Technical Support Document
Air Quality Construction Permit Reopening
Permit No. MIN-SM-27139R0001-2013-03

This document sets forth the legal and factual basis for permit conditions, with references to applicable statutory and regulatory provisions, including provisions under the federal tribal New Source Review program, 40 C.F.R. §§ 49.151 - 49.161.

1.0 GENERAL INFORMATION

(A) Applicant and Stationary Source Information

Owner	Facility (SIC Codes: 4911)
Shakopee Mdewakanton Sioux Community of Minnesota 2330 Sioux Trail NW Prior Lake, MN 55372	Mystic Lake Casino Hotel 2400 Mystic Lake Boulevard Prior Lake, MN 55372 Scott County

(B) Contact Information

Responsible Official: Charlie Vig, Tribal Chairman
2330 Sioux Trail NW
Prior Lake, MN 55372
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Permit Contact: Stanley Ellison, Director
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(C) Background and Facility Description

Shakopee Mdewakanton Sioux Community of Minnesota (SMSC) is a federally recognized Indian tribe. SMSC's reservation is located in Prior Lake, Minnesota and is comprised of approximately 3,300 acres. SMSC operates several businesses within the boundaries of its reservation, including two casinos, a fire department and a public works department. The Mystic Lake Casino Hotel is located on reservation lands held by the United States government in trust for the SMSC. The EPA retains responsibility for implementing the Clean Air Act within Indian country in Minnesota, including within the SMSC reservation.

The SMSC originally constructed the Mystic Lake Casino Hotel, 2400 Mystic Lake Boulevard, Prior Lake, Minnesota, in 1992. At that time, several diesel-fired engines were installed and operated as emergency generators. Emissions units 101, 102, 107 and 108 have been removed

and were replaced by emissions units 116, 117 and 118, for which SMSC obtained a synthetic minor construction permit in 2012. Emission unit 103 replaced an existing unit in 2004 and emission unit 104 replaced an existing unit in 2008. The SMSC added additional generators in 2006 (EU 111) and 2009 (EU 113, 114, and 115).

On April 9, 2012, EPA issued a synthetic minor construction permit number SYN-SM-27139R0001-2012-01 to SMSC. The permit authorized the construction and operation of EU 116, EU 117, and EU 118. The permit established limits for EU 116, EU 117, and EU118 which were intended to limit nitrogen oxide (NOx) emissions to below 250 tons per year, the prevention of significant deterioration (PSD) major source threshold. The permit established annual fuel usage limits equivalent to 700 hours of operation per year per engine at maximum load to ensure that the NOx synthetic minor limit is enforceable as a practical matter. EPA is proposing to reopen permit SYN-SM-27139R0001-2012-01 in a separate permitting action.

On June 23, 2014, EPA issued after-the-fact Air Quality Construction Permit number MIN-SM-27139R0001-2013-02 to SMSC. The permit established annual NOx synthetic minor emission limits for EU 103, EU 104, EU 109, EU 110, EU 111, and EU 112 which were intended to limit NOx emissions to below 250 tons per year, the PSD major source threshold. The permit established annual fuel usage limits equivalent to 700 hours of operation per year per engine at maximum load to ensure that the NOx synthetic minor limit is enforceable as a practical matter. EPA is proposing to reopen permit MIN-SM-27139R0001-2013-02 in this permitting action, renaming it MIN-SM-27139R0001-2013-03.

(D) Area Classification

The facility is located in Scott County, which is designated attainment with National Ambient Air Quality Standards for all criteria pollutants. There are no Prevention of Significant Deterioration Class 1 areas within 100 kilometers of the Mystic Lake Casino Hotel Complex or the SMSC reservation.

2.0 PROCESS DESCRIPTION

(A) Description of Permit Action

This proposed permit action is a reopening of after-the-fact construction permit MIN-SM-27139R0001-2013-02, issued to SMSC on June 23, 2014. EPA issued the June 23, 2014, permit as an after-the-fact synthetic minor permit required by an administrative consent order. Permit number MIN-SM-27139R0001-2013-02 will be reissued as permit number MIN-SM-27139R0001-2013-03.

In a letter dated October 23, 2014, SMSC reported that inaccurate performance specifications provided by the manufacturer had been submitted in the permit application for permit number MIN-SM-27139R0001-2013-02. The performance specifications, which understated NOx emissions for EU 103, were used to establish the NOx emission limits and operating limits for EU 103. Since the performance specifications underestimated emissions, the current limit does not accurately reflect the actual performance of EU 103. SMSC requested that the NOx emission limits and annual fuel usage limit be revised based on the correct manufacturer's data. EPA is proposing revisions to this permit that will increase the allowable hourly NOx emission from 34.09 pounds per hour to 64.02 pounds per hour, increase the allowable annual NOx emissions from 11.93 tons per year to 22.41 tons per year, and decrease the allowable annual fuel use from 109,410 gallons to 108,500 gallons. While allowable NOx emissions from EU 103 will increase, the facility will remain a synthetic minor PSD source.

