

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

**TECHNICAL SUPPORT DOCUMENT FOR TITLE V
PERMIT TO CONSTRUCT AND OPERATE**

#AOP-04-029

February 28, 2006

Prepared By: Jay Hollingsworth, Environmental Engineer

APPLICANT: Okemo Limited Liability Company
Ted Reeves, Director of Real Estate and Planning
77 Okemo Ridge Road
Ludlow, Vermont 05149

SOURCE: Stationary Reciprocating Internal Combustion
Engines Okemo Mountain, Inc.
Ludlow, Vermont 05149

This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division ("Agency") review for the combined Air Pollution Control Permit to Construct and Operate and is intended to provide additional technical information, discussion and clarification in support of the Permit. It is not intended to provide a comprehensive review of the Facility or permit process or duplicate the information contained in the Permit.

1.0 INTRODUCTION

Okemo Mountain, Inc. (also referred to herein as "Permittee" and also referred to herein as "Owner/Operator") owns and operates a recreational facility (also referred to herein as "Facility") located in Ludlow, Vermont. The resort currently consists of a mixed-use development that combines residential and vacation housing with the ski resort operations and various commercial activities. Air contaminant sources at the Facility include diesel engines owned, rented and leased by Okemo, and several activities classified as insignificant. Listed below are the Facility's allowable emissions:

| Facility-Wide Allowable Air Contaminant Emissions tons/year ¹ | | | | | | |
|--|-----------------|-----------------|------|------|----------------|-------------------|
| PM/PM ₁₀ | SO ₂ | NO _x | CO | VOCs | Total Criteria | HAPs ² |
| 3.5 | 25.9 | 110.3 | 46.2 | 3.5 | >10 | <10/25 |

¹PM/PM₁₀ - particulate matter and particulate matter of 10 micrometers in size or smaller; SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

²Emissions of individual HAPs each < 10 tpy and emissions of total HAPs combined <25 tpy. Actual total combined HAPs estimated at <1 tpy.

2.0 FACILITY DESCRIPTION AND LOCATION

Okemo owns and operates a mountain resort located in Ludlow, Vermont. Okemo's primary sources of air pollution are approximately twenty-three (23) diesel engines used in the snow making process. The twenty-three (23) diesel engines are located at two locations at the Resort. Approximately half of the engines are located at the base compressor pad, and the other half at the Solitude compressor pad. Land uses adjacent to the base compressor pad site include the main parking lot, the base lodge, and condominiums. Land uses adjacent to the Solitude compressor pad include the Mountain Maintenance Building, Sign Shop, undeveloped forest land, and condominiums. The distances from the base pad and Solitude pad to the closest Okemo property boundaries are approximately 100 feet and 350 feet, respectively. The distances from the base pad and Solitude pad to the closest residential units are approximately 200 feet and 500 feet, respectively. Below is a table listing the Facility's permitted equipment:

| Facility-Wide Permitted Equipment and Stack Information | | | | | | |
|--|-----------------|------------------------------|----------------|-------------|-------------------|-----------------------------|
| Description and Model Number | Quantity | Rated Brake Horsepower, Each | Date Installed | Fuel Type | Stack Height (ft) | Presence of Control Device? |
| Caterpillar 3516 diesel engine with Ingersoll-Rand Centac compressor | 1 | 1,485 | 1993 | Diesel fuel | 13.5 | Yes ¹ |
| Caterpillar 3516B diesel engine generators | 1 | 2,146 | Annual Lease | | 4 ft minimum | No |
| Atlas Copco diesel engines with Ingersoll-Rand IQ System compressors | 20 ² | 560 | | | 4 ft minimum | No |

¹ Unit is equipped with an oxidation catalyst and selective catalytic reduction technology.

² The number and make of engines and compressors is subject to change but not to exceed a total capacity of 11,515 bhp.

