Technical Support Document
for
Draft Air Emission Permit No. 10900008-103

This technical support document (TSD) is intended for all parties interested in the draft permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General information

1.1 Applicant and stationary source location

Table 1. Applicant and source address

Applicant/Address	**Stationary source/Address** (SIC Code: 8062 - General Medical and Surgical Hospitals)
Mayo Medical Center - Rochester 200 1st St SW Rochester, MN 55905-0001	Mayo Clinic Hospital - Saint Mary's Campus 1216 2nd St SW Rochester, MN 55902-1906
Contact: Karl Corrigan Phone: 507-284-2382	

1.2 Facility description

Mayo Clinic Hospital - Saint Mary's Campus is a tertiary care hospital owned and operated by the Mayo Clinic. It includes several buildings located on a 49-acre campus. The primary emission units at the facility are three identical 107.05 MMBtu/hr boilers which exhaust through a common stack, one 5,000 kW cogeneration turbine generator, and three internal combustion engine generators, rated at 2,800 kW (EQUI 5), 2,500 kW (EQUI 9), and 3,490 kW (EQUI 35).

Each boiler combusts natural gas with the use of distillate fuel as allowed under the definition of, "gas-fired boiler" per 40 CFR § 63.11237. The cogeneration turbine burns only natural gas. Two of the generators (EQUI 9 and EQUI 35) are for emergency use only and burn only distillate oil. The non-emergency generator (EQUI 5) also burns only distillate oil. The main pollutants of concern are those resulting from combustion of the boilers, engines, and turbine, such as nitrogen oxides and carbon monoxide.

1.3 Description of the activities allowed by this permit action

This permit action is a Part 70 Reissuance. The Minnesota Pollution Control Agency (MPCA) has a combined operating and construction permitting program under Minn. R. ch. 7007. Under that authority, this permit action authorizes construction. This permit authorizes the construction of a new emergency generator, EQUI 38, which will vent to a new stack, STRU 12. The main pollutants of concern are nitrogen oxides and carbon monoxide.

1.4 Description of notifications and applications included in this action

Table 2. Notifications and applications included in this action

Date received	**Application/Notification type and description**
10/08/2025	Minor Amendment (IND20250001)
02/15/2023	Part 70 Reissuance (IND20230001)

1.5 Facility emissions

Table 3. Title I emissions summary

Pollutant	Emissions increase from the modification (tpy)	Limited emissions increase from the modification (tpy)	NSR/112(g) Significant thresholds for major sources (tpy)	NSR/ 112(g) review required? (yes/no)
PM	0.15	0.15	25	No
PM_{10}	0.15	0.15	15	No
$PM_{2.5}$	0.15	0.15	10	No
NO_X	2.16	2.16	40	No
SO_2	0.14	0.14	40	No
CO	0.47	0.47	100	No
Ozone (VOC)	0.18	0.18	40	No
Lead	0.00	0.00	0.6	No
CO_2e**	80.36	80.63	75,000	No

**Carbon dioxide equivalents as defined in Minn. R. 7007.0100.

Table 4. Non-title I emissions increase summary

Pollutant	After change (lb/hr)	Before change (lb/hr)	Net change* (lb/hr)	Insignificant modification thresholds (lb/hr <)	Minor and moderate amendment thresholds (lb/hr < or ≥)	Type of amendment (minor or moderate)
PM_{10}	0.61	0.00	0.61	0.855	3.42	Insig. Mod.
NO_X	8.64	0.00	8.64	2.28	9.13	Minor
SO_2	0.57	0.00	0.57	2.28	9.13	Insig. Mod.
CO	1.86	0.00	1.86	5.70	22.80	Insig. Mod.
VOC	0.71	0.00	0.71	2.28	9.13	Insig. Mod.
Lead	0.00	0.00	0.00	0.025	0.11	Insig. Mod.

Table 5. Total facility potential to emit summary

	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	NO_X (tpy)	CO (tpy)	CO_2e (tpy)	VOC (tpy)	Single HAP** (tpy)	All HAPs (tpy)
Total facility limited potential emissions	13.62	13.55	13.54	65.85	235.4	134.8	203,000	10.53	2.46	2.96
Total facility actual emissions (2024)	0.568	0.548	0.498	1.13	86.1	36.7	*	2.03	*	

*Not reported in Minnesota emission inventory.
**Single HAP is hexane.

Table 6. Facility classification

Classification	Major	Synthetic minor/area	Minor/Area
New Source Review	X		
Part 70	X		
Part 63			X

1.6 Changes to permit

The permit does authorize specific modifications, however, the MPCA has a combined operating and construction permitting program under Minnesota Rules Chapter 7007, and under Minn. R. 7007.0800, the MPCA has authority to include additional requirements in an operating permit. The following changes to the permit are made through this permit action:

- The permit has been updated to reflect current MPCA templates and standard citation formatting; Completed requirements and the requirements for equipment that has been removed have been deleted.
- Subject item details have been updated based on the most recently submitted reissuance application.
- Some requirements have been updated to reflect the current standard language practices at the MPCA.
- EQUI 38 is added to the permit as a new emergency generator. EQUI 38 will vent to a new stack, STRU 12.
- EQUI 10 and STRU 10 were removed from the permit since they were removed in the last permit action.
- 40 CFR pt. 60, subp. KKKKa requirements have been added to EQUI 11 since the unit could become subject to this subpart should the facility choose to modify or reconstruct. This subpart has been added as Appendix F to the permit.

2. Regulatory and/or statutory basis

2.1 New source review (NSR)

The facility is an existing major source under New Source Review regulations and will remain a major source after the project.

2.2 Part 70 permit program

The facility is a major source under the Part 70 permit program.

2.3 New source performance standards (NSPS)

The Permittee has stated that the following New Source Performance Standards apply to the operations at this facility:

40 CFR pt. 60, subp. Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

The three boilers at the facility (EQUI 6, EQUI 7, EQUI 8) are subject to this subpart. All three boilers are steam generating units that commenced construction, modification, or reconstruction after June 19, 1984 and have heat input capacities greater than 29 megawatts (100 MMBtu/hr).

40 CFR pt. 60 subp. GG, Standards of Performance for Stationary Gas Turbines

The combustion turbine (EQUI 11) is subject to this subpart. It has a peak load heat input of greater than 10.7 gigajoules (10 MMBtu/hr). EQUI 11 continues to have custom NO_X monitoring requirements (as allowed under 40 CFR § 60.334(c)). The custom requirements were initiated in the first Title V permit. The request and EPA approval letters are included in Attachment 4 of this document.

