



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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March 24, 2016

Mr. Michael DiMauro
Massachusetts Municipal Wholesale Electric Co.
327 Moody Street
Ludlow, MA 01056

RE: LUDLOW
Transmittal No.: X268524
Application No.: WE-15-019
Class: *OP*
FMF No.: 221112
AIR QUALITY PLAN APPROVAL

Dear Mr. DiMauro:

The Massachusetts Department of Environmental Protection (“MassDEP”), Bureau of Air and Waste, has reviewed your Non-major Comprehensive Plan Application (“Application”) listed above. This Application concerns the proposed alteration and/or operation of two (2) Caterpillar Model 3516 diesel engines at your electric power generation facility located at 327 Moody Street in Ludlow, Massachusetts (“Facility”). The Application bears the seal and signature of George S. Lipka, Massachusetts Registered Professional Engineer Number 29704.

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 “Air Pollution Control” regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-N, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP’s review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator (“Permittee”) must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

The Massachusetts Municipal Wholesale Electric Company (“MMWEC”) facility is an electric power generation facility largely consisting of five General Electric MS7001E combustion turbines located on Moody Street in Ludlow, Massachusetts. MMWEC sells the electricity to twenty-five (25) Massachusetts municipal electric systems. Emission Units 1, 2, and 3 burn natural gas or #2 fuel oil and operate in combined-cycle mode with a net total output of 350-megawatts. Emission Units 4 and 5 burn #2 fuel oil and operate in peaking mode with a net total output of 170-megawatts. The five combustion turbines were approved by MassDEP on January 31, 1979 and constructed at the facility during December 1981.

MMWEC has a total of four #2 fuel oil-fired emergency stationary reciprocating internal combustion engines (“RICE”) and one #2 fuel oil-fired emergency stationary RICE fire pump. In September 2007, MMWEC constructed two (2) EPA TIER 2 Certified, Caterpillar Model #3516C #2 fuel oil-fired emergency RICEs, each with a maximum rating of 19.3 million Btu per hour (“MMBtu/hr”) of heat input (equivalent to a rated power output of 2,000 kilowatts), in accordance with MassDEP’s Environmental Results Program, 310 CMR 7.26(42).

MMWEC is proposing to change the operational status of the two TIER 2 Certified 19.3 MMBtu/hr Caterpillar Model 3516C emergency RICEs (Emission Units 12 and 13) from a solely emergency function to one of providing power to the facility under both emergency and scheduled maintenance conditions. Operation of these engines in this manner will remove them from “emergency” status under 310 CMR 7.26(42) and 40 CFR 63 Subpart ZZZZ. In order to enable the operation of the two engines under non-emergency conditions, a carbon monoxide (CO) oxidation catalyst is being added to each unit. The engines are classified as “new” under Subpart ZZZZ since they were installed after December 19, 2002.

The facility is considered to be a major source since it has the potential to emit greater than 100 tons per year of particulate matter (PM) including PM10 (PM with an aerodynamic diameter equal to or less than 10 microns) and PM2.5 (PM with an aerodynamic diameter equal to or less than 2.5 microns), 50 tons per year of volatile organic compounds (VOCs), 50 tons per year of nitrogen oxides (NO_x), 100 tons per year of carbon monoxide, 100 tons per year of sulfur dioxide, 10 tons per year of any individual hazardous air pollutant (HAP) (manganese) and 25 tons per year of any combination of HAPs. Therefore the facility is subject to the Operating Permit and Compliance Program pursuant to 310 CMR 7.00: Appendix C(2). The facility is currently operating in accordance with Title V Operating Permit 1-O-10-005, issued January 28, 2013.

Applicable Regulatory Requirements

New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS)

The emergency stationary RICEs are also subject to the federal NESHAPS for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63 Subpart ZZZZ. In addition, the two EPA TIER 2 Certified, Caterpillar Model #3516C diesel-fired emergency RICEs are subject to NSPS 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines).

MMWEC is requesting to operate EU12 and EU13 to provide station power during scheduled switchyard maintenance. Such operation will not qualify as “emergency operation” defined in 310 CMR 7.26(42). In addition, the new proposed use for switchyard maintenance will not meet the definition of “emergency” or “blackstart” under 40 CFR 63, Subpart ZZZZ. MMWEC is required to meet the requirements of 40 CFR 63 Subpart ZZZZ for non-emergency RICE.

