

DRAFT

AIR EMISSION PERMIT NO. 09300001-003
Total Facility Operating Permit - Reissuance

IS ISSUED TO

City of Litchfield

CITY OF LITCHFIELD

421 West 3rd Street
Litchfield, Meeker County, MN 55355

The emission units, control equipment and emission stacks at the stationary source authorized in this permit reissuance are as described in the Permit Applications Table.

This permit reissuance supersedes Air Emission Permit No. 09300001-002 and authorizes the Permittee to operate and modify the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Unless otherwise indicated, all the Minnesota rules cited as the origin of the permit terms are incorporated into the State Implementation Plan (SIP) under 40 CFR § 52.1220 and as such are enforceable by U.S. Environmental Protection Agency (EPA) Administrator or citizens under the Clean Air Act.

Permit Type: Federal; Part 70/Limits to Avoid NSR

Operating Permit Issue Date: <issue date>

Expiration Date: <expiration date or Non-Expiring> – All Title I Conditions do not expire.

Don Smith, P.E., Manager
Air Quality Permits Section
Industrial Division

for John Linc Stine
Commissioner
Minnesota Pollution Control Agency

Permit Applications Table

Permit Type	Application Date	Permit Action
Reopening	December 18, 2009	003
Major Amendment	April 15, 2010	003
Reopening	April 19, 2010	003
Reopening	April 29, 2010	003
Total Facility Operating Permit (Reissuance)	September 5, 2012	003
Supplemental Information	December 6, 2012	003

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Appendix C: GP 001 NO_x Emissions Formula

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NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	651-296-6300
Outside Metro Area	1-800-657-3864
TTY	651-282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

The City of Litchfield (Permittee) owns and operates a municipal peak electric generating plant (facility) composed of two 2,880 brake horsepower (bhp) Fairbanks Morse internal combustion engines permitted to run on natural gas and No. 2 fuel oil (dual fuel mode) or on No. 2 fuel oil (diesel) and five 3,292 bhp Caterpillar internal combustion engines permitted to run on diesel fuel only. The Permittee also operates a natural gas fired boiler that is used for building heat.

Permit Action 003: Part 70 Reissuance/Major Amendment

This permit is a reissuance of the facility operating permit. The reissuance permit also includes a major amendment action to eliminate the NO_x emission factor revision trigger and the operational limit of 2,000 hours per year on the GP 001 engines and replace it with a 69.8 ton per year limit (12-month rolling sum) and an equation to calculate month NO_x emissions in Appendix C of the permit. There is no proposed construction of new units or modifications to existing units.

This action also rolls in reopenings to update the NO_x emission rates for the GP 001 engines based on the most recent performance tests on both No. 2 fuel oil and dual fuel. These new rates will be used in the previously mentioned Appendix C equation.

TABLE A: LIMITS AND OTHER REQUIREMENTS

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Facility Name: Litchfield city of

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Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
SOURCE SPECIFIC REQUIREMENTS	hdr
Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices B, C and D. Modeling parameters in Appendix A are included for reference only as described elsewhere in Table A.	40 CFR Section 63.6620(e); 40 CFR Section 72.7(d)(2); Minn. R. 7007.0800, subp. 2
General Provisions of pt. 63 applicable to subp. ZZZZ are provided in Table 8 to Subpart ZZZZ of Part 63.	40 CFR Part 63
OPERATIONAL REQUIREMENTS	hdr
The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0080. Compliance shall be demonstrated upon written request by the MPCA.	40 CFR pt. 50; Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L), & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subps. 14 and 16(J)
Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.	Minn. R. 7019.1000, subp. 4
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.	Minn. R. 7011.0150
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7030.0010-7030.0080
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
PERFORMANCE TESTING	hdr
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-2** 01/17/13

Facility Name: Litchfield city of

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<p>Performance Test Notifications and Submittals:</p> <p>Performance Tests are due as outlined in Table A of the permit. See Table B for additional testing requirements.</p> <p>Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test</p> <p>The Notification, Test Plan, and Test Report may be submitted in an alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4; Minn. R. 7017.2035, subps. 1-2</p>
<p>Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change.</p>	<p>Minn. R. 7017.2025, subp. 3</p>
MODELING REQUIREMENTS	hdr
<p>The parameters used in NOx, SO2, CO and PM10 modeling for permit number 09300001-002 are listed in Appendix A of this permit. The parameters describe the operation of the facility at maximum permitted capacity. The purpose of listing the parameters in the Appendix is to provide a benchmark for future changes.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
<p>Modeling Triggers-NOx: For changes that do not require a permit amendment and affect any modeled parameter or emission rate documented in Appendix A, or are an addition to the information documented in Appendix A, a Remodeling Submittal requirement is not triggered at the time of the change. The Permittee shall keep updated records on site of all parameters and emission rates. The Permittee shall submit any changes to parameters and emission rates with the next required Remodeling Submittal.</p> <p>For changes that require a minor, moderate, or major permit amendment and affect any modeled parameter or emission rate documented in Appendix A, or are an addition to the information documented in Appendix A, a Remodeling Submittal requirement is triggered. The Permittee shall include previously made changes to parameters and emission rates that did not trigger a Remodeling Submittal.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
<p>Remodeling Submittal-NOx: The Permittee must submit to the Commissioner for approval changes meeting the above criteria and must wait for a written approval before making such changes. For minor amendments, written approval of the modeling may be given before permit issuance; however, this approval applies only to the modeling and not to any other changes. The information submitted must include, for stack and vent sources, source emission rate, location, height, diameters, exit velocity, exit temperature, discharge direction, use of rain caps or rain hats, and, if applicable, locations and dimensions of nearby buildings. For non-stack/vent sources, this includes the source emission rate, location, size and shape, release height, and, if applicable, any emission rate scalars, and the initial lateral dimensions and initial vertical dimensions and adjacent building heights.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
<p>Remodeling Submittal-NOx, continued: The plume dispersion characteristics due to the revisions of the information must be equivalent to or better than the dispersion characteristics modeled November 2007. The Permittee shall demonstrate this equivalency in the proposal. If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must submit full remodeling.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
<p>Modeling at Reissuance-NOx: The Permittee shall submit an assessment with the reissuance application (due as stated elsewhere in this permit) that addresses any changes made during the permit term that did not require a permit amendment but that affected any modeled parameter or emission rate (including adding sources beyond those documented in Appendix A) and were not assessed in a later modeling submittal. The information in this submittal shall be the same as listed in the requirement entitled "Remodeling Submittal".</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
MONITORING REQUIREMENTS	hdr
<p>Monitoring Equipment Calibration: The Permittee shall calibrate all required monitoring equipment at least once every 12 months (any requirements applying to continuous emission monitors are listed separately in this permit).</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-3** 01/17/13

Facility Name: Litchfield city of

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Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.	Minn. R. 7007.0800, subp. 4(D)
RECORDKEEPING	hdr
Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).	Minn. R. 7007.0800, subp. 5(C)
Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes.	Minn. R. 7007.0800, subp. 5(B)
If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format.	Minn. R. 7007.1200, subp. 4
REPORTING/SUBMITTALS	hdr
Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.	Minn. R. 7019.1000, subp. 3
Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.	Minn. R. 7019.1000, subp. 2
Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7019.1000, subp. 1
Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7019.1000, subp. 1
Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.	Minn. R. 7007.1150 - 7007.1500