40 CFR pt. 60, subp. KKKKa, Standards of Performance for Stationary Combustion Turbines
The combustion turbine (EQUI 11) is currently not subject to this subpart because it was constructed prior to the applicability date of December 13, 2024. If the components for the turbine are replaced such that the project meets the definition of "modification" as defined in 40 CFR § 60.14 or "reconstruction" as defined in 40 CFR § 60.15, then the modified or reconstructed turbine will be subject to 40 CFR pt. 60. subp. KKKKa. If the facility triggers "reconstruction", a major amendment may not be needed to comply with new requirements because the requirements for a reconstructed source under 40 CFR pt. 60, subp. KKKKa are included in the permit at EQUI 11. If additional 40 CFR pt. 60, KKKKa requirements are applicable, the appropriate amendment will be needed to include the requirements in the permit. An amendment may also be needed if there is an increase in emissions, if the change triggers additional applicable requirements, or if the change requires revisions to the limits, monitoring, or recordkeeping in this permit.

40 CFR pt. 60, subp. IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
Generator #6 (EQUI 35), Generator #7 (EQUI 5), and Generator #8 (EQUI 38) are subject to this subpart. These units are all model year 2007 and later compression ignition (CI) internal combustion engines with a displacement of less than 10 liters per cylinder. Generator #5 (EQUI 9) is not subject to this subpart since it predates the applicability of this standard.

40 CFR pt. 60, subp. Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984, and On or Before October 4, 2023
The facility has three oil storage tanks which qualify as insignificant activities under Minn. R. 7007.1300, subp. 3(I). The storage tanks are not subject to this subpart since they are larger than 151 m^3 or approximately 39,890 gallons and they contain a liquid with a maximum true vapor pressure less than 3.5 kPa. Each tank has a volume of 50,000 gallons and the vapor pressure of distillate fuel oil at 70°C is 0.009 psia (0.06 kPa) or 0.4 mmHg (0.05 kPa) according to MSDS sheets for No. 2 diesel fuel from Amerada Hess Corporation and Philips Petroleum Company, respectively.

2.4 National emission standards for hazardous air pollutants (NESHAP)

The facility is an area source under 40 CFR pt. 63. Thus, no major source NESHAPs apply.

40 CFR pt. 63, subp. ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)
Generator #6 (EQUI 35), Generator #7 (EQUI 5), and Generator #8 (EQUI 38) are subject to this subpart. EQUIs 5, 35, and 38 are new RICE located at an area source; therefore, under 40 CFR § 63.6590(c)(1), EQUIs 5, 35, and 38 comply with 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII for CI engines. No further requirements apply for such engines under 40 CFR pt. 63, subp. ZZZZ.

Generator #5 (EQUI 9) is not subject to 40 CFR pt. 63, subp. ZZZZ. Prior to the compliance date of 5/3/2013, the Permittee decided to operate these emission units as emergency engines. Therefore, they are not subject to 40 CFR pt. 63, subp. ZZZZ because they are existing institutional emergency stationary RICE located at an area source of HAP emissions and are not contractually obligated to be available for more than 15 hours per calendar year under 40 CFR § 63.6585(f)(3).

40 CFR pt. 63, subp. WWWWW, National Emission Standards for Hospital Ethylene Oxide Sterilizers
The five existing ethylene oxide sterilizers are subject to this subpart. However, because this is an area source standard not delegated to the MPCA, and the units otherwise qualify as insignificant activities, the units are listed in Appendix A, and the 40 CFR pt. 63, subp. WWWWW requirements are listed in Appendix D to the permit.

40 CFR pt. 63, subp. JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

The three boilers (EQUI 6, EQUI 7, EQUI 8) are not subject to this subpart, or to any of its requirements because they qualify as gas-fired boilers under 40 CFR §63.11195(e) and as defined by 40 CFR §63.11237. The permit allows very low sulfur oil (defined in 40 CFR §60.41b) to be used as fuel during natural gas curtailments per 40 CFR §63.11237.

2.5 Regulatory Overview

Table 7. Regulatory overview of facility

Subject item*	Applicable regulations	Rationale
COMG 2 – Boilers (EQUIs 6-8)	40 CFR pt. 60, subp. Db and Minn. R. 7011.0565	NSPS for Industrial-Commercial-Institutional Steam Generating Units. All three boilers were constructed after June 19, 1984 and have heat capacities greater than 29 megawatts (100 MMBtu/hour).
COMG 3 – Boiler and Generator Sulfur Limit (EQUIs 5-9 and 35)	Title I Condition: Avoid major modification under 40 CFR § 52.21 (b)(2) and Minn. R. 7007.3000	PSD. Emission limits are carried forward from previous permit actions to reduce sulfur emissions below the major modification threshold under 40 CFR § 52.21.
EQUI 5 – Generator #7	Title I Condition: Avoid major modification under 40 CFR § 52.21 (b)(2) and Minn. R. 7007.3000	PSD. Limits on hours of operation are carried forward from previous permit actions to keep the potential emissions below the major modification thresholds under 40 CFR § 52.21.
	40 CFR pt. 60, subp. IIII and Minn. R. 7011.2305	NSPS for Stationary Compression Ignition Internal Combustion Engines. Applicability criteria include: • Commenced construction after July 11, 2005; • Manufactured after April 1, 2006, and is not a fire pump engine; • Model year is after 2007; and • Engine displacement less than 10 liters/cylinder
	40 CFR pt. 63, subp. ZZZZ and Minn. R. 7011.8150	NESHAP for Stationary Reciprocating Internal Combustion Engines. EQUI 7 is a new affected source subject to 40 CFR pt. 63, subp. ZZZZ. Under 40 CFR § 63.6590(c) the engine complies with the requirements 40 CFR pt. 63, subp. ZZZZ by complying with the requirements of 40 CFR pt. 60, subp. IIII and no further requirements apply under 40 CFR pt. 63, subp. ZZZZ.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel limited to diesel only, by design. Sulfur content of fuel limited to 0.0015% by weight.
EQUI 9 – Generator #5	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel limited to diesel only, by design. Sulfur content of fuel limited to 0.0015% by weight.

