isopropyl Alcohol

$$(400 \text{ gals/yr}) \times (8.24 \text{ lbs/gal}) \times (2.4\%) \times (1 \text{ ton}/2,000 \text{ lbs}) \times (5,000 \text{ gpm}/360,000 \text{ gpm}) = 0.0005 \text{ tons/yr}$$

#### Ethyl Alcohol

$$(400 \text{ gals/yr}) \times (8.24 \text{ lbs/gal}) \times (1.8\%) \times (1 \text{ ton}/2,000 \text{ lbs}) \times (5,000 \text{ gpm}/360,000 \text{ gpm}) = 0.0004 \text{ tons/yr}$$

#### Dodecylguanidine Hydrochloride

$$(400 \text{ gals/yr}) \times (8.24 \text{ lbs/gal}) \times (5\%) \times (1 \text{ ton}/2,000 \text{ lbs}) \times (5,000 \text{ gpm}/360,000 \text{ gpm}) = 0.001 \text{ tons/yr}$$

### B. NALCO H-550

#### Glutaraldehyde (50% Solution)

$$(250 \text{ gals/yr}) \times (9.4 \text{ lbs/gal}) \times (50\%) \times (1 \text{ ton}/2,000 \text{ lbs}) \times (5,000 \text{ gpm}/360,000 \text{ gpm}) = 0.008 \text{ tons/yr}$$

## CERTIFICATION OF DATA ACCURACY

### For Purposes of Emission Calculations

This form must be signed by an individual responsible for the completion and certification of the data contained in the forms attached which are intended to meet both the requirements of State Statute {10 V.S.A. 555 (c) and 3 V.S.A. 2822 (j)(1)(B)} and the requirements for "Emission Statements" contained in the Federal Clean Air Act as amended in 1990. Certification indicates that the signatory takes legal responsibility for the accuracy of the information on the form.

*The data presented herein represents the best available information and is true, accurate, and complete to the best of my knowledge.*

Lynni DeWald

Print Full Name

Environmental Specialist

Print Full Title

Lynni DeWald

Signature

1/25/06

Date of Signature

802-258-5526

Telephone Number

Received

JAN 4 2006

By Lynni DeWald

**Vermont Agency of Natural Resources  
2005 Air Pollutant Emissions Inventory**

**Combustion Source  
For Criteria Pollutants**

The information displayed on this form is that which is currently on file for your facility. It is based on inventory forms completed for calendar year 2004 or the most recent year available. The information must be updated to calendar year 2005. Please review the information contained in the boxes. If there is no value in a box, write in the correct 2005 value. If there is a value, but it is incorrect for 2005, cross out the value and in its place write the correct value.

If you have questions, or desire assistance with completing the inventory, please call Dan Riley at (802)-241-3858.

Facility Name : ENTERGY NUCLEAR VERMONT YANKEE

Person Completing Inventory Form

Lynn Dewald

Facility ID WM2335

Source Description: house heating boilers (2)

Stack Number: 1

Source Number: 1

Segment Number: 1

Source Classification Code: 1-03-005-01

**Operational Data:**

Hours Per Day: 0

Winter Throughput (%) : 40

Days Per Week: 0

Spring Throughput (%) : 30

Weeks Per Year: 0

Summer Throughput (%) : 0

Hours Per Year: 5,304

Autumn Throughput (%) : 30

(Over)

**Combustion Source (continued)**

Fuel Type :

2005 Fuel Consumption : (supply units) :

Av. Sulfur Content of Fuel (%) :  Ash Content of Fuel (%) :

*(Please supply a current estimate of mid-range sulfur content)*

Maximum Heat Input (million BTU/hr) :

Burner Rating:

Boiler Rating:  *16.5 LCD 1/1/06*

Maximum Actual Firing Rate (million BTU/hr):

Percent Space Heat:

Percent Process Heat:

**Stack Parameters:**

Stack Number:

Stack/Duct Discharge Height (feet) :

Stack/Duct Inner Diameter at Exit (inches) :

Exit Gas Temperature (deg. F) :

Flow Rate at Exit (actual FT<sup>3</sup>/min) :

**If an air pollution control device for the source exists inspect the following information and correct if necessary :**

TSP Control Device:  Theoretical Efficiency:

SO<sub>2</sub> Control Device:  Theoretical Efficiency:

NO<sub>x</sub> Control Device:  Theoretical Efficiency:

VOC Control Device:  Theoretical Efficiency:

CO Control Device:  Theoretical Efficiency:

**If an estimated emission rate exists, please supply the information below :**

Estimated Emission Rate\* :

Basis of Estimate :

\* If test data 4 years old or less is available.