The table below lists activities at the Facility which are considered negligible sources of contaminant emissions. In all cases except emergency generators, emissions from these sources were not estimated and included in the Facility's allowable air contaminant emissions as part of this Operating/Construction Permit.

| Sources of Negligible Contaminant Emissions | |
|---|---|
| Equipment | Description/Location |
| Five (5) small distillate oil fired space heating units and boilers | All units rated at less than three (3) MMBtu/hr ¹ and are at the following locations: Administration Building, Wernic House, Cole House, and the Base lodge (2 units). |
| Forty-six (46) small propane fired space heating units and boilers | All units rated at less than three (3) MMBtu/hr ¹ and are at the following locations: the Guest Information Booth, Racing Shacks (3), Patrol Shacks (4), Detach Maintenance Shacks (2), Group Sales, Maintenance Garage, Sugar house (3), Lift Shacks (26), Base Pump, Gables (2), Summit Lodge, and Lodging. |
| Two (2) small propane-fired generators (back-up power) ² | Both units rated at less than thirty-seven (37) kilowatts and are located at the Solitude Shop. |
| Twelve (12) emergency electric diesel generators ² | All units operated less than 100 hour hours per year each and provide emergency evacuation power on the ski lifts at the following locations: A-Quad - Cummins 100 hp Green - John Deere 153 hp B-Quad - Detroit Diesel 112 hp Black - Detroit Diesel 130 hp Sachem - Cummins 210 hp Solitude - Cummins 250 hp Glades - Cummins 234 hp Morning Star - VM 400hp North Star - Cummins 280 hp South Face - Cummins 250 hp Jackson Gore – Cummins 210 hp Coleman Brook – Cummins 110 hp |
| Motor vehicles | The following vehicles are owned by Okemo: 16 buses 44 snowmobiles 12 four-wheel drive vehicles 6 miscellaneous 1-ton trucks 14 grooming machines 8 miscellaneous (loaders, grader, tractors, backhoe, shuttle, packmaster) 31 light duty vehicles, pickup trucks, and vans |
| Fuel oil storage tanks | Two (2) storage tanks (20,000 and 10,000 gallons) |

¹ MMBtu/hr – Maximum rated heat input in million British thermal units per hour.

² Since the emergency generators are used for emergency purposes only and are not operated more than 100 hours per year each, they are considered insignificant activities under Subchapter X of the *Regulations*. However, estimated emissions from the units have been calculated assuming 200 hours of operation per year and are included in the facility-wide allowable emission estimates.

The Facility is located less than 100 kilometers (approximately 36 kilometers) from the Lye Brook Wilderness area in Manchester, Vermont and greater than 100 kilometers from the Great Gulf and Dry River Wilderness areas in New Hampshire. The Facility is a mountain resort listed under the Standard Industrial Classification ("SIC") Codes #7011, Hotels and Motels, as well as #7999, Amusement Recreation Services, Not Elsewhere Classified.

3.0 QUANTIFICATION OF POLLUTANTS

The quantification of emissions from a stationary source is necessary in order to establish the regulatory review process necessary for the operating permit application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. An applicant may impose in its application an emission rate or design, or an operational or equipment limitation which may be incorporated in the Permit to restrict operation to a lower level. Such limitations may include fuel restrictions or production limits.

3.1 Designation of the Facility for the Permit to Operate

The designation of the Facility for the Permit to Operate is determined by its allowable emissions following issuance of the permit, taking into account any limitations contained in the permit that restrict the Facility's allowable emissions. The regulated sources of air contaminants at the Facility include the one (1) Caterpillar diesel engine equipped with SCR technology, the two (2) leased Caterpillar 3516B diesel engines, the twenty (20) leased Cummins diesel engines and the twelve (12) emergency diesel engines. The allowable emissions from the emergency diesel engines were included in this section because the Facility is already determined to be a Subchapter X source. The calculated emissions for each are detailed below.