Subject item*	Applicable regulations	Rationale
EQUI 11 – Turbine Engine	Title I Condition: Avoid major modification under 40 CFR § 52.21 (b)(2) and Minn. R. 7007.3000	Provision for replacement of combustion turbine components. The restrictions of authorization allow the change to avoid being a major modification under NSR. The potential to emit for this unit is less than the major modification threshold, so the NSR emission increase analysis for component replacement will be less than the major modification thresholds.
	40 CFR pt. 60, subp. GG and Minn. R. 7011.2350	NSPS for Stationary Gas Turbines. Determination of applicable limits for rule: • Heat input at peak load ≥ 10 MMBtu/hr; and • Constructed/modified/reconstructed after Oct 3, 1977 but before Feb 18, 2005.
	40 CFR pt. 60, subp. KKKKa	NSPS for Reconstructed Natural Gas Combustion Turbines. Because the permit allows the component replacement of EQUI 11, it is possible that the replacements could reach the point of reconstruction under 40 CFR § 60.14. If this is the case, then the unit would be subject to 40 CFR, pt. 60, subp. KKKKa; therefore the permit includes the provisions that would apply to the reconstructed turbine. Limits from the standard are based on the following criteria: • The turbine is not located in Alaska or north of the arctic circle; • The turbine burns only pipeline natural gas; • Using fuel records and NO_X performance testing compliance options; and • Heat input at peak load > 20 MMBtu/hr and ≤ 850 MMBtu/hr.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel limited to natural gas only, by design. Sulfur content of fuel limited to 0.0015 lb/MMBtu
EQUI 35 – Generator #6	40 CFR pt. 60, subp. IIII and Minn. R. 7011.2305	NSPS for Stationary Compression Ignition Internal Combustion Engines. Applicability criteria include: • emergency engine (not a fire pump); • commenced construction date after July 11, 2005; • manufacture date after April 1, 2006; • engine output >= 3000; and • displacement less than 30 liters per cylinder.
	40 CFR pt. 63, subp. ZZZZ and Minn. R. 7011.8150	NESHAP for Stationary Reciprocating Internal Combustion Engines. EQUI 35 is a new affected source subject to 40 CFR pt. 63, subp. ZZZZ. Under 40 CFR § 63.6590(c) the engine complies with the requirements 40 CFR pt. 63, subp. ZZZZ by complying with the requirements of 40 CFR pt. 60, subp. IIII and no further requirements apply under 40 CFR pt. 63, subp. ZZZZ.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel is limited to diesel only, by design. Sulfur content of fuel limited to 0.0015% by weight.
EQUI 38 – SMC Parking Emergency Generator	Title I Condition: Avoid major modification under 40 CFR § 52.21 (b)(2) and Minn. R. 7007.3000	PSD. Construction requirement to avoid major modification under NSR. The Permittee is only allowed to install the listed equipment.

Subject item*	Applicable regulations	Rationale
	40 CFR pt. 60, subp. IIII and Minn. R. 7011.2305	NSPS for Stationary Compression Ignition Internal Combustion Engines. Applicability criteria include: • emergency engine (not a fire pump); • commenced construction date after July 11, 2005; • manufacture date after April 1, 2006; • engine output >175 hp and <= 300; and • displacement less than 30 liters per cylinder.
	40 CFR pt. 63, subp. ZZZZ and Minn. R. 7011.8150	NESHAP for Stationary Reciprocating Internal Combustion Engines. EQUI 38 is a new affected source subject to 40 CFR pt. 63, subp. ZZZZ. Under 40 CFR § 63.6590(c) the engine complies with the requirements 40 CFR pt. 63, subp. ZZZZ by complying with the requirements of 40 CFR pt. 60, subp. IIII and no further requirements apply under 40 CFR pt. 63, subp. ZZZZ.
	Minn. R. 7011.2300	Standards of Performance for Stationary Internal Combustion Engines. Fuel is limited to diesel only, by design. Sulfur content of fuel limited to 0.0015% by weight.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3. Technical information

3.1 Calculations of potential to emit (PTE) and Emissions increase analysis

Attachment 1 to this TSD contains a summary of the PTE of the Facility as well as detailed spreadsheets and supporting information prepared by the MPCA and the Permittee.

Attachment 1 to this TSD contains the Title I emissions increase calculations for this modification. This demonstrates that this modification is not a major modification for PSD and qualifies as a minor amendment.

Boilers (EQUI 6, 7, 8)

The Permittee states that the three boilers will run on natural gas, except during a natural gas curtailment in order to qualify as gas-fired boilers under 40 CFR pt. 63, subp. JJJJJJ. Therefore, criteria pollutant and HAPs emissions are calculated for both natural gas and distillate fuel operation using emission factors from AP-42 sections 1.3 and 1.4. Worst-case potential emissions are based on the worst-case fuel for each pollutant. As a result of the SO_X limit, the boilers are limited in the amount of fuel oil they are able to use per year. The maximum heat input for natural gas is 107.05 MMBtu/hr, and the maximum heat input for distillate fuel is 106.5 MMBtu/hr.

Diesel Only Non-Emergency Engine (EQUI 5)

This generator runs on diesel fuel only and is used primarily for emergency power generation. Its maximum heat input is 26.28 MMBtu/hr and a maximum horsepower of 3,755. There is a limit of 2,045 hours/year. The CO, PM, NO_X, and VOC emission factors are based on manufacturer information. The SO_X emissions are based on the sulfur content of the fuel. The HAPs emission factors are from AP-42 sections 3.3 and 3.4.

Diesel Only Emergency Engine (EQUI 9)

This generator runs on diesel fuel only. Its maximum heat input is 23.47 MMBtu/hr and a maximum horsepower of 3,353. Criteria pollutant and HAPs emission factors are from AP-42 sections 3.3 and 3.4. EQUI 9 is an emergency generator, therefore the September 6, 1995 EPA Memo "Calculating Potential to Emit (PTE) for Emergency Generators" applies therefore 500 hours/year is used for calculating the emissions.

Diesel Only Emergency Engine (EQUI 35)

This emergency generator runs on diesel fuel only. Its maximum heat input is 32.79 MMBtu/hr and a maximum horsepower of 4,684. The VOC emissions factor is from AP-42 section 3.4. The PM, NO_X, and CO emission factors are from 40 CFR pt. 1039, Table 2 to Appendix I. The SO_X emissions are based on the sulfur content of the fuel. The HAPs emission factors are from AP-42 sections 3.3 and 3.4. EQUI 35 is an emergency generator, therefore the September 6, 1995 EPA Memo "Calculating Potential to Emit (PTE) for Emergency Generators" applies and 500 hours/ year is used for calculating emissions.

Dual Fuel Emergency Engine (EQUI 38)
This generator runs on diesel fuel only. Its maximum heat input is 1.96 MMBtu/hr and a maximum horsepower of 280. Criteria pollutant and HAPs emission factors are from AP-42 section 3.3. EQUI 38 is an emergency generator, therefore the September 6, 1995 EPA Memo "Calculating Potential to Emit (PTE) for Emergency Generators" applies therefore 500 hours/year is used for calculating the emissions.

Natural Gas Only Cogeneration Turbine (EQUI 11)
This turbine runs on natural gas only. Its maximum heat input is 60.45 MMBtu/hr. Emission factors for criteria pollutants and HAPs are from AP-42 sections 3.1.

Boilers and Generators Sulfur Limit (COMG 3)
EQUIs 5-9 and EQUI 35 are subject to the 65.56 tpy SO_X limit. The combined generator PTE for SO_X of EQUIs 5, 9, and 35 have a controlled PTE of 0.06 tpy. The remaining 65.50 tpy limits the maximum gallons of fuel oil available for the boilers to use. The total PTE for COMG 3 is the combination of the combined generator PTE with the worst-case fuel source PTE for the boilers.

Greenhouse Gases
Greenhouse gases (GHG) refer to CO_2, CH_4, and N_2O in this permit. The GHG emission factors and global warming potentials are from 40 CFR pt. 98, Table C-1, Table C-2, and Equation A-1. All units at the facility use this method to determine the emissions for GHGs.