In a separate letter dated December 18, 2014, SMSC requested an administrative permit revision pursuant to 40 C.F.R. § 49.159(f) to add a new monitoring condition to determine compliance with NOx emission limits. Specifically, SMSC requested authorization to use the runtime hour meter in lieu of the fuel meter to determine compliance with NOx limits in the event that the fuel meter fails. In the permit, compliance with the NOx emission limit is demonstrated by calculating the NOx emissions based on the fuel used by each generator. If a fuel meter fails, it is more difficult for SMSC to determine NOx emissions for each individual generator. The new monitoring condition will help to demonstrate compliance with the NOx emission limits at all times, including during periods of fuel meter failure. When a fuel meter fails, the runtime hour meter will be used to track operation of the engine. The new monitoring condition assumes that the engine is operating at its maximum fuel rate during those times, yielding a conservative overestimate of NOx emissions during fuel meter failures. For this reason, the permit will be revised to include the new monitoring requirement. However, for the reasons given in the next paragraph, this revision will not be processed as an administrative permit revision.

40 C.F.R. § 49.159(f)(1) provides several instances where an administrative permit revision may be appropriate. The new monitoring condition does not require SMSC to conduct more frequent monitoring for any of the emission units at the facility. Instead, the new monitoring requirement applies only when the fuel meter has failed. Use of the runtime hour meter in lieu of the fuel meter when the fuel meter fails ensures that SMSC is complying with the NOx emission limits established in the permit at all times. The revision to add the monitoring requirement does not increase in any emission unit's allowable emissions limit for NOx or any other regulated NSR pollutant. However, this revision is subject to review pursuant to the requirements of the tribal

minor NSR program since the new monitoring requirement is used to show compliance with a NOx limit established in the minor NSR program. This revision does not correct typographical errors, is not a minor administrative change at the source, and does not change the name of the owner or operator of the source. For these reasons, this revision will be subject to all permitting requirements given in the federal tribal minor NSR program at 40 C.F.R. §§ 49.151-161, including permit issuance and public participation requirements.

(B) Emission Unit Specifications

EU	Location	Make & Model	Serial number	Month/ Yr Mfg	Month/ Yr Installed	Primary Fuel	Rated kW	Horse Power	MMBtu/ hr
103	Hotel	Caterpillar 3516	1HZ02629	Oct-03	Jul-04	Diesel	2250	3196	21.24
104	Ent/Cab/MLM P-MSQ	Caterpillar 3516	SBJ00374	Mar-08	Dec-08	Diesel	2000	2990	19.47
109	Ent/Cab/MLM P-MSQ	Caterpillar 3516	025Z06281	Aug-98	May-99	Diesel	1600	2288	15.69
110	Ent/Cab/MLM P-MSQ	Caterpillar 3516	25Z05012	Sep-95	Jun-96	Diesel	1275	1825	12.73
111	Buffet	Caterpillar 3516B	GZS00745	Jul-05	Apr-06	Diesel	2000	2885	18.59
113	Roof-AA/DD/CC	Caterpillar 3516C	SBJ00774	Nov-08	Sep-09	Diesel	2000	2990	19.47
114	Roof-AA/DD/CC	Caterpillar 3516C	SBJ00775	Nov-08	Sep-09	Diesel	2000	2990	19.47
115	Roof-AA/DD/CC	Caterpillar 3516C	SBJ00776	Nov-08	Sep-09	Diesel	2000	2990	19.47

Table 1: Summary of emission units affected by permit.

(C) Emission Factors

See the attached calculation sheets for the specific source and value of all emission factors used to calculate emissions.

Carbon monoxide (CO), NOx, particulate matter (PM), and volatile organic compound (VOC) emission factors are provided by the engine manufacturer. Sulfur dioxide (SO2) emission factors are calculated as described in AP-42, Fifth Edition, Volume I, Table 3.4-1.

Particulate matter with an aerodynamic diameter smaller than 10 microns and 2.5 microns (PM_{10} and $PM_{2.5}$, respectively) emission factors are assumed to be the same as the PM emission factor since unit-specific emission factors for PM_{10} and $PM_{2.5}$ are unavailable. This is a conservative estimate since this assumes that all PM emissions, regardless of aerodynamic diameter, are the smallest fractions of particulate matter.

(D) Potential-to-Emit Summary

Unrestricted Potential to Emit Summary – Proposed Permit Action

The following table lists the unrestricted potential to emit for emission units permitted this permit, based on the proposed emissions factor revisions. The values are given in tons per year (tpy) and assume 8,760 hours of operation per year per emission unit. See the attached calculation sheets for calculation and calculation methodology used to determine the unrestricted potential to emit.

