

APPENDIX A

CLEAN AIR OPERATING PERMIT OPT-OUT APPLICATION (NOVEMBER 9, 1995)

HISTORICAL INFORMATION

November 9, 1995

Vermont Air Pollution Control Division  
103 South Main Street  
Bldg. 3 South  
Waterbury, Vermont 05671

**SUBJECT:** Vermont Yankee Operating Permit Opt-Out Application

Dear Sir/Madam:

Vermont Yankee Nuclear Power Corporation, the operator of the Vermont Yankee Nuclear Power Station (Vermont Yankee) in Vernon, VT is submitting the enclosed Operating Permit Opt-Out Application in response to Subchapter X of the Vermont Air Pollution Control Regulations (Regulations).

**Background**

The Vermont Air Pollution Control Division (Division) has promulgated Subchapter X of the Regulations which establishes an operating permit program for those air contaminant sources listed in Section 5-401 of the Regulations which have total "allowable emissions" of all air contaminants of 10 tons per year (tpy) or more. Since Vermont Yankee is an electrical power generation facility and such facilities qualify as air contaminant sources pursuant to Section 5-401 of the Regulations, Vermont Yankee is subject to the provisions of Subchapter X of the Regulations.

According to Section 5-1016 of the Regulations, sources with "actual emissions" of less than 10 tpy which are required to obtain an operating permit solely because their allowable emissions are greater than 10 tpy need not secure an operating permit if: (1) the source is not considered a "Federal Title V Source"; and (2) the owner/operator demonstrates that actual emissions during the preceding calendar year (i.e., 1994) did not exceed 10 tons. The information included in this letter is intended to demonstrate that Vermont Yankee qualifies for this operating permit exemption.

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## APPENDIX A (Continued)

Vermont Air Pollution Control Division

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### Federal Title V Sources

A Federal Title V Source is a source which is subject to Title V of the 1990 Clean Air Act Amendments. A source qualifies as a Federal Title V Source if it meets one or more of the following criteria:

- The source has allowable emissions of nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), or particulate matter (PM) of 100 tpy or more,
- The source has allowable emissions of volatile organic compounds (VOCs) of 50 tpy or more,
- The source is subject to either a New Source Performance Standard (NSPS) or a National Emission Standard for Hazardous Air Pollutants (NESHAP), or
- The source has allowable emissions of any one hazardous air pollutant (HAP) regulated by the U.S. EPA of 10 tpy or more or allowable emissions of a combination of HAPs regulated by the U.S. EPA of 25 tpy or more.

Emissions from those activities considered "insignificant" pursuant to Section 5-1002(h) of the Regulations can be excluded from the calculation of a source's allowable emissions. A non-production process can be classified by the Division as an insignificant activity on the basis of the minimal quantity of emissions and impracticality with respect to quantifying emissions. Exhibit A presents a set of activities being proposed as insignificant for Vermont Yankee.

Vermont Yankee's allowable emissions of HAPs are minimal and an estimate of Vermont Yankee's allowable emissions of non-hazardous air pollutants (excluding emissions from the set of proposed insignificant activities listed in Exhibit A) is provided in Exhibit B. This calculation shows that Vermont Yankee's allowable emissions of non-hazardous air pollutants are below the thresholds for a Federal Title V Source. Since Vermont Yankee is also not subject to either a NSPS or a NESHAP, Vermont Yankee does not qualify as a Federal Title V Source.

### 1994 Actual Emissions

As with the calculation of allowable emissions, emissions from insignificant activities can also be excluded from the calculation of a source's actual emissions. A calculation of Vermont Yankee's 1994 actual emissions (which also excludes the emissions from the set of proposed insignificant activities listed in Exhibit A)<sup>1</sup> is provided in Section 3 of the enclosed Operating Permit Opt-Out application. This calculation shows that Vermont Yankee's actual

<sup>1</sup>Emissions from both Vermont Yankee Emergency Diesel Generators were excluded from the calculation of Vermont Yankee's 1994 actual emissions even though neither unit strictly qualified as an insignificant activity in 1994 since each unit was operated for more than 100 hours during the year. The scheduled test surveillance for each of these two units has subsequently been reduced to guard against exceeding 100 hours of annual operation in future years.

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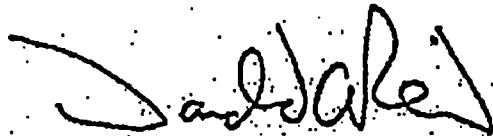
emissions during 1994 were below 10 tons.