Nonattainment Review – 310 CMR 7.00: Appendix A

MMWEC is considered a major stationary source for the purposes of 310 CMR 7.00: Appendix A, since its potential to emit exceeds 50 tons per year of nitrogen oxides (NO_x) and 50 tons per year of volatile organic compounds (VOC). As such, a netting analysis was performed to determine the net emissions increase associated with the proposed modification which involves a “change in the method of operation” associated with the operation of the RICEs during “non-emergency” conditions (switchyard maintenance). The period for all facility-wide emissions increases and decreases contemporaneous with the proposed changes over the past 5 years encompasses the calendar years 2010 through 2014. There have been no other creditable increases or decreases in NO_x or VOC emissions at the facility during the past 5 years.

The netting analysis performed for NO_x and VOC emissions conservatively calculated the annual Nonattainment Review (“NR”) applicability emissions assuming a maximum proposed operation of 265 hours per rolling 12 months during non-emergency conditions. The RICE NO_x and VOC emissions under this case are well below the NR major modification thresholds as defined in 310 CMR 7.00: Appendix A. As a result the project will not be subject to 310 CMR 7.00 – Appendix A.

Prevention of Significant Deterioration (“PSD”)

MMWEC is an existing major stationary source pursuant to the PSD regulations of 40 CFR§52.21. The proposed changes in operation to the facility would be categorized as a major modification to an existing major source if emissions were to increase by greater than the following significant regulated New Source Review (“NSR”) pollutant emission rates: 40 tpy of SO₂, 40 tpy of NO₂, 100 tpy of CO, 0.6 tpy of lead (Pb), 25 tpy of PM/PM₁₀/PM_{2.5}, 15 tpy of sulfuric acid (H₂SO₄), or varied emission rates of miscellaneous NSR pollutants.

The changes in operation of the units during “non-emergency” conditions, even assuming all 265 hours of operation per rolling 12 months is for switchyard maintenance, will not result in a significant emissions increase of a regulated NSR pollutant and is therefore not a major modification as defined in 40 CFR 52.21. Specifically these conservatively calculated emissions increases will be: 0.007 tpy of SO₂, 11.1 tpy of NO_x, 0.32 tpy of CO, 1.6E-5 tpy of lead (Pb), 0.15 tpy of PM/PM₁₀/PM_{2.5}, 0.012 tpy of sulfuric acid (H₂SO₄), and 0.3 tpy of VOC. As a result, the project will not be subject to 40 CFR 52.21.

Best Available Control Technology (“BACT”) Analysis

The Massachusetts Air Regulations require that BACT be applied for any source requiring plan approval under 310 CMR 7.02. Therefore, a top-down BACT assessment has been performed for the project for PM_{10/2.5}, PM, SO₂, NO_x, CO, VOC, HAP and total HAPs.

The MassDEP requires a “top-down” approach to BACT analysis. The process begins with the identification of all control technology alternatives for each pollutant. Technically infeasible technologies are eliminated and the remaining technologies are ranked by control efficiency. These technologies are evaluated based on economic, energy and environmental impacts. If an alternative, starting with the most stringent, is eliminated based on these criteria, the next most stringent technology is evaluated until BACT is selected.

BACT for NO_x

NO_x is emitted from the RICE as a result of either bound nitrogen in the fuel or secondary thermal formation due to high exhaust temperatures. NO_x emissions can be minimized by both low NO_x engine design in accordance with EPA NSPS, 40 CFR 60 Subpart III (TIER 2) and additional control technology which is currently selective catalytic reduction (“SCR”).

SCR can normally achieve greater than a 90% reduction in NO_x emissions. However, because of the limited hours of operation of the diesel engines (265 hours per unit per rolling 12 months) proposed, the control of NO_x emissions by SCR is not economically feasible. Continued compliance with the EPA TIER 2 limits required by 40 CFR 60 Subpart III, an operating restriction of 265 hours per year per engine, along with a maximum “not to exceed” emission rate of 41.87 pounds per hour (“lbs/hr”) at full load, and 5.5 tons per year is considered BACT.