	CO (tpy)	NOx (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Single HAP (tpy)	Total HAP (tpy)
EU103	10.07	280.41	2.28	2.28	2.28	0.14	6.83	0.01	0.41
EU104	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37
EU109	53.92	274.01	4.86	4.86	4.86	0.10	3.85	0.01	0.30
EU110	33.16	289.08	2.28	2.28	2.28	0.08	5.52	0.01	0.24
EU111	19.58	276.86	3.59	3.59	3.59	0.12	10.38	0.01	0.36
EU113	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37
EU114	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37
EU115	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37
TOTAL	151.42	1,749.85	15.81	15.81	15.81	0.97	39.38	0.08	2.79

Table 2: Potential to emit of units in permit action (in tons/year).

Facility Unrestricted Potential to Emit

The following table gives the unrestricted potential to emit for emission units that were previously permitted under permit SYN-SM-27139R0001-2012-01 for further emissions information for EU116, EU117, and EU118. This proposed permit action does not revise or establish requirements for EU116, EU117, and EU118.

	CO (tpy)	NOx (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Single HAP (tpy)	Total HAP (tpy)
Current Project	151.42	1,749.85	15.81	15.81	15.81	0.97	39.38	0.08	2.79
EU116 EU117 EU118	26.3	471.6	2.6	2.6	2.6	0.4	9.2	0.2	0.4
Facility Total	177.72	2221.45	18.41	18.41	18.41	1.37	48.58	0.28	3.19

Table 3: Facility potential to emit before permit issuance (in tons/year).

(E) Potential to Emit After Federally Enforceable Limits

The limited potential to emit after the issuance of the current permit is given in the following table. Values are given in tons per year. See the attached calculation sheets for calculations and calculation methodology used to determine the limited potential to emit after federally enforceable limits for EU 103, EU 104, EU 109, EU 110, EU 111, EU 113, EU 114, and EU 115.

See permit SYN-SM-27139R0001-2012-01 for allowable emissions for EU 116, EU 117, and EU 118. This permit action does not revise existing requirements or establish new requirements for EU 116, EU 117, and EU 118.

	CO (tpy)	NOx (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	Single HAP (tpy)	Total HAP (tpy)
EU103	0.81	22.41	0.18	0.18	0.18	0.01	0.55	0.00	0.03
EU104	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03
EU109	4.31	21.90	0.39	0.39	0.39	0.01	0.31	0.00	0.02
EU110	2.65	23.10	0.18	0.18	0.18	0.01	0.44	0.00	0.02
EU111	1.56	22.12	0.29	0.29	0.29	0.01	0.83	0.00	0.03
EU113	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03
EU114	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03
EU115	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03
EU116 EU117 EU118	2.1	37.8	0.3	0.3	0.3	0.03	0.9	0.02	0.03
Total	14.2	177.63	1.56	1.56	1.56	0.11	4.05	0.03	0.25

Table 4: Potential to emit after permit issuance (in tons/year).

(F) Enforcement Issues

On February 27, 2012, EPA and the SMSC entered into an Administrative Consent Order (ACO) to resolve outstanding violations for constructing and operating multiple generators without a permit to construct. The ACO establishes a schedule for submittal of permit applications for the unpermitted generators at the SMSC with potential to emit greater than the major source thresholds for various criteria pollutants. Attachment A of the ACO requires permit applications for, among others, the generators identified as EU 103, 104, 109, 110, 111, 113, 114 and 115. Applications were to be submitted by May 31, 2012. This ACO deadline has been satisfied.

There are no other federal enforcement actions proceeding against SMSC at this time.

(G) Pollution Control Equipment

The proposed generators must be certified to meet New Source Performance Standards Subpart IIII Tier 2 emissions standards. The engines use a catalytic converter to reduce carbon monoxide (CO), NOx, and volatile organic compounds (VOC). This equipment is control equipment that is inherent to the generator and is not identified as add-on pollution control equipment.

3.0 APPLICABLE REQUIREMENTS

(A) Prevention of Significant Deterioration (PSD)

This source is subject to the requirements of 40 C.F.R. § 52.21 based on its potential to emit and the definition of "major source" in 40 C.F.R. § 52.21. The eight generators constitute a major stationary source, based upon their uncontrolled potential to emit. SMSC has requested that operating conditions be placed into the permit in order to avoid PSD applicability for the project. Minor source limitations are available under EPA's minor source program for Indian country, codified at 40 C.F.R. § 49.151, *et. seq.*

(B) Restrictions on Potential to Emit

"Potential to emit" is defined in 40 C.F.R. § 52.21 as the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any state or federal physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation, or the effect it would have on emissions, is enforceable as a practical matter.