To calculate the Facility-wide allowable emissions, calculations were broken-down into four steps. First, emissions associated with the Caterpillar 3516 diesel engine equipped with SCR technology were calculated. This engine has an hour restriction of 1,500 hours per year.

| Allowable Air Contaminant Emissions from Caterpillar 3516 Diesel Engine with SCR | | | | |
|---|-----------------|----------|--|---------------------|
| Unit size = 1,480 bhp Operation limit = 1,500 hr/yr Estimated fuel use = 97,500 gal/yr ¹ | Emission Factor | | | Allowable Emissions |
| Pollutant | Factor | Units | Source | tons per year |
| PM | 0.04 | g/bhp-hr | §5-251(3) of the <i>Regulations</i> ³ | 0.1 |
| SO ₂ | 1.8 | | AP-42 Table 3.4-1, 10/96 | 4.4 |
| NO _x | 1.6 | | §5-251(3) of the <i>Regulations</i> ³ | 3.9 |
| CO | 0.6 | | | 1.4 |
| VOC ² | 0.3 | | AP-42 Table 3.4-1, 10/96 | 0.7 |
| HAPs | 0.0043 | | AP-42 Table 3.4-3, 10/96 | 0.011 |

¹ Annual fuel use based on a fuel consumption rate of 65 gallons per hour and the operational limit of 1,500 hours per year.

² Value in AP-42 indicates total organic compounds. This was used for a conservative estimate of VOC emissions.

³ Emission rates established under NO_x RACT determination upon issuance of Permit #AP-99-013.

Second, emissions were calculated for the operation of the two leased Caterpillar 3516B diesel engines. These two engines have a combined hour restriction of 1,500 hours per year.

| Allowable Air Contaminant Emissions from Caterpillar 3516B Diesel Engines | | | | |
|--|-----------------|----------|----------------------------------|---------------------|
| Unit size = 2@ 2,146 bhp ea. Operation limit = 1,500 hr/yr combined Estimated fuel use = 218,100 gal/yr ¹ | Emission Factor | | | Allowable Emissions |
| Pollutant | Factor | Units | Source | tons per year |
| PM | 0.14 | g/bhp-hr | Caterpillar "Not to Exceed Data" | 0.5 |
| SO ₂ | 1.8 | | AP-42 Table 3.4-1, 10/96 | 6.4 |
| NO _x | 6.56 | | Caterpillar "Not to Exceed Data" | 23.3 |
| CO | 0.64 | | | 2.3 |
| VOC ² | 0.18 | | 0.6 | |
| HAPs | 0.0066 | | AP-42 Table 3.4-3, 10/96 | 0.023 |

¹ Annual combined fuel use based on a fuel consumption rate of 145.4 gallons per hour and the combined operational limit of 1,500 hours per year.

² Value in Caterpillar "Not to Exceed" emissions data sheet indicates "Total Hydrocarbons". This was used for to estimate VOC emissions.

Third, the remaining fuel from the Facility-wide cap was assumed to be consumed by the twenty leased Cummins diesel engines.

| Allowable Air Contaminant Emissions from Leased Cummins Diesel Engines | | | | |
|---|-----------------|----------|-------------------------------|----------------------------|
| Unit size = 20@ 560 bhp ea. Operation limit = None Estimated fuel use = 560,400 gal/yr ¹ | Emission Factor | | | Allowable Emissions |
| Pollutant | Factor | Units | Source | tons per year ² |
| PM | 0.15 | g/bhp-hr | Federal Tier II Certification | 2.4 |
| SO ₂ | 0.93 | | AP-42 Table 3.3-1, 10/96 | 14.6 |
| NO _x | 4.8 | | Federal Tier II Certification | 75.5 |
| CO | 2.6 | | | 40.9 |
| VOC ³ | 0.10 | | Manufacturer's Data | 1.6 |
| HAPs | 0.0015 | | AP-42 Table 3.3-2, 10/96 | 0.024 |

¹ Annual combined fuel use based on the remainder of the Facility-wide fuel cap not consumed by the Caterpillar 3516 and 3516Bs.

² Emission calculations based on a fuel consumption rate of 22 gallons/hr per engine.

³ Emission rate from 1999 manufacturer's test results: Manufacturer = Cummins Inc.; Engine Model = QSX15-C; EPA Standard Engine Family = 5CEXL015.AAA.