3.2 Performance testing history

Table 8 shows the performance tests for EQUI 35 for opacity conducted since the installation of the equipment.

Table 8. Initial Compliance Performance Tests

ID#	Test Date	Limit	Tested Result	Units	Status
EQUI 35	11/23/2020	20	5	Percent opacity	Compliant

Based on the compliance with the initial performance test, the facility will not have to conduct another opacity test for EQUI 35. This permit requires EQUI 38 to perform an initial opacity performance test.

3.3 Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- the likelihood of the facility violating the applicable requirements;
- whether add-on controls are necessary to meet the emission limits;
- the variability of emissions over time;
- the type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- the technical and economic feasibility of possible periodic monitoring methods; and
- the kind of monitoring found on similar units elsewhere.

The Table below summarizes the monitoring requirements.

Table 9. Monitoring

Subject Item*	Requirement [basis]	What is the monitoring?	Why is this monitoring adequate?
COMG 2 – Boilers (EQUIs 6-8)	Opacity <= 20% opacity Sulfur Content of Fuel <= 0.50% by weight NO_X <= 0.10 lb/MMBtu heat input 30-day rolling average [40 CFR pt. 60, subp. Db and Minn. R. 7011.0565]	COMS for opacity, Fuel Certification, and CEMS for NO_X.	Monitoring required by 40 CFR pt. 60, subp. Db is adequate to demonstrate compliance with the standard. COMS requirements are located at EQUI 4 and CEMS requirements are located at EQUI 2 in the permit.
COMG 3 – Boiler and Generator Sulfur Limit (EQUIs 5-9 and 35)	SO_2 <= 65.56 tons/yr 12-month rolling sum [Limit to avoid PSD]	Daily record keeping of fuel use, monthly calculations, and monthly records.	The Permittee is able to use daily records of fuel use to calculate monthly and 12-month rolling sum SO_2 emissions to show compliance with the limit. Because these units are not likely to operate uniformly throughout the year, with some months having very limited operations, a 12-month rolling sum is adequate to ensure the facility remains below PSD major modification thresholds.
EQUI 5 – Generator 7	Opacity <= 20% SO_2 <= 0.0015 lb/MMBtu heat input [Minn. R. 7011.2300]	Monthly recordkeeping of the type of fuel used.	This unit uses diesel fuel with a sulfur content less than 0.0015% by weight and limits the hours of operation to 2,045 hr/yr; therefore the likelihood of violating either limit is very small. Fuel certifications verify sulfur content of the fuel. The potential to emit from the unit is 0.0015 lb SO_2/MMBtu due to allowable fuels and equipment design.
	Hours <= 2,045 hr/yr 12-month rolling sum [Limit to avoid PSD]	Daily records of hours of operation, monthly calculations, records, and fuel certification.	The Permittee is able to use daily records of hours to calculate monthly and 12-month rolling sum to show compliance with the limit. Because the engine is not likely to operate uniformly throughout the year, with some months having very limited operations, a 12-month rolling sum is adequate to ensure the facility remains below PSD thresholds.

Subject Item*	Requirement [basis]	What is the monitoring?	Why is this monitoring adequate?
	HC <= 1.3 g/kW-hr PM <= 0.54 g/kW-hr NO_X <= 9.2 g/kW-hr CO <= 11.4 g/kW-hr [40 CFR pt. 60, subp. IIII, Minn. R. 7011.2305, and Minn. R. 7011.8150]	Fuel Supplier Certification for each shipment of diesel fuel, and recordkeeping. Purchase certified engine and: 1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; 2) Change only those emission-related settings that are permitted by the manufacturer; and 3) Meet the requirements of 40 CFR parts 1039, 1042, and/or 1068 as they apply.	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.
EQUI 9 – Generator 9	SO_2 <= 0.0015 lb/MMBtu heat input Opacity <= 20% [Minn. R. 7011.2300]	Fuel certifications and recordkeeping of the fuel type and usage.	The SO_2 limits are met by using allowable fuels, including diesel fuel with a sulfur content less than 0.0015% by weight. Fuel certifications verify sulfur content of fuel. The potential to emit from the unit is 0.0015 lb SO_2/MMBtu due to equipment design and allowable fuels.

Subject Item*	Requirement [basis]	What is the monitoring?	Why is this monitoring adequate?
EQUI 11 – Turbine Engine	SO_2 <= 0.015% by volume at 15% O_2 and on a dry basis. NO_X <= 190 ppm at 15% O_2 and on a dry basis when combusting natural gas. [40 CFR pt. 60, subp. GG and Minn. R. 7011.2350]	Custom Monitoring Schedule for NO_X Keep records on current purchase contract, tariff sheet, or transportation contract showing that the sulfur content is 20 grains/100 scf or less.	Under 40 CFR § 60.334(c) a turbine that was constructed before October 3rd, 1977, but before July 8th, 2004 and does not use water or steam injection to control NO_X emissions, the owner or operator is allowed to continue to use a previously submitted procedure for monitoring compliance with the applicable NO_X limit. • This turbine was constructed on March 3rd, 1996 • It also does not use water or steam injection for NO_X emissions control. The turbine only burns natural gas which contains a negligible amount of fuel bound nitrogen. It is unlikely that the unit will exceed this emission limit while burning natural gas. The requirement to monitor the nitrogen content of fuel was waived in the initial Title V permit issued 7/23/2003. A reduced-frequency custom sulfur monitoring schedule was requested in the Title V permit issued 7/23/2003 under the terms of the 8/14/1987 EPA memo on custom fuel monitoring schedules under 40 CFR pt. 60, subp. GG. An EPA letter to the MPCA, dated 5/2/2003 approved a custom monitoring scheduling as outlined in the memo.
	Opacity <= 20 % opacity SO_2 <= 0.0015 lb/MMBtu heat input [Minn. R. 7011.2300]	Monthly recordkeeping of the type of fuel used	This unit uses pipeline natural gas only; therefore, the likelihood of violating either of the limits is very small. The Permittee can demonstrate that the unit will continue to operate such that emissions meet the emission limits by only burning natural gas. PTE is 0.00056 lb of SO_2/MMBtu.

