Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

**Draft**
**Prevention of Significant Deterioration Permit**
**Application No. NE-12-022**
**Transmittal No. X254064**

**Footprint Power Salem Harbor Development LP**
**Salem Harbor Station**
**24 Fort Avenue**
**Salem, MA 01970**

**692 MW Combustion Turbine Combined Cycle**
**Electric Generating Facility**

Pursuant to the provisions of the Clean Air Act (CAA) Chapter I, Part C (42 U.S.C. Section 7470, *et. seq*), the regulations found at the Code of Federal Regulations Title 40, Section 52.21, and the Agreement for Delegation of the Federal Prevention of Significant Deterioration Program, dated April 2011, by the United States Environmental Protection Agency, Region 1 (EPA) to the Massachusetts Department of Environmental Protection (MassDEP), MassDEP is issuing a Prevention of Significant Deterioration (PSD) Permit to Footprint Power Salem Harbor Development LP (the Permittee) concerning its proposed, new 692 Megawatt, combined cycle electric generating facility to be located at 24 Fort Avenue in Salem, MA (proposed Facility). This is the site of the present Salem Harbor Station electric generating facility.

The operation of the Facility shall be subject to the attached permit conditions and permit limitations. This PSD Permit is valid only for the equipment described herein and as submitted to MassDEP in the December 21, 2012 application for a PSD Permit under 40 CFR 52.21 and subsequent application submittal addenda. This PSD Permit shall be effective 30 days after the date of signature or, if no comments requesting a change in the Draft Permit are received, shall be effective immediately upon signature and shall remain in effect until it is surrendered to MassDEP. This Permit becomes invalid if the Permittee does not commence construction within 18 months after the date of signature. MassDEP may extend the 18 month period upon a satisfactory showing that an extension is justified. The Final PSD Permit does not relieve the Permittee from the obligation to comply with applicable state and federal air pollution control rules and regulations.



James E. Belsky
Permit Chief
Bureau of Waste Prevention

Date Stamped: September 9, 2013
Date Issued

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## I. PROJECT DESCRIPTION (For Informational Purposes)

Footprint Power Salem Harbor Development LP (the Permittee) proposes to construct and operate a nominal 630 Megawatt (MW) natural gas fired, quick start (capable of producing 300 MW within 10 minutes of startup) combined cycle electric generating facility (the proposed Facility) at Salem Harbor Station. With duct firing, the proposed Facility will be capable of generating an additional 62 MW, for a total of 692 MW. The existing Salem Harbor Station Boiler Units 1 and 2 were removed from service on or prior to December 31, 2011. Boiler Unit 3 and Boiler Unit 4 are required to cease operation, permanently shutdown, and be rendered inoperable no later than June 1, 2014.

The proposed Facility components include two combustion turbine generators with integrated duct burners, Heat Recovery Steam Generators, and Steam Turbine Generators, as well as an auxiliary boiler, an emergency engine/generator set, a fire pump, an aqueous $NH_3$ storage tank, an auxiliary cooling tower, and generator step-up (GSU) transformers.

Effective April 11, 2011, EPA and MassDEP entered into an "Agreement for Delegation of the Federal Prevention of Significant Deterioration (PSD) Program by the United States Environmental Protection Agency, Region 1 to the Massachusetts Department of Environmental Protection" (Delegation Agreement). Pursuant to the Delegation Agreement and to 40 CFR 52.21(u), EPA delegated full responsibility for implementing and enforcing the federal PSD regulations for sources located in the Commonwealth of Massachusetts to MassDEP.

Therefore, MassDEP is authorized to issue this Draft PSD Permit concurrently with a separate Proposed Plan Approval in accordance with 310 CMR 7.02, for the above described proposed Facility.

The Fact Sheet for the Draft PSD Permit is attached to this Draft PSD Permit and the Proposed Plan Approval. This Fact Sheet explains MassDEP's evaluation and determination of Best Available Control Technology (BACT) and air quality impacts. The PSD Permit and the 310 CMR 7.02 Comprehensive Plan Approval processes have the same review considerations for these items for this proposed Facility.

## II. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this PSD Permit:

**Table 1**

| EU# | Description | Design Capacity | Pollution Control Device (PCD) |
|---|---|---|---|
| EU1 | General Electric Model No. 107F Series 5 Combustion Turbine/Heat Recovery Steam Generator Including Duct Burner | 2,449 MMBtu/hr, HHV (energy input)<br><br>346 MW (electric power output) | Dry Low $NO_x$ Combustors (PCD1) Selective Catalytic Reduction (PCD2) CO Oxidation Catalyst (PCD3) |
| EU2 | General Electric Model No. 107F Series 5 Combustion Turbine/Heat Recovery Steam Generator Including Duct Burner | 2,449 MMBtu/hr, HHV (energy input)<br><br>346 MW (electric power output) | Dry Low $NO_x$ Combustors (PCD4) Selective Catalytic Reduction (PCD5) CO Oxidation Catalyst (PCD6) |
| EU3 | Cleaver Brooks Model No. CBND-80E-300D-65 or equivalent Auxiliary Boiler | 80 MMBtu/hr, HHV (energy input) | Ultra Low $NO_x$ Burners (PCD7) |
| EU4 | Cummins Model No. DQFAA or equivalent Emergency Engine/Generator | 7.4 MMBtu/hr, HHV (energy input)<br><br>1102 bhp (engine mechanical power output)<br><br>750 KW (generator electric power output) | None |
| EU5 | Cummins Model No. CFP9E-F50 or equivalent Fire Pump Engine | 2.7 MMBtu/hr, HHV (energy input)<br><br>371 bhp (engine mechanical power output) | None |

**Table 1 Key:**

EU# = Emission Unit Number

No. = Number
MMBtu/hr = fuel heat input, million British thermal units per hour
HHV = higher heating value basis
bhp = mechanical engine rating, brake horsepower
MW = generator net electrical output, Megawatts
KW = generator net electrical output, Kilowatts
$NO_x$ = Oxides of Nitrogen
CO = Carbon Monoxide

## III. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Facility is subject to, and the Permittee shall ensure that the Facility shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below, including footnotes:

**Table 2**

| EU# | Operational / Production Limit | Air Contaminant | Emission Limit |
|---|---|---|---|
| EU1, EU2 | Operation at ≥ MECL, (17) excluding start-ups and shutdowns<br><br>Fuel Heat Input Rate of each EU:<br>≤ 2,449 MMBtu per hour, HHV<br><br>Natural Gas shall be the only fuel of use.<br><br>Fuel Heat Input of each EU:<br>≤ 18,888,480 MMBtu, HHV per 12-month rolling period (9) | $NO_x$ (no duct firing) | ≤ 18.1 lb/hr (1, 2)<br>≤ 0.0074 lb/MMBtu (1)<br>≤ 2.0 ppmvd @ 15% $O_2$ (1)<br>≤ 0.051 lb/MW-hr (1, 2, 10, 14)<br><br>≤ 15.0 ppmvd @ 15% $O_2$<br>or<br>≤ 0.43 lb/MW-hr (13) |
| | | $NO_x$ (duct firing) | ≤ 18.1 lb/hr (1, 2)<br>≤ 0.0074 lb/MMBtu (1)<br>≤ 2.0 ppmvd @ 15% $O_2$ (1)<br>≤ 0.055 lb/MW-hr (1, 2, 15)<br><br>≤ 15.0 ppmvd @ 15% $O_2$<br>or<br>≤ 0.43 lb/MW-hr (13) |
| | | CO (no duct firing) | ≤ 11.0 lb/hr (1, 2)<br>≤ 0.0045 lb/MMBtu (1)<br>≤ 2.0 ppmvd @ 15% $O_2$ (1)<br>≤ 0.031 lb/MW-hr (1, 2, 10, 14) |
| | | CO (duct firing) | ≤ 11.0 lb/hr (1, 2)<br>≤ 0.0045 lb/MMBtu (1)<br>≤ 2.0 ppmvd @ 15% $O_2$ (1)<br>≤ 0.033 lb/MW-hr (1, 2, 15) |