Lastly, the estimated allowable emissions from the Facility's twelve (12) emergency diesel engines were calculated. All the Facility's emergency diesel engines are 400 brake horsepower or less. Consequently, their maximum horsepower capacities were summed together and the AP-42 emission factors for diesel engines less than 600 horsepower were used to estimate allowable emissions based on 200 hours of annual operation. Below is a list of the Facility's emergency diesel engines and their respective horsepower rating.

- | | |
|--------------------------------|-------------------------------|
| A-Quad - Cummins 100 hp | Green - John Deere 153 hp |
| B-Quad - Detroit Diesel 112 hp | Black - Detroit Diesel 130 hp |
| Sachem - Cummins 210 hp | Solitude - Cummins 250 hp |
| Glades - Cummins 234 hp | Morning Star - VM 400hp |
| North Star - Cummins 280 hp | South Face - Cummins 250 hp |
| Jackson Gore - Cummins 210 hp | Coleman Brook - 110 hp |

The twelve (12) engines sum up to a total horsepower capacity of 2,439. Below are the estimated allowable emissions associated with the Facility's emergency diesel engine fleet.

| Allowable Air Contaminant Emissions from Facility-wide Emergency Diesel Engines | | | | |
|--|---------|-----------------|--------------------------|---------------------|
| Combined horsepower capacity = 2,439 Operational Assumption = 200 hrs. ea. | | Emission Factor | | Allowable Emissions |
| Pollutant | Factor | Units | Source | tons per year |
| PM | 0.0022 | lb/hp-hr | AP-42 Table 3.3-1, 9/98 | 0.5 |
| SO ₂ | 0.00205 | | | 0.5 |
| NO _x | 0.031 | | | 7.6 |
| CO | 0.00668 | | | 1.6 |
| VOC ¹ | 0.00247 | | | 0.6 |
| HAPs | 3.31E-6 | | AP-42 Table 3.3-2, 10/96 | 0.001 |

¹ Exhaust emission factor used.

Below is a summary of the Facility-wide allowable emissions.

| Future Allowable Air Contaminant Emissions (tons/year)¹ | | | | | | |
|---|-----------------|-----------------|------|------|----------------|------|
| PM/PM ₁₀ | SO ₂ | NO _x | CO | VOCs | Total Criteria | HAPs |
| 3.5 | 25.9 | 110.3 | 46.2 | 3.5 | >10 | 0.1 |

¹ PM/PM₁₀ - particulate matter and particulate matter of 10 micrometers in size or smaller; SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

4.0 APPLICABLE REQUIREMENTS DISCUSSION

4.1 VERMONT AIR POLLUTION CONTROL REGULATIONS AND STATUTES

Section 5-201, 5-202, and 5-203 – Prohibition of Open Burning. The Facility is not expected to engage in any open burning activities except in conformity with the provisions of Section 5-201, 5-202, and 5-203 of the *Regulations*.

Section 5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970. These emission standards apply to all installations at the Facility. The applicant is expected to comply with these emission standards based on proper equipment design, operation and maintenance.

Section 5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel. This regulation applies to all the stationary fuel burning equipment at the Facility. Based on the application submittal, the applicant is expected to comply with this regulation based on the use of diesel fuel certified by the supplier to contain no more than 0.5% sulfur by weight.

Section 5-221(2) - Waste Oil. Based on the application submittal and past operational history, the Facility does not burn waste oil and therefore is not currently subject to this regulation. The Agency will continue to assess compliance with this section in the future during any inspections of the Facility. Inspections will include inquiring into waste oil combustion practices and a review of records indicating types and quantities combusted.