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-4**

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Facility Name: Litchfield city of

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Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H).	Minn. R. 7007.1400, subp. 1(H)
Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance, to be submitted on a form approved by the Commissioner.	Minn. R. 7019.3000 - 7019.3100
Emission Fees: due 60 days after receipt of an MPCA bill.	Minn. R. 7002.0005 - 7002.0095

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-5** 01/17/13

Facility Name: Litchfield city of

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Subject Item: GP 001 Fairbanks Morse Engines**Associated Items:** EU 001 East Fairbanks Morse IC Engine

EU 002 West Fairbanks Morse IC Engine

SV 001 Stack for EU 001

SV 002 Stack for EU 002

What to do	Why to do it
APPLICABILITY	hdr
Compliance Date: The Permittee shall comply with the applicable emission and operational limitations found in 40 CFR pt. 63, subp. ZZZZ no later than May 3, 2013.	40 CFR Section 63.6595(a); Minn. R. 7011.8150
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input (This is met through the total capacity of the equipment burning No. 2 fuel oil and/or natural gas. The total potential to emit is 0.0004 lb/hp-hr or 0.059 lb/MMBtu heat input.)	Minn. R. 7011.2300, subp. 2
Nitrogen Oxides: less than or equal to 69.8 tons/year using 12-month Rolling Sum of the equation found in Appendix C.	Title I Condition: To avoid major source thresholds under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 2
Nitrogen Oxides: less than or equal to 87.3 lbs/hour . This limit applies to each separately to each engine. Compliance is determined by periodic NOx testing showing emissions are less than or equal to 13.75 g/bhp-hr regardless of the fuel combusted.	Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subp. 7(A), 7(L), & 7(M); Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
Carbon Monoxide: less than or equal to 23 parts per million , volumetric dry at 15 percent oxygen; or reduce CO emissions by 70 percent or more.	40 CFR Section 63.6603(a); 40 CFR pt. 63, subp. ZZZZ, Table 2d; Minn. R. 7011.8150
Compliance with the numerical emission limitations established in 40 CFR pt. 63, subp. ZZZZ is based on the results of testing the average of three 1-hour runs using the testing requirements and procedures in 40 CFR Section 63.6620 and 40 CFR pt. 63, subp. ZZZZ, Table 4.	40 CFR Section 63.6603; 40 CFR Section 63.6620; 40 CFR pt. 63, subp. ZZZZ Table 4; Minn. R. 7011.8150
EMISSION AND OPERATIONAL REQUIREMENTS	hdr
For each engine using an oxidation catalyst to comply with the requirement to reduce CO emissions or limit the concentration of CO in the exhaust, the Permittee shall: - maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load, plus or minus 10 percent from the pressure drop across the catalyst that was measured during the initial performance test, and - maintain the temperature of the engine exhaust so that the catalyst temperature is greater than or equal to 450 degrees F and less than or equal to 1350 degrees F.	40 CFR Section 63.6603(a); 40 CFR pt. 63, subp. ZZZZ, Table 2b; Minn. R. 7011.8150
For each engine not using an oxidation catalyst to comply with the requirement to reduce CO emissions or limit the concentration of CO in the exhaust, the Permittee shall comply with the operating limitations approved by the Administrator.	40 CFR Section 63.6603(a); 40 CFR pt. 63, subp. ZZZZ, Table 2b; Minn. R. 7011.8150
Fuel Type: Diesel fuel must meet the requirements of 40 CFR Section 80.510(b) for nonroad diesel fuel which requires that diesel fuel have a maximum sulfur content of 15 parts per million and either a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.	40 CFR Section 63.6604; 40 CFR Section 80.510(b); Minn. R. 7011.8150
The Permittee shall be in compliance with the emission limitations and operating limitations in 40 CFR pt. 63, subp. ZZZZ that apply at all times.	40 CFR Section 63.6605(a); Minn. R. 7011.8150
At all times, the Permittee shall operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require the Permittee to make any further efforts to reduce emissions if levels required by 40 CFR pt. 63, subp. ZZZZ have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.	40 CFR Section 63.6605(b); Minn. R. 7011.8150

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-6** 01/17/13

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<p>The Permittee shall comply with either paragraph (g)(1) or (g)(2) of 40 CFR Section 63.6625. The Permittee shall follow the manufacturer's specified maintenance requirements for operating and maintaining the open or closed crankcase ventilation systems and replacing the crankcase filters, or can request to the Administrator to approve different maintenance requirements that are as protective as manufacturer requirements.</p> <p>(1) Install a closed crankcase ventilation system that prevents crankcase emissions from being emitted to the atmosphere, or</p> <p>(2) Install an open crankcase filtration emission control system that reduces emissions from the crankcase by filtering the exhaust stream to remove oil mist, particulates, and metals.</p>	40 CFR Section 63.6625(g); Minn. R. 7011.8150
<p>The Permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes. After which time the emissions standards applicable to all times other than startup in Table 2d of 40 CFR pt. 63, subp. ZZZZ apply.</p>	40 CFR Section 63.6625(h); Minn. R. 7011.8150
<p>The Permittee shall demonstrate initial compliance with each emission and operating limitation that applies according to 40 CFR pt. 63, subp. ZZZZ, Table 5.</p>	40 CFR Section 63.6630(a); Minn. R. 7011.8150
<p>Initial Compliance Demonstration:</p> <p>1. For each engine complying with a requirement to reduce CO emissions and using an oxidation catalyst and using a CPMS, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Reducing the average emissions of CO by 70 percent or more, as determined from the initial performance test; and</p> <p>ii. Installing a CPMS to continuously monitor catalyst inlet temperature according to the requirements of 40 CFR Section 63.6625(b); and</p> <p>iii. Recording the catalyst pressure drop and catalyst inlet temperature during the initial performance test.</p> <p>(continued below)</p>	40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>(continued)</p> <p>2. For each engine complying with a requirement to limit the concentration of CO, using an oxidation catalyst and using a CPMS, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Reducing the average CO concentration to less than or equal to 23 parts per million, volumetric dry, at 15 percent oxygen as determined from the initial performance test; and</p> <p>ii. Installing a CPMS to continuously monitor catalyst inlet temperature according to the requirements in 40 CFR Section 63.6625(b); and</p> <p>iii. Recording the catalyst pressure drop and catalyst inlet temperature during the initial performance test.</p> <p>(continued below)</p>	40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>(continued)</p> <p>3. For each engine complying with a requirement to reduce CO emissions and not using an oxidation catalyst, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Reducing the average emissions of CO by 70 percent or more, as determined from the initial performance test; and</p> <p>ii. Installing a CPMS to continuously monitor operating parameters approved by the Administrator (if any) according to the requirements of 40 CFR 63.6625(b); and</p> <p>iii. Recording the approved operating parameters (if any) during the initial performance test.</p> <p>(continued below)</p>	40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150