Subject Item*	Requirement [basis]	What is the monitoring?	Why is this monitoring adequate?
	KKKKa Reconstructed Units: SO_2 <= 110 ng/J (0.90 lb/MWh) gross output or the Permittee must not burn any fuel in EQUI 11 which contains total potential sulfur emissions in excess of 26 ng SO_2/J (0.060 lb SO_2/MMBtu) heat input. NO_X <= 42 ppm at 15% O2 or 67 ng/J of useful output (0.15 lb/MMBtu). [40 CFR pt. 60, subp. KKKKa]	Records for sulfur content: maintain current purchase contract, tariff sheet or transportation contract for the fuel Initial and annual NO_X performance testing	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS contain adequate monitoring requirements. SO_2 PTE is 0.0015 lb SO_2/MMBtu compared to rule limit of 0.06 lb/MMBtu. NO_X PTE is 0.099 lb/MMBtu compared to rule limit of 0.222 lb/MMBtu. See Attachment 1 for detailed calculations.
EQUI 35 – Generator 6	SO_2 <= 0.0015 lb/MMBtu heat input Opacity <= 20% [Minn. R. 7011.2300]	Fuel certifications and recordkeeping of the fuel type and usage.	The SO_2 limits are met by using allowable fuels, including diesel fuel with a sulfur content less than 0.0015% by weight. Fuel certifications verify sulfur content of fuel. The potential to emit from the unit is 0.0015 lb SO_2/MMBtu due to equipment design and allowable fuels.
	Opacity <= 15% during the lugging mode Opacity <= 20% during acceleration mode Opacity <= 50% during peaks in either the acceleration or lugging modes NMHC+ NO_X <= 6.4 g/kW-hr PM <= 0.20 g/kW-hr CO <= 3.5 g/kW-hr Sulfur Content of Fuel <= 15.0 ppm either a minimum cetane index of 40 or a maximum aromatic content of 35% by volume, as required by 40 CFR § 1090.305 [40 CFR pt. 60, subp. IIII and Minn. R. 7011.2305]	Fuel Supplier Certification for each shipment of diesel fuel. Non-resettable hour meter, and recordkeeping. Purchase certified engine and: 1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; 2) Change only those emission-related settings that are permitted by the manufacturer; and 3) Meet the requirements of 40 CFR parts 1039, 1042, and/or 1068 as they apply.	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.

Subject Item*	Requirement [basis]	What is the monitoring?	Why is this monitoring adequate?
EQUI 38 – SMC Parking Ramp Emergency Generator	Opacity <= 20% SO_2 <= 0.0015 lb/MMBtu heat input. [Minn. R. 7011.2300]	Fuel certifications and recordkeeping of the fuel type and usage.	The SO_2 limits are met by using allowable fuels, including diesel fuel with a sulfur content less than 0.0015% by weight. Fuel certifications verify sulfur content of fuel. The potential to emit from the unit is 0.0015 lb SO_2/MMBtu due to equipment design and allowable fuels.
	CO <= 3.5 g/kW-hr PM <= 0.20 g/kW-hr NMHC+ NO_X <= 6.5 g/kW-hr Opacity <= 50% during the peaks in either the acceleration or lugging modes. Opacity <= 15% during the lugging mode. Opacity <= 20% during the acceleration mode. The Permittee must limit Sulfur Content of Fuel <= 15.0 parts per million and either a minimum cetane index of 40 or a maximum aromatic content of 35% by volume, as required by 40 CFR § 1090.305. [40 CFR pt. 60, subp. IIII and Minn. R. 7011.2305]	Fuel Supplier Certification for each shipment of diesel fuel. Non-resettable hour meter, and recordkeeping. Purchase certified engine and: 1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer's emission-related written instructions; 2) Change only those emission-related settings that are permitted by the manufacturer; and 3) Meet the requirements of 40 CFR parts 1039, 1042, and/or 1068 as they apply.	Monitoring required by the NSPS is adequate to demonstrate compliance with the requirements because this standard was promulgated after November 15, 1990, and post-November 15, 1990, NSPS and NESHAPs contain adequate monitoring requirements.

*Location of the requirement in the permit (e.g., EQUI 1, STRU 2, etc.).

3.4 Insignificant activities

Mayo Clinic Hospital - Saint Mary's Campus has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in Appendix A to the permit.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the current insignificant activities. See Attachment 1 of this TSD for PTE information for the insignificant activities.

Table 10. Insignificant activities

Insignificant activity	General applicable emission limit	Discussion
Minn. R. 7007.1300, subp. 3(D) Emissions from a laboratory, as defined in	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011. 0715)	Mayo Clinic Hospital – Saint Mary's Campus operates experimental study and teaching laboratories throughout the facility. These are very small, intermittent, bench-top operations that typically do not even have any emissions. It is highly unlikely that they could violate the applicable requirement.
Minn. R. 7007.1300, subp. 3(E) Brazing, soldering or welding equipment	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011. 0715)	For these units, based on EPA published emissions factors, it is highly unlikely that they could violate the applicable requirement. These units are used for facility maintenance and are not for production purposes. In addition, these units are typically operated and vented inside a building, so testing for PM or opacity is not feasible.
Minn. R. 7007.1300, subp. 3(F) Individual units with potential emissions less than 2000 lb/year of certain pollutants	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011.0715)	There are 3 distillate oil storage tanks with potential emissions of 0.015 tpy of VOC each based on analysis done for previous permit actions. Particulate emissions are not anticipated. Based on general knowledge of storage tanks for distillate oil, it is highly unlikely that they could violate the applicable emission limits. There are five ethylene oxide sterilizers in operation. Based on how the ethylene oxide sterilizers operate, particulate emissions are not anticipated. Additionally, the units are operated and vented inside a building, so monitoring or testing for PM or opacity is not feasible. The potential emission from each sterilizer is 165 lb/yr. The area source 40 CFR pt. 63, supb. WWWWW applies to these units. Monitoring required by the NESHAP is adequate to demonstrate compliance with the requirements. The NESHAP requirements are work practice and recordkeeping, therefore, the units are and will continue to be classified as insignificant activities. The NESHAP requirements are in Appendix D to the permit.
Minn. R. 7007.1300, subp. 4 Individual units with potential or actual emissions meeting the criteria in	PM, variable depending on airflow Opacity <= 20% (Minn. R. 7011. 0715)	Mayo Hospital Clinic – Saint Mary's Campus operates several activities that qualify under this insignificant activity including sandblasters, parts washers, a non-contact cooling tower, gluing, parts lubrication, printing, and flux cleaning. For these units, based on EPA published emissions factors and the anticipated use of the units, it is highly unlikely that they could violate the applicable requirement. In addition, these units are vented inside a building, so testing for PM or opacity is not feasible.

3.5 Permit organization and standard language

This permit meets the MPCA Tempo Guidance for ordering and grouping of requirements as well as the use of permit appendices.

When amending or reissuing an air permit, MPCA staff evaluate standard permit language in the permit. If the standard language has been changed in the Tempo database since the last permit was issued, staff need to decide how to proceed for each revised condition. For this permit action, all standard language was updated in the permit.

3.6 Comments received

This section will be completed after the referenced review periods.