| Table 2 | | | |
|---|---|---|---|
| **EU#** | **Operational / Production Limit** | **Air Contaminant** | **Emission Limit** |
| EU1, EU2 | Operation at ≥ MECL, [17] excluding start-ups and shutdowns<br><br>Fuel Heat Input Rate of each EU:<br>≤ 2,449 MMBtu per hour, HHV<br><br>Natural Gas shall be the only fuel of use.<br><br>Fuel Heat Input of each EU:<br>≤ 18,888,480 MMBtu, HHV per 12-month rolling period [9] | VOC (no duct firing), as Methane ($CH_4$) | ≤ 3.0 lb/hr [1, 2]<br>≤ 0.0013 lb/MMBtu [1]<br>≤ 1.0 ppmvd @ 15% $O_2$ [1]<br>≤ 0.009 lb/MW-hr [1, 2, 10, 14] |
| | | VOC (duct firing), as Methane ($CH_4$) | ≤ 5.4 lb/hr [1, 2]<br>≤ 0.0022 lb/MMBtu [1]<br>≤ 1.7 ppmvd @ 15% $O_2$ [1]<br>≤ 0.016 lb/MW-hr [1, 2, 15] |
| | | S in Fuel | ≤ 0.5 grains/100 scf |
| | | $SO_2$ (no duct firing) | ≤ 3.7 lb/hr [1, 2]<br>≤ 0.0015 lb/MMBtu [1]<br>≤ 0.3 ppmvd @ 15% $O_2$ [1]<br>≤ 0.010 lb/MW-hr [1, 2, 10, 14] |
| | | $SO_2$ (duct firing) | ≤ 3.7 lb/hr [1, 2]<br>≤ 0.0015 lb/MMBtu [1]<br>≤ 0.3 ppmvd @ 15% $O_2$ [1]<br>≤ 0.011 lb/MW-hr [1, 2, 15] |
| | | $H_2SO_4$ (no duct firing) | ≤ 2.3 lb/hr [1, 2]<br>≤ 0.0010 lb/MMBtu [1]<br>≤ 0.1 ppmvd @ 15% $O_2$ [1]<br>≤ 0. 007 lb/MW-hr [1, 2, 10, 14] |
| | | $H_2SO_4$ (duct firing) | ≤ 2.3 lb/hr [1, 2]<br>≤ 0.0010 lb/MMBtu [1]<br>≤ 0.1 ppmvd @ 15% $O_2$ [1]<br>≤ 0.008 lb/MW-hr [1, 2, 15] |
| | | $PM/PM_{10}/PM_{2.5}$ (no duct firing) | ≤ 15.5 lb/hr [1, 2, 8]<br>≤ 0.0088 lb/MMBtu [1, 8]<br>≤ 0.044 lb/MW-hr [1, 2, 8, 10, 14] |
| | | $PM/PM_{10}/PM_{2.5}$ (duct firing) | ≤ 15.5 lb/hr [1, 2, 8]<br>≤ 0.0067 lb/MMBtu [1, 8]<br>≤ 0.049 lb/MW-hr [1, 2, 8, 15] |
| | | $NH_3$ (no duct firing) | ≤ 6.6 lb/hr [1, 2]<br>≤ 0.0027 lb/MMBtu [1]<br>≤ 2.0 ppmvd @ 15% $O_2$ [1]<br>≤ 0.019 lb/MW-hr [1, 2, 10, 14] |
| | | $NH_3$ (duct firing) | ≤ 6.6 lb/hr [1, 2]<br>≤ 0.0027 lb/MMBtu [1]<br>≤ 2.0 ppmvd @ 15% $O_2$ [1]<br>≤ 0.020 lb/MW-hr [1, 2, 15] |
| | | Greenhouse Gases, $CO_{2e}$ | ≤ 825 lb/MW-hr [11]<br>≤ 895 lb/MW-hr [16] |

| Table 2 | | | |
|---|---|---|---|
| **EU#** | **Operational / Production Limit** | **Air Contaminant** | **Emission Limit** |
| EU1, EU2 | Operation at ≥ MECL, [17] excluding start-ups and shutdowns<br><br>Fuel Heat Input Rate of each EU:<br>≤ 2,449 MMBtu per hour, HHV<br><br>Natural Gas shall be the only fuel of use.<br><br>Fuel Heat Input of each EU:<br>≤ 18,888,480 MMBtu, HHV per 12-month rolling period [9] | Opacity | < 5%, except 5% to < 10% for ≤ 2 minutes during any one hour [5] |
| | Operation at < MECL during **start-ups** [3, 12]<br><br>Start-up duration:<br>≤ 45 minutes [3, 12]<br><br>Natural Gas shall be the only fuel of use. | $NO_x$ | ≤ 89 lb per event [4, 12] |
| | | CO | ≤ 285 lb per event [4, 12] |
| | | VOC, as Methane ($CH_4$) | ≤ 23 lb per event [4, 12] |
| | | S in Fuel | ≤ 0.5 grains/100 scf |
| | | $SO_2$ | ≤ 2.0 lb per event [4, 12] |
| | | $H_2SO_4$ | ≤ 1.3 lb per event [4, 12] |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 7.3 lb per event [4, 8, 12] |
| | | $NH_3$ | NA |
| | | Opacity | < 10% [5, 12] |
| | Operation at < MECL during **shutdowns** [3, 12]<br><br>Shutdown duration:<br>≤ 27 minutes [3, 12]<br><br>Natural Gas shall be the only fuel of use. | $NO_x$ | ≤ 10 lb per event [12] |
| | | CO | ≤ 151 lb per event [12] |
| | | VOC, as Methane ($CH_4$) | ≤ 29 lb per event [12] |
| | | S in Fuel | ≤ 0.5 grains/100 scf |
| | | $SO_2$ | ≤ 0.3 lb per event [12] |
| | | $H_2SO_4$ | ≤ 0.2 lb per event [12] |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 5.8 lb per event [8, 12] |
| | | $NH_3$ | NA |
| | | Opacity | < 10% [5, 12] |

| Table 2 | | | |
|---|---|---|---|
| **EU#** | **Operational / Production Limit** | **Air Contaminant** | **Emission Limit** |
| EU3 | Operation at ≥ MECL [18]<br><br>Fuel Heat Input Rate: ≤ 80 MMBtu per hour, HHV<br><br>Natural Gas shall be the only fuel of use.<br><br>Total Fuel Heat Input: ≤ 525,600 MMBtu, HHV per 12-month rolling period [9] | $NO_x$ | ≤ 0.88 lb/hr [1]<br>≤ 0.011 lb/MMBtu [1]<br>≤ 9.0 ppmvd @ 3% $O_2$ [1] |
| | | CO | ≤ 2.8 lb/hr [1]<br>≤ 0.035 lb/MMBtu [1]<br>≤ 47 ppmvd @ 3% $O_2$ [1] |
| | | VOC, as Methane ($CH_4$) | ≤ 0.4 lb/hr [1]<br>≤ 0.005 lb/MMBtu [1]<br>≤ 11.8 ppmvd @ 3% $O_2$ [1] |
| | | S in Fuel | ≤ 0.5 grains/100 scf |
| | | $SO_2$ | ≤ 0.12 lb/hr [1]<br>≤ 0.0015 lb/MMBtu [1]<br>≤ 0.9 ppmvd @ 3% $O_2$ [1] |
| | | $H_2SO_4$ | ≤ 0.009 lb/hr [1]<br>≤ 0.0001 lb/MMBtu [1]<br>≤ 0.05 ppmvd @ 3% $O_2$ [1] |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 0.4 lb/hr [1, 8]<br>≤ 0.005 lb/MMBtu [1, 8] |
| | | Greenhouse Gases, $CO_{2e}$ | ≤ 119.0 lb/MMBtu |
| | | Opacity | < 5%, except 5% to < 10% for ≤ 2 minutes during any one hour [5] |
| EU4 | ≤ 300 hours of operation per 12-month rolling period<br><br>Ultra Low Sulfur Diesel Fuel Oil shall be the only fuel of use. | $NO_x$ and VOC (NMHC as $CH_{1.8}$), Combined Total | ≤ 11.60 lb/hr [6]<br>≤ 4.8 gm/bhp-hr [6]<br>≤ 6.4 gm/KW-hr [6] |
| | | CO | ≤ 6.34 lb/hr [6]<br>≤ 2.6 gm/bhp-hr [6]<br>≤ 3.5 gm/KW-hr [6] |
| | | S in Fuel | ≤ 0.0015% by weight |
| | | $SO_2$ | ≤ 0.011 lb/hr [6] |
| | | $H_2SO_4$ | ≤ 0.0009 lb/hr [6] |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 0.36 lb/hr [6]<br>≤ 0.15 gm/bhp-hr [6]<br>≤ 0.2 gm/KW-hr [6] |
| | | Greenhouse Gases, $CO_{2e}$ | ≤ 162.85 lb/MMBtu |
| | | Opacity | < 5%, except 5% to < 10% for ≤ 2 minutes during any one hour |