Section 5-231(3)(a) - Prohibition of Particulate Matter; Combustion Contaminants. This emission standard applies to all stationary fuel burning equipment at the Facility. The following emission limits are applicable to each respective piece of equipment.

| Diesel Engines Subject to Particulate Matter Emission Limits - Section 5-231 | | | | |
|---|-----------------------------|--------------------------|------------------------------------|-----------------------|
| Quantity/Equipment | Size, ea¹ | Emission Standard | Emission Standard Reference | Emission Limit |
| | MMBtu/hr | Lb/MMBtu | | Lb/hr |
| (20) Cummins leased engine fleet | 3 | 0.5 | Section 5-231(3)(a)(i) | 1.5 |
| (1) Caterpillar 3516 w/ SCR | 9 | | | 4.5 |
| (2) Caterpillar 3516B rental units | 20 | 0.4 | Section 5-231(3)(a)(ii) | 8 |

¹ MMBtu/hr sizes calculated using the diesel fuel oil heat rating of 0.137 MMBtu/gal and the maximum fuel oil consumption rates of 22 gal/hr, 65 gal/hr and 145.4 gal/hr for the leased 560 bhp Cummins engines, the 1,480 bhp Caterpillar 3516 engine and the rented 2,146 bhp Caterpillar engines, respectively.

The applicant is expected to comply with the emission standard on the leased Cummins diesel engine fleet based on the Federal EPA Tier II certification of 0.15 grams per brake horsepower-hour and the proper operation, maintenance of each diesel engine.

The applicant is expected to comply with this emission standard on the SCR equipped Caterpillar 3516 diesel engine based on the SCR manufacturer's guaranteed emission rate of 0.01 lbs/MMBTU and the proper operation, maintenance and bi-annual emissions analysis (at a minimum, the beginning and midpoint of each snowmaking season) of the diesel engine.

The applicant is expected to comply with the emission standard on the rented Caterpillar 3516B diesel engines based on manufacture's "Not to Exceed" particulate matter data of 0.144 grams per brake horsepower-hour and the proper operation, maintenance of each diesel engine.

Section 5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter. The Facility is not expected to be a significant source of fugitive particulate matter. However, the Facility is required to take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility.

Section 5-241(1) and (2) - Prohibition of Nuisance and Odor. Since the Facility is operating combustion equipment, the potential for odors from combustion contaminants exists. Due to the fairly rural location of the Facility, odor problems have not been a concern in the past and are not expected to be a problem in the future for this Facility.

Section 5-251(3) – Control of Nitrogen Oxides Emissions, Reasonably Available Control Technology (RACT) for Large Stationary sources. See below, Section 5.0.

Section 5-271 - Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines. All stationary reciprocating internal combustion engines, such as diesel-fired engine generators, with a brake horsepower output rating of 450 bhp or greater must meet emission standards for NO_x, CO, and PM. Stationary reciprocating internal combustion engines installed prior to July 1, 1999, will be subject to the emission standards summarized in the table below as of July 1, 2007. Engines installed after July 1, 1999, but before July 1, 2007 must comply with the same standards immediately upon installation. Note: For internal combustion engines installed prior to July 1, 1999, the emission standards in Section 5-231(3)(a) of the *Regulations* establish the maximum PM discharge rates from the engine until July 1, 2007.

The Agency has made a determination that the Facility's leased engine fleet must meet the more stringent emission standards outlined in Section 5-271 (c) of the *Regulations*. The Agency has made a determination that engines meeting the Federal Tier II standards are considered to be in compliance with Section 5-271 (c) of the *Regulations*.

| Air Contaminant Emission Standards^{1,2} | | | |
|--|---|---|---|
| Applicability | PM | NO_x | CO |
| Engines installed after July 1, 1999, but prior to July 1, 2007. | 0.45 g/bhp-hr or 0.063 g/dscm @ 15% O ₂ | 6.9 g/bhp-hr or 505 ppmvd @ 5% O ₂ | 3.0 g/bhp-hr or 360 ppmvd @ 15% O ₂ |
| Engines installed on or after July 1, 2007 | 0.15 g/bhp-hr or 0.021 g/dscm @ 15% O ₂ | 4.8 g/bhp-hr or 350 ppmvd @ 15% O ₂ | 2.6 g/bhp-hr or 315 ppmvd @ 15% O ₂ |

¹ All Leased engines must comply with the more stringent emission standards outlined in Section 5-271(c) of the *Regulations* upon installation.