Although SMSC is subject to the requirements of the PSD permitting program based on its potential to emit, it has relatively low actual emissions. SMSC has requested that limits on its potential to emit for generators EU 103, 104, 109, 110, 111, 113, 114 and 115 be set in this after-the-fact construction permit to avoid major source modification regulatory requirements. In this permit, limits have been set to restrict fuel usage to below a certain number of gallons per year per unit, based on a 12 month rolling sum. The following table describes the permitted fuel restrictions in comparison with actual usage and limited NOx emissions.

Emission Unit	Permit Limits (gal/hr)	Permit Limits (gal/year)	Actual Usage 4/11-3/12 (gal/year)	Permitted NO_x Emissions (lb/hr)	Permitted NO_x Emissions (tons/year)
103	155	108,500	3,143	64.02	22.41
104	142.1	99,470	3,697	35.93	12.58
109	114.5	80,150	3,267	62.56	21.90
110	92.9	65,030	2,332	66.00	23.10
111	135.7	94,990	2,769	63.21	22.12
113	142.1	99,470	627	35.93	12.58
114	142.1	99,470	219	35.93	12.58
115	142.1	99,470	302	35.93	12.58

Table 5: Permitted fuel restrictions and allowable NOx emissions.

All generators are equipped with fuel meters to monitor fuel usage. The fuel restrictions were based upon operation of each unit for fewer than 700 hours per year.[1] The type of fuel is also restricted to ultra low sulfur diesel fuel with a maximum sulfur content of 0.0015%. Restrictions on potential to emit will be monitored with monthly recordkeeping requirements and with testing requirements on the generators. EPA is proposing that each generator will be required to be tested for NOx emissions once every five years years using EPA Method 5E.

(C) New Source Performance Standards (NSPS)

The New Source Performance Standards, 40 C.F.R. Part 60, Subpart IIII applies to generators ordered after July 11, 2005 and manufactured after April 1, 2006. Generators 104, 113, 114, and 115 were ordered after July 11, 2005 and manufactured after April 1, 2006 and therefore, are subject to the NSPS. These emissions units were manufactured to meet NSPS IIII EPA Tier 2 emissions standards. As mentioned above, EU 104, 113, 114, and 115 were all installed in 2008. NSPS applicability is based on these dates. EU 104, 113, 114 and 115 are non-emergency, stationary, compression-ignition (CI) internal combustion engines (ICE) with a displacement of less than 30 liters per cylinder. The following conditions apply to EU 104, 113, 114 and 115:

i. The emission standards referred to in 40 C.F.R. § 60.4201(a) apply because EU 104, 113, 114, and 115 are subject to 40 C.F.R. § 60.4204(b). The manufacturer is required to certify that the engine meets the emissions standards listed in 40 C.F.R. §§ 89.112 and 89.113.

ii. The emission standards in 40 C.F.R. § 60.4204(b) apply because EU 104, 113, 114, and 115 are non-emergency, stationary, compression-ignition, internal combustion engines with displacement of less than 30 liters per cylinder.

iii. 40 C.F.R. § 60.4206 applies because EU 104, 113, 114, and 115 are CI ICE that must achieve the emission standards in 40 C.F.R. § 60.4204(b). This condition requires the engine to achieve the required emission standards throughout the life of the engine.

iv. The fuel standards of 40 C.F.R. § 60.4207 apply because EU 104, 113, 114, and 115 are CI ICE with displacement of less than 30 liters per cylinder. The effective date of this condition (October 1, 2010) has already passed.

v. The monitoring requirements of 40 C.F.R. § 60.4209 apply because the Permittee owns and operates EU 104, 113, 114, and 115. The only applicable requirement is to comply with 40 C.F.R. §60.4211.

[1] The overall fuel limit is based upon total fuel use when operated at maximum load for 700 hours per year. 700 hours per year reflects the maximum utility peak shaving contract hours (600) combined with an assumed 100 hours emergency use and weekly maintenance maximum.

vi. The compliance requirements of 40 C.F.R. § 60.4211(a) apply because the Permittee must comply with the emission standards listed in 40 C.F.R. § 60.4204(b).

vii. The compliance requirements of 40 C.F.R. § 60.4211(c) apply because the Permittee owns and operates EU 104, 113, 114, and 115. This requires the Permittee to purchase an engine that has been certified to meet the emission requirements in 40 C.F.R. § 60.4204(b).

viii. 40 C.F.R. § 60.4218 applies because the Permittee is subject to 40 C.F.R. Part 60, Subpart IIII. Conditions in Table 8 to 40 C.F.R. Part 60, Subpart IIII, apply to the Permittee as listed.