| Table 2 | | | |
|---|---|---|---|
| **EU#** | **Operational / Production Limit** | **Air Contaminant** | **Emission Limit** |
| EU5 | ≤ 300 hours of operation per 12-month rolling period<br><br>Ultra Low Sulfur Diesel Fuel Oil shall be the only fuel of use. | $NO_x$ and VOC (NMHC as $CH_{1.8}$), Combined Total | ≤ 2.44 lb/hr (6)<br>≤ 3.0 gm/bhp-hr (6)<br>≤ 4.0 gm/KW-hr (6) |
| | | CO | ≤ 2.14 lb/hr (6)<br>≤ 2.6 gm/bhp-hr (6)<br>≤ 3.5 gm/KW-hr (6) |
| | | S in Fuel | ≤ 0.0015% by weight |
| | ≤ 300 hours of operation per 12-month rolling period<br><br>Ultra Low Sulfur Diesel Fuel Oil shall be the only fuel of use. | $SO_2$ | ≤ 0.004 lb/hr (6) |
| | | $H_2SO_4$ | ≤ 0.0003 lb/hr (6) |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 0.12 lb/hr (6)<br>≤ 0.15 gm/bhp-hr (6)<br>≤ 0.2 gm/KW-hr (6) |
| | | Greenhouse Gases, $CO_{2e}$ | ≤ 162.85 lb/MMBtu |
| | | Opacity | < 5%, except 5% to < 10% for ≤ 2 minutes during any one hour |
| EU1, EU2, EU3, EU4, EU5 | NA | Smoke | 310 CMR 7.06 (1)(a) |
| Facility-Wide | NA | $NO_x$ | ≤ 144.8 TPY (7) |
| | | CO | ≤ 106.4 TPY (7) |
| | | VOC | ≤ 28.0 TPY (7) |
| | | $SO_2$ | ≤ 28.8 TPY (7) |
| | | $PM/PM_{10}/PM_{2.5}$ | ≤ 109.4 TPY (7, 8) |
| | | $NH_3$ | ≤ 51.0 TPY (7) |
| | | $H_2SO_4$ | ≤ 18.8 TPY (7) |
| | | Pb | ≤ 0.00013 TPY (7) |
| | | Formaldehyde or Single HAP | ≤ 6.6 TPY (7) |
| | | Total HAPs | ≤ 13.1 TPY (7) |
| | | $CO_2$ | ≤ 2,277,333 TPY (7) |
| | | Greenhouse Gases, $CO_{2e}$ | ≤ 2,279,530 TPY (7) |

**Table 2 Notes:**

1. Emission limits are one hour block averages and do not apply during start-ups and shutdowns.

2. Emission rates are based on burning natural gas in any one combustion turbine at a maximum natural gas firing rate of 2,449 MMBtu/hr, HHV, at 90 ºF ambient temperature, 14.7 psia ambient pressure, and 60% ambient relative humidity (combustion turbine and duct burner combined). These constitute worst case emissions.

3. Start-ups include the time from flame-on in the combustor (after a period of downtime) until the minimum emissions compliance load (MECL) is reached. Shutdowns include the time from dropping below the MECL until flame-out.

4. Emission limits represent worst case emissions for cold start-ups. Emissions for warm and hot start-ups are

expected to be lower.

5. Opacity emission limits are one minute block averages.

6. Emission limits are one hour block averages and apply throughout the operating range, including during start-up and shutdown. Emissions are based on manufacturer's certifications using gaseous testing procedures in accordance with 40 CFR Part 89. VOC emissions are assumed to be equivalent to NMHC emissions. In accordance with the calculations found at 40 CFR 89.424 for No. 2 diesel fuel oil exhaust, NMHC mass emissions are calculated by assuming that each carbon atom is accompanied (using a weighted average) by 1.8 atoms of hydrogen (i.e. NMHC as $CH_{1.8}$), which corresponds to a gas density of 0.5746 kg/m$^3$.

7. Facility emissions include the two CTG/HRSG pairs with duct burners (EU1 and EU2), the auxiliary boiler (EU3), the emergency diesel engine/generator set (EU4), the fire pump engine (EU5), and the auxiliary cooling tower. Emissions, except CO emissions, for each of EU1 and EU2 are based on 8,040 hours of natural gas firing per 12 month rolling period at 100% load and 50ºF ambient temperature with no duct burner firing (2,130 MMBtu/hr, HHV) or evaporative cooling, and 720 hours of natural gas firing per 12 month rolling period at peak load (approximately 102% load) and 90ºF ambient temperature with 100% duct burner firing (2,449 MMBtu/hr, HHV) and evaporative cooling, and include start-up and shutdown emissions. Worst case CO emissions for each of EU1 and EU2 are based on a typical annual operating scenario of 3,272 hours at full load and different seasonal emission rates depending on heat input rates, ambient temperatures, and duct burner/evaporative cooling status, and 36, 166, and 4 cold, warm, and hot start-up/shutdown cycles, respectively. Emissions for EU3 are based on 6,570 hours of natural gas firing per 12 month rolling period at 100% load (80 MMBtu/hr, HHV). Emissions for each of EU4 and EU5 are based on restricted operation of 300 hours per unit, including maintenance and periodic readiness testing, while firing ULSD having a sulfur content that does not exceed 0.0015% by weight. Worst case $NO_x$ and VOC emissions for EU4 are assumed to be emitted at the EPA Tier 2 limit of 6.4 gm/KW-hr and the EPA Tier 1 limit of 1.3 gm/KW-hr, respectively. Worst case $NO_x$ and VOC emissions for EU5 are assumed to be emitted at the EPA Tier 3 limit of 4.0 gm/KW-hr and the EPA Tier 1 limit of 1.3 gm/KW-hr, respectively. EPA Tier 1, 2, and 3 emission standards are published in the United States Code of Federal Regulations, Title 40, Part 89 [40 CFR Part 89]. There are no $NH_3$ emissions from the auxiliary boiler, emergency engine/generator set, fire pump engine, and auxiliary cooling tower. The auxiliary cooling tower contributes to $PM/PM_{10}/PM_{2.5}$ emissions only based on 8,760 hours of operation per 12 month rolling period.