TABLE A: LIMITS AND OTHER REQUIREMENTS

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<p>(continued)</p> <p>4. For each engine complying with a requirement to limit the concentration of CO and not using an oxidation catalyst, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Reducing the average CO concentration to less than or equal to 23 parts per million, volumetric dry, at 15 percent oxygen as determined from the initial performance test; and</p> <p>ii. Installing a CPMS to continuously monitor operating parameters approved by the Administrator (if any) according to the requirements of 40 CFR Section 63.6625(b); and</p> <p>iii. Recording the approved operating parameters (if any) during the initial performance test.</p> <p>(continued below)</p>	<p>40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150</p>
<p>(continued)</p> <p>5. For each engine complying with a requirement to reduce CO emissions and using a CEMS, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Installing a CEMS to continuously monitor CO and either oxygen or carbon dioxide at both the inlet and outlet of the oxidation catalyst according to the requirements of 40 CFR Section 63.6625(a); and</p> <p>ii. Conducting a performance evaluation of the CEMS using Performance Specifications 3 and 4A of 40 CFR pt. 60, Appendix B; and</p> <p>iii. Demonstrating that the average reduction of CO calculated using 40 CFR Section 63.6620 equals or exceeds 70 percent. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average percent reduction achieved during the 4-hour period.</p> <p>(continued below)</p>	<p>40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150</p>
<p>(continued)</p> <p>6. For each engine complying with a requirement to limit the concentration of CO and using a CEMS, the Permittee shall demonstrate initial compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Installing a CEMS to continuously monitor CO and either oxygen or carbon dioxide at the outlet of the oxidation catalyst according to the requirements of 40 CFR Section 63.6625(a); and</p> <p>ii. Conducting a performance evaluation of the CEMS using Performance Specifications 3 and 4A of 40 CFR pt. 60, Appendix B; and</p> <p>iii. Demonstrating that the average concentration of CO calculated using 40 CFR Section 63.6620 is less than or equal to 23 parts per million, volumetric dry, at 15 percent oxygen. The initial test comprises the first 4-hour period after successful validation of the CEMS. Compliance is based on the average concentration measured during the 4-hour period.</p>	<p>40 CFR 63.6630(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150</p>
<p>The Permittee shall demonstrate continuous compliance with each emission limitation and operating limitation in Tables 2b and 2d of 40 CFR pt. 63, subp. ZZZZ that apply according to methods specified in Table 6 of 40 CFR pt. 63, subp. ZZZZ.</p>	<p>40 CFR Section 63.6640(a); Minn. R. 7011.8150</p>
<p>Continuous Compliance Demonstration:</p> <p>1. For each engine complying with a requirement to reduce CO emissions or limit the concentration of CO in the exhaust and using a CEMS, the Permittee shall demonstrate continuous compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <p>i. Collecting the monitoring data according to 40 CFR Section 63.6625(a), reducing the measurements to 1-hour averages, calculating the percent reduction or concentration of CO emissions according to 40 CFR Section 63.6620; and</p> <p>ii. Demonstrating that the catalyst achieves the required percent reduction of CO emissions over the 4-hour averaging period, or that the emissions remain at or below the CO concentration limit; and</p> <p>iii. Conduction an annual RATA of your CEMS using Performance Specifications 3 and 4A of 40 CFR part 60, Appendix B, as well as daily and periodic data quality checks in accordance with 40 CFR part 60, Appendix F, procedure 1.</p> <p>(continued below)</p>	<p>40 CFR Section 63.6640; 40 CFR pt. 63, subp. ZZZZ, Table 6; Minn. R. 7011.8150</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS
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Facility Name: Litchfield city of

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<p>(continued)</p> <p>2. For each engine complying with a requirement to reduce CO emissions or limit the concentration of CO in the exhaust and using an oxidation catalyst, the Permittee shall demonstrate continuous compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <ul style="list-style-type: none"> i. Conducting performance tests every 8,760 hours or 3 years, whichever comes first, for CO to demonstrate that the required CO percent reduction is achieved or that the emissions remain at or below the CO concentration limit; and ii. Collecting the catalyst inlet temperature data according to Section 63.6625(b); and iii. Reducing these data to 4-hour rolling averages; and iv. Maintaining the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature; and v. Measuring the pressure drop across the catalyst once per month and demonstrating that the pressure drop across the catalyst is within the operating limitation established during the performance test. <p>(continued below)</p>	<p>40 CFR Section 63.6640(a); 40 CFR pt. 63, subp. ZZZZ, Table 6; Minn. R. 7011.8150</p>
<p>(continued)</p> <p>3. For each engine complying with a requirement to reduce CO emissions or limit the concentration of CO in the exhaust and not using an oxidation catalyst, the Permittee shall demonstrate continuous compliance with the requirements of 40 CFR pt. 63, subp. ZZZZ by:</p> <ul style="list-style-type: none"> i. Conducting performance tests every 8,760 hours or 3 years, whichever comes first, for CO, to demonstrate that the required 70 percent reduction is achieved or that your emissions remain at or below the 23 parts per million, dry volumetric concentration limit. ii. Collecting the approved operating parameter (if any) data according to 40 CFR Section 63.6625(b). iii. Reducing the data to 4-hour rolling averages. iv. Maintaining the 4-hour rolling averages within the operating limitations for the operating parameters established during the performance test. 	<p>40 CFR Section 63.6640(a); 40 CFR pt. 63, subp. ZZZZ, Table 6; Minn. R. 7011.8150</p>
<p>The Permittee shall comply with the General Provisions in 40 CFR Section 63.1 through 63.15, as applicable.</p>	<p>40 CFR Section 63.6665 and Table 8 to Subpart ZZZZ of Part 63; 40 CFR Section 63.1 - 63.15; Minn. R. 7011.8150</p>
<p>Fuel type: Natural gas and No. 2 fuel oil (dual fuel), or No. 2 fuel oil only.</p>	<p>Minn. R. 7005.0100, subp. 35a</p>
<p>The exhaust stacks will have the following dimensions: Stack Height: greater than or equal to 98.4 feet (30.0 m) high; Stack Diameter: less than or equal to 20 inches (0.5 m) of inside diameter.</p>	<p>Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080</p>
<p>PERFORMANCE TESTING REQUIREMENTS - CO</p>	<p>hdr</p>
<p>Initial Performance Test: due 180 days after 05/03/2013 and according to the provisions in 40 CFR Section 63.79(a)(2), to measure emissions of carbon monoxide.</p>	<p>40 CFR Section 63.6612(a); Minn. R. 7011.8150</p>
<p>Performance Test: due before end of each 36 months following Initial Performance Test or 8,760 hours of operation following the Initial Performance Test, whichever comes first.</p> <p>The first subsequent performance test is due 36 months or 8,760 hours of operation (whichever comes first) after the initial performance test. Subsequent testing shall be conducted to determine CO reduction according to the requirements of 40 CFR pt. 63, subp. ZZZZ, Tables 3 and 4, and 40 CFR Section 63.6620.</p>	<p>40 CFR Section 63.6615; 40 CFR pt. 63, subp. ZZZZ, Table 3; 40 CFR Section 63.6620; Minn. R. 7011.8150</p>
<p>An initial performance test on units for which a performance test has been previously conducted is not required if the test meets all of the conditions described below:</p> <ul style="list-style-type: none"> 1) The test must have been conducted using the same methods specified in 40 CFR pt. 63, subp. ZZZZ, and these methods must have been followed correctly. 2) The test must not be older than 2 years. 3) The test must be reviewed and accepted by the Administrator. 4) Either no process or equipment changes have been made since the test was performed, or the owner or operator must be able to demonstrate that the results of the performance test, with or without adjustments, reliably demonstrate compliance despite process or equipment changes. 	<p>40 CFR Section 63.6612(b); Minn. R. 7011.8150</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-9** 01/17/13