² Units: g/bhp-hr is grams per brake horsepower hour; g/dscm @ 15% O₂ is grams per dry standard cubic meter corrected to fifteen (15) percent oxygen; ppmvd @ 15% O₂ is parts per million on a volume basis and corrected to fifteen (15) percent oxygen and dry basis.

The Agency has made a determination that gives the Facility approval to operate two (2) Caterpillar 3516B Federal EPA Tier I certified diesel engines each with a rated 2,146 brake horsepower capacity. The use of these two engines is limited to the generation of electricity exclusively for snowmaking purposes. The operational restriction on the two engines is 1,500 hours combined for the 2005-2006 ski season. The Facility has flexibility to operate these two engines for electric power generation as either Tier I or Tier II certified engines during the 2006-2007 ski season. If Tier I certified engines are operated, the 1,500 combined hour restriction will remain. If Tier II certified engines are operated, the combined hour restriction for the two engines will increase from 1,500 to 2,000 hours. The Facility will be required to operate Tier II or cleaner engines no later than July 1, 2007. The combined brake horsepower capacity of the two engines at no time shall not exceed 4,292. Any proposed increase in hours of operation, brake horsepower capacity or use of the engines will require Agency review and an amendment to the existing permit.

Section 5-402 - Written Reports When Required. This section gives the Agency authority to require the Facility to submit reports summarizing records required to be maintained by the Agency. In particular, the Facility is required to submit semi-annual periodic monitoring reports within thirty (30) days after July 1st and January 1st of each year that summarizes:

- A summary of fuel use records;
- O&M performed on all engines and the SCR catalyst emission control system;
- A summary of daily urea injection usage rates;
- Results of any emissions testing performed on the Facility's engines including results from the use of the portable NOx analyzer, including the NOx reduction efficiency calculation for the Caterpillar 3516 unit; and
- A statement of the sulfur content of any and all fuel delivered to the Facility for use in the engines during the reporting period.

The Facility is also required to submit prior to each ski season the following information on all engines, other than emergency units, that will be operated at the Facility during the approaching ski season:

- A listing of all engines proposed to be operated;
- A summary of engine specs and emission specs for each engine;
- A cumulative listing of the manufacturer's rated horsepower output of each engine and a statement certifying that the total capacity is in compliance with the permit; and
- A certification that all engine rates meet the respective emission limits within the permit.

The Facility is also required to submit a compliance certification by February 1st of each year for the previous year which ascertains and identifies the compliance status of the Facility with respect to the terms and conditions of the permit. The certification is required to include, at a minimum, the following information:

- Identification of each term or condition of the permit that is the basis of the certification;
- The compliance status with each term or condition;
- Whether compliance was continuous or intermittent; and
- Methods used to determine compliance.

Section 5-403 - Circumvention. This section states no person shall build, erect, install or use any article, machine, equipment or other contrivances, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which otherwise would constitute a violation of these regulations. Based on the application submittal, past operational history and information available to the Agency, the Facility is currently in compliance with this regulation.

Subchapter VIII - Registration of Air Contaminant Source. This section states that each operator of a source which emits more than five tons of any and all air contaminants per year shall register the source with the Secretary, and shall renew such registration annually. The applicant is currently in compliance and has been registering its emissions with the Agency on an annual basis.

4.2 Federal Air Pollution Control Regulations and the CAA

Section 111 of the Clean Air Act - New Source Performance Standards (NSPS). NSPSs are promulgated under Title 40 of the Code of Federal Regulations ("40 C.F.R.") Part 60. Currently, no NSPSs currently apply to the Facility.

40 C.F.R. Part 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels. This subpart historically did apply to the Facility prior to revisions made to the subpart that were finalized July 1st, 2004. Specifically it applied to all tanks that were greater than or equal to 40 cubic meters (10,562 gallons) used to store volatile organic liquids. For tanks that were greater than 40 cubic meters but less than less than 75 m³ (19,084 gallons) the only requirements of this regulation were to keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. For storage vessels greater than 75 m³ (19,084 gallons) and storing a volatile organic liquid with a maximum true vapor pressure less than 3.5 kPa (0.51 psi), the only additional requirement of the regulation was to notify the EPA Administrator within 30 days when the vapor pressure exceeded the respective value.