8. Emission limit is for the sum of filterable and condensable particulates, including sulfates.

9. Maximum fuel (natural gas only) heat input for each CTG/HRSG with duct burner is based on 8,040 hours of operation per 12 month rolling period at 100% load and 50ºF ambient temperature with no duct burner firing (2,130 MMBtu/hr, HHV), and 720 hours of operation per 12 month rolling period at peak load (approximately 102% load) and 90ºF ambient temperature with 100% duct burner firing (2,449 MMBtu/hr, HHV). Maximum total fuel heat input for the auxiliary boiler is based on 6,570 hours of operation per 12 month rolling period at 100% load (80 MMBtu/hr, HHV).

10. Emission limit is based on full (base) load (100% load) ISO corrected (59 ºF, 14.7 psia, 60% humidity) heat rate of 6,940 Btu, higher heating value, per KW-hr net electrical output to the grid.

11. Emission limit is based on full (base) load (100% load) without duct firing ISO corrected (59 ºF, 14.7 psia, 60% humidity) heat rate of 6,940 Btu, higher heating value, per KW-hr net electrical output to the grid and the EPA 40 CFR Part 75 default $CO_2$ emission factor of 118.9 lb/MMBtu. Compliance shall be determined during the initial emissions compliance test performed within 180 days after initial firing of the EU. If the EU does not meet this limit, then the Permittee shall remedy the EU's failure to meet this limit, and shall not combust fuel in the EU until the Permittee has shown compliance with this limit during a subsequent emissions compliance test.

12. Start-up and shutdown emission limits and duration are subject to revision by MassDEP based on review of compliance testing (stack testing) data and CEMs/COMs data generated from the first year of commercial operation.

13. $NO_x$ emission limits are from 40 CFR Part 60 Subpart KKKK. Compliance with the more stringent LAER NOx emission limits of this PSD Permit shall be deemed compliance with the NOx limits from 40 CFR Part 60

Subpart KKKK.

14. Limit is based on an initial compliance test at full (base) (100% load) with no duct firing. Compliance demonstration shall be made by emissions compliance testing within 180 days after initial firing of each EU.

15. Limit is based on an initial compliance test at peak load (approximately 102% load) with 100% duct firing. Compliance demonstration shall be made by emissions compliance testing within 180 days after initial firing of each EU.

16. Emission limit is effective 365 days after initial firing of the EU and is based on a 365 day rolling average, net electrical output to the grid and the EPA 40 CFR Part 75 default $CO_2$ emission factor of 118.9 lb/MMBtu. A new 365 day rolling average emission rate shall be calculated each day by calculating the arithmetic average of all hourly emission rates for the preceding 365 days, excluding the hours in which the EU was not operating. Hourly $CO_2$ mass emissions (lb) shall be calculated by obtaining monitored and recorded actual hourly heat input (MMBtu) and multiplying by the EPA 40 CFR Part 75 default $CO_2$ emission factor of 118.9 lb/MMBtu.

17. Minimum Emissions Compliance Load (MECL) for EU1 and EU2 shall be a function of ambient temperature and other system parameters.

18. MECL for EU3 shall be determined during the initial emissions compliance testing to be performed within 180 days after initial firing of EU3.

**Table 2 Key:**

EU# = Emission Unit Number
No. = Number
$NO_x$ = Nitrogen Oxides
CO = Carbon Monoxide
VOC = Volatile Organic Compounds
NMHC = Non-Methane Hydrocarbons
S = Sulfur
$SO_2$ = Sulfur Dioxide
PM = Total Particulate Matter
$PM_{10}$ = 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
$NH_3$ = Ammonia
$H_2SO_4$ = Sulfuric Acid
Pb = Lead
HAP = Hazardous Air Pollutants
$CO_2$ = Carbon Dioxide
$CO_{2e}$ = Greenhouse Gases expressed as Carbon Dioxide equivalent and calculated by multiplying each of the six greenhouse gases (Carbon Dioxide, Nitrous Oxide, methane, Hydrofluorocarbons, Perfluorocarbons, Sulfur Hexafluoride) mass amount of emissions, in tons per year, by the gas's associated global warming potential published at Table A-1 of 40 CFR Part 98, Subpart A and summing the six resultant values.
lb = pounds
lb/hr = pounds per hour
MMBtu = million British thermal units, higher heating value (HHV) basis
lb/MMBtu = pounds per million British thermal units
ppmvd @ 15% $O_2$ = parts per million by volume, dry basis, corrected to 15 percent oxygen
ppmvd @ 3% $O_2$ = parts per million by volume, dry basis, corrected to 3 percent oxygen
scf = standard cubic feet
$kg/m^3$ = kilograms per cubic meter
% = percent
gm/KW-hr = grams per Kilowatt-hour
lb/MW-hr = pounds per Megawatt-hour net electrical output to the grid
Btu/KW-hr = British thermal units per Kilowatt-hour net electrical output to the grid

TPY = tons per 12-month rolling period
°F = degrees Fahrenheit
psia = pounds per square inch, absolute
EPA = Unites States Environmental Protection Agency
CFR = Code of Federal Regulations
ISO = International Organization for Standardization
CTG/HRSG = combustion turbine generator/heat recovery steam generator
ULSD = Ultra Low Sulfur Diesel Fuel Oil containing a maximum of 0.0015 weight percent sulfur
CEMS = Continuous Emission Monitoring Systems
COMS = Continuous Opacity Monitoring Systems
HHV = higher heating value basis
MECL = minimum emissions compliance load
< = less than
> = greater than
≤ = less than or equal to
≥ = greater than or equal to
NA = Not Applicable

## IV. MONITORING AND TESTING REQUIREMENTS

| Table 3 | |
|---|---|
| **EU#** | **Monitoring and Testing Requirements** |
| EU1, EU2, EU3 | 1. The Permittee shall ensure that the proposed Facility is constructed to accommodate the emissions (compliance) testing requirements as stipulated in 40 CFR Part 60 Appendix A. The two outlet sampling ports (90 degrees apart from each other) for each emission unit must be located at a minimum of one duct diameter upstream and two duct diameters downstream of any flow disturbance. In addition, the Permittee shall facilitate access to the sampling ports and testing equipment by constructing platforms, ladders, or other necessary equipment. |
| | 2. The Permittee shall ensure that compliance testing of the proposed Facility is completed within 180 days after initial firing of each EU to demonstrate compliance with the emission limits specified in Table 2 of this PSD Permit. All emissions testing shall be conducted in accordance with MassDEP's "Guidelines for Source Emissions Testing" and in accordance with EPA reference test methods as specified in 40 CFR Part 60, Appendix A, 40 CFR Part 60 Subpart KKKK, 40 CFR Parts 72 and 75, or by another method which has been approved in writing by MassDEP. The Permittee shall schedule the compliance testing such that MassDEP personnel can witness it. |