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<p>The Permittee shall conduct each performance test in Tables 3 and 4 of 40 CFR pt. 63, subp. ZZZZ that applies.</p> <p>Each performance test shall be conducted according to the requirements that are specified in Table 4 of 40 CFR pt. 63, subp. ZZZZ.</p> <p>The Permittee shall conduct three separate test runs for each performance test required in this section, as specified in 40 CFR Section 63.7(e)(3). Each test run shall last at least 1 hour.</p>	<p>40 CFR Section 63.6612(a); 40 CFR Section 63.6620(a), (b) and (d); 40 CFR pt. 63, subp. ZZZZ, Tables 3 and 4; Minn. R. 7011.8150</p>
<p>The Permittee shall determine compliance with the percent reduction requirement according to the procedures in 40 CFR Section 63.6620(e)(1) as described in Appendix D of this permit.</p> <p>The Permittee shall normalize the carbon monoxide concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen, or an equivalent percent carbon dioxide. If pollutant concentrations are to be corrected to 15 percent oxygen and carbon dioxide concentration is measured in lieu of oxygen concentration measurement, a carbon dioxide correction factor is needed. The Permittee shall calculate the carbon dioxide correction factor as described in paragraphs (e)(2)(i) through (iii) of 40 CFR Section 63.6620 and in Appendix D.</p>	<p>40 CFR Section 63.6620(e); Minn. R. 7011.8150</p>
<p>If the Permittee is complies with the emission limitation to reduce CO and is not using an oxidation catalyst, the Permittee shall petition the Administrator for operating limitations to be established during the initial performance test and continuously monitored thereafter; or for approval of no operating limitation. The Permittee shall not conduct the initial performance test until after the petition has been approved by the Administrator.</p>	<p>40 CFR Section 63.6620(f); Minn. R. 7011.8150</p>
<p>If the Permittee petitions the Administrator for approval of operating limitations, the petition shall include the information described in paragraphs (g)(1) through (5) of 40 CFR Section 63.6620.</p>	<p>40 CFR Section 63.6620(g); Minn. R. 7011.8150</p>
<p>If the Permittee petitions the Administrator for approval of no operating limitations, the petition shall include the information described in paragraphs (h)(1) through (7) of 40 CFR Section 63.6620.</p>	<p>40 CFR Section 63.6620(h); Minn. R. 7011.8150</p>
<p>The engine percent load during a performance test shall be determined by documenting the calculations, assumptions, and measurement devices used to measure or estimate the percent load in a specific application. A written report of the average percent load determination shall be included in the notification of compliance status. The following information shall be included in the written report: the engine model number, the engine manufacturer, the year of purchase, the manufacturer's site-rated brake horsepower, the ambient temperature, pressure, and humidity during the performance test, and all assumptions that were made to estimate or calculate percent load during the performance test shall be clearly explained. If measurement devices such as flow meters, kilowatt meters, beta analyzers, stain gauges, etc. are used, the model number of the measurement device and an estimate of its accuracy in percentage of true value shall be provided.</p>	<p>40 CFR Section 63.6620(i); Minn. R. 7011.8150</p>
<p>During the initial performance test, the Permittee shall establish each operating limitation in Table 2b of 40 CFR pt. 63, subp. ZZZZ that apply.</p>	<p>40 CFR Section 63.6630(b); Minn. R. 7011.8150</p>
<p>PERFORMANCE TESTING REQUIREMENTS - NO_x</p>	<p>hdr</p>
<p>Performance Test: due before end of each 36 months starting 08/31/2010 to evaluate NO_x emission factors of 13.20 g/bhp-hr for burning No. 2 fuel oil and 10.29 g/bhp-hr for burning dual fuel. These are equivalent to 83.81 lb/hr and 65.33 lb/hr, respectively.</p> <p>Testing shall be conducted on one engine, and all future tests shall be conducted on an emission unit that has not been tested. After all units have been tested, testing shall be conducted on the unit for which testing is least current. Recurring tests shall not exceed 36 months between test dates.</p>	<p>Minn. R. 7017.2020, subp. 1</p>
<p>MONITORING REQUIREMENTS</p>	<p>hdr</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-10** 01/17/13

Facility Name: Litchfield city of

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<p>If required to install a CEMS as specified in Table 5 of 40 CFR pt. 63, subp. ZZZZ, the Permittee shall install, operate, and maintain a CEMS to monitor CO and either oxygen or carbon dioxide at both the inlet and the outlet of the control device according to the following requirements:</p> <ol style="list-style-type: none"> 1. Each CEMS shall be installed, operated, and maintained according to the applicable performance specifications of 40 CFR pt. 6 Appendix B. 2. The Permittee shall conduct an initial performance evaluation and an annual relative accuracy test audit (RATA) of each CEMS according to the requirements in 40 CFR Section 63.8 and according to the applicable performance specifications of 40 CFR pt. 60, Appendix B as well as daily and periodic data quality checks in accordance with 40 CFR pt. 60, Appendix F, Procedure 1. <p>(continued below)</p>	40 CFR Section 63.6625(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>(continued)</p> <ol style="list-style-type: none"> 3. As specified in 40 CFR Section 63.8(c)(4)(ii), each CEMS shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period. The Permittee shall have a least two data points, with each representing a different 15-minute period, to have a valid hour of data. 4. The CEMS data shall be reduced as specified in 40 CFR Section 63.8(g)(2) and recorded in parts per million or parts per billion (as appropriate for the applicable limitation) at 15 percent oxygen or the equivalent carbon dioxide concentration. 	40 CFR Section 63.6625(a); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>If required to install a CPMS as specified in Table 5 of 40 CFR Part 63, Subpart ZZZZ, the Permittee shall install, operate, and maintain each CPMS according to the following requirements:</p> <ol style="list-style-type: none"> 1. The Permittee shall prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outline in paragraphs (b)(1)(i) through (v) of 40 CFR Section 63.6625(b) and in 40 CFR Section 63.8(d). 2. The Permittee shall install, operate, and maintain each CPMS in continuous operation according to the procedures in the site-specific monitoring plan. 3. The CPMS shall collect data at least once every 15 minutes. 4. For a CPMS for measuring temperature range, the temperature sensor shall have a minimum tolerance of 2.8 degrees Celsius or 1 percent of the measurement range, whichever is larger. <p>(continued below)</p>	40 CFR Section 63.6625(b); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>(continued)</p> <ol style="list-style-type: none"> 5. The Permittee shall conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan at least annually. 6. The Permittee shall conduct a performance evaluation of each CPMS in accordance with the sit-specific monitoring plan. 	40 CFR Section 63.6625(b); 40 CFR pt. 63, subp. ZZZZ, Table 5; Minn. R. 7011.8150
<p>The Permittee shall monitor and collect data according to the requirements of 40 CFR Section 63.6635.</p> <p>Except for monitor malfunctions, associated repairs, and required quality assurance or control activities, the Permittee shall monitor continuously at all times that the stationary RICE is operating.</p> <p>The Permittee may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. The Permittee shall use all the valid data collected during all other periods.</p>	40 CFR Section 63.6635; Minn. R. 7011.8150
<p>Upon promulgation of a performance specification for the CPMS, the Permittee shall comply with the quality control provisions in 40 CFR Section 63.8(d) and shall conduct the required performance evaluation in 40 CFR Section 63.8(e), unless an alternative monitoring method has been approved under the provisions of 40 CFR Section 63.8(f).</p>	40 CFR Section 63.8(a)(2)
RECORDKEEPING REQUIREMENTS	hdr
<p>The Permittee shall demonstrate continuous compliance with each emission limitation and operating limitation in Table 2d of 40 CFR pt. 63, subp. ZZZZ that apply according to methods specified in Table 6 of 40 CFR pt. 63, subp. ZZZZ.</p>	40 CFR Section 63.6640(a); Minn. R. 7011.8150