### Summary

Enclosed is an Operating Permit Opt-Out Application for Vermont Yankee. Vermont Yankee qualifies for this operating permit exemption since Vermont Yankee is not a Federal Title V Source and Vermont Yankee's actual emissions during 1994 were below 10 tons. In submitting this application, we recognize that Vermont Yankee will be required to submit an annual report to the Division certifying that emissions from Vermont for the previous year were below 10 tons. We also realize that Vermont Yankee must obtain an operating permit before actual emissions can increase above 10 tpy. It is our understanding however, based on discussions with Brian Fitzgerald of your office, that in the unlikely event that one of the Vermont Yankee Emergency Diesel Generators exceeds 100 hours of operation in a year which results in Vermont Yankee's actual emissions exceeding 10 tpy, Vermont Yankee would not be required to apply for an operating permit if this exceedence was unlikely to reoccur. Vermont Yankee will notify the Division in writing in the unlikely event that either of the Emergency Diesel Generators is operated beyond 100 hours during any calendar year.

Should you have any questions on this matter, please contact G. Dean Weyman, Environmental Supervisor, at (802) 258-4114.

Very truly yours,



Enclosures

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APPENDIX A (Continued)

Vermont Air Pollution Control Division

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**EXHIBIT A**  
**(Sheet 1 of 2)**

**List of Proposed Insignificant Activities for Vermont Yankee**

- Natural gas, propane, and distillate oil space heating/hot water heaters rated at less than 3.0 million BTUs per hour.
- Portable space heaters which can be reasonable carried and relocated by an employee.
- Construction activities, excluding fugitive dust.
- Internal combustion engine generator sets rated less than 37 kW (50 hp).
- Emergency use generators operated less than 100 hours per year which are installed for use when the usual sources of heat, power, and lighting are temporarily unobtainable.
- Emergency use fire pump diesel engines operated less than 100 hours per year.
- Typical office activities such as copying and duplication and the use of typewriters, printers, blueprinting and pens.
- Bathroom and locker room ventilation.
- Maintenance activities associated with welding, braising, gluing, painting, soldering, wood working, etc.
- Architectural maintenance activities conducted to take care of the buildings and structures at the facility, including repainting, roofing and sandblasting.
- Interior maintenance activities and the equipment and supplies used therein, such as janitorial cleaning products.
- Exterior maintenance activities conducted to take care of the grounds of the facility, including parking lots and lawn maintenance.
- Food preparation, including barbecuing for service facility cafeterias and dining rooms.
- Steam vents which do not emit any regulated pollutants, air toxics, CO, or HAPS.
- The use of consumer products in a manner consistent with how the general public would use the product.
- Fire control equipment, including maintenance and employee training.

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APPENDIX A (Continued)

Vermont Air Pollution Control Division

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**EXHIBIT A**  
**(Sheet 2 of 2)**

**List of Proposed Insignificant Activities for Vermont Yankee**

- Cooling towers, evaporators, and HVAC systems.
- Emergency vents not subject to the accident release regulations.
- The storage, handling, and use of sulfuric acid, sodium bromide, and sodium hypochlorite.
- The storage and handling of gasoline, diesel fuel, #2 oil, and waste oil.
- The storage, handling, and use of lubricating, hydraulic, and transformer oils.
- The storage of closed containers of flammable/combustible liquids in ventilated storage cabinets.
- Steam turbine generator lube oil vents.
- Miscellaneous venting of carbon dioxide, hydrogen and nitrogen.
- Propane as a start-up fuel for the House Heating Boilers.
- Short-term leased stationary internal combustion engines.
- Batteries and battery charging stations.
- Monitors and other analyzers.
- Laboratory vents.
- Routine calibration, maintenance, and use of laboratory equipment and other analytical equipment.
- Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
- Hydraulic and hydrostatic testing equipment.
- The engine of any motor vehicle, including but not limited to any forklift or tractor.

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**EXHIBIT B**  
**(Sheet 1 of 6)****Calculation of Vermont Yankee's Allowable Emissions**

The purpose of this analysis is to calculate the "allowable emissions" of non-hazardous air pollutants from the "significant activities" located at Vermont Yankee. The allowable emissions of a facility are generally determined using the "maximum capacity" of the source, unless the facility operates under a state and federally enforceable limitation established in an existing air pollution control permit, state or federal standard, or other limiting regulation. For the purposes of this analysis, significant activities are defined as those air emission activities which cannot be classified as insignificant activities pursuant to Section 5-1002(h) of the Regulations. The significant activities at Vermont Yankee include the operation of two House Heating Boilers, two Waste Oil Burners, and two Parts Cleaners (i.e., two solvent metal degreasers). Note that the only regulatory restriction currently applicable to the House Heating Boilers and the Waste Oil Burners is the 2.0% by weight sulfur limitation in fuel specified in Section 5-221 of the Regulations.