Public Notice Period: [start date] – [end date]
EPA Review Period: [start date] – [end date]

4. Permit fee assessment

This permit action is the reissuance of an individual Part 70; therefore, no application fees apply under Minn. R. 7002.0016, subp. 1 to the changes that are covered by the reissuance application. However, the permit action rolls in one additional permit application to which fees do apply. Attachment 3 to this TSD contains the MPCA's assessment of Application and Additional Points used to determine the permit application fee as required by Minn. R. 7002.0019. The action includes the incorporation of a NESHAP (40 CFR pt. 63 supb. ZZZZ) and an NSPS (40 CFR pt. 60, subp. IIII) for EQUI 38

5. Conclusion

Based on the information provided by Mayo Clinic Hospital - Saint Mary's Campus the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 10900008-103 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff members on permit team: Jacqueline Hammond (permit engineer)
Hannah Braatz (peer reviewer)
Leah Waller (data coordinator)
Kayla Park (enforcement team)
Laurie O'Brien (administrative support)

Tempo Activities: Minor Amendment (IND20250001), Part 70 Reissuance (IND20230001)

Attachments:
1. PTE summary and emissions increase calculation spreadsheets
2. Subject item inventory and facility requirements
3. Points Calculator
4. EPA Memo on Custom Monitoring/Letter to EPA Seeking Approval/EPA Approval Letter

Attachment 1- PTE Summary and Emissions Increase Calculation Spreadsheets

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	EQUI 6 Boiler 1			EQUI 7 Boiler 2			EQUI 8 Boiler 3			EQUI 9 Gen 5			EQUI 35 Gen 6		
	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim
Acetaldehyde										5.91E-04	1.48E-04	1.48E-04	8.26E-04	2.07E-04	2.07E-04
Acrolein										1.85E-04	4.62E-05	4.62E-05	2.58E-04	6.46E-05	6.46E-05
Arsenic compounds	2.09E-05	9.14E-05	9.14E-05	2.09E-05	9.14E-05	9.14E-05	2.09E-05	9.14E-05	9.14E-05						
Barium	4.59E-04	2.01E-03	2.01E-03	4.59E-04	2.01E-03	2.01E-03	4.59E-04	2.01E-03	2.01E-03						
Benzene	2.19E-04	9.60E-04	9.60E-04	2.19E-04	9.60E-04	9.60E-04	2.19E-04	9.60E-04	9.60E-04	1.82E-02	4.55E-03	4.55E-03	2.54E-02	6.36E-03	6.36E-03
Beryllium	1.25E-06	5.48E-06	5.48E-06	1.25E-06	5.48E-06	5.48E-06	1.25E-06	5.48E-06	5.48E-06						
Biphenyl													0.00E+00	0.00E+00	0.00E+00
1,3-Butadiene										9.18E-04	2.29E-04	2.29E-04	1.28E-03	3.21E-04	3.21E-04
Cadmium compounds	1.15E-04	5.03E-04	5.03E-04	1.15E-04	5.03E-04	5.03E-04	1.15E-04	5.03E-04	5.03E-04						
CH4 (Methane)	7.08E-01	3.10E+00	3.10E+00	7.08E-01	3.10E+00	3.10E+00	7.08E-01	3.10E+00	3.10E+00	1.55E-01	3.88E-02	3.88E-02	2.17E-01	5.42E-02	5.42E-02
Chromium compounds	1.46E-04	6.40E-04	6.40E-04	1.46E-04	6.40E-04	6.40E-04	1.46E-04	6.40E-04	6.40E-04						
CO	8.76E+00	3.84E+01	COMG 3	8.76E+00	3.84E+01	COMG 3	8.76E+00	3.84E+01	COMG 3	1.99E+01	4.99E+00	COMG 3	2.70E+01	6.74E+00	COMG 3
CO2	1.75E+04	7.65E+04	COMG 3	1.75E+04	7.65E+04	COMG 3	1.75E+04	7.65E+04	COMG 3	3.83E+03	9.57E+02	COMG 3	5.35E+03	1.34E+03	COMG 3
CO2e	1.75E+04	76716.86	COMG 3	1.75E+04	7.67E+04	COMG 3	1.75E+04	7.67E+04	COMG 3	3.84E+03	9.60E+02	COMG 3	5.36E+03	1.34E+03	COMG 3
Cobalt compounds	8.76E-06	3.84E-05	3.84E-05	8.76E-06	3.84E-05	3.84E-05	8.76E-06	3.84E-05	3.84E-05						
Copper	6.39E-04	2.80E-03	2.80E-03	6.39E-04	2.80E-03	2.80E-03	6.39E-04	2.80E-03	2.80E-03						
1,4-Dichlorobenzene	1.25E-04	5.48E-04	5.48E-04	1.25E-04	5.48E-04	5.48E-04	1.25E-04	5.48E-04	5.48E-04						
Dioxins (OCDD)	2.39E-09	1.05E-08	1.05E-08	2.39E-09	1.05E-08	1.05E-08	2.39E-09	1.05E-08	1.05E-08						
Ethylbenzene	4.91E-05	2.15E-04	2.15E-04	4.91E-05	2.15E-04	2.15E-04	4.91E-05	2.15E-04	2.15E-04				0.00E+00	0.00E+00	0.00E+00
Formaldehyde	2.55E-02	1.12E-01	1.12E-01	2.55E-02	1.12E-01	1.12E-01	2.55E-02	1.12E-01	1.12E-01	1.85E-03	4.63E-04	4.63E-04	2.59E-03	6.47E-04	6.47E-04
HAPs Total	0.200736	0.879225	0.879225	0.200736	0.879225	0.879225	0.200736	0.879225	0.879225	0.037845	0.009461	0.009461	0.052876493	0.013219	0.013219123
Hexane	1.88E-01	8.23E-01	8.23E-01	1.88E-01	8.23E-01	8.23E-01	1.88E-01	8.23E-01	8.23E-01				0.00E+00	0.00E+00	0.00E+00
Lead	9.59E-04	4.20E-03	COMG 3	9.59E-04	4.20E-03	COMG 3	9.59E-04	4.20E-03	COMG 3						
Manganese compounds	3.96E-05	1.74E-04	1.74E-04	3.96E-05	1.74E-04	1.74E-04	3.96E-05	1.74E-04	1.74E-04						
Mercury	2.71E-05	1.19E-04	1.19E-04	2.71E-05	1.19E-04	1.19E-04	2.71E-05	1.19E-04	1.19E-04						
Molybdenum	1.15E-04	5.03E-04	5.03E-04	1.15E-04	5.03E-04	5.03E-04	1.15E-04	5.03E-04	5.03E-04						
Naphthalene	8.72E-04	3.82E-03	3.82E-03	8.72E-04	3.82E-03	3.82E-03	8.72E-04	3.82E-03	3.82E-03	3.05E-03	7.63E-04	7.63E-04	4.26E-03	1.07E-03	1.07E-03
Nickel compounds	2.19E-04	9.60E-04	9.60E-04	2.19E-04	9.60E-04	9.60E-04	2.19E-04	9.60E-04	9.60E-04						
N2O	1.42E-01	6.20E-01	COMG 3	1.42E-01	6.20E-01	COMG 3	1.42E-01	6.20E-01	COMG 3	3.10E-02	7.76E-03	COMG 3	4.34E-02	1.08E-02	COMG 3
NOx	1.04E+01	4.57E+01	COMG 3	1.04E+01	4.57E+01	COMG 3	1.04E+01	4.57E+01	COMG 3	7.51E+01	1.88E+01	COMG 3	4.93E+01	1.23E+01	COMG 3
PM	2.55E+00	1.12E+01	COMG 3	2.55E+00	1.12E+01	COMG 3	2.55E+00	1.12E+01	COMG 3	1.64E+00	4.09E-01	COMG 3	1.54E+00	3.85E-01	COMG 3
PM10	1.27E+00	5.58E+00	COMG 3	1.27E+00	5.58E+00	COMG 3	1.27E+00	5.58E+00	COMG 3	1.34E+00	3.36E-01	COMG 3	1.54E+00	3.85E-01	COMG 3
PM2.5	7.93E-01	3.47E+00	COMG 3	7.93E-01	3.47E+00	COMG 3	7.93E-01	3.47E+00	COMG 3	1.30E+00	3.26E-01	COMG 3	1.54E+00	3.85E-01	COMG 3
POM	7.28E-05	3.19E-04	3.19E-04	7.28E-05	3.19E-04	3.19E-04	7.28E-05	3.19E-04	3.19E-04						
Selenium compounds	2.50E-06	1.10E-05	1.10E-05	2.50E-06	1.10E-05	1.10E-05	2.50E-06	1.10E-05	1.10E-05						
SO2	5.70E+01	2.50E+02	COMG 3	5.70E+01	2.50E+02	COMG 3	5.70E+01	2.50E+02	COMG 3	3.56E-02	8.89E-03	COMG 3	4.97E-02	1.24E-02	COMG 3
Toluene	4.78E-03	2.10E-02	2.10E-02	4.78E-03	2.10E-02	2.10E-02	4.78E-03	2.10E-02	2.10E-02	6.59E-03	1.65E-03	1.65E-03	9.21E-03	2.30E-03	2.30E-03
1,1,1-Trichloroethane	1.82E-04	7.98E-04	7.98E-04	1.82E-04	7.98E-04	7.98E-04	1.82E-04	7.98E-04	7.98E-04						
VOCs	5.74E-01	2.51E+00	COMG 3	5.74E-01	2.51E+00	COMG 3	5.74E-01	2.51E+00	COMG 3	1.92E+00	4.81E-01	COMG 3	2.69E+00	6.71E-01	COMG 3
Xylenes (mixed isomers)	8.41E-05	3.68E-04	3.68E-04	8.41E-05	3.68E-04	3.68E-04	8.41E-05	3.68E-04	3.68E-04	4.53E-03	1.13E-03	1.13E-03	6.33E-03	1.58E-03	1.58E-03
Zinc	3.03E-03	1.33E-02	1.33E-02	3.03E-03	1.33E-02	1.33E-02	3.03E-03	1.33E-02	1.33E-02						