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-11** 01/17/13

Facility Name: Litchfield city of

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<p>The Permittee shall maintain the following records:</p> <ol style="list-style-type: none"> 1. A copy of each notification and report submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status submitted, according to the requirement in 40 CFR Section 63.10(b)(2)(xiv). 2. Records of the occurrence and duration of each malfunction of operation or the air pollution control and monitoring equipment. 3. Records of performance tests and performance evaluations as required in 40 CFR Section 63.10(b)(2)(viii). 4. Records of all required maintenance performed on the air pollution control and monitoring equipment. 5. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR Section 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. 	40 CFR Section 63.6655(a); Minn. R. 7011.8150
<p>The Permittee shall maintain the following records:</p> <ol style="list-style-type: none"> 1. Records described in 40 CFR Section 63.10(b)(2)(vi) - (xi). 2. Previous (i.e. superseded) versions of the performance evaluation plan as required in 40 CFR Section 63.8(d)(3). 3. Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in 40 CFR Section 63.8(f)(6)(i), if applicable. 	40 CFR Section 63.6655(b); Minn. R. 7011.8150
<p>The Permittee shall maintain, at a minimum, the following information:</p> <ol style="list-style-type: none"> 1. Each period during which a CMS is malfunctioning or inoperative, including out-of-control periods; 2. All required measurements needed to demonstrate compliance with a relevant standard; 3. All results of performance tests, CMS performance evaluations, and opacity and visible emission observations; 4. All measurements as may be necessary to determine the conditions of performance tests and performance evaluations; 5. All CMS calibration checks; 6. All adjustments and maintenance performed on CMS; 7. Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under 40 CFR pt. 63, subp. A if the Permittee has been granted a waiver under paragraph (f) of this section; <p>(continued below)</p>	40 CFR Section 63.10(b)(2); Minn. R. 7019.0100, subp. 2(B)
<p>(continued)</p> <ol style="list-style-type: none"> 8. All emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission under 40 CFR Section 63.8(f)(6); and 9. All documentation supporting initial notifications and notifications of compliance status under 40 CFR Section 63.9. 	40 CFR Section 63.10(b)(2); Minn. R. 7019.0100, subp. 2(B)
<p>For each CPMS or CEMS, if used, the Permittee shall maintain the following records:</p> <ol style="list-style-type: none"> 1) Records described in 40 CFR Section 63.10(b)(2)(vi) - (xi). 2) Previous (i.e. superseded) versions of the performance evaluation plan as required in 40 CFR Section 63.8(d)(3). 3) Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in 40 CFR Section 63.8(f)(6)(i), if applicable. 	40 CFR Section 63.6655(b); Minn. R. 7011.8150
<p>The Permittee shall keep the records required in Table 6 of 40 CFR pt. 63, subp. ZZZZ, to show continuous compliance with each emission or operating limitation that applies.</p>	40 CFR Section 63.6655(d); Minn. R. 7011.8150
<p>The Permittee shall maintain all records in a form suitable and readily available for expeditious review according to 40 CFR Section 63.10(b)(1).</p> <p>As specified in 40 CFR Section 63.10(b)(1), the Permittee shall keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.</p> <p>The Permittee shall keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to 40 CFR section 63.10(b)(1).</p>	40 CFR Section 63.6660; 40 CFR Section 63.10(b)(1); Minn. R. 7011.8150; Minn R. 7019.0100, subp. 2(B)

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-12** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

<p>The Permittee shall maintain, at a minimum, the following information:</p> <ul style="list-style-type: none"> - Each period during which a CMS is malfunctioning or inoperative, including out-of-control periods; - All required measurements needed to demonstrate compliance with a relevant standard; - All results of performance tests, CMS performance evaluations, and opacity and visible emission observations; - All measurements as may be necessary to determine the conditions of performance tests and performance evaluations; - All CMS calibration checks; - All adjustments and maintenance performed on CMS; - Any information demonstrating whether a source is meeting the requirements for a waiver of recordkeeping or reporting requirements under 40 CFR pt. 63, subp. A if the Permittee has been granted a waiver under paragraph (f) of this section; <p>(continued below)</p>	40 CFR Section 63.10(b)(2); Minn. R. 7019.0100, subp. 2(B)
<p>(continued)</p> <ul style="list-style-type: none"> - All emission levels relative to the criterion for obtaining permission to use an alternative to the relative accuracy test, if the source has been granted such permission under 40 CFR Section 63.8(f)(6); and - All documentation supporting initial notifications and notifications of compliance status under 40 CFR Section 63.9. 	40 CFR Section 63.10(b)(2); Minn. R. 7019.0100, subp. 2(B)
<p>For each CMS, if used, the Permittee shall maintain, at a minimum, the following information:</p> <ol style="list-style-type: none"> 1. All required CMS measurements; 2. The date and time identifying each period during which the CMS was inoperative except for zero and high-level checks; 3. The date and time identifying each period during which the CMS was out of control, as defined in 40 CFR Section 63.8(c)(7); 4. The specific identification of each period of excess emissions and parameter monitoring exceedances, that occurs during startups, shutdowns, and malfunctions; 5. The specific identification of each time period of excess emissions and parameter monitoring exceedances, that occurs during periods other than startups, shutdowns, and malfunctions; 6. The nature and cause of any malfunction (if known); 7. The corrective action taken or preventive measures adopted; 8. The nature of the repairs or adjustments to the CMS that was inoperative or out of control; <p>(continued below)</p>	40 CFR Section 63.10(c)
<p>(continued)</p> <ol style="list-style-type: none"> 9. The total process operating time during the reporting period; and 10. All procedures that are part of a quality control program developed and implemented for CMS under 40 CFR Section 63.8(d). 	40 CFR Section 63.10(c)
<p>Monthly Recordkeeping - NOx Emissions: By the 15th of the month, the Permittee shall calculate and record the following:</p> <ol style="list-style-type: none"> 1) The total NOx emissions of each engine in the group for the previous calendar month using the formula found in Appendix C. 2) The total GP 001 NOx emissions for the previous month. 3) The 12 month GP 001 rolling sum NOx emissions for the previous 12 month period by summing the monthly NOx emissions data for the previous 12 months. 	Title I Condition: To avoid major source thresholds under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800 subp. 2
<p>Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying that the sulfur content does not exceed 0.05% by weight.</p>	Minn. R. 7007.0800, subps. 4 & 5
REPORTING AND NOTIFICATION REQUIREMENTS	hdr
<p>Notification of Compliance Status: due 60 days after Initial Performance Test for each initial compliance demonstration that includes performance test results as specified in 40 CFR Section 63.10(d)(2).</p>	40 CFR Section 63.6630(c); 40 CFR Section 63.6645(h)(2); Minn. R. 7011.8150
<p>The Permittee shall submit all of the notifications in 40 CFR Section 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b)-(e), and (g) and (h) that apply by the dates specified.</p>	40 CFR Section 63.6645(a); Minn. R. 7011.8150