**House Heating Boilers**

Each of the two House Heating Boilers utilizes No. 2 fuel oil and has a firing capacity of 119.2 gal/hr. These units are used to provide a source of steam to meet space heating requirements during all phases of plant operation.

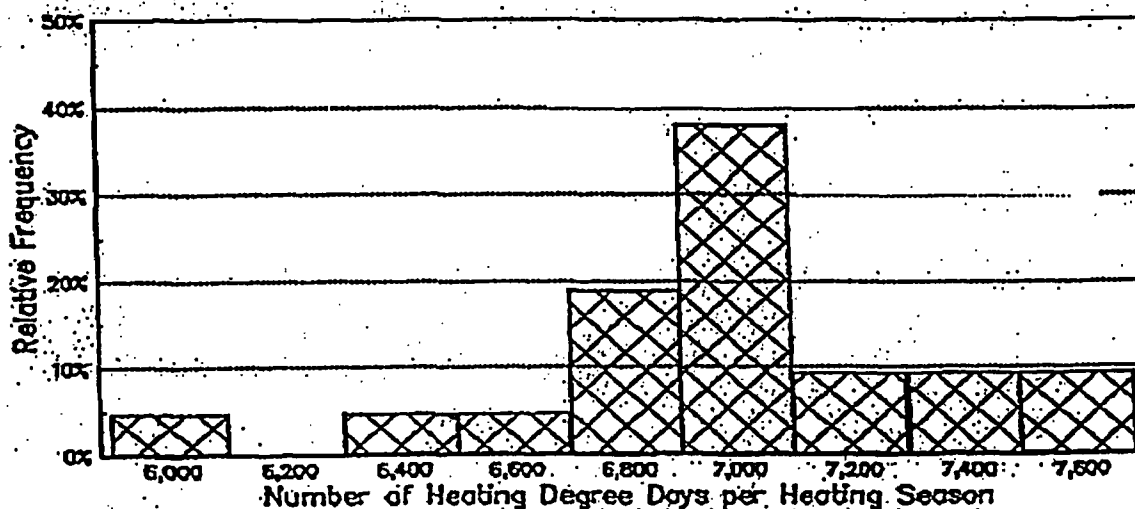
The traditional approach for calculating allowable emissions for these units would be to assume they are always operating at their "maximum capacity"; that is, continuously at full load throughout the year. However, a recent (January 25, 1995) memorandum from John Seitz (EPA OAQPS Director) to the EPA Regions now allows use of a "common-sense" approach when determining maximum capacity for an emissions unit. In the case of fuel burning equipment used only for space heating purposes, the number of hours of operation can be adjusted from 8,760 hr/yr to a more realistic number based on the length of the heating season for a given area (Reference 1).

In order to derive a realistic upper-bound estimate of the maximum capacity of the House Heating Boilers, historic seasonal Heating Degree Day (HDD) data and House Heating Boiler fuel consumption data were examined. A relative frequency histogram of the number of HDDs per heating season (defined as July 1 through June 30) as reported by the National Climatic Data Center for Vernon, VT from the 1973-74 heating season through the 1993-94 heating season is given below (Reference 2):

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**EXHIBIT B**  
(Sheet 2 of 6)

**Calculation of Vermont Yankee's Allowable Emissions**

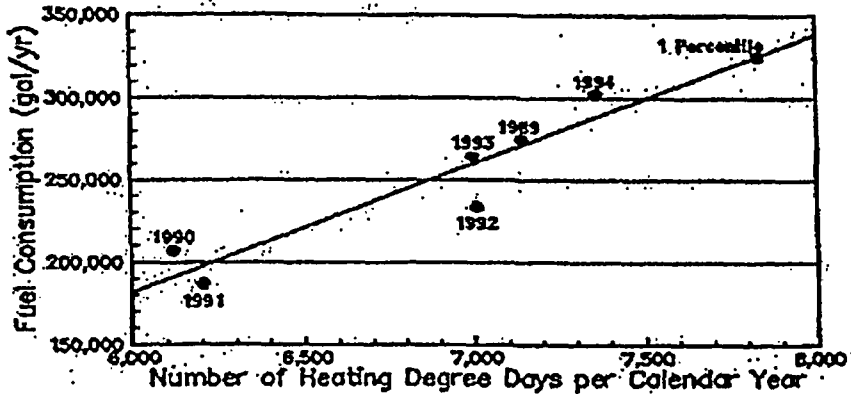


Note that the mean and standard deviation of this sample of seasonal HDD totals is 6,989 and 358, respectively. Assuming the distribution of seasonal HDD totals can be represented by a normal or Gaussian distribution, the seasonal HDD total which can be expected to be exceeded 1% of the time (e.g., once in 100 years) is 7,830 (e.g., 2.35 standard deviations above the mean value).