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	EQUI 5 Gen 7			EQUI 38 Emg. Gen			EQUI 11 Turbine			COMG 3	Facility Total	
	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim	LB / HR	TPY - Unc	TPY - Lim	TPY - Lim	TPY - Unc	TPY - Lim
Acetaldehyde	6.62E-04	2.90E-03	6.77E-04	1.50E-03	3.76E-04	3.76E-04	2.42E-03	1.06E-02	1.06E-02		1.42E-02	0.011998351
Acrolein	2.07E-04	9.07E-04	2.12E-04	1.81E-04	4.53E-05	4.53E-05	3.87E-04	1.69E-03	1.69E-03		2.76E-03	0.002062464
Arsenic compounds											2.74E-04	0.000274198
Barium											6.03E-03	0.006032361
Benzene	2.04E-02	8.93E-02	2.09E-02	1.83E-03	4.57E-04	4.57E-04	7.25E-04	3.18E-03	3.18E-03		1.07E-01	0.038282727
Beryllium											1.65E-05	1.64519E-05
Biphenyl											0.00E+00	0
1,3-Butadiene	1.03E-03	4.50E-03	1.05E-03	7.66E-05	1.92E-05	1.92E-05					5.07E-03	0.001619902
Cadmium compounds											1.51E-03	0.00150809
CH4 (Methane)	1.74E-01	7.61E-01	1.78E-01	1.30E-02	3.24E-03	3.24E-03	1.33E-01	5.84E-01	5.84E-01	3.37E+00	1.07E+01	3.959364402
Chromium compounds											1.92E-03	0.001919388
CO	3.39E+00	1.49E+01	COMG 3	1.86E+00	4.66E-01	4.66E-01	9.07E-01	3.97E+00	3.97E+00	1.30E+02	1.46E+02	134.7961806
CO2	4.29E+03	1.88E+04	COMG 3	3.21E+02	8.04E+01	8.04E+01	7.07E+03	3.10E+04	3.10E+04	1.71E+05	2.82E+05	202300.6175
CO2e	4.30E+03	1.88E+04	COMG 3	3.23E+02	8.06E+01	8.06E+01	7.08E+03	3.10E+04	3.10E+04	1.71E+05	2.82E+05	202523.6758
Cobalt compounds											1.15E-04	0.000115163
Copper											8.40E-03	0.00839646
1,4-Dichlorobenzene											1.65E-03	0.001645189
Dioxins (OCDD)											3.14E-08	3.1436E-08
Ethylbenzene							1.93E-03	8.47E-03	8.47E-03		9.12E-03	0.009117617
Formaldehyde	2.07E-03	9.08E-03	2.12E-03	2.31E-03	5.78E-04	5.78E-04	4.29E-02	1.88E-01	1.88E-01		5.33E-01	0.526437276
HAPs Total	0.042386	0.185651	0.04334	0.007592	0.001898	0.001898	0.06019	0.263632	0.263632		3.111536057	2.969225177
Hexane											2.47E+00	2.467784211
Lead										1.10E-03	1.26E-02	0.001101537
Manganese compounds											5.21E-04	0.000520977
Mercury											3.56E-04	0.000356458
Molybdenum											1.51E-03	0.00150809
Naphthalene	3.42E-03	1.50E-02	3.49E-03	1.66E-04	4.16E-05	4.16E-05	7.86E-05	3.44E-04	3.44E-04		2.86E-02	0.017166855
Nickel compounds											2.88E-03	0.002879082
N2O	3.48E-02	1.52E-01	COMG 3	2.59E-03	6.48E-04	6.48E-04	1.33E-02	5.84E-02	5.84E-02	3.64E-01	2.09E+00	0.423337478
NOx	3.80E+01	1.66E+02	COMG 3	8.64E+00	2.16E+00	2.16E+00	5.98E+00	2.62E+01	2.62E+01	2.07E+02	3.63E+02	235.4220401
PM	4.96E-01	2.17E+00	COMG 3	6.08E-01	1.52E-01	1.52E-01	3.99E-01	1.75E+00	1.75E+00	1.17E+01	3.83E+01	13.61968106
PM10	4.96E-01	2.17E+00	COMG 3	6.08E-01	1.52E-01	1.52E-01	3.99E-01	1.75E+00	1.75E+00	1.16E+01	2.15E+01	13.54693062
PM2.5	4.96E-01	2.17E+00	COMG 3	6.08E-01	1.52E-01	1.52E-01	3.99E-01	1.75E+00	1.75E+00	1.16E+01	1.52E+01	13.53695677
POM											9.57E-04	0.000957226
Selenium compounds											3.29E-05	3.29038E-05
SO2	3.98E-02	1.74E-01	COMG 3	5.68E-01	1.42E-01	1.42E-01	3.41E-02	1.49E-01	1.49E-01	6.56E+01	7.49E+02	65.85143084
Toluene	7.39E-03	3.23E-02	7.55E-03	8.02E-04	2.00E-04	2.00E-04	7.86E-03	3.44E-02	3.44E-02		1.34E-01	0.108996745
1,1,1-Trichloroethane											2.39E-03	0.002393194
VOCs	1.08E+00	4.72E+00	COMG 3	7.06E-01	1.76E-01	1.76E-01	1.27E-01	5.56E-01	5.56E-01	9.79E+00	1.41E+01	10.52662937
Xylenes (mixed isomers)	5.07E-03	2.22E-02	5.19E-03	5.59E-04	1.40E-04	1.40E-04	3.87E-03	1.69E-02	1.69E-02		4.31E-02	0.026091691
Zinc											3.98E-02	0.039758746