The 2004 revisions to the subpart exempt any size tank storing fluids with a maximum true vapor pressure less than 3.5 kPa (0.51 psi). Any tank under 75 m³ (19,084 gallons) is exempt, regardless of the stored fluid's vapor pressure. The Facility has only one tank with a volume greater than 19,084 gallons (20,000 gallons) that stores exclusively distillate No. 2 fuel oil. The vapor pressure of distillate No. 2 fuel oil is 0.022 at 100 degrees F. Therefore all the tanks at the Facility are now exempt from this subpart.

Section 112 of the Clean Air Act – National Emission Standards for Hazardous Air Pollutants (NESHAPs). NESHAPs are promulgated under 40 C.F.R. Part 61 and Part 63. No promulgated NESHAPs in 40 CFR Part 61 or 63 currently are applicable to the Facility

40 C.F.R. Part 64 – Compliance Assurance Monitoring. Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* (“CAA”), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring (“CAM”) for major stationary sources of air pollution that are required to obtain operating permits under Title V of the CAA. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the CAA. Monitoring is proposed to focus on emissions units that rely on pollution control device equipment to achieve compliance with the applicable standards. The regulations also provide procedures for coordinating these requirements with the operating permits program regulations.

Section 64.2 of 40 *C.F.R.* specifies that each pollutant specific emission unit at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

- (1) Be subject to an emission limit or standard;
- (2) Use a control device to achieve compliance; and
- (3) Have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *C.F.R.* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAP, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Equipment at the Facility that meets the first criteria are the twenty-three internal combustion engines including the 20 leased Cummins diesel engines, the two rented Caterpillar 3516B diesel engines and the one owned Caterpillar 3516 diesel engine equipped with selective catalytic reduction technology and an oxidation catalyst. As the leased and rented diesel engines do not use control devices (Criteria #2), they are not subject to CAM. The owned Caterpillar 3516 diesel engine is subject to an emission limit or standard and does use a control device to achieve compliance. However, its pre-control emissions do not exceed nor are they equivalent to the major source thresholds because the engine operates under an enforceable hour cap of 1,500 hours per year.

Potential to emit is defined in 40 *C.F.R.* as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restriction on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation is enforceable by the Administrator.”

As none of the equipment at the Facility meet the three criteria listed above the Facility is currently not subject to CAM.

40 CFR Part 82, Subpart F – Recycling and Emissions Reductions. This requirement is applicable to any facility that owns, services, maintains, repairs, and disposes of appliances containing ozone depleting substances. The above requirements apply to all refrigeration equipment present at the Facility.

5.0 CONTROL OF NITROGEN OXIDES, RACT for §5-251(3) of the Regulations

The emissions of nitrogen oxides are regulated under §5-251 of the *Regulations*. The Owner/Operator of a source must quantify the emissions of nitrogen oxides at a Facility. If a Facility is determined to have allowable emissions of one hundred (100) tons per year (tpy) or more of nitrogen oxides, the owner/operator must then install and operate RACT, as approved by the *Secretary*.

Prior to issuance of Permit #OP-99-013, the Facility estimated its allowable NO_x emissions, resulting from the operation of the Facility's existing twenty-five (25) diesel engines, to be two hundred eleven (211) tpy. Consequently, the Agency determined that the Facility was subject to §5-251(3) of the *Regulations* and must implement NO_x RACT. The determination included a combination of emission reductions totaling 132 tons of NO_x spread out over the five (5) years following the date of issuance of Permit #OP-99-013. The implementation schedule is outlined in the table below:

| RACT Determination Timeline | | | | | |
|-----------------------------|---|--|-----|------|--|
| Implementation Date | Required Action | Not to Exceed Emission Rates, g/bhp-hr | | | Achieved NO _x Reductions, tpy |
| | | NO _x | CO | PM | |
| Nov. 1, 2000 | -Install and operate an SCR control device on existing Cat 3516 engine. - Hour limit on Cat 3408B's and Cat 3406B's and Cummins VTA1710P of 1,450 hrs/yr. -Hour limit on all other engines of 1,500 hrs/yr. | - | | | 40 |
| | -Replacement of four (4) existing Cat 3408B engines with four (4) Detroit engines | 6.9 | 8.5 | 0.40 | |
| | -Install temporary Cat 3516B engine for electric generation w/ 600 hr/yr cap. | 6.5 | 0.6 | 0.2 | |
| Nov. 1, 2001 | -No Changes Required | | | | |
| Nov. 1, 2002 | -Removal of two (2) Cummins VTA1710P's and four (4) Detroit engines. | - | | | 29 |
| | -Install two (2) Cat 3512B DITA engines w/ 1,500 hr/yr cap. | 4.8 | 2.6 | .075 | |
| Nov. 1, 2003 | -Removal of two (2) Cummins VTA1710P engines. | - | | | 14 |
| | Install one (1) Cat 3512B DITA engine w/ 1,500 hr/yr cap. | 4.8 | 2.6 | .075 | |
| Nov. 1, 2004 | Remove Cat 3408B's and 3406B's for a total of five (5) engines. | - | | | 37 |
| | -Install two (2) Cat 3512B DITA engines w/ 1,500 hr/yr cap. | 4.8 | 2.6 | .075 | |
| Nov. 1, 2005 | Retirement of three (3) existing Detroit diesel engines | - | | | 12 |

Since the issuance of Permit #OP-99-013, the Facility has removed the engines outlined above on time with the determination. However, new engines have not been installed. The Facility now leases the majority of its engines. These currently include twenty (20) Cummins engines each rated at 560 brake horsepower that are required to be Tier II certified. The Facility also rents two (2) Caterpillar 2,146 brake horsepower, each 3516B engines that are Tier I certified.

Okemo has met the 132 tons of NOx reduction requirement outlined in September 2000 RACT determination by decommissioning all previously owned engines used for snowmaking purposes, excluding the SCR equipped Caterpillar 3516, with either new owned or leased engines that are all federal non-road engine Tier II certified. The Facility also rents, on a seasonal basis (2) two Caterpillar 3516B, Tier I certified engines used for electrical power generation purposes for snowmaking that have an operational limit of 1,500 hours, combined.

Okemo's current allowable NOx emissions do not reflect a 132 ton decrease from the original 211 ton limit due to restructuring of the Facility's operational limits. Excluding the SCR equipped diesel engine and the two rental Caterpillar diesel engines, the Facility operates a fleet of identical engines. Consequently, hour caps have been removed from most of the Facility's engines and a facility-wide fuel cap has been put in place. Regardless of allowable emissions, the Facility is running the cleanest technology available and will be reflected in the Facility's actual emissions.

6.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement. The Agency will notify the source if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that the source complies with such requirement at that time.

7.0 HAZARDOUS MOST STRINGENT EMISSION RATE DISCUSSION

The sources of HAC emissions at the Facility are the combustion related emissions associated with the diesel engines used in the snow making process and the emergency diesel engine generators. Pursuant to §5-261(1)(b)(ii) of the *Regulations*, fuel burning equipment that combusts virgin liquid or gaseous fuels are exempt from the requirements of §5-261. Therefore, the snow making diesel engines and emergency diesel engine generators are exempt from §5-261 of the *Regulations*.

8.0 MOST STRINGENT EMISSION RATE DISCUSSION (MSER):

Pursuant to §5-502 of the *Regulations*, the owner/operator of each new major stationary source or major modification must apply control technology adequate to achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which there would be a major or significant actual emissions increase, respectively, but only for those currently proposed physical or operational changes which would contribute to the increased emissions.

The proposed project is designated as a non-major modification of a stationary source and therefore is not subject to review under the MSER requirements in §5-502 of the *Regulations*. In addition, there have been no prior MSER evaluations conducted for any of the previous modifications to the Facility.

9.0 AMBIENT AIR QUALITY IMPACT EVALUATION DISCUSSION (AQIE): Not applicable