(D) National Emissions Standards for Hazardous Air Pollutants (NESHAP) – 40 C.F.R. Part 63, Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)

In accordance with 40 C.F.R. § 63.6585, a source is subject to the RICE MACT if it operates a stationary reciprocating internal combustion engine (RICE) at an area source of hazardous air pollutant (HAP) emissions. The facility is an area source for HAP emissions, as defined in 40 C.F.R. § 63.6675, because it emits less than 10 tpy of any single HAP and emits less than 25 tpy of total HAPs. For the purpose of this subpart, each of the four RICE emissions units 104, 113, 114 and 115 are existing, non-emergency, non-black start, compression ignition RICE as defined in 40 C.F.R. §§ 63.6590 and 63.6675.

Generators 104, 113, 114 and 115 are compression ignition engines that were manufactured after June 12, 2006. Therefore, these engines are new stationary RICE sources and must meet the requirements of the RICE MACT by meeting the requirements of 40 C.F.R. Part 60, Subpart IIII. These units were manufactured to meet the NSPS Subpart IIII standards.

Generators 103, 109, 110 and 111 are existing compression ignition engines because they were manufactured and constructed prior to June 12, 2006 and are located at an area source of HAP emissions.

(E) Monitoring

Monitoring and testing to assure compliance with the hourly limits in the permits has been established in this permit. An initial performance test for each emission unit is required within 180 days of issuance of this permit. Subsequent performance testing for each emission unit is required once every five years. The performance testing interval is set at once per five years. This is adequate for emissions units such as EU 104, EU 113, EU 114, and EU 115, which are designed to operate as load shed and/or peak shaving generators. Additionally, the facility has submitted an Operation and Maintenance plan that will be followed to assure that the units are maintained to operate at their optimum performance. The combination of a performance test every five years, along with adherence to an Operation and Maintenance plan is a sufficient means of demonstrating compliance with the applicable hourly limits.

(F) Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) requires all federal agencies, including EPA, to insure that any action authorized, including the issuance of a federal permit, does not jeopardize the continued existence of an endangered or threatened species or designated or proposed critical habitat. As part of this process, Section 7(a)(2) requires a consultation with the Fish and Wildlife Service if the project may have an effect on a listed species.

According to the December 2014 *County Distribution of Federally-Listed Threatened, Endangered, Proposed and Candidate Species* list (distribution list), the northern long-eared bat may be present in Scott County.

This permit does not authorize the additional construction of emission units. This permit is being issued to correct a NOx emission factor for EU 103 and to incorporate additional monitoring to ensure compliance with the synthetic minor NOx limits when a fuel meter fails. Further, potential NOx emissions are based on maximum fuel flow rate at maximum load for 700 hours each. In practice, each engine is very unlikely to achieve 100% load and, as a result, will likely not cause NOx emissions near the amount given for the NOx limited potential to emit.

For these reasons, EPA has determined that the issuance of this permit will have no effect on the northern long-eared bat. Further ESA consultation is not necessary for this permit action.

(G) National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies, EPA included, to take into account the effects of undertaking on historic properties. The implementing regulations of the NHPA can be found at 36 C.F.R. Part 800.

An undertaking, as defined at 36 C.F.R §800.16(y), includes projects requiring a federal permit. Therefore, the issuance of this permit constitutes an undertaking.

Since this permit does not authorize additional construction, and since this permit action only corrects a NOx emission limit and establishes additional monitoring, this action will have no potential to cause effects on historic properties, assuming such historic properties were present. Pursuant to 36 C.F.R. § 800.3(a)(1), since the issuance of this permit will have no potential to cause effects on historic properties, EPA has no further obligations under section 106 of the NHPA or 36 C.F.R. Part 800.

(H) Tribal Consultation

According to EPA's 2011 Policy on Consultation and Coordination with Indian Tribes, EPA is to consult on a government-to-government basis with federally recognized tribal governments when EPA actions and decisions may affect tribal interests. Since EPA is the permitting authority for Mystic Lake Casino Hotel, EPA's final permit decisions may affect tribal interests, requiring consultation with the tribe.

Since Mystic Lake Casino Hotel is owned by SMSC, and since this permitting action is the result of an October 23, 2014, and a December 18, 2014, request by SMSC, further consultation is not necessary.

4.0 Revisions to the Permit

Based on the application and supporting information provided by SMSC, EPA is proposing to reopen permit number MIN-SM-27139R0001-2013-02 to revise NOx emission limits for EU 103 and to add additional monitoring to be used only when a fuel meter fails. This permit will be reissued as permit number MIN-SM-27139R0001-2013-03.