Mayo Foundation - St Marys
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COMG 3 - Boilers and Generators

EQUI 6, 7, & 8 - Boilers 1, 2, & 3
EQUI 5 - Generator 7
EQUI 9 - Generators 5
EQUI 35 - Generator 6

65.56 tpy permit limit

Combined generator PTE (with permit hourly limits) using worst case fuel:

	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Limited PTE:	1.30	1.23	1.22	0.06	69.95	2.25	15.20	0.0	**tpy**

GHG generator PTE (w/ permit hourly limits) using worst case fuel:

	CO2	CH4	N20	CO2e	
Limited PTE:	6,675	0.27	0.05	6,697	**tpy**

Boiler emissions (NG vs oil):

	65.50	Available tpy SOx after generators
=	130,996	Available lbs/year SOx after generators
÷	0.074	EF lb SO2/gallon of fuel oil
=	1,773,811	Max gallons fuel oil/year available to use (limited by SOx)

Boiler emissions (NG vs oil):

	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Oil rate:	3.30E-03	1.65E-03	3.96E-04	7.39E-02	1.00E-02	2.00E-04	5.00E-03	1.24E-06	lb/gal
PTE:	**2.93**	**1.46**	**0.35**	**65.50**	**8.87**	**0.18**	**4.43**	**1.10E-03**	**tpy total**
NG Rate:	0.79	0.79	0.79	0.06	10.43	0.57	8.76	5.22E-05	lb/hr each
PTE:	**10.42**	**10.42**	**10.42**	**0.82**	**137.10**	**7.54**	**115.16**	**0.00069**	**Combined**

	CO2	CH4	N20	CO2e	
Oil rate:	22.62	0.00092	0.00018	---	lb/gal
PTE:	**20,063**	**0.8138**	**0.1628**	**20,129**	**tpy total**
NG Rate:	12,525	0.24	0.024	---	lb/hr each
PTE:	**164,573**	**3**	**0.310**	**164,742**	**Combined**

Worst Case Criteria PTE Emissions GP002 Total

GP002	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
PTE:	11.72	11.65	11.64	65.56	207.05	9.79	130.36	0.001102	tpy

Worst Case Criteria PTE Emissions GP002 Total

GP002	CO2	CH4	N20	CO2e	
PTE:	171,248	3.37	0.36	171,439	tpy

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EQUI 7 & 8 (COMG 2)
Boiler Criteria Emissions
Emission Factors - >100 MMBtu/hour, FGR (Flue gas recirculation)

Boiler Capacity (each)					
107.05	MMBtu / hour - natural gas				
1,026	BTU/cubic ft NG	0.001026	MMBtu/ft3	104,337	ft3/hour
106.5	MMBtu / hour - oil				
138,000	Btu/gallon #2 fuel oil per AP42 1.3	0.138	MMBtu/gallon	771.7391	gal/hr
		1,773,811	Max gal of fuel oil/yr limited by the 65.56 SOx limit		

Emssion Factors

Fuel:	**PM**	**PM10**	**PM2.5**	**SOx**	**NOx**	**VOC**	**CO**	**Pb**	
Natural Gas	7.6E-06	7.6E-06	7.6E-06	6E-07	1E-04	5.5E-06	8.4E-05	5E-10	lb/ft3
Distillate Oil	3.3E-03	1.65E-03	3.96E-04	7.39E-02	1E-02	2E-04	5E-03	1.2E-06	lb/gallon
Limits:					1E-01	lb/MMBtu per 40 CFR Section 60.44b(a)			
				0.5	% Low Sulfur Oil per 40 CFR Section 60.41b				

Notes:

1. Distillate PM per AP42 1.3 Tables 1 & 2 (Combined filterable & condensable) #2 Oil Fired/FGR
2. Distillate PM10 & PM2.5 ratios per AP42 1.3 Table 6
3. Distillate VOC per AP42 1.3 Table 3 (reported as NMTOC)
4. Distillate NOx & CO per AP42 1.3 Table 1 #2 Oil Fired/FGR
5. Distllate SOx per AP42 1.3 Table 1 for combined SO2 / SO3 #2 Oil Fired/FGR
6. Distillate Lead per AP42 1.3 Table 10 (trace elements)
7. Natural Gas EF for PM per AP42 1.4 Table 2 (combined filterable & condensable).
8. Natural Gas EF for NOx & CO per AP42 1.4 Table 1 (Large Boilers - FGR)
9. Natural Gas EF for Lead, SOx & VOC per AP42 1.4 Table 2

Emissions									
	PM	**PM10**	**PM2.5**	**SOx**	**NOx**	**VOC**	**CO**	**Pb**	
Natural Gas	0.79	0.79	0.79	0.06	10.43	0.57	8.76	5.22E-05	lb/hr each
Distillate Oil	2.55	1.27	0.31	56.99	7.72	0.15	3.86	9.59E-04	lb/hr each
NSPS				56.99	7.72				lb/hr each
Worst Case:	2.55	1.27	0.79	56.99	10.43	0.57	8.76	9.59E-04	lb/hr each
Uncontrolled PTE for Each Boiler	**11.15**	**5.58**	**3.47**	**249.63**	**45.70**	**2.51**	**38.39**	**4.20E-03**	**tpy each**
Controlled PTE for Each Boiler	**2.927**	**1.463**	**0.351**	**65.498**	**8.869**	**0.177**	**4.435**	**0.001**	**tpy each**

EQUI 7 & 8 (COMG 2)
Boiler HAP Emissions
Emission Factors - >100 MMBtu/hour, FGR (Flue gas recirculation)

	Fuel Oil EF lb/gal	Natural Gas EF lb/scf	Fuel Oil lb