In order to predict the amount of fuel which would be consumed by the House Heating Boilers during this 1% heating season, a correlation between the number of HDDs recorded and the amount of fuel consumed by both House Heating Boilers was developed for the last six calendar years (1989 through 1994). A plot of these data is as follows:

**EXHIBIT B**  
(Sheet 3 of 6)

Calculation of Vermont Yankee's Allowable Emissions



A simple linear regression fit of these data produces the following relationship between the number of HDDs recorded annually (n) and the corresponding amount of fuel consumed by both House Heating Boilers (f, gal):

$$f = 78.58n - 289,700$$

Assuming the 1% heating season consists has a total of 7,830 HDDs, this relationship predicts that approximately 325,600 gal of fuel would be consumed by both House Heating Boilers during the 1% heating season (or during the 1% calendar year) (i.e.,  $78.58 \times 7,830 - 289,700 = 325,600$ ). Consequently, the combined maximum capacity of both House Heating Boilers can be defined as the amount of fuel consumed by both units during the 1% heating season; i.e., 325,600 gal/yr.

Assuming a maximum capacity of 325,600 gal/yr, the combined allowable emissions for both House Heating Boilers can be estimated utilizing the AP-42 emission factors for distillate oil fired industrial boilers (from Tables 1.3-2 and 1.3-4 of Reference 3) as follows:



**EXHIBIT B**  
**(Sheet 4 of 6)**

**Calculation of Vermont Yankee's Allowable Emissions**

Pollutant	Emission Factor (lb/kgal)	Maximum Capacity Fuel Consumption (gal/yr)	Allowable Emissions (ton/yr)
NO <sub>x</sub>	20	325,600	3.3
SO <sub>2</sub>	284	325,600	46.2
CO	5	325,600	0.8
PM	2	325,600	0.3
VOC	0.252	325,600	<0.1

The SO<sub>2</sub> emission factor used above is based on a maximum allowed fuel sulfur content of 2% by weight per Section 5-221 of the Regulations.

**Waste Oil Burners**

Each of the two Waste Oil Burners has a firing capacity of 2 gal/hr. These units are forced hot air space heaters which are used to heat the North Warehouse and the Containment Access Building. A conservative maximum capacity assumption for these units is to assume both units operate continuously throughout the year at their rated capacity of 2 gal/hr; i.e., 35,040 gal/yr.

Assuming a maximum capacity of 35,040 gal/yr, the combined allowable emissions for both Waste Oil Burners can be estimated utilizing the AP-42 emission factors for waste oil fired atomizing burner space heaters (from Tables 1.11-1 through 1.11-3 of Reference 3) as follows:

**EXHIBIT B**  
**(Sheet 5 of 6)**

**Calculation of Vermont Yankee's Allowable Emissions**

Pollutant	Emission Factor (lb/kgal)	Maximum Capacity Fuel Consumption (gal/yr)	Allowable Emissions (ton/yr)
NO <sub>x</sub>	16	35,040	0.3
SO <sub>2</sub>	214	35,040	3.7
CO	2.1	35,040	<0.1
PM	41.6	35,040	0.7
VOC	0.1	35,040	<0.1

The SO<sub>2</sub> emission factor used above is based on a maximum allowed fuel sulfur content of 2% by weight per Section 5-221 of the Regulations and the PM emission factor is based on a fuel ash content of 0.65% by weight (a typical ash content for waste oil as reported in Table 2.1 of Reference 4).

**Parts Cleaners**

The two parts cleaners qualify as cold solvent degreasing cleaners. One unit utilizes diesel fuel (No. 2 fuel oil) as a solvent and has a 25"×25" (4.3 ft<sup>2</sup>) solvent-air interface area; the other unit utilizes EPA 2000 as a solvent and has a 21"×30" (4.4 ft<sup>2</sup>) solvent-air interface area. Both units are used infrequently as maintenance cleaners. A very conservative maximum capacity assumption for these units is to assume that they are operated continuously; i.e., 8,760 hr/yr.

An estimate of the allowable VOC emissions for these units can be derived utilizing the AP-42 emission factor of 0.08 lb/hr/ft<sup>2</sup> for cold cleaners (from Table 4.6-2 of Reference 3) as follows:

$$(0.08 \text{ lb/hr/ft}^2) \times (8,760 \text{ hr/yr}) \times (4.3 \text{ ft}^2 + 4.4 \text{ ft}^2) \times (\text{ton}/2000 \text{ lb}) = 3.0 \text{ tpy}$$

Vermont Air Pollution Control Division

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**EXHIBIT B**  
**(Sheet 6 of 6)**

**Calculation of Vermont Yankee's Allowable Emissions**

**Total Allowable Emissions**

The allowable emissions for Vermont Yankee includes the combined allowable emissions for the two House Heating Boilers, the two Waste Oil Burners, and the two Parts Cleaners as follows:

Emission Units	Allowable Emissions (ton/yr)				
	NO <sub>x</sub>	SO <sub>2</sub>	CO	PM	VOCs
House Heating Boilers (2)	3.3	46.2	0.8	0.3	<0.1
Waste Oil Burners (2)	0.3	3.7	<0.1	0.7	<0.1
Parts Cleaners (2)	0.0	0.0	0.0	0.0	3.0
<b>TOTAL</b>	<b>3.5</b>	<b>50.0</b>	<b>0.9</b>	<b>1.1</b>	<b>3.1</b>

The above table demonstrates that the allowable emissions for Vermont Yankee are below the Federal Title V Source thresholds of 100 tpy for NO<sub>x</sub>, SO<sub>2</sub>, CO, and PM and 50 tpy for VOCs.

**References**

1. Brian J. Fitzgerald (VT DEC) memorandum to Operating Permit File, "State and Federal Operating Permit Programs," dated May 11, 1995.
2. National Climatic Data Center, "Climatological Data: New England," July 1974 through 1994 issues.
3. U.S. EPA, "Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources," Fifth Edition, January 1995.
4. U.S. EPA, "Emission Factor Documentation for AP-42 Section 1.11, Waste Oil Combustion," April 1993.

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APPENDIX A (Continued)

VERMONT AIR POLLUTION CONTROL  
LIMITING ALLOWABLE EMISSIONS  
OPERATING PERMIT OPT-OUT APPLICATION

Vermont Yankee Nuclear Power Station

**Section 1:** Site Information

a. Facility name:

*Vermont Yankee Nuclear Power Station*

b. Mailing address:

*RD 5, Box 169, Ferry Road, Brattleboro, VT 05301*

c. Street location:

*PO Box 157, Governor Hunt Road, Vernon, VT 05354*

d. Name and telephone number of designated air pollution contact person:

*G. Dean Weyman, Environmental Supervisor, (802) 258-4114*

**Section 2:** Operational Information

a. Please attach a narrative description of the processes at the facility.

*Vermont Yankee is a commercial nuclear power plant consisting of a single-cycle, forced circulation, boiling water reactor producing steam for direct use in a steam turbine. The turbine is an 1800 rpm tandem-coupled, four-flow, nonreheat unit designed to produce 540 MWe [EPU-650 MWe].*

*Vermont Yankee utilizes a house heating boiler system to provide a source of steam to meet space heating requirements during all phases of plant operation. This system consists of two forced draft, four pass No. 2 oil-fired fire tube boilers. Each boiler is rated at 400 boiler horsepower which represents approximately 50 percent of the calculated heating load. Both boilers exhaust to a common stack located on the south end of the Turbine Building.*

*Two small waste oil burners, each rated at 0.3 MMBtu/hr, also provide space heating; one is located in the North Warehouse and the second is located in the Containment Access Building.*

*Vermont Yankee also utilizes two parts cleaners which can be classified as cold solvent degreasing cleaners. One unit utilizes diesel fuel (No. 2 fuel oil) as a solvent and has a 4.3 ft<sup>2</sup> solvent-air interface area; the other unit utilizes EPA 2000 as a solvent and has a 4.4 ft<sup>2</sup> solvent-air interface area. Both units are fugitive sources located in the Machine Shop and are used infrequently as maintenance cleaners.*

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APPENDIX A (Continued)

Vermont Yankee Operating Permit Opt-Out Application

- b. Please provide an 8 1/2 in. x 11 in. sketch of the plant layout (or blueprint, if available) locating equipment and stacks.

*A diagram of the plant layout showing the location of the stacks for all of the stationary fuel combustion units and the two fugitive source parts cleaners is provided in Exhibit A. Note that the fire pump diesel, the John Deere diesel, and the two emergency diesel generator units qualify as insignificant activities due to their use as emergency use generators pursuant to Section 5-1002(h)(vi) of the Regulations.*

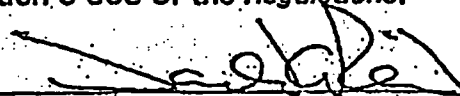
**Section 3:** Emissions estimate based on total annual facility throughputs for calendar year 1994

Emission Units	Total 1994 Fuel/Solvent Consumption (gal)	Emission Factor (lb/kgal)	1994 Actual Emissions (ton)
House Heating Boilers (2)	302,959	32.3	4.89
Waste Oil Burners (2)	4,900	113.9	0.28
Parts Cleaners (2)	4 (estimated)	0.007	<0.01
<b>TOTAL:</b>			<b>5.17</b>

*The assumptions used to derive the emission factors utilized above are documented in Exhibit B.*

**Section 4:** Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on information and belief formed after reasonable inquiry, the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I recognize that by signing this application, I agree to allow representatives of the State of Vermont access to the properties covered by this application for the purpose of processing this application and verifying the accuracy of the information submitted herein. I have read Section 5-1016 of the *Regulations* and understand that I must obtain an operating permit prior to emitting ten tons of air pollutant per year. I am aware of my obligation to register the emissions from the facility annually per Section 5-803 of the *Regulations*.