| Table 3 | |
|---|---|
| **EU#** | **Monitoring and Testing Requirements** |
| EU1, EU2, EU3 | 3. The Permittee shall conduct initial compliance tests of the proposed Facility to document actual emissions of EU1, EU2, and EU3 so as to determine their compliance status versus the emission limits (in lb/hr, lb/MMBtu, ppmvd, and lb/MW-hr, as applicable) in Table 2 for the pollutants listed below.<br><br>Testing for these pollutants for EU1 and EU2 as specified below shall be conducted at four (4) load conditions that cover the entire normal operating range: the minimum emissions compliance load (MECL); 75 percent load; 100 percent (base) load without duct firing; and peak (approximately 102 percent load) with 100 percent duct firing.<br><br>$NO_x$, CO, VOC, $SO_2$, PM, $PM_{10}$, $PM_{2.5}$, $NH_3$, $CO_2$, $H_2SO_4$, opacity<br><br>Testing for these pollutants for EU3 as specified below shall be conducted at four (4) load conditions that cover the entire normal operating range: the MECL (to be determined during the compliance test); 50 percent load; 75 percent load; and 100 percent load.<br><br>$NO_x$, CO, VOC, $SO_2$, PM, $PM_{10}$, $PM_{2.5}$, $H_2SO_4$, opacity |
| | 4. The above referenced emissions testing shall include testing to develop a correlation between CO and VOC emissions for EU1 and EU2; parametric monitoring testing for PM, $PM_{10}$, and $PM_{2.5}$ emissions for EU1 and EU2; and $NO_x$/CO emissions optimization testing for EU3. |
| | 5. The Permittee shall conduct $NO_x$/CO optimization on, and tune, EU3 according to procedures contained in EPA 340/1-83-023 "Combustion Efficiency Optimization Manual for Operators of Oil and Gas Fired Boilers" with the goal of reducing air pollutant emissions to optimum levels. In addition, the Permittee shall tune EU3 in accordance with said procedures and inspect and maintain EU3 per manufacturer recommendations as well as test EU3 for efficient operation on an annual basis. The Permittee shall allow MassDEP personnel to witness tuning of EU3 if and when requested by MassDEP. |
| | 6. The Permittee shall install, calibrate, test, and operate a Data Acquisition and Handling System(s) (DAHS), CEMS, and COMS serving EU1 and EU2 to measure and record the following emissions:<br><br>a) $O_2$; b) $NO_x$; c) CO; e) $NH_3$; d) opacity.<br><br>The Permittee shall install, calibrate, test, and operate a DAHS and COMS to measure and record opacity on EU3. |
| | 7. The Permittee shall ensure that all emission monitors and recorders serving EU1, EU2 and EU3 comply with MassDEP approved performance and location specifications, and conform with the EPA monitoring specifications at 40 CFR 60.13 and 40 CFR Part 60 Appendices B and F, and all applicable portions of 40 CFR Parts 72 and 75, and 310 CMR 7.32, as applicable. |
| | 8. The Permittee shall ensure that the subject CEMS and COMS are equipped with properly operated and properly maintained audible and visible alarms to activate whenever emissions from the Facility exceed the limits established in Table 2 of this PSD Permit. |

| Table 3 | |
|---|---|
| **EU#** | **Monitoring and Testing Requirements** |
| EU1, EU2, EU3 | 9. The Permittee shall operate each CEMS and/or COMS serving EU1, EU2 and EU3 at all times except for periods of CEMS and COMS calibration checks, zero and span adjustments, preventative maintenance, and periods of unavoidable malfunction. |
| | 10. The Permittee shall obtain and record emissions data from each CEMS and/or COMS serving EU1, EU2 and EU3 for at least seventy (75) percent of each emission unit's operating hours per day, for at least seventy five (75) percent of each emission unit's operating hours per month, and for at least ninety five (95) percent of each emission unit's operating hours per quarter, except for periods of CEMS and COMS calibration checks, zero and span adjustments, and preventive maintenance. |
| | 11. All periods of excess emissions occurring at the Facility, even if attributable to an emergency/malfunction, start-up/shutdown or equipment cleaning, shall be quantified and included by the Permittee in the compilation of emissions and determination of compliance with the emission limits as stated in Table 2 of this PSD Permit. (**"Excess Emissions"** are defined as emissions which are in excess of the emission limits as stated in Table 2). An exceedance of emission limits in Table 2 due to an emergency or malfunction shall not be deemed a federally permitted release as that term is used in 42 U.S.C. Section 9601(10). |
| | 12. The Permittee shall use and maintain its CEMS and/or COMS serving EU1, EU2 and EU3 as "direct-compliance" monitors to measure $NO_x$, CO, $NH_3$, $O_2$, and/or opacity. "Direct-compliance" monitors generate data that legally documents the compliance status of a source. |
| | 13. The Permittee shall develop a quality assurance/quality control (QA/QC) program for the long-term operation of the CEMS and/or COMS serving EU1, EU2 and EU3 so as to conform with 40 CFR Part 60 Appendices B and F, all applicable portions of 40 CFR Parts 72 and 75, and 310 CMR 7.32. |
| | 14. The Permittee shall install, operate, and maintain a fuel metering device and recorder for EU1, EU2 and EU3 that records natural gas consumption in standard cubic feet (scf). |
| | 15. The Permittee shall monitor fuel heat input rate (MMBtu/hr, HHV) and total fuel heat input (MMBtu) for EU1, EU2, and EU3. |
| | 16. The Permittee shall monitor each date and daily hours of operation and total hours of operation for EU1, EU2, and EU3 per month and twelve month rolling period. |
| EU1, EU2 | 17. The Permittee shall ensure that initial compliance tests of the proposed Facility are conducted for "hot start", "warm start", "cold start", and shutdown periods as defined in the Permittee's Application for EU1 and EU2. These compliance tests shall represent periods of operation below the MECL for EU1 and EU2. Emission data generated from this testing shall be made available for review by MassDEP prior to determining and approving the maximum allowable emission limits for all pollutants listed in Table 2 (lb per event) and opacity limits, for these periods of time. MassDEP will incorporate these emission limits into a Final PSD Permit for the as-built Facility upon issuance and such limits shall be considered enforceable. |
| | 18. Whenever either combustion turbine is operating below the MECL for start-up and shutdown, the VOC emissions shall be considered as occurring at the rate determined in the most recent compliance test for start-up/shutdown conditions. |

| Table 3 | |
|---|---|
| **EU#** | **Monitoring and Testing Requirements** |
| EU1, EU2 | 19. If either combustion turbine is operating at the MECL or greater, and if its CO emissions are below the CO emission limit at the given combustion turbine operating conditions, its VOC emissions shall be considered as meeting the emission limits contained in this PSD Permit, subject to correlation as contained in Condition 20 below. |
| | 20. If either combustion turbine is operating at the MECL or greater, and if its CO emissions are above the CO emission limit at the given combustion turbine operating conditions, its VOC emissions shall be considered as occurring at a rate determined by the equation: $VOC_{actual} = VOC_{limit} \times (CO_{actual}/CO_{limit})$, pending the outcome of compliance testing, after which a VOC/CO correlation curve for each combustion turbine will be developed and used for VOC compliance determination purposes. |
| | 21. The Permittee shall comply with all applicable monitoring requirements of 40 CFR Part 60 Subpart KKKK. |
| | 22. The Permittee shall monitor the natural gas consumption of EU1 and EU2 in accordance with 40 CFR Part 60 Subpart KKKK utilizing a continuous monitoring system accurate to $\pm$ 5 percent, and as approved by MassDEP. |
| | 23. The Permittee shall monitor the sulfur content of the natural gas combusted by EU1 and EU2 in accordance with 40 CFR Part 60 Subpart KKKK, or pursuant to any alternative fuel monitoring schedule issued in accordance with 40 CFR Part 60 Subpart KKKK. |
| | 24. The Permittee shall install and operate continuous monitors fitted with alarms to monitor continuously the temperatures at the inlets to the SCR and CO catalysts serving EU1 and EU2. In addition, the Permittee shall monitor the combustion turbine inlet and ambient temperatures for EU1 and EU2. |
| | 25. The Permittee shall install and operate high and low level audible alarm monitors on the $NH_3$ storage tank and shall ensure that they are properly maintained. |
| | 26. The Permittee shall monitor the load, start-up and shutdown duration, and mass emissions (lb/event) during start-up and shutdown periods of EU1 and EU2. |
| | 27. The Permittee shall monitor the operation of EU1 and EU2, in accordance with the surrogate methodology or parametric monitoring developed during the most recent compliance test concerning PM, $PM_{10}$, and $PM_{2.5}$ emission limits. |
| | 28. The Permittee shall monitor the $SO_2$ and $CO_2$ emissions in accordance with 40 CFR Part 75. |
| | 29. The Permittee shall monitor the Greenhouse Gas emission rate utilizing the calculation procedures in 40 CFR Part 98 Subpart A, Table A-1. |
| | 30. The Permittee shall continuously monitor the net electrical output to the grid of the proposed Facility. |
| EU3 | 31. The Permittee shall comply with all applicable monitoring requirements of 40 CFR Part 60 Subpart Dc. |
| EU4, EU5 | 32. The Permittee shall comply with all applicable emissions standards, operating restrictions, and monitoring requirements of 40 CFR Part 60 Subpart IIII. |
| | 33. The Permittee shall equip, operate, and maintain non-resettable hour meters on the emergency generator and fire pump engines in order to monitor the hours of operation of each emission unit. |

| Table 3 | |
|---|---|
| **EU#** | **Monitoring and Testing Requirements** |
| EU4, EU5 | 34. The Permittee shall monitor the quantity and sulfur content of ULSD fuel oil burned in EU4 and EU5. |
| Facility-Wide | 35. If and when MassDEP requires it, the Permittee shall conduct compliance testing in accordance with EPA Reference Test Methods and 310 CMR 7.13. |