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-13** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

For each CMS, if used: Notification of CMS Performance Evaluation: due 60 days before Performance Test. This notification is due simultaneously with the Notification of Intent to conduct a performance test.	40 CFR Section 63.6645(a); 40 CFR Section 63.9(g); Minn. R. 7011.8150
The Permittee shall submit each report in Table 7 of 40 CFR pt. 63, subp. ZZZZ, as applicable.	40 CFR 63.6650(a); 40 CFR pt. 63 subp. ZZZZ, Table 7; Minn. R. 7011.8150
The Semiannual Compliance report shall contain the information in paragraphs (c)(1) through (c)(6) of 40 CFR Section 63.6650.	40 CFR Section 63.6650(c); Minn. R. 7011.8150
For each deviation from an emission or operating limitation for an engine where a CMS is not used, the Compliance report shall contain the information in paragraphs (c)(1) through (c)(4) of 40 CFR Section 63.6650 and the information in paragraphs (d)(1) and (d)(2) of 40 CFR Section 63.6650.	40 CFR Section 63.6650(d); Minn. R. 7011.8150
For each deviation from an emission or operating limitation for an engine where a CMS is used, the Compliance report shall contain the information in paragraphs (c)(1) through (c)(4) and (e)(1) through (e)(12) of 40 CFR Section 63.6650.	40 CFR Section 63.6650(e); Minn. R. 7011.8150
The Permittee shall report all deviations as defined in 40 CFR pt. 63, subp. ZZZZ in the semiannual monitoring report required by 40 CFR Section 70.6(a)(3)(iii)(A).	40 CFR Section 63.6650(f); Minn. R. 7011.8150
The Permittee shall report each instance in which the stationary RICE did not meet each applicable emission limitation or operating limitation. These instances are deviations from the emission and operating limitations. These deviations shall be reported according to the requirements in 40 CFR Section 63.6650.	40 CFR Section 63.6640(b); Minn. R. 7011.8150
The Permittee shall submit a Compliance Report semiannually according to the requirements in 40 CFR Section 63.6650(b) with the following contents: 1. If there are no deviations from any applicable emission limitations or operating limitations, a statement that there were no deviations from the emission limitations or operating limitations during the reporting period. If there were no periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in 40 CFR Section 63.8(c)(7), a statement that there were not periods during which the CMS was out-of-control during the reporting period; or (continued below)	40 CFR Section 63.6650(a); 40 CFR pt. 63, subp. ZZZZ, Table 7; Minn. R. 7011.8150
(continued) 2. If there was a deviation from any emission limitation or operating limitation during the reporting period, the information in 40 CFR Section 63.6650(d). If there were periods during which the CMS, including CEMS and CPMS, was out-of-control, as specified in 40 CFR Section 63.8(c)(7), the information in 40 CFR Section 63.6650(e); or 3. If there was a malfunction during the reporting period, the information in 40 CFR Section 63.6650(c)(4).	40 CFR Section 63.6650(a); 40 CFR pt. 63, subp. ZZZZ, Table 7; Minn. R. 7011.8150
The Permittee shall report each instance when the applicable requirements in Table 8 of 40 CFR pt. 63, subp. ZZZZ were not met.	40 CFR Section 63.6640(e); 40 CFR pt. 63, subp. ZZZZ, Table 8; Minn. R. 7011.8150

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-14** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

Subject Item: GP 002 Caterpillar Engines**Associated Items:** EU 003 IC Engine #3

EU 004 IC Engine #4

EU 005 IC Engine #5

EU 006 IC Engine #6

EU 007 IC Engine #7

SV 003 Stack for EU 003

SV 004 Stack for EU 004

SV 005 Stack for EU 005

SV 006 Stack for EU 006

SV 007 Stack for EU 007

What to do	Why to do it
SOURCE-SPECIFIC REQUIREMENTS	hdr
EUs 003-007 are new affected sources as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR Section 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EUs 003-007.	40 CFR Section 63.6590(c); Minn. R. 7011.8150
ACID RAIN REQUIREMENTS	hdr
Each emission unit in GP 002 is a "new utility unit" as defined in 40 CFR Section 72.2, and is exempt from the Acid Rain Program requirements as provided by 40 CFR Section 72.7(a). Although each unit is not an affected unit (as defined in Section 72.2), each unit is subject to the requirements of Section 72.7, Section 72.8, or Section 72.14, as applicable to the exemption.	40 CFR Section 72.6(b)(9)
Average Annual Sulfur Content Determination: The annual average sulfur content, as a percentage by weight, shall be calculated using the equation at 40 CFR Section 72.7(d)(2) as modified by Section 72.7(d)(3). This equation is in Appendix B of this permit.	40 CFR Section 72.7(d)(3)
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Exhaust Opacity: Less than or equal to: 1. 20 percent during the acceleration mode 2. 15 percent during the lugging mode; and 3. 50 percent during the peaks in either the acceleration or lugging modes.	40 CFR Section 60.4202(a)(2); 40 CFR Section 89.113(a); Minn. R. 7011.3520
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . (This is met through the total capacity of the equipment burning No. 2 fuel oil. The total potential to emit is 0.0004 lb/hp-hr or 0.059 lb/MMBtu heat input.)	Minn. R. 7011.2300, subp. 2
Nitrogen Oxides: less than or equal to 0.020283 lbs/kilowatt-hour . This limit is equivalent to 9.2 g/kw-hr, or 6.9 g/hp-hr. (This is met through the total capacity of the equipment burning No. 2 fuel oil. The total potential to emit is 41.37 lb/hr or 0.0169 lb/kw-hr.)	40 CFR Section 60.4204(b); 40 CRF Section 60.4201(b); Minn. R. 7011.3520
Carbon Monoxide: less than or equal to 0.025132 lbs/kilowatt-hour . This limit is equivalent to 11.4 g/kw-hr, or 8.5 g/hp-hr. (This is met through the total capacity of the equipment burning No. 2 fuel oil. The total potential to emit is 4.02 lb/hr or 0.00164 lb/kw-hr.)	40 CFR Section 60.4204(b); 40 CRF Section 60.4201(b); Minn. R. 7011.3520
Total Particulate Matter: less than or equal to 0.001190 lbs/kilowatt-hour . This limit is equivalent to 0.54 g/kw-hr, or 0.40 g/hp-hr. (This is met through the total capacity of the equipment burning No. 2 fuel oil. The total potential to emit is 0.29 lb/hr or 0.000118 lb/kw-hr.)	40 CFR Section 60.4204(b); 40 CRF Section 60.4201(b); Minn. R. 7011.3520
Hydrocarbons: less than or equal to 0.002866 lbs/kilowatt-hour. This limit is equivalent to 1.3 g/kw-hr, or 1.0 g/hp-hr.	40 CFR Section 60.4204(b); 40 CRF Section 60.4201(b); Minn. R. 7011.3520
OPERATING CONDITIONS	hdr
Fuel type: No. 2 fuel oil only.	Minn. R. 7005.0100, subp. 35a