**Vermont Agency of Natural Resources  
2005 Air Pollutant Emissions Inventory**

**Combustion Source  
For Criteria Pollutants**

The information displayed on this form is that which is currently on file for your facility. It is based on inventory forms completed for calendar year 2004 or the most recent year available. The information must be updated to calendar year 2005. Please review the information contained in the boxes. If there is no value in a box, write in the correct 2005 value. If there is a value, but it is incorrect for 2005, cross out the value and in its place write the correct value.

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Facility Name : ENTERGY NUCLEAR VERMONT YANKEE

Person Completing Inventory Form

Lynn DeWald

Facility ID WM2335

Source Description: <sup>used</sup> waste oil furnace (2)

LCD  
1/25/06

Stack Number: 2

Source Number: 2

Segment Number: 1

Source Classification Code: 1-02-004-01

**Operational Data:**

Hours Per Day: 0

Winter Throughput (%) : 50

Days Per Week: 0

Spring Throughput (%) : 0

Weeks Per Year: 0

Summer Throughput (%) : 0

Hours Per Year: 1700.07

Autumn Throughput (%) : 50

(Over)

**Combustion Source (continued)**

Fuel Type :

2005 Fuel Consumption : (supply units) :  gallons

Av. Sulfur Content of Fuel (%) :  Ash Content of Fuel (%) :

*(Please supply a current estimate of mid-range sulfur content)*

Maximum Heat Input (million BTU/hr) :

Burner Rating:

Boller Rating:

Maximum Actual Firing Rate (million BTU/hr):

Percent Space Heat:

Percent Process Heat:

**Stack Parameters:**

Stack Number:

Stack/Duct Discharge Height (feet) :

Stack/Duct Inner Diameter at Exit (inches) :

Exit Gas Temperature (deg. F) :

Flow Rate at Exit (actual FT<sup>3</sup>/min) :

**If an air pollution control device for the source exists inspect the following information and correct if necessary :**

TSP Control Device:  Theoretical Efficiency:

SO<sub>2</sub> Control Device:  Theoretical Efficiency:

NO<sub>x</sub> Control Device:  Theoretical Efficiency:

VOC Control Device:  Theoretical Efficiency:

CO Control Device:  Theoretical Efficiency:

**If an estimated emission rate exists, please supply the information below :**

Estimated Emission Rate\* :

Basis of Estimate :

\* If test data 4 years old or less is available.



**Vermont Agency of Natural Resources**  
**2005 Air Pollutant Emissions Inventory**

**Process Source**  
**For Criteria Pollutants**

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If you have questions, or desire assistance with completing the inventory, please call Dan Riley at (802)-241-3858.

Facility Name: ENTERGY NUCLEAR VERMONT YANKEE

Person Completing Inventory Form : Lynn Dewald

Facility ID : WM2335

Source Description: Particulate Emissions from Cooling Tower

Stack Number: 5

Source Number: 5

Segment Number: 1

Source Classification Code: 3-85-001-01

**Operational Data :**

HoursPerDay : 0

DaysPerWeek : 0

WeeksPerYear : 0

HoursPerYear : 2,149

Winter Throughput (%) : 0

Spring Throughput (%) : 6% ~~0~~ May 2005

Summer Throughput (%) : 85% ~~0~~ June-Sept 2005

Autumn Throughput (%) : 99% ~~0~~ Oct 2005

(Over)

*LED*  
*1/20/06*

**Process Source (continued)**

**Raw Materials Input\*:**

Type	Quantity

**Product Materials Output\* :**

Type	Quantity

**\*Information in this section only necessary if accurate figures for stack flow rate and hours of operation cannot be supplied.**

**Stack Parameters :**

**Stack Number:** 5

**Stack/Duct Discharge Height (Feet) :**

0.0

**Stack/Duct Inner Diameter at Exit (Inches) :**

0.0

**Exit Gas Temperature (Deg F) :**

70

**Flow Rate at Exit (Actual FT<sup>3</sup>/Min) :**

0

**If there is an air pollution control device on this source inspect the following information and correct if necessary :**

**PM Control Device:**

none

**Theoretical Efficiency (%):**

0

**If available, supply theoretical efficiencies for :**

**PM10 Efficiency (%) :**

**PM2.5 Efficiency (%) :**

**(NOTE: This information will not affect the Air Registration Fee Estimate).**

**If an estimated emission rate exists for PM, supply the information below :**

**Estimated Emission Rate\***

**Basis of Estimate :**

**\* If test data 4 years old or less is available.**

**Vermont Agency of Natural Resources  
2005 Air Pollutant Emissions Inventory**

**Combustion Source  
For Criteria Pollutants**

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Facility Name : ENTERGY NUCLEAR VERMONT YANKEE