The following conditions have been changed based on the information provided by SMSC. Additions are indicated in **BOLD** typeface while deletions are indicated by ~~strikethrough~~ font:

1.) Condition 2.0(A)(1)(i)(a) is being revised to increase EU 103's hourly NOx emission limit from 34.09 pounds per hour to 64.02 pounds per hour. The revised condition reads as follows:

Limit NOx emissions to no greater than ~~34.09~~**64.02** pounds per hour expressed as NO_2, averaged over the duration of the emission performance test. Compliance with this limit shall be demonstrated using applicable monitoring and periodic testing requirements listed in Condition 2.0 B. of this permit. [40 C.F.R. § 49.155(a)(2)]

2.) Condition 2.0(A)(1)(i)(b) is being revised to increase EU 103's annual NOx emission limit from 11.93 tons per year to 22.41 tons per year. The revised condition reads as follows:

Limit NOx emissions to no greater than ~~11.93~~**22.41** tons per year expressed as NO_2, based on a 12 month rolling sum. Compliance with this limit shall be based on a rolling sum of monthly emissions during the previous 12 months. [40 C.F.R. § 49.155(a)(2)]

3.) Condition 2.0(A)(1)(i)(d) is being revised to reduce EU 103's annual fuel usage limit from 109,410 gallons per year to 108,500 gallons per year. The revised conditions reads as follows:

Limit fuel usage to no greater than ~~109,410~~**108,500** gallons per year, based on a 12 month rolling sum. Compliance with this limit shall be based on a rolling sum of monthly fuel usage (in gallons) during the previous 12 months. [40 C.F.R. § 49.155(a)(2)]

4.) Condition 2.0(B)(1)(v) is being added to the permit. This condition will allow monthly NOx emissions to be estimated based on each engine's runtime in the event of fuel meter failure. Subsequent conditions have been renumbered to accommodate the addition of this new permit condition. The new monitoring condition reads as follows:

v. If a fuel meter fails on any individual generator, monthly NOx emissions shall be calculated using the following equation:

$NOx = H \times EF_{hour} / 2000$

Where: **NOx is the monthly NOx emissions, in tons;**
H is the engine's monthly operating hours, in hours;
EF_{hour} is the NOx emission factor, in pounds/hour.

vi. [...]
vii. [...]
viii. [...]

In addition to the previously listed revisions, the following formatting changes have been made to the permit:

1.) Condition 1.0(B) has been revised by repeating the table's header on each page. The table is broken across two pages. This revision was made to ensure clarity regarding what each column represents in the table. This change does not create any additional permit requirements.

2.) Condition 2.0 has been revised by removing the colon at the end of the section title. This revision does not create any additional permit requirements.

3.) The formatting of sections 2.0, 3.0, and 4.0 of the permit has been adjusted to allow for each section to begin on a new page. This change also modifies the page numbering within the permit. None of the permit requirements have been changed as a result of this revision.

Unrestricted Potential to Emit (tons/year)													
	Criteria Pollutants							Hazardous Air Pollutants		Greenhouse Gases			
Emission Unit	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP	CO_2	CH_4	N_2O	CO_2e
EU103	10.07	280.41	2.28	2.28	2.28	0.14	6.83	0.01	0.41	15,349.90	0.62	0.12	15,401.87
EU104	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37	14,072.39	0.56	0.11	14,120.04
EU109	53.92	274.01	4.86	4.86	4.86	0.10	3.85	0.01	0.30	11,339.12	0.45	0.09	11,377.51
EU110	33.16	289.08	2.28	2.28	2.28	0.08	5.52	0.01	0.24	9,200.03	0.37	0.07	9,231.19
EU111	19.58	276.86	3.59	3.59	3.59	0.12	10.38	0.01	0.36	13,438.59	0.54	0.11	13,484.09
EU113	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37	14,072.39	0.56	0.11	14,120.04
EU114	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37	14,072.39	0.56	0.11	14,120.04
EU115	8.67	157.37	0.70	0.70	0.70	0.13	3.20	0.01	0.37	14,072.39	0.56	0.11	14,120.04
TOTAL	151.42	1,749.85	15.81	15.81	15.81	0.97	39.38	0.08	2.79	105,617.18	4.23	0.84	105,974.81
Major Source Threshold	250	250	250	250	250	250	250	10	25				
Major Source?	No	Yes	No	No	No	No	No	No	No	No	No	No	No

Limited Potential to Emit (tons/year)													
	Criteria Pollutants							Hazardous Air Pollutants		Greenhouse Gases			
Emission Unit	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP	CO_2	CH_4	N_2O	CO_2e
EU103	0.81	22.41	0.18	0.18	0.18	0.01	0.55	0.00	0.03	1,226.59	0.05	0.01	1,230.74
EU104	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03	1,124.51	0.05	0.01	1,128.31
EU109	4.31	21.90	0.39	0.39	0.39	0.01	0.31	0.00	0.02	906.09	0.04	0.01	909.16
EU110	2.65	23.10	0.18	0.18	0.18	0.01	0.44	0.00	0.02	735.16	0.03	0.01	737.65
EU111	1.56	22.12	0.29	0.29	0.29	0.01	0.83	0.00	0.03	1,073.86	0.04	0.01	1,077.50
EU113	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03	1,124.51	0.05	0.01	1,128.31
EU114	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03	1,124.51	0.05	0.01	1,128.31
EU115	0.69	12.58	0.06	0.06	0.06	0.01	0.26	0.00	0.03	1,124.51	0.05	0.01	1,128.31
TOTAL	12.10	139.83	1.26	1.26	1.26	0.08	3.15	0.01	0.22	8,439.73	0.34	0.07	8,468.31
Major Source Threshold	250	250	250	250	250	250	250	10	25				
Major Source?	No	No	No	No	No	No	No	No	No	No	No	No	No