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-15** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

Fuel Type: Diesel fuel must meet the requirements of 40 CFR Section 80.510(b) for nonroad diesel fuel which requires that diesel fuel have a maximum sulfur content of 15 parts per million and either a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.	40 CFR Section 60.4207(b); 40 CFR Section 80.510(b); Minn. R. 7011.3520
Operating Hours: less than or equal to 8,000 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month. This limit is for EU's 003-007 combined.	Title I Condition: To avoid major source thresholds under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800 subp. 2
Emission Standards: Operate and maintain the engine according to the manufacturer's written instructions or procedures approved by the manufacturer for the entire life of the engine. Change only those emission-related settings that are permitted by the manufacturer. Meet the requirements of 40 CFR Part 89, 94, and/or 1068 as applicable. Settings for the unit may not be changed unless permitted by the manufacturer.	40 CFR Section 60.4206; 40 CFR Section 60.4211(a); Minn. R. 7011.3520
Engine Certification: The engine must be certified to the emission standards in 40 CFR Section 60.4204(b), for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications.	40 CFR Section 60.4211(c); Minn. R. 7011.3520
The exhaust stacks will have the following dimensions: Stack Height: greater than or equal to 85.3 feet (26.0 m) high; Stack Diameter: less than or equal to 18 inches (0.457 m) of inside diameter.	Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, subps 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010-7009.0080
The Permittee shall comply with the General Provisions in 40 CFR Section 60.1 through 60.19, as applicable.	40 CFR Section 60.4218 and Table 8 to Subpart IIII of Part 60; 40 CFR Section 60.1 - 60.19; Minn. R. 7011.3520
PERFORMANCE TESTING	hdr
Performance Test: due before end of each 36 months starting 08/31/2010 to evaluate NOx emission factor of 4.36 g/bhp-hr. This is equivalent to 31.64 lb/hr at 100% load. Testing shall be conducted on one engine, and all future tests shall be conducted on an emission unit that has not been tested. After all units have been tested, testing shall be conducted on the unit for which testing is least current. Recurring testing shall not exceed 36 month between test dates.	Minn. R. 7017.2020, subp. 1
Application for Major Amendment Required: If any GP 002 NOx emission factor evaluation test measures NOx emissions greater than 5.70 g/bhp-hr, the Permittee shall submit a complete application for a major permit amendment to adjust the GP 002 operating hour limit. The application shall be submitted within 30 days after the Permittee's receipt of the test report (from the testing company), indicating emissions greater than 5.70 g/bhp-hr. The application shall include a proposed revised operating hour limit to restrict GP 001 and GP 002 NOx emissions to a maximum of 235 tons per year (12-month rolling sum basis) based on the actual value of the emission factor that was measured greater than 5.70 g/bhp-hr.	Minn. R. 7007.0800, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Keep records of the following: i) All notifications submitted to comply with this subpart and all documentation supporting any notification. ii) Maintenance conducted on the engine. iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards. iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.	40 CFR Section 60.4214(a)(2); Minn. R. 7011.3520
Monthly Recordkeeping - Operating Hours: By the 15th of the month, the Permittee shall calculate and record the following: 1) The total operating hours of each engine in the group for the previous calendar month. 2) The total GP002 operating hours for the previous month. 3) The 12 month GP002 rolling sum operating hours for the previous 12 month period by summing the monthly operating hours data for the previous 12 months.	Title I Condition: To avoid major source thresholds under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800 subp. 2
Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying that the sulfur content does not exceed 0.0015% by weight.	Minn. R. 7007.0800, subps. 4 & 5

TABLE A: LIMITS AND OTHER REQUIREMENTS**A-16**

01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

Subject Item: EU 010 Bryan Boiler

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input . The potential to emit from the unit is 0.00745 lb/MMBtu due to equipment design and allowable fuels.	Minn. R. 7011.0515, subp. 1; Minn. R. 7011.0550
Opacity: less than or equal to 20 percent except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0515, subp. 2
Fuel type: Natural gas only, by design.	Minn. R. 7005.0100, subp. 35a
Fuel Recordkeeping: The Permittee shall keep records of fuel purchases.	Minn. R. 7007.0800, subp. 4 and 5

TABLE B: SUBMITTALS

B-1 01/17/13

Facility Name: Litchfield city of
Permit Number: 09300001 - 003

Also, where required by an applicable rule or permit condition, send to the Permit Document Coordinator notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Chief Air Enforcement
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

Send any application for a permit or permit amendment to:

Fiscal Services
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**B-2** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit.	Total Facility
Notification of compliance status	due 60 days after Initial Performance Test. For each initial compliance demonstration that includes performance test results as specified in 40 CFR Section 63.10(d)(2).	GP001
Notification	due 60 days before Performance Test as required in 40 CFR Section 63.7(b)(1) to allow the Administrator, upon request, to review and approve the site-specific test plan required under paragraph (c) of 40 CFR Section 63.7 and to have an observer present during the test.	GP001

TABLE B: RECURRENT SUBMITTALS**B-3** 01/17/13

Facility Name: Litchfield city of

Permit Number: 09300001 - 003

What to send	When to send	Portion of Facility Affected
Semiannual Compliance Report	<p>due 31 days after end of each calendar half-year starting 05/03/2013. The Report shall cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.</p> <p>Each subsequent Compliance report shall be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period.</p>	GP001
Semiannual Deviations Report	<p>due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.</p>	Total Facility
Compliance Certification	<p>due 31 days after end of each calendar year following Permit Issuance (for the previous calendar year). The Permittee shall submit this on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.</p>	Total Facility