**Table 3 Key:**
EU# = Emission Unit Number
EPA = United States Environmental Protection Agency
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations
DAHS = Data Acquisition and Handling System
CEMS = Continuous Emission Monitoring System
COMS = Continuous Opacity Monitoring System
SCR = Selective Catalytic Reduction
QA/QC = Quality Assurance/Quality Control
$O_2$ = Oxygen
$NO_x$ = Nitrogen Oxides
CO = Carbon Monoxide
$NH_3$ = Ammonia
PM = Particulate Matter
$PM_{10}$ = Particulate Matter less than or equal to 10 microns in size
$PM_{2.5}$ = Particulate Matter less than or equal to 2.5 microns in size
VOC = Volatile Organic Compounds
$CO_2$ = Carbon Dioxide
$SO_2$ = Sulfur Dioxide
$H_2SO_4$ = Sulfuric Acid
lb = pounds
lb/hr = pounds per hour
lb/MMBtu = pounds per million British thermal units
ppmvd = parts per million by volume, dry basis
lb/MW-hr = pounds per MW-hr net electrical output to the grid
scf = standard cubic feet
MMBtu/hr = million British thermal units per hour
MMBtu = million British thermal units
HHV = higher heating value basis
MECL = Minimum Emissions Compliance Load
ULSD = Ultra Low Sulfur Diesel Fuel Oil containing a maximum of 0.0015weight percent sulfur

## V. RECORD KEEPING REQUIREMENTS

| Table 4 | |
|---|---|
| **EU#** | **Record Keeping Requirements** |
| EU1, EU2, EU3 | 1. The Permittee shall maintain records of each emission unit's hourly fuel heat input rate (MMBtu/hr, HHV), total fuel heat input (MMBtu), and natural gas consumption (scf) per month and twelve month rolling period basis. |
| | 2. The Permittee shall maintain records of each date and daily hours of operation and total hours of operation of each EU per month and twelve month rolling period. |

| Table 4 | |
|---|---|
| **EU#** | **Record Keeping Requirements** |
| EU1, EU2, EU3 | 3. The Permittee shall maintain on-site permanent records of output from all continuous monitors (including CEMS and COMS) for flue gas emissions and natural gas consumption (scf). |
| | 4. The Permittee shall maintain a log to record problems, upsets or failures associated with the subject emission control systems, DAHS, CEMS, and/or COMS serving EU1, EU2, and EU3, and the $NH_3$ handling system serving EU1 and EU2. |
| EU1, EU2 | 5. The Permittee shall continuously estimate and record VOC emissions on the DAHS using the CO/VOC correlation curve developed from the most recent compliance test. |
| | 6. The Permittee shall continuously estimate and record PM, $PM_{10}$, and $PM_{2.5}$ emissions on the DAHS using the surrogate methodology or parametric monitoring derived from the most recent compliance test. |
| | 7. The Permittee shall maintain records of the load, start-up and shutdown duration, and mass emissions (lb/event) during start-up and shutdown periods of EU1 and EU2. |
| | 8. The Permittee shall maintain records of net electrical output to the grid from the Facility on a daily basis. |
| | 9. The Permittee shall comply with all applicable record keeping requirements of 40 CFR Part 60 Subpart KKKK. |
| | 10. The Permittee shall maintain records of the sulfur content of the natural gas combusted by EU1 and EU2 at the frequency required pursuant to 40 CFR Part 60 Subpart KKKK, or pursuant to any alternative fuel monitoring schedule issued in accordance with 40 CFR Part 60 Subpart KKKK. |
| | 11 The Permittee shall record $SO_2$ and $CO_2$ emissions from EU1 and EU2 in accordance with 40 CFR Part 75. |
| | 12. The Permittee shall record the Greenhouse Gas emission rate of EU1 and EU2 on a daily basis utilizing the calculation procedures in 40 CFR Part 98 Subpart A, Table A-1. |
| | 13. The Permittee shall maintain continuous records of SCR and CO control system inlet temperatures, combustion turbine inlet temperatures and ambient temperatures. |
| | 14. The Permittee shall maintain the SOMP for the $NH_3$ handling system serving EU1 and EU2 in a convenient location and make them readily available to all employees. |
| EU3 | 15. The Permittee shall comply with all applicable record keeping requirements of 40 CFR Part 60 Subpart Dc. |
| | 16. The Permittee shall record and post conspicuously on or near EU3 the results of annual inspections, maintenance, and testing and the date(s) upon which it was performed. |
| EU4, EU5 | 17. The Permittee shall comply with all applicable record keeping requirements of 40 CFR Part 60 Subpart IIII. |
| | 18. The Permittee shall maintain a record of the quantity of ULSD fuel oil combusted in, and the total hours of operation of, EU4 and EU5 per month and per 12-month rolling period. |
| | 19. The Permittee shall maintain a record of the sulfur content of each ULSD fuel oil delivery at the Facility. |
| | 20. The Applicant shall maintain records concerning engine certifications as described in 310 CMR 7.26 (42)(e)1. at the Facility. |

| Table 4 | |
|---|---|
| **EU#** | **Record Keeping Requirements** |
| Facility-Wide | 21. A record keeping system for the Facility shall be established and maintained up-to-date by the Permittee such that year-to-date information is readily available. Record keeping shall, at a minimum, include:<br><br>a) Compliance records sufficient to document actual emissions from the Facility in order to determine compliance with what is allowed by this PSD Permit. Such records shall include, but are not limited to, fuel usage rates, emissions test results, monitoring equipment data and reports;<br><br>b) Maintenance: A record of routine maintenance activities performed on the subject emission units' control equipment and monitoring equipment at the Facility including, at a minimum, the type or a description of the maintenance performed and the date(s) and time(s) the work was commenced and completed; and,<br><br>c) Malfunctions: A record of all malfunctions on the subject emission units' control and monitoring equipment at the Facility including, at a minimum: the date and time the malfunction occurred; a description of the malfunction and the corrective action taken; the date and time corrective actions were initiated; and the date and time corrective actions were completed. |
| | 22. The Permittee shall maintain all records required by 310 CMR 7.32 and 40 CFR Part 98 (Mandatory Greenhouse Gas Emissions Reporting) at the Facility. |
| | 23. The Permittee shall maintain monthly records to demonstrate the Facility's compliance status regarding the Facility-Wide emission limits (TPY) specified in Table 2. Records shall include actual emissions for the month as well as for the previous 11 months. (The MassDEP approved format can be downloaded at http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping in Microsoft Excel format.) |
| | 24. The Permittee shall maintain a copy of this PSD Permit, underlying Application, and the most up-to-date Standard SOMP for each emission unit and PCD approved herein on-site. |
| | 25. The Permittee shall maintain records of monitoring and testing as required by Table 3. All records required by this PSD Permit shall be kept on site for five (5) years and made available for inspection by MassDEP or EPA upon request. |