HP	3196	bhp (at 100% load)
Fuel Flow	155	gal/hr
Heat Input [1]	21.23965	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)							
Version	CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
9/18/2014 (Revised)	2.3	64.02	0.52	0.52	0.52	0.03217807	1.56
10/18/2004 (Previous)	1.11	34.09	0.52	0.52	0.52	0.03217807	0.81

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]									
Version	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
9/18/2014 (Revised)	10.074	280.4076	2.2776	2.2776	2.2776	0.140939946	6.8328	0.01209386	0.40598
10/18/2004 (Previous)	4.8618	149.3142	2.2776	2.2776	2.2776	0.140939946	3.5478	0.01209386	0.40598

Limited Hours	700	hrs/yr	
Annual Fuel Usage	108500	gal/yr	
Control Efficiency	0	%	(No Controls)

Limited Potential to Emit (tons/year) [8]									
Version	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
9/18/2014 (Revised)	0.805	22.407	0.182	0.182	0.182	0.011262324	0.546	0.0009664	0.032441
10/18/2004 (Previous)	0.3885	11.9315	0.182	0.182	0.182	0.011262324	0.2835	0.0009664	0.032441

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit				Limited Potential to Emit			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	3504.54225	0.1404761	0.028036338		3504.54225	0.140476072	0.028036338	
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	15349.89506	0.6152852	0.12279916	15401.87133	1226.589788	0.049166625	0.009812718	1230.74314

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	2990	bhp (at 100% load)
Fuel Flow	142.1	gal/hr
Heat Input [1]	19.471963	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
1.98	35.93	0.16	0.16	0.16	0.029500024	0.73

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
8.6724	157.3734	0.7008	0.7008	0.7008	0.129210105	3.1974	0.011087336	0.372192

Limited Hours	700	hrs/yr	
Annual Fuel Usage	99470	gal/yr	
Control Efficiency	0	%	(No Controls)

Limited Potential to Emit (tons/year) [8]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
0.693	12.5755	0.056	0.056	0.056	0.010325008	0.2555	0.000885974	0.029741

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	3212.873895	0.128784837	0.025702991		3212.873895	0.128784837	0.025702991	
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	14072.38766	0.564077587	0.112579101	14120.03817	1124.505863	0.045074693	0.008996047	1128.314

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	2288	bhp (at 100% load)
Fuel Flow	114.5	gal/hr
Heat Input [1]	15.689935	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
12.31	62.56	1.11	1.11	1.11	0.023770252	0.88

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
53.9178	274.0128	4.8618	4.8618	4.8618	0.104113702	3.8544	0.008933849	0.299901

Limited Hours	700	hrs/yr	
Annual Fuel Usage	80150	gal/yr	
Control Efficiency	0	%	(No Controls)

Limited Potential to Emit (tons/year) [8]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
4.3085	21.896	0.3885	0.3885	0.3885	0.008319588	0.308	0.000713892	0.023965

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	2588.839275	0.103771033	0.020710714		2588.839275	0.103771033	0.020710714	
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	11339.11602	0.454517127	0.090712928	11377.51141	906.0937463	0.036319862	0.00724875	909.1619

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	1825	bhp (at 100% load)
Fuel Flow	92.9	gal/hr
Heat Input [1]	12.730087	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
7.57	66	0.52	0.52	0.52	0.019286082	1.26

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
33.1566	289.08	2.2776	2.2776	2.2776	0.084473038	5.5188	0.007248512	0.243326

Limited Hours	700	hrs/yr	
Annual Fuel Usage	65030	gal/yr	
Control Efficiency	0	%	(No Controls)

Limited Potential to Emit (tons/year) [8]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
2.6495	23.1	0.182	0.182	0.182	0.006750129	0.441	0.000579219	0.019444

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	2100.464355	0.084195013	0.016803715		2100.464355	0.084195013	0.016803715	
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	9200.033875	0.368774158	0.073600271	9231.18611	735.1625243	0.029468255	0.0058813	737.6519

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	2885	bhp (at 100% load)
Fuel Flow	135.7	gal/hr
Heat Input [1]	18.594971	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
4.47	63.21	0.82	0.82	0.82	0.028171381	2.37

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
19.5786	276.8598	3.5916	3.5916	3.5916	0.123390649	10.3806	0.010587976	0.355429

Limited Hours	700	hrs/yr	
Annual Fuel Usage	94990	gal/yr	
Control Efficiency	0	%	(No Controls)