APPENDIX MATERIAL

Facility Name: City of Litchfield

Permit Number: 09300001-003

Appendix A: Air Modeling Parameters

		LOCATION		CRITERIA POLLUTANT EMISSION RATE [g/s]				STACK PARAMETERS						
Stack ID	Source Group	Easting	Northing	NO _x	SO ₂	CO	PM ₁₀	Base Height [m]	Release Height [m]	Inside Diameter [m]	Exhaust Flow [acfm]	Exit Velocity [m/s]	Exit Temperature [K]	Orientation
SV001	IC & ALL	379288	4998310	8.800	0.147	1.440	0.254	342	30.0	0.51	25,740	59.9	622	Up, no cap
SV002	IC & ALL	379294	4998353	8.800	0.147	1.440	0.254	342	30.0	0.51	25,740	59.9	622	Up, no cap
SV003	IC & ALL	379207	4998353	5.213	0.183	0.507	0.037	342	26.0	0.46	17,668	50.8	751	Up, no cap
SV004	IC & ALL	379211	4998353	5.213	0.183	0.507	0.037	342	26.0	0.46	17,668	50.8	751	Up, no cap
SV005	IC & ALL	379215	4998353	5.213	0.183	0.507	0.037	342	26.0	0.46	17,668	50.8	751	Up, no cap
SV006	IC & ALL	379219	4998353	5.213	0.183	0.507	0.037	342	26.0	0.46	17,668	50.8	751	Up, no cap
SV007	IC & ALL	379223	4998353	5.213	0.183	0.507	0.037	342	26.0	0.46	17,668	50.8	751	Up, no cap
SVHEAT	HEAT & ALL	379269	4998339	0.040	0.0002	0.033	0.002	342	10.1	0.56	800	0.001	478	Up, Cap

Appendix B: 40 CFR §72.7(d)(2) Equation for Determination of Average Annual Sulfur Content

$$\%S_{\text{annual}} = \frac{\sum_{n=1}^{\text{last}} \%S_n V_n d_n}{\sum_{n=1}^{\text{last}} V_n d_n}$$

Where:

$\%S_{\text{annual}}$ = annual average sulfur content of the fuel burned during the year by the unit, as a percentage by weight;

$\%S_n$ = sulfur content of the n^{th} sample of the fuel delivered during the year to the unit, as a percentage by weight;

V_n = volume of the fuel in a delivery during the year to the unit of which the n^{th} sample is taken, in standard cubic feet; or, for fuel delivered during the year to the unit continuously by pipeline, volume of the fuel delivered starting from when the n^{th} sample of such fuel is taken until the next sample of such fuel is taken, in standard cubic feet;

d_n = density of the n^{th} sample of the fuel delivered during the year to the unit, in pounds per standard cubic foot; and

n = each sample taken of the fuel delivered during the year to the unit, taken at least once for each delivery; or, for fuel that is delivered during the year to the unit continuously by pipeline, at least once each quarter during which the fuel is delivered.

Note: as specified by 40 CFR §72.7(d)(3), in lieu of the factor, volume times density ($V_n d_n$), in the equation, the factor, mass (M_n), may be used, where M_n is mass of the nongaseous fuel in a delivery during the year to the unit of which the n^{th} sample is taken, in pounds; or, for fuel delivered during the year to the unit continuously by pipeline, mass of the nongaseous fuel delivered starting from when the n^{th} sample of such fuel is taken until the next sample of such fuel is taken, in pounds.

Appendix C: GP 001 NO_x Emissions Formula

Use the following equation to calculate the monthly NO_x emissions, in tons, for each engine in GP 001.

$$E = \frac{(2880 \text{ bhp})(H_D)(ER_D) + (H_{DF})(ER_{DF})}{(453.59 \text{ g/lb})(2000 \text{ lb/ton})}$$

Where:

E = NO_x emissions for the given month, in tons.

H_D = time operated on 100% No. 2 fuel oil each month, in hours.

ER_D = average NO_x emission factor during the most recent performance test while operating on 100% No. 2 fuel oil, in grams per brake horsepower-hour.

H_{DF} = time operated on dual fuel each month, in hours.

ER_{DF} = average NO_x emission factor during the most recent performance test while operating on dual fuel, in grams per brake horsepower-hour.

The annual NO_x emissions for GP 001 engines will be calculated by adding the monthly emissions from each engine in the group and using a twelve month rolling sum of the monthly group emissions.

APPENDIX D: NESHAP ZZZZ Compliance Determination with the CO Percent Reduction Requirement

The Permittee shall conduct three separate test runs for each performance test required by 40 CFR pt. 63, subp. ZZZZ, as specified in 40 CFR §63.7(e)(3). Each test run shall last at least 1 hour. The Permittee shall use Equation 1 of 40 CFR §63.6620 to determine compliance with the percent reduction requirement:

$$\frac{C_i - C_o}{C_i} \times 100 = R \quad (\text{Eq. 1})$$

Where:

C_i = Concentration of CO at the control device inlet.

C_o = Concentration of CO at the control device outlet.

R = Percent reduction of CO emissions.

The Permittee shall normalize the carbon monoxide (CO) concentrations at the inlet and outlet of the control device to a dry basis and to 15 percent oxygen, or an equivalent percent carbon dioxide (CO₂). If pollutant concentrations are to be corrected to 15 percent oxygen and CO₂ concentration is measured in lieu of oxygen concentration measurement, a CO₂ correction factor is needed. Calculate the CO₂ correction factor as described in paragraphs (e)(2)(i) through (iii) of 40 CFR §63.6620.

- (i) Calculate the fuel-specific F_o value for the fuel burned during the test using values obtained from Method 19, section 5.2, and the following equation:

$$F_o = \frac{0.209F_d}{F_c} \quad (\text{Eq. 2})$$

Where:

F_o = Fuel factor based on the ration of oxygen volume to the ultimate CO₂ volume produced by the fuel at zero percent excess air.

0.209 = Fraction of air that is oxygen, percent/100.

F_d = Ratio of the volume of dry effluent gas to the gross calorific value of the fuel from Method 19, dsm³/J (dscf/10⁶ Btu).

F_c = Ratio of the volume of CO₂ produced to the gross calorific value of the fuel from Method 19, dsm³/J (dscf/10⁶ Btu).

- (ii) Calculate the CO₂ correction factor for correcting measurement data to 15 percent oxygen, as follows:

$$X_{CO_2} = \frac{5.9}{F_o} \quad (\text{Eq. 3})$$

Where:

X_{CO_2} = CO_2 correction factor, percent.

$5.9 = 20.9 \text{ percent } O_2 - 15 \text{ percent } O_2$, the defined O_2 correction value, percent.

(iii) Calculate the NO_x and SO_2 gas concentrations adjusted to 15 percent O_2 using CO_2 as follows:

$$C_{adj} = C_d \frac{X_{CO_2}}{\%CO_2} \quad (\text{Eq. 4})$$

Where:

$\%CO_2$ = Measured CO_2 concentration measured, dry basis, percent.