**Table 4 Key:**

EU# = Emission Unit Number
PCD = Pollution Control Device
SOMP = Standard Operating and Maintenance Procedures
EPA = United States Environmental Protection Agency
DAHS = Data Acquisition and Handling System
CEMS = Continuous Emission Monitoring System
COMS = Continuous Opacity Monitoring System
SCR = Selective Catalytic Reduction
CFR = Code of federal Regulations
CMR = Code of Massachusetts Regulations

CO = Carbon Monoxide
$NH_3$ = Ammonia
PM = Particulate Matter
$PM_{10}$ = Particulate Matter less than or equal to 10 microns in size
$PM_{2.5}$ = Particulate Matter less than or equal to 2.5 microns in size
VOC = Volatile Organic Compounds
$SO_2$ = Sulfur Dioxide
$CO_2$ = Carbon Monoxide
ULSD = Ultra Low Sulfur Diesel Fuel Oil containing a maximum of 0.0015weight percent sulfur
lb = pounds
scf = standard cubic feet
MMBtu/hr = million British thermal units per hour
MMBtu = million British thermal units
HHV = higher heating value basis
TPY = tons per 12-month rolling period

## VI. REPORTING REQUIREMENTS

**Table 5**

| EU# | Reporting Requirements |
|---|---|
| EU1, EU2, EU3 | 1. The Permittee must obtain written MassDEP approval of an emissions test protocol prior to initial compliance emissions testing of EU1, EU2 and EU3 at the Facility. The protocol shall include a detailed description of sampling port locations, sampling equipment, sampling and analytical procedures, and operating conditions for any such emissions testing. In addition, the protocol shall include procedures for: a) the required CO and VOC correlation for EU1 and EU2; b) a parametric monitoring strategy to ensure continuous monitoring of PM, $PM_{10}$, and $PM_{2.5}$ emission from EU1 and EU2; and c) procedures for the required $NO_x$ and CO optimization for EU3. The protocol must be submitted to MassDEP at least 30 days prior to commencement of testing. |
| | 2. The Permittee shall submit a final emissions test results report to MassDEP within 45 days after completion of the initial compliance emissions testing program. |
| | 3. A QA/QC program plan for the CEMS and/or COMS serving EU1, EU2 and EU3 must be submitted, in writing, at least 30 days prior to commencement of commercial operation of the subject emission units. MassDEP must approve the QA/QC program prior to its implementation. Subsequent changes to the QA/QC program plan shall be submitted to MassDEP for MassDEP approval prior to their implementation. |

| Table 5 | |
|---|---|
| **EU#** | **Reporting Requirements** |
| EU1, EU2, EU3 | 4. The Permittee shall submit a quarterly Excess Emissions Report to MassDEP by the thirtieth (30th) day of April, July, October, and January covering the previous calendar periods of January through March, April through June, July through September, and October through December, respectively. The report shall contain at least the following information:<br><br>a) The Facility CEMS and COMS excess emissions data, in a format acceptable to MassDEP.<br><br>b) For each period of all excess emissions or excursions from allowable operating conditions for the emission unit(s), the Permittee shall list the duration, cause, the response taken, and the amount of excess emissions. Periods of excess emissions shall include periods of start-up, shutdown, malfunction, emergency, equipment cleaning, and upsets or failures associated with the emission control system or CEMS or COMS. (**"Malfunction"** means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. **"Emergency"** means any situation arising from sudden and reasonably unforeseeable events beyond the control of this source, including acts of God, which situation would require immediate corrective action to restore normal operation, and that causes the source to exceed a technology based limitation under the PSD Permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operations, operator error or decision to keep operating despite knowledge of these things.)<br><br>c) A tabulation of periods of operation (including dispatch) of each emission unit and total hours of operation of each emission unit during the calendar quarter. |
| EU1, EU2 | 5. After completion of the initial compliance emissions testing program, the Permittee shall submit information for MassDEP review that documents the actual emissions impacts generated by EU1 and EU2 during start-up and shutdown periods versus any applicable NAAQS and SILs or the AALs and TELs for air toxics. This information shall be submitted to MassDEP as part of the final emissions test results report. |
| | 6. The Permittee shall submit to MassDEP, in accordance with the provisions of Regulation 310 CMR 7.02(5)(c), plans and specifications for the main exhaust stack, CTGs, the SCR control system (including the $NH_3$ handling and storage system), the CO catalyst control system, and the CEMS, COMS, and DAHS once the specific information has been determined, but in any case not later than 30 days prior to commencement of construction/installation of each component of each subject emission unit. |
| | 7. The Permittee shall comply with all applicable reporting requirements of 40 CFR Part 60 Subpart KKKK. |
| | 8. The Permittee shall submit to MassDEP a Phase II Acid Rain Permit Application at least 24 months prior to commencement of commercial operation of any subject emission unit. |

| Table 5 | |
|---|---|
| **EU#** | **Reporting Requirements** |
| EU1, EU2 | 9. The Permittee shall submit to MassDEP a Clean Air Interstate Rule (CAIR) Permit Application in accordance with 310 CMR 7.32 at least 18 months prior to commencement of commercial operation of any subject emission unit. |
| EU3 | 10. The Permittee shall submit to MassDEP, in accordance with the provisions of Regulation 310 CMR 7.02(5)(c), the plans and specifications for the auxiliary boiler, and its Ultra Low NOx burner, exhaust stack, COMS and DAHS once the specific information has been determined, but in any case not later than 30 days prior to commencement of construction/installation of each component of EU3. |
| | 11. The Permittee shall comply with all applicable reporting requirements of 40 CFR Part 60 Subpart Dc. |
| EU4, EU5 | 12. The Permittee shall submit to MassDEP a certification for each engine in accordance with 310 CMR 7.26 (42)(e)1 not later than 30 days prior to commencement of its construction/installation. |
| | 13. The Permittee shall submit to MassDEP, in accordance with the provisions of Regulation 310 CMR 7.02(5)(c), the plans and specifications for the emergency engine/generator set, fire pump engine, and associated exhaust stacks once the specific information has been determined, but in any case not later than 30 days prior to commencement of construction/installation of each component of the subject emission unit. |
| | 14. The Permittee shall comply with all applicable reporting requirements of 40 CFR Part 60 Subpart IIII. |
| Facility-Wide | 15. The Permittee shall submit, in writing, the following notifications to MassDEP within fourteen (14) days after each occurrence:<br>a) date of commencement of construction of each subject emission unit at the Facility;<br>b) date when construction has been completed of each subject emission unit at the Facility;<br>c) date of initial firing of each subject emission unit at the Facility;<br>d) date when each subject emission unit at the Facility is either ready for commercial operation or has commenced commercial operation. |
| | 16. The Permittee shall submit to MassDEP an Operating Permit Application in accordance with 310 CMR 7.00: Appendix C no later than 12 months after commencement of commercial operation of the Facility. |
| | 17. If the Facility is subject to 40 CFR Part 68, due to the presence of a regulated substance above a threshold quantity in a process, the Permittee must submit a Risk Management Plan no later than the date the regulated substance is first present above a threshold quantity. |
| | 18. The Permittee shall report to EPA in accordance with 40 CFR Part 75. |
| | 19. The Permittee shall comply with all applicable reporting requirements of 310 CMR 7.32 and 40 CFR Part 98 (Mandatory Greenhouse Gas Emissions Reporting). |
| | 20. The Permittee must notify MassDEP by telephone or fax or e-mail [nero.air@massmail.state.ma.us] as soon as possible, but in any case no later than three (3) business days after the occurrence of any upsets or malfunctions to the Facility equipment, air pollution control equipment, or monitoring equipment which result in an excess emission to the air and/or a condition of air pollution. |