Person Completing Inventory Form

Lyan Dewald

Facility ID WM2335

Source Description: Emergency Diesels (2) - 1675 hp

Stack Number: 3

Source Number: 3

Segment Number: 1

Source Classification Code: 2-02-004-01

**Operational Data:**

Hours Per Day: 0

Winter Throughput (%) : 25

Days Per Week: 0

Spring Throughput (%) : 25

Weeks Per Year: 0

Summer Throughput (%) : 25

Hours Per Year: 94.1

Autumn Throughput (%) : 25

"A"  
Diesel Generator  
47.6 hrs

(Over)

"B"  
Diesel Generator  
46.5 hrs

**Combustion Source (continued)**

Fuel Type :

2005 Fuel Consumption : (supply units) :

Av. Sulfur Content of Fuel (%) :  Ash Content of Fuel (%) :

*(Please supply a current estimate of mid-range sulfur content)*

Maximum Heat Input (million BTU/hr) :

Burner Rating:

Boiler Rating:

Maximum Actual Firing Rate (million BTU/hr):

Percent Space Heat:

Percent Process Heat:

**Stack Parameters:**

Stack Number:

Stack/Duct Discharge Height (feet) :

Stack/Duct Inner Diameter at Exit (inches) :

Exit Gas Temperature (deg. F) :

Flow Rate at Exit (actual FT<sup>3</sup>/min) :

**If an air pollution control device for the source exists inspect the following information and correct if necessary :**

TSP Control Device:  Theoretical Efficiency:

SO<sub>2</sub> Control Device:  Theoretical Efficiency:

NO<sub>x</sub> Control Device:  Theoretical Efficiency:

VOC Control Device:  Theoretical Efficiency:

CO Control Device:  Theoretical Efficiency:

**If an estimated emission rate exists, please supply the information below :**

Estimated Emission Rate\* :

Basis of Estimate :

\* If test data 4 years old or less is available.

# Vermont Agency of Natural Resources 2005 Air Pollutant Emissions Inventory

## Combustion Source For Criteria Pollutants

The information displayed on this form is that which is currently on file for your facility. It is based on inventory forms completed for calendar year 2004 or the most recent year available. The information must be updated to calendar year 2005. Please review the information contained in the boxes. If there is no value in a box, write in the correct 2005 value. If there is a value, but it is incorrect for 2005, cross out the value and in its place write the correct value.

If you have questions, or desire assistance with completing the inventory, please call Dan Riley at (802)-241-3858.

Facility Name : ENTERGY NUCLEAR VERMONT YANKEE

Person Completing Inventory Form

Lynn DeWald

Facility ID WM2335

Source Description: 235 hp John Deere Diesel

Stack Number: 4

Source Number: 4

Segment Number: 1

Source Classification Code: 2-01-001-02

### Operational Data:

Hours Per Day: 0

Days Per Week: 0

Weeks Per Year: 0

Hours Per Year: 30

Winter Throughput (%) : 25

Spring Throughput (%) : 25

Summer Throughput (%) : 25

Autumn Throughput (%) : 25

(Over)

**Combustion Source (continued)**

Fuel Type :

2005 Fuel Consumption : (supply units) :

Av. Sulfur Content of Fuel (%) :  Ash Content of Fuel (%) :

*(Please supply a current estimate of mid-range sulfur content)*

Maximum Heat Input (million BTU/hr) :

Burner Rating:

Boiler Rating:

Maximum Actual Firing Rate (million BTU/hr):

Percent Space Heat:

Percent Process Heat:

**Stack Parameters:**

Stack Number:

Stack/Duct Discharge Height (feet) :

Stack/Duct Inner Diameter at Exit (inches) :

Exit Gas Temperature (deg. F) :

Flow Rate at Exit (actual FT<sup>3</sup>/min) :

**If an air pollution control device for the source exists inspect the following information and correct if necessary :**

TSP Control Device:  Theoretical Efficiency:

SO<sub>2</sub> Control Device:  Theoretical Efficiency:

NO<sub>x</sub> Control Device:  Theoretical Efficiency:

VOC Control Device:  Theoretical Efficiency:

CO Control Device:  Theoretical Efficiency:

**If an estimated emission rate exists, please supply the information below :**

Estimated Emission Rate\* :

Basis of Estimate :

\* If test data 4 years old or less is available.