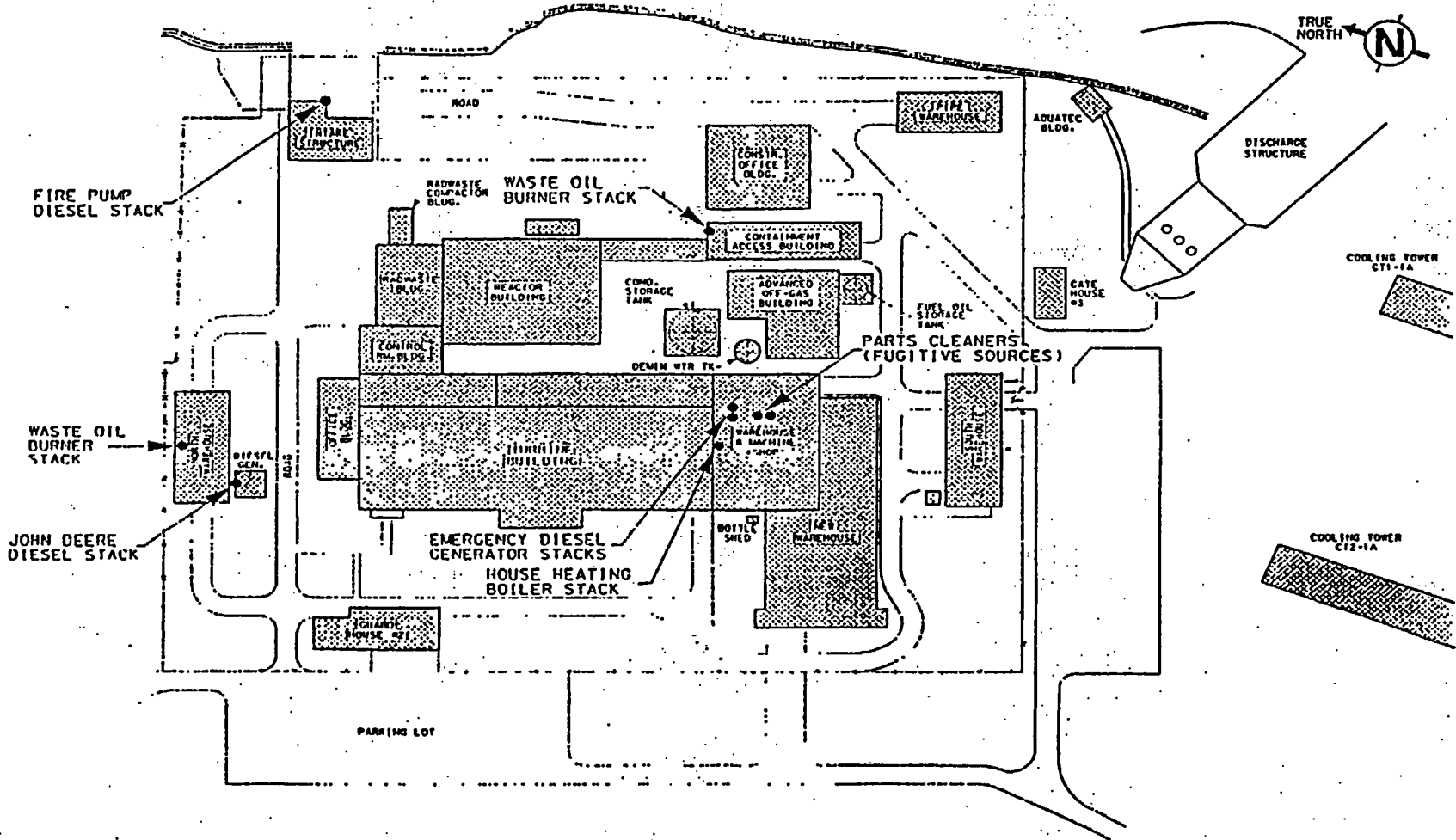
  
 \_\_\_\_\_  
 (Signature)  
 Donald A. Reid  
 \_\_\_\_\_  
 (Print Name)

November 9, 1995  
 \_\_\_\_\_  
 (Date)  
 Vice President, Operations  
 \_\_\_\_\_  
 (Title)

APPENDIX A (Continued)