Limited Potential to Emit (tons/year) [8]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
1.5645	22.1235	0.287	0.287	0.287	0.009859983	0.8295	0.000846071	0.028402

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	3068.170215	0.122984535	0.024545362	[redacted]	3068.170215	0.122984535	0.024545362	[redacted]
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	13438.58554	0.538672263	0.107508684	13484.08994	1073.859575	0.043044587	0.008590877	1077.496

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	2990	bhp (at 100% load)
Fuel Flow	142.1	gal/hr
Heat Input [1]	19.471963	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
1.98	35.93	0.16	0.16	0.16	0.029500024	0.73

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

Unrestricted Potential to Emit (tons/year) [7]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
8.6724	157.3734	0.7008	0.7008	0.7008	0.129210105	3.1974	0.011087336	0.372191626

Limited Hours	700	hrs/yr	
Annual Fuel Usage	99470	gal/yr	
Control Efficiency	0	%	*(No Controls)*

Limited Potential to Emit (tons/year) [8]								
CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	VOC	Single HAP Napthalene	Total HAP
0.693	12.5755	0.056	0.056	0.056	0.010325008	0.2555	0.000885974	0.02974134

Greenhouse Gas Potential to Emit								
	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
Emission Factor (lb/hr)	3212.873895	0.128784837	0.025702991		3212.873895	0.128784837	0.025702991	
Global Warming Potential [11]	1	25	298		1	25	298	
Emissions (tons/year) [7],[8]	14072.38766	0.564077587	0.112579101	14120.03817	1124.505863	0.045074693	0.008996047	1128.313553

Assumptions and Methodology	
[1]	Heat Input (MMBTU/hr) = fuel flow (gallons/hr) * 7.1 pounds/gallon * 19,300 BTU/pound * 1 MMBTU/10^6 BTU. Diesel fuel density and heating value from AP-42, Fifth Edition, Volume I, Table 3.4-1, Footnote a. Assumes operation at maximum fuel flow.
[2]	Emission factor provided by engine manufacturer.
[3]	SO2 emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. SO2 Emission Factor (lb/hr) = 1.01 * Fuel Sulfur (%) * Heat Input Rate (MMBTU/hr)
[4]	HAP Emission Factors from AP-42, Fifth Edition, Volume I, Table 3.4-3.
[5]	Napthalene emission factor from AP-42, Fifth Edition, Volume I, table 3.4-4.
[6]	Total HAP potential to emit is the sum of all HAP and PAH listed in AP-42, Fifth Edition, Volume I, tables 3.4-3 and 3.4-4.
[7]	Unrestricted Potential to Emit (tons/year) = Emission Factor (lbs/hr) * 8,760 hrs/yr * 1 ton/2000 pounds
[8]	Limited Potential to Emit (tons/year) = Emission Factor (lbs/hr) * Limited Hours of Operation (hrs/yr) * 1 ton/2000 pounds
[9]	CO2 Emission factor from AP-42, Fifth Edition, Volume I, Table 3.4-1. CO2 Emission Factor (lbs/hr) = 165 lb CO2/MMBTU * Heat Input Rate (MMBTU/hr)
[10]	Emission factor from 40 CFR 98, Table C-2. Emission factor (lb/hr) = Emission factor (kg/MMBTU) * Heat Input Rate (MMBTU/hr) * 2.2 lbs/1kg
[11]	Global warming potential from 40 CFR 98, Table A-1. GWP for these compounds are based on updated values published in the Federal Register on November 29, 2013, and became effective on January 1, 2014. See 78 FR 71904 for further information.
[12]	CO2e (tons/year) = CO2 (tons/year) * CO2 GWP + CH4 (tons/year) * CH4 GWP + N2O (tons/year) * N2O GWP

HP	2990	bhp (at 100% load)
Fuel Flow	142.1	gal/hr
Heat Input [1]	19.471963	MMBTU/hr
Fuel Sulfur	0.0015	%

Criteria Pollutant Emission Factors (lb/hr)						
CO [2]	NOx [2]	PM [2]	PM_{10} [2]	$PM_{2.5}$ [2]	SO_2 [3]	VOC [2]
1.98	35.93	0.16	0.16	0.16	0.029500024	0.73

HAP Emission Factors (lb/MMBTU)						
Benzene [4]	Toluene [4]	Xylenes [4]	Propylene[4]	Formaldehyde [4]	Napthalene [5]	Total HAP [6]
0.000776	0.000281	0.000193	0.00279	0.0000789	0.00013	0.00436398

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	Unrestricted Potential to Emit (tons/year)				Limited Potential to Emit (tons/year)			
Pollutant	CO_2 [9]	CH_4 [10]	N_2O [10]	CO_2e [12]	CO_2	CH_4	N_2O	CO_2e
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Assumptions and Methodology	
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