| Table 5 | |
|---|---|
| **EU#** | **Reporting Requirements** |
| Facility-Wide | 21. The Permittee shall notify MassDEP immediately by telephone or fax or e-mail [nero.air@massmail.state.ma.us] and within three (3) working days, in writing, of any upset or malfunction to the $NH_3$ handling or delivery systems that resulted in a release or threat of release of $NH_3$ to the ambient air at the Facility. In addition, the Permittee must comply with all notification procedures required under M.G.L. c. 21 E for any release or threat of release of $NH_3$. |
| | 22. The Permittee shall submit a semi-annual report to MassDEP by July 30 and January 30 of each year to demonstrate the Facility's compliance status regarding the Facility-Wide emission limits (TPY) specified in Table 2. Reports shall include actual emissions for the previous 12 months. (The MassDEP approved format can be downloaded at http://www.mass.gov/eea/agencies/massdep/air/approvals/limited-emissions-record-keeping-and-reporting.html#WorkbookforReportingOn-SiteRecordKeeping in Microsoft Excel format.) |
| | 23. The Permittee shall submit to MassDEP a SOMP for the subject emission units and associated control and monitoring/recording systems at the Facility no later than 30 days prior to commencement of commercial operation of the unit. Thereafter, the Permittee shall submit updated versions of the SOMP to MassDEP no later than thirty (30) days prior to the occurrence of a significant change. MassDEP must approve of significant changes to the SOMP prior to the SOMP becoming effective. The updated SOMP shall supersede prior versions of the SOMP. |
| | 24. The Permittee shall submit to MassDEP all information required by this PSD Permit 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). |
| | 25. All notifications and reporting to MassDEP required by this PSD Permit shall be made to the attention of:<br><br>Department of Environmental Protection/Bureau of Waste Prevention<br>205B Lowell Street<br>Wilmington, Massachusetts 01887<br>Attn: Permit Chief<br>Phone: (978) 694-3200<br>Fax: (978) 694-3499<br>E-Mail: nero.air@massmail.state.ma.us |
| | 26. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this PSD Permit within thirty (30) days from MassDEP's request. |
| | 27. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least thirty (30) days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements. |
| | 28. The Permittee shall submit to MassDEP a final stack emission test results report, within forty five (45) days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements. |

**Table 5 Key:**

EU# = Emission Unit Number
EPA = United States Environmental Protection Agency
CEMS = Continuous Emission Monitoring System
COMS = Continuous Opacity Monitoring System
DAHS = Data Acquisition and Handling System
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Regulations
M.G.L. = Massachusetts General Laws
SOMP = Standard Operating and Maintenance Procedures
QA/QC = Quality Assurance/Quality Control
CTG = Combustion Turbine Generator
SCR = Selective Catalytic Reduction
TPY = tons per 12 month rolling period
$NO_x$ = Oxides of Nitrogen
CO = Carbon Monoxide
$NH_3$ = Ammonia
PM = Particulate Matter
$PM_{10}$ = Particulate Matter less than or equal to 10 microns in size
$PM_{2.5}$ = Particulate Matter less than or equal to 2.5 microns in size
VOC = Volatile Organic Compounds
NAAQS = National Ambient Air Quality Standards
SILs = Significant Impact Levels
AAL = Allowable Ambient Limit
TEL = Threshold Effects Exposure Limit

## VII. SPECIAL TERMS AND CONDITIONS

| Table 6 | |
|---|---|
| **EU#** | **Special Terms and Conditions** |
| EU1, EU2 | 1. The Permittee shall not allow the combustion turbines at the Facility to operate below the MECL, except for start-ups and shutdowns. Emissions during start-ups and shutdowns shall be included in the TPY limits specified in Table 2. |
| | 2. The Permittee shall ensure that the SCR control equipment serving EU1 and EU2 is operational whenever the turbine exhaust temperature at the SCR unit attains the minimum exhaust temperature specified by the SCR vendor and other system parameters are satisfied for SCR operation. The specific load at which this exhaust temperature and other system parameters are achieved will vary based on ambient conditions and whether the start-up is cold, warm, or hot. |
| | 3. The Permittee shall maintain in the Facility control room, properly maintained, operable, portable $NH_3$ detectors for use during an $NH_3$ spill, or other emergency situation involving $NH_3$, at the Facility. |
| | 4. The Permittee shall comply with all applicable portions of Section 112(r) of the Clean Air Act and associated regulations at 40 CFR Part 68. |
| EU1, EU2, EU3 | 5. The Permittee shall develop as part of the Standard Operating Procedures for EU1, EU2, and EU3, an MECL optimization protocol to establish minimum operating load(s) that maintain compliance with all emission limitations at various ambient temperatures and conditions for each respective emission unit. |

| Table 6 | |
|---|---|
| **EU#** | **Special Terms and Conditions** |
| EU1, EU2, EU3 | 6. The Permittee shall maintain an adequate supply of spare parts on-site to maintain the on-line availability and data capture requirements for the CEMS and COMS equipment serving the Facility. |
| Facility-Wide | 7. The Permittee shall properly train all personnel to operate the Facility and the control and monitoring equipment serving the Facility in accordance with vendor specifications. All persons responsible for the operation of the Facility shall sign a statement affirming that they have read and understand the approved SOMP. Refresher training shall be given by the Permittee to Facility personnel at least once annually. |
| | 8. Prior to commencing construction of any emission unit at the Facility, the roadways serving said Facility shall be paved and maintained free of deposits that could result in excessive dust emissions. |
| | 9. The Permittee shall comply with all provisions of 40 CFR Parts 72 and 75, 40 CFR Part 60, 40 CFR Part 63, 40 CFR Part 64, 40 CFR Part 68, 40 CFR Part 98, and 310 CMR 6.00 through 8.00 that are applicable to this Facility. |

**Table 6 Key:**

EU# = Emission Unit Number
CFR = Code of federal regulations
CMR = Code of Massachusetts Regulations
SOMP = Standard Operating and Maintenance Procedures
CEMS = Continuous Emission Monitoring System
COMS = Continuous Opacity Monitoring System
SCR = Selective Catalytic Reduction
$NH_3$ = Ammonia
TPY = tons per 12 month rolling period
MECL = Minimum Emissions Compliance Load

## VIII. RIGHT OF ENTRY

The Permittee shall allow all authorized representatives of MassDEP and/or EPA, upon presentation of credentials, to enter upon or through the Facility where records required under this PSD Permit are kept. The Permittee shall allow such authorized representatives, at reasonable times:

1. To access and copy any records that must be kept under this PSD Permit;

2. To inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this PSD Permit; and

3. To monitor substances or parameters for purposes of assuring compliance with this PSD Permit.

## IX. TRANSFER OF OWNERSHIP

In the event of any changes in control or ownership of the Facility, this PSD Permit shall be binding on all subsequent owners and operators. The Permittee shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions before such change, if possible, but in no case later than 14 days after such change. Notification shall be sent by letter with a copy forwarded within 5 days to MassDEP and EPA.

## X. SEVERABILITY

The provisions of this PSD Permit are severable, and if any provision of the PSD Permit is held invalid, the remainder of this PSD Permit will not be affected thereby.

## XI. CREDIBLE EVIDENCE

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any provision of this PSD Permit, the methods used in this PSD Permit shall be used, as applicable. However, nothing in this PSD Permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether the Permittee would have been in compliance with applicable requirements if the appropriate performance or compliance test procedures or methods had been performed.

## XII. OTHER APPLICABLE REGULATIONS

The Permittee shall operate all equipment regulated herein in compliance with all other applicable provisions of federal and state air regulations.

## XIII. AGENCY ADDRESSES

Subject to change, all correspondence required by this PSD Permit shall be forwarded to:

Permit Chief, Bureau of Waste Prevention
The Department of Environmental Protection (MassDEP)
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887