Vermont Yankee Operating Permit Opt-Out Application

EXHIBIT A  
Plant Layout



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APPENDIX A (Continued)

Vermont Yankee Operating Permit Opt-Out Application

**EXHIBIT B**  
**(Sheet 1 of 3)**

**Derivation of Vermont Yankee's 1994 Emission Factors**

**A. House Heating Boilers**

<b>Pollutant</b>	<b>Emission Factor (lb/kgal)</b>	<b>References</b>
Sulfur Oxides (SO <sub>x</sub> )	5.04	Based on a fuel sulfur content S of 0.035% by weight (the average of six house heating boiler fuel samples taken at Vermont Yankee throughout 1994) and SO <sub>2</sub> and SO <sub>3</sub> emission factors of 142S lb/kgal and 2S lb/kgal, respectively, as presented in Table 1.3-2 of AP-42 (dated 1/95) for distillate oil fired industrial boilers.
Nitrogen Oxides (NO <sub>x</sub> )	20	Based on a NO <sub>x</sub> emission factor of 20 lb/kgal as presented in Table 1.3-2 of AP-42 (dated 1/95) for distillate oil fired industrial boilers.
Particulate Matter (PM)	2	Based on a filterable PM emission factor of 2 lb/kgal as presented in Table 1.3-2 of AP-42 (dated 1/95) for distillate oil fired industrial boilers.
Carbon Monoxide (CO)	5	Based on a CO emission factor of 5 lb/kgal as presented in Table 1.3-2 of AP-42 (dated 1/95) for distillate oil fired industrial boilers.
Total Organic Compounds (TOC)	0.252	Based on a TOC emission factor of 0.252 lb/kgal as presented in Table 1.3-4 of AP-42 (dated 1/95) for distillate oil fired industrial boilers.
Trace Metals	0.038	Based on the sum of trace element emission factors presented in Table 1.3-11 of AP-42 (dated 1/95) for distillate oil fired combustion sources.
<b>TOTAL</b>	<b>32.3</b>	

APPENDIX A (Continued)

Vermont Yankee Operating Permit Opt-Out Application

**EXHIBIT B**  
(Sheet 2 of 3)

**Derivation of Vermont Yankee's 1994 Emission Factors**

**B. Waste Oil Burners**

Pollutant	Emission Factor (lb/kgal)	References
Sulfur Oxides (SOx)	53.5	Based on a fuel sulfur content S of 0.5% by weight (a typical average sulfur concentration for waste oil as reported in Table 2.1 of the emission factor documentation for AP-42 Section 1.11, draft dated 4/93) and a SOx emission factor of 107S lb/kgal as presented in Table 1.11-2 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
Nitrogen Oxides (NOx)	16	Based on a NOx emission factor of 16 lb/kgal as presented in Table 1.11-2 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
Particulate Matter (PM)	41.6	Based on a fuel ash content A of 0.65% by weight (a typical average ash concentration for waste oil as reported in Table 2.1 of the emission factor documentation for AP-42 Section 1.11, draft dated 4/93) and a PM emission factor of 64A lb/kgal as presented in Table 1.11-1 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
Carbon Monoxide (CO)	2.1	Based on a CO emission factor of 2.1 lb/kgal as presented in Table 1.11-2 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
Total Organic Compounds (TOC)	0.1	Based on a TOC emission factor of 0.1 lb/kgal as presented in Table 1.11-3 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
Trace Metals	0.63	Based on a fuel lead content of 32 ppm by weight (as measured in a waste oil fuel sample taken at Vermont Yankee on 02/02/95) and the sum of lead and trace element emission factors presented in Tables 1.11-1 and 1.11-4 of AP-42 (dated 1/95) for waste oil fired atomizing burner space heaters.
<b>TOTAL</b>	<b>113.9</b>	

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APPENDIX A (Continued)

Vermont Yankee Operating Permit Opt-Out Application

**EXHIBIT B**  
**(Sheet 3 of 3)**

**Derivation of Vermont Yankee's 1994 Emission Factors**

**C. Solvent Metal Degreaser**

<b>Pollutant</b>	<b>Emission Factor (lb/kgal)</b>	<b>References</b>
Total Organic Compounds (TOC)	0.007	Based on a solvent density of 7 lb/gal (the average density of the two solvents used, diesel fuel and EPA 2000).
TOTAL	0.007	