BACT for CO

CO is emitted from the RICE as a result of incomplete oxidation of the fuel. CO emissions can be minimized by the use of proper engine design and good combustion practices or add-on controls. The most stringent CO control technology is a catalytic oxidation system. A catalytic oxidation system can provide between 80- 90% reduction in CO emissions.

The proposed addition of a single layer CO catalyst will provide an 81.1% removal efficiency, which meets the maximum achievable control technology (“MACT”) requirements of 40 CFR

63, Subpart ZZZZ, which requires a 70% minimum CO removal. Emissions from the estimated catalyst performance of 81.1% removal is 0.77 lbs/hr per unit based on a worst case uncontrolled CO emission rate of 4.05 lbs/hr as documented in the July 20, 2006 performance data sheet supplied by the engine manufacturer.

An incremental cost analysis was also performed for a second layer of CO catalyst. For the double layer of oxidation catalyst, the estimated performance was increased to 89.8% removal efficiency with an emission rate of 0.41 lbs/hr per unit. However, because of the limited hours of operation of the diesel engines (265 hours per unit per rolling 12 months) proposed, the addition of a second catalyst would only remove an additional 0.10 tons per year. This is economically infeasible.

BACT for SO₂

SO₂ is emitted from the RICE as a result of the oxidation of the sulfur in the fuel. The only practical means for controlling SO₂ emissions from a RICE is to limit the sulfur content of the fuel. The selection of ultra-low sulfur diesel (“ULSD”) with a sulfur content equal to or less than 0.0015% is considered BACT.

BACT for PM/PM₁₀/PM_{2.5}

Emissions from PM₁₀/PM_{2.5} result from trace quantities of ash (non-combustibles) in the fuel as well as products of incomplete combustion. MassDEP is requiring facilities to demonstrate compliance with PM and PM_{2.5} standards as well as PM₁₀ standards. To be conservative, MassDEP presumes all particulate emissions from combustion sources are PM_{2.5} (less than 2.5 microns in diameter). PM/PM_{2.5}/PM₁₀ emission controls available for the diesel-fired units are either add on diesel particulate filter (“DPF”) controls or low emission engine design in accordance with EPA NSPS, 40 CFR 60 Subpart IIII (TIER 2) which reflects current engine emissions.

The cost effectiveness of using add on DPFs for the two Caterpillar diesel generators was calculated to be excessive based on the high cost of the control devices and the limited operating hours (265 hours per unit per rolling 12 months) of the units. Continued compliance with the EPA TIER 2 limits required by 40 CFR 60 Subpart IIII, an operating restriction of 265 hours per year per engine, along with a maximum controlled PM/PM₁₀/PM_{2.5} emission rate of 0.57 lbs/hr and 0.076 tons per year, per unit is considered BACT.

BACT for VOC

VOCs are emitted from the RICE as a result of incomplete oxidation of the fuel. VOC emissions can be minimized by the use of proper engine design and good combustion practices or add on controls. The most stringent control technology for VOC is an oxidation catalyst. A catalytic oxidation system is already being proposed for controlling emissions of CO in accordance with the requirements of 40 CFR 63, Subpart ZZZZ. The estimated VOC removal for a single layer CO oxidation catalyst is typically between 40-50%. The actual removal percentage that would

be achieved depends on the specific organic compounds that constitute the VOC, so the actual removal percentage is uncertain.

Meeting EPA's TIER 2 limits, an operating restriction of 265 hours per year per engine, along with a maximum controlled VOC emission rate of 1.13 lbs/hr per and 0.15 tons per year per unit is considered to be BACT. This emission rate is the vendor's maximum rate for hydrocarbons.

BACT for HAPs

Carbon monoxide has been shown to be an appropriate surrogate for HAP emissions from CI engines. For the NESHAP promulgated in 2004 and the Final Rule as published on March 3, 2010 in Volume 75, No. 41 of the Federal Register, EPA found that there is a relationship between CO emissions reductions and HAP emissions reductions from CI stationary engines. The publication stated that because testing for CO emissions has many advantages over testing for HAP emissions, CO emissions were chosen as a surrogate for HAP emissions reductions for CI stationary engines.

EPA also stated that for the standards being finalized in the March 3, 2010 action, EPA believes that previous decisions regarding the appropriateness of using CO in concentration (parts per million (ppm)) levels as has been done for stationary sources before as surrogates for HAP are still valid. Consequently, EPA is finalizing emission standards for CO for stationary CI engines in order to regulate HAP emissions

Since 40 CFR 63 Subpart ZZZZ uses the CO limit as a surrogate limit for HAPs, separate BACT limits for HAPs are not considered necessary.

National Ambient Air Quality Standards

The USEPA approved air dispersion computer modeling analysis (AERMOD) submitted by MMWEC demonstrates that air emissions predicted concentrations, with continued use of the existing Caterpillar engine stacks, are in compliance with the National Ambient Air Quality Standards ("NAAQS"). All total predicted concentrations, which include the background concentrations and the proposed equipment impacts, are below the NAAQS. The NAAQS include: sulfur dioxide, particulate matter, which is less than 10 microns, carbon monoxide, nitrogen dioxide, and lead. MassDEP requested that MMWEC run an EPA Guideline air quality model because the existing Caterpillar engine stacks are less than the 1.5 times the height of the existing generator enclosures, which are 13.8 feet above grade and the existing stacks are 15.6 feet above grade.

The results of the modeling analysis were reviewed and cross-checked by MassDEP and determined to be accurate and representative of the data parameters used. MassDEP concludes that the results summarized in the AERMOD analysis indicate that all pollutants for all averaging periods modeled demonstrate compliance with NAAQS.

2. EMISSION UNIT IDENTIFICATION

Each Emission Unit (“EU”) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU	Description	Design Capacity	Pollution Control Device (PCD)
12	Caterpillar Model#3516, #2 Fuel Oil-Fired CI Engine	19.3 MMBtu/hr	Advanced Catalytic Systems Oxidation Catalyst or equivalent
13	Caterpillar Model#3516, #2 Fuel Oil-Fired CI Engine	19.3 MMBtu/hr	Advanced Catalytic Systems Oxidation Catalyst or equivalent

Table 1 Key:

EU = Emission Unit Number
 CI = Compression Ignition

PCD = Pollution Control Device
 MMBtu/hr = Million British Thermal Units per Hour

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2:

Table 2					
EU	Restrictions/ Operating Parameters	Air Contaminant	Emission Limit (each engine)		
			Lb/MMBtu ²	Lb/Hr	Tons per 12 month rolling period
EU12 EU13	Operate each engine ≤ 265 hours per year (in any consecutive rolling 12 month total) This operating restriction includes normal maintenance and testing procedures as recommended by the manufacturer.	PM including PM ₁₀ and PM _{2.5} ¹	0.12	0.57	0.076
		NO _x	2.17	41.87	5.55
		CO ³	0.34	1.22	0.16
		VOC	0.28	1.13	0.15
		Sulfur in Fuel	≤ 15 ppm (≤ 0.0015 % by weight)		
		Smoke	< No. 1 of Chart ⁴ , except No. 1 to < No. 2 of Chart for ≤ 6 minutes during any one hour		
		Opacity	≤ 20% except 20 to ≤ 40% for ≤ 2 minutes during any one hour		

Table 2 Notes

1. Particulate Matter shall be measured by EPA Method 5 and Condensable Particulate Measured by EPA Method 202.
2. Based on July 20, 2006 GEN SET performance data worst case load and “not to exceed data” obtained from manufacturer for model 3516 engines.
3. For CI RICE (which commenced construction after 12/19/2002) at a major source, MACT for CO is an oxidation catalyst meeting the requirements of Subpart ZZZZ with 70% CO removal. Maximum CO emissions not to exceed 1.22 lb/hr based on 70% removal.
4. Chart means the Ringleman Scale for grading the density of smoke, as published by the United States Bureau of Mines and as referred to in the Bureau of Mines Information Circular No. 8333, or any smoke inspection guide approved by MassDEP.

Table 2 Key:

EU = Emission Unit Number

PM = Total Particulate Matter

PM₁₀ = Particulate Matter less than or equal to 10 microns in diameter

PM_{2.5} = Particulate Matter less than or equal to 2.5 microns in diameter

BACT = Best Available Control Technology

lb/hr = pounds per hour

lb/MMBtu = pounds per million British thermal units.

NO_x = Nitrogen Oxides

SO₂ = Sulfur Dioxide

CO = Carbon Monoxide

VOC = Volatile Organic Compounds

TPM = tons per month

TPY = tons per consecutive 12-month period

< = less than

≤ = less than or equal to

% = percent

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5:

Table 3	
EU	Monitoring and Testing Requirements
EU 12 EU 13	1. The Permittee shall install, operate, and maintain in good working order a non-resettable hour meter on each engine.
	2. In accordance with 40 CFR §63.6610(a), the initial performance test or other initial compliance demonstrations that apply in Table 4 of Subpart ZZZZ must be conducted within 180 days after the compliance date that is specified in §63.6595 and according to the provisions in §63.7(a)(2).
	3. In accordance with 40 CFR 63 Subpart ZZZZ Table 4, conduct an initial performance test to demonstrate compliance with the CO reduction requirement and emission limit as applicable.
	4. In accordance with 40 CFR §63.6620(b), each performance test must be conducted according to the requirements that this subpart specifies in Table 4 to this subpart. If you own or operate a non-operational stationary RICE that is subject to performance testing, you do not need to start up the engine solely to conduct the performance test. Owners and operators of a non-operational engine can conduct the performance test when the engine is started up again. The test must be conducted at any load condition within plus or minus 10 percent of 100 percent load for the stationary rice listed in paragraphs §63.6620(b)(1) through (4).
	5. In accordance with 40 CFR §63.6620(d), conduct three separate runs for each performance test required in 40 CFR 63 Subpart ZZZZ, as specified in §63.7(e)(3). Each test run must last at least 1 hour, unless otherwise specified in this subpart.
	6. In accordance with 40 CFR §63.6620(e), utilize the equations in (e)(1) and (e)(2) of this section to determine compliance with the percent reduction requirement.
	7. In accordance with 40 CFR 63 Subpart ZZZZ Table 3, Item 1 and Table 6, Item 1 conduct subsequent performance tests semiannually for CO to demonstrate that the required CO percent reduction is achieved.
	8. In accordance with 40 CFR 63 Subpart ZZZZ Table 5, Item 2, install a CPMS on each engine to continuously monitor catalyst inlet temperature according to the requirements in 40 CFR §63.6625(b).
	9. In accordance with 40 CFR 63 Subpart ZZZZ Table 5, Item 2, measure pressure drop across the catalyst and the catalyst inlet temperature during the initial performance test.
	10. In accordance with 40 CFR 63 Subpart ZZZZ Table 6, Item 1, measure the pressure drop across the catalyst one per month to demonstrate that the pressure drop across the catalyst is within the operating limitation established during the performance test.

Table 3	
EU	Monitoring and Testing Requirements
EU 12 EU 13	11. In accordance with 40 CFR 63 Subpart ZZZZ Table 6, Item 1 and 40 CFR §63.6625(b), catalyst inlet temperature shall be continuously monitored and data shall be reduced to 4-hour rolling averages.
	12. In accordance with 40 CFR 63.7(c), before conducting a required performance test, develop and, if requested by the administrator, shall submit a site-specific test plan for approval. The test plan shall include a test program summary, the test schedule, data quality objectives, and both an internal and external quality assurance (“QA”) program. Data quality objectives are the pretest expectations of precision, accuracy and completeness of data.
	13. The Permittee shall monitor fuel oil purchases such that only fuel oil containing no greater than 0.0015 percent by weight is purchased for use in each unit.
	14. The Permittee shall monitor sulfur content of each new shipment of fuel oil received. Sulfur content of the fuel can be demonstrated through fuel analysis. The analysis of sulfur content of the fuel shall be in accordance with the applicable American Society for Testing Materials (“ASTM”) test methods or any other method approved by the MassDEP and EPA. Fuel sulfur information may be provided by fuel suppliers.
	15. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration
	16. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and Regulation 310 CMR 7.13
	17. At least 30 days prior to emission testing, the Permittee shall submit to MassDEP for approval a stack emission pretest protocol.
	18. Within 45 days after emission testing, the Permittee shall submit to MassDEP a final stack emission test results report.

Table 3 Key:

EU = Emission Unit Number
EPA = US Environmental Protection Agency
MassDEP = Massachusetts Department of Environmental Protection
BACT = Best Available Control Technology

CO = Carbon Monoxide
CPMS = Continuous Performance Monitoring System
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations

Table 4

EU	Record Keeping Requirements
EU 12 EU 13	1. The Permittee shall record the hourly, monthly, and twelve month rolling hours of operation for each engine using a non-resettable hour meter recorder.
	2. The Permittee shall maintain records as described in 310 CMR 7.26(43)(f)1. through 4. Such records shall be maintained on-site and made available to MassDEP or its designee upon request. The owner or operator shall certify that records are accurate and true in accordance with 310 CMR 7.01(2)(a) through (c). <ul style="list-style-type: none"> a. Information on equipment type, make and model, and maximum power output; and b. A monthly log of hours of operation, gallons of fuel used, fuel type, heating value, and sulfur content. A monthly calculation of the total hours operated and gallons of fuel used in the previous 12 months shall be kept on-site; and c. Purchase orders, invoices, and other documents to support information in the monthly log; and d. Copies of certificates and documents from the manufacturer related to certificates.
	3. The Permittee shall maintain oil analysis results used to demonstrate compliance with fuel oil sulfur content requirements.
	4. In accordance with 40 CFR 63.6655, maintain the following records: <ul style="list-style-type: none"> a. A copy of each notification and report submitted to comply with 40 CFR 63 Subpart ZZZZ, including all documentation supporting any Initial Notification or Notification of Compliance Status submitted, according to the requirement in 40 CFR 63.10(b)(2)(xiv). b. Records of the occurrence and duration of each malfunction of operation (i.e. process equipment) or the air pollution control and monitoring equipment. c. Records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(xiii). d. Records of all required maintenance performed on the air pollution control and monitoring equipment. e. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6606(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation.
	5. In accordance with 40 CFR 63.6655(b), the Permittee must keep the following records for each CEMS or CPMS: <ul style="list-style-type: none"> a. Records described in §63.10(b)(2)(vi) through (xi). b. Previous (i.e., superseded) versions of the performance evaluation plan as required in §63.8(d)(3). c. Requests for alternatives to the relative accuracy test for CEMS or CPMS as required in §63.8(f)(6)(i), if applicable.
	6. In accordance with 40 CFR 63.6655(d) and Table 6, Item 1, maintain records of all required performance tests, pressure drop measurements across the catalysts, and catalyst inlet temperature measurements.

Table 4	
EU	Record Keeping Requirements
EU 12 EU 13	<p>7. The Permittee shall maintain adequate records on-site to demonstrate compliance status with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve-month period (current month plus prior eleven months). These records shall be compiled no later than the 15th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping.</p>
	8. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	9. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EU(s) and PCD(s) approved herein on-site.
	10. The Permittee shall maintain a record of routine maintenance activities performed on the approved EU(s), PCD(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	11. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s), PCD(s) and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	12. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	13. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	14. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 4 Key:

EU = Emission Unit Number

SOMP = Standard Operating and Maintenance Procedure

CMR = Code of Massachusetts Regulations

CFR = Code of Federal Regulations

PCD = Pollution Control Device

MassDEP = Massachusetts Dept. of Environmental Protection

USEPA = United States Environmental Protection Agency

Table 5

EU	Reporting Requirements
EU 12 EU 13	<ol style="list-style-type: none"> <li data-bbox="302 415 1430 520">1. The Permittee shall make available the monthly log(s) and records as described under 310 CMR 7.26(43)(f) to MassDEP or its designee upon request. The owner or operator shall certify that the log is accurate and true in accordance with 310 CMR 7.01(2). <li data-bbox="302 533 1425 674">2. In accordance with 40 CFR §63.7b, notify MassDEP and the US EPA in writing of the intention to conduct a performance test at least 60 calendar days before the performance test is initially scheduled to begin to allow the Administrator, upon request, to review and approve the site-specific test plan as required pursuant to 40 CFR 63.7(c), and to have an observer present during the test. <li data-bbox="302 686 1430 827">3. In accordance with 40 CFR §63.6650(b)(5), for each stationary RICE that is subject to permitting regulations pursuant to 40 CFR Part 70 or 71, the first and subsequent compliance reports shall be submitted at least every six months (January 30 and July 30 of each calendar year) in accordance with the requirements in CMR 7.00 Appendix C(10)(c). <li data-bbox="302 840 1425 942">4. In accordance with 40 CFR 63 Subpart ZZZZ Table 7, semi-annual compliance reports shall be submitted every six months (January 30 and July 30 of each calendar year) containing information as required by Subpart ZZZZ Table 7.1.a.-c. <li data-bbox="302 955 1442 1556">5. In accordance with §63.6650(c), the Permittee shall include the following information in the semi-annual compliance reports: <ol style="list-style-type: none"> <li data-bbox="345 1037 683 1066">a. Company name and address. <li data-bbox="345 1073 1377 1136">b. Statement by a responsible official, with that officials name, title, and signature, certifying the accuracy of the content of the report. <li data-bbox="345 1142 1073 1171">c. Date of report beginning and ending dates of the reporting period. <li data-bbox="345 1178 1442 1381">d. If a malfunction occurred during the reporting period, the compliance report must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused and any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with §63.6605(b) including actions taken to correct a malfunction. <li data-bbox="345 1388 1398 1451">e. If there are no deviations from any emission or operating limitations that apply, a statement that there were no deviations from the emission or operating limitations during the reporting period. <li data-bbox="345 1457 1414 1556">f. If there were no periods during which the continuous monitoring system (CMS), including CEMS and CPMS, was out-of-control, as specified in §63.8(c)(7), a statement that there were no periods during which the CMS was out-of-control during the reporting period. <li data-bbox="302 1568 1442 1850">6. In accordance with §63.6650(d), for each deviation from an emission or operating limitation occurring for a stationary RICE which is not using a CMS to comply with the emission or operating limitations in this subpart, the compliance report must contain the information in paragraphs 5a through 5d above and the information in paragraphs (d)(1) and (2) of §63.6650: <ol style="list-style-type: none"> <li data-bbox="345 1717 1442 1780">a. The total operating time of the stationary RICE at which the deviation occurred during the reporting period. <li data-bbox="345 1787 1349 1850">b. Information on the number, duration, and cause of deviations (including unknown cause, if applicable), as applicable and the corrective action taken.

Table 5	
EU	Reporting Requirements
EU 12 EU 13	<p>7. In accordance with §63.6650(f), the Permittee must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If the Permittee submits a compliance report pursuant to 40 CFR 63 Subpart ZZZZ Table 7 along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the compliance report includes all required information concerning deviations from any emission or operating limitation in this subpart, submission of the compliance report shall be deemed to satisfy any obligation to report the same deviations in the semiannual monitoring report. However, submission of a compliance report shall not otherwise affect any obligation the Permittee may have to report deviations from permit requirements to MassDEP and the US EPA.</p> <p>8. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a “Responsible Official” as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).</p> <p>9. The Permittee shall notify the Western Regional Office of MassDEP, Permit Chief by telephone: 413-755-2115, email: marc.simpson@.state.ma.us, or fax : 413-784-1149, as soon as possible, but no later than three (3) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to Permit Chief at MassDEP within ten (10) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).</p> <p>10. The Permittee shall report annually to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.</p>

Table 5 Key:

EU = Emission Unit Number
CMR = Code of Massachusetts Regulations
CFR = Code of Federal Regulations

MassDEP = Massachusetts Dept. of Environmental Protection
US EPA = United States Environmental Protection Agency

4. SPECIAL TERMS AND CONDITIONS

A. The Permittee is subject to, and shall comply with, the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU	Special Terms and Conditions
EU 12 EU 13	<ol style="list-style-type: none"> 1. In accordance with 40 CFR 63.6600(b), the Permittee shall comply with the emission limitations in Subpart ZZZZ, Table 2a and the operating limitations in Subpart ZZZZ, Table 2b. 2. In accordance with 40 CFR Subpart ZZZZ Table 2b(1)(a), 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 performances test. 3. In accordance with 40 CFR Subpart ZZZZ Table 2b(1)(b), the Permittee shall maintain the temperature of the stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F. 4. In accordance with 40 CFR 63.6625(b), install a continuous parameter monitoring system (CPMS) as specified in 40 CFR Subpart ZZZZ Table 5. 5. In accordance with 40 CFR 63.6625(b), the Permittee shall install, operate and maintain each CPMS in accordance with the following requirements: <ol style="list-style-type: none"> a. Prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in paragraphs (b)(1)(i) through (v) and in §63.8(d). As specified in §63.8(f)(4), the Permittee may request approval of monitoring system quality assurance and quality control procedures alternative to those specified in paragraphs (b)(1) through (b)(5) of 40 CFR 63.6625 in their site specific monitoring plan. b. Install, operate and maintain each CPMS in continuous operation according to the procedures in the site-specific monitoring plan. c. The CPMS must collect data at least once every 15 minutes. d. For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of measurement range, whichever is larger. e. Conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan at least annually. f. You must conduct a performance evaluation of each CPMS in accordance with your site-specific monitoring plan. 6. In accordance with 40 CFR 63 Subpart ZZZZ Table 8, EU 12 and EU13 are subject to the requirements of 40 CFR 63 Subpart A “General Provisions”. Compliance with all applicable provisions of 40 CFR 63 Subpart A therein is required.

Table 6	
EU	Special Terms and Conditions
EU 12 EU 13	7. EU #12 and #13 are subject to the Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60.4200 through 60.4219, and shall comply with all applicable requirements.
	8. EU #12 and #13 are subject to the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63.6580 through 60.6675, and shall comply with all applicable requirements.
	9. In accordance with 40 CFR §60.4204(b), owners and operator of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable.
	10. In accordance with 40 CFR §60.4207(b), beginning October 1, 2010, owners and operators of stationary CI ICE, subject to 40 CFR 60 Subpart IIII, with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel, except that any existing diesel fuel purchased (or otherwise obtained) prior to October 1, 2010, may be used until depleted.
Facility-wide	11. Any prior Plan Approvals issued under 310 CMR 7.02 shall remain in effect unless specifically changed or superseded by this Plan Approval. The Facility shall not exceed the emission limits and shall comply with approved conditions specified in the prior Plan Approval(s) unless specifically altered by this Plan Approval.
	12. The Permittee may make the approved changes herein, upon the submittal and receipt by MassDEP of a BWP AQ10 Operating Permit Minor Modification application pursuant to 310 CMR 7.00 Appendix C(8)(d)3.

Table 6 Key:

EU = Emission Unit Number
CI = Compression Ignition
RICE = Reciprocating Internal Combustion Engine
ICE = Internal Combustion Engine
°F = degrees Fahrenheit

HAP (total) = total Hazardous Air Pollutants.
VOC = Volatile Organic Compounds
CFR = Code of Federal Regulations
BWP = Bureau of Waste Prevention
CMR = Code of Massachusetts Regulations
MassDEP = Massachusetts Dept. of Environmental Protection

B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including, but not limited to, rain protection devices known as “shanty caps” and “egg beaters.”

C. The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7, for the Emission Units that are regulated by this Plan Approval:

Table 7				
EU	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (feet)	Stack Gas Exit Velocity Range (feet per second)	Stack Gas Exit Temperature Range (°F)
12	15.6	1.25	58 - 197	490 - 712
13	15.6	1.25	58 - 197	490 - 712

Table 7 Key:

EU = Emission Unit Number

°F = Degree Fahrenheit

5. GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.

- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.
- J. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

6. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain “Fail-Safe Provisions,” which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

7. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Todd Wheeler by telephone at (413) 755-2297, or in writing at the letterhead address.

*This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.*

Marc Simpson
Permit Chief
Bureau of Air and Waste

Enclosure

ecc: MassDEP/Boston - Yi Tian
MassDEP/WERO – Peter Czapienski
George S. Lipka – Tetra Tech, Inc.