TABLE 1

## SOURCES OF INFORMATION

PARAMETER	SOURCE OF INFORMATION
Boiler fuel volume	Operations Department Administrative Assistant
Boiler hours of operation	Divide fuel gallons used by a burn rate of 119.2 gal/hr.
Boiler fuel Sulfur content	Fuel analyses, presently provided by current contracted fuel supplier
Boiler fuel ash content	Fuel analyses, presently provided by current contracted fuel supplier
Used oil burner fuel volume	RP Department records - Non-Radioactive Used Oil Burner Chemistry Dept. record (VYDPF 2612.04) - Radioactive Used Oil Burner
Used oil burner hours of operation	Non-Radioactive Used Oil Burner: Divide fuel gallons used by a burn rate of 2 gal/hr. Radioactive Used Oil Burner - Subtract the initial hours logged on VYOPF 2612.04 for January or the first month of burning from the final hours logged on VYOPF 2612.04 for the last month of burning oil for the year. Sum Radioactive and Non-Radioactive Used Oil Burner hours.
Used oil Sulfur content	Used oil analyses provided by the RP Department
Used oil ash content	Used oil analyses provided by the RP Department
Emergency diesel operating hours	Subtract hours logged on VYOPF 4126.03 for Jan. 1 from the hours logged for Dec. 31
Emergency diesel fuel volume	(Preferred method) Use the tank volume logged on VYAPF 0150.01 for Jan. 1 plus volume of fuel delivered for the year, minus the tank volume logged for Dec. 31, minus the volume of any waste removed from the tank, minus the volume used for the John Deere diesel.  (Alternate method) Multiply the operating hours by a fuel use rate of 203 gal/hr.
Emergency diesel fuel delivered	Operations Department Administrative Assistant
Emergency diesel Sulfur content	Chemistry Department, VYOPF 4613.01 analysis records
Emergency diesel ash content	Chemistry Department, VYOPF 4613.01 analysis
John Deere diesel operating hours	Subtract hours logged on VYOPF 4127.01 for Jan. 1 from the hours logged for Dec. 31
John Deere diesel fuel volume	Multiply the operating hours by a fuel use rate of 13.5 gal/hr.
John Deere diesel fuel Sulfur content	Same as the emergency diesel Sulfur content
John Deere diesel fuel ash content	Same as the emergency diesel ash content

TABLE 2

LIST OF INSIGNIFICANT ACTIVITIES FOR VERMONT YANKEE - UPDATED MAY 2003

- Natural gas, propane, and distillate oil space heating/hot water heaters rated at less than 3.0 million BTUs per hour.
- Construction activities, excluding fugitive dust.
- Any temporary reciprocating internal combustion engine rated less than 450 brake horsepower.
- Any temporary reciprocating internal combustion engine rated greater than 450 brake horsepower on-site for less than twelve (12) months.
- Emergency use generators operated less than 100 hours per year which are installed for use when the usual sources of heat, power, and lighting are temporarily unobtainable. (i.e. emergency diesel generators and John Deere diesel)
- Emergency use fire pump diesel engines operated less than 100 hours per year.
- Typical office activities such as copying and duplication and the use of typewriters, printers, blueprinting and pens.
- Bathroom and locker room ventilation.
- Maintenance activities associated with welding, braising, gluing, painting, soldering, woodworking, etc.
- Architectural maintenance activities conducted to take care of the buildings and structures at the facility, including repainting, roofing and sandblasting.
- Interior maintenance activities and the equipment and supplies used therein, such as janitorial cleaning products.
- Exterior maintenance activities conducted to take care of the grounds of the facility, including parking lots and lawn maintenance.
- Food preparation, including barbecuing for service facility cafeterias and dining rooms.
- Steam vents which do not emit any regulated pollutants, air toxics, CO, or HAPS.
- The use of consumer products in a manner consistent with how the general public would use the product.
- Fire control equipment, including maintenance and employee training.

TABLE 2 (Continued)

- Cooling towers, evaporators, and HVAC systems.
- Emergency vents not subject to the accident release regulations.
- The storage, handling, and use of sulfuric acid, sodium bromide, and sodium hypochlorite.
- The storage and handling of gasoline, diesel fuel, #2 oil, and waste oil.
- The storage, handling, and use of lubricating, hydraulic, and transformer oils.
- The storage of closed containers of flammable/combustible liquids in ventilated storage cabinets.
- Steam turbine generator lube oil vents.
- Miscellaneous venting of carbon dioxide, hydrogen and nitrogen.
- Propane as a start-up fuel for the House Heating Boilers
- Batteries and battery charging stations.
- Monitors and other analyzers.
- Laboratory vents.
- Routine calibration, maintenance, and use of laboratory equipment and other analytical equipment.
- Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis.
- Hydraulic and hydrostatic testing equipment.
- The engine of any motor vehicle, including but not limited to any forklift or tractor.
- All stationary sources emitting a total of less than five (5) tons per year (i.e. PSB house heating boiler).
- Any natural gas, propane, and distillate oil space heating/hot water heaters rated at less than 3.0 million British Thermal Units (BTUs) per hour (i.e. PSB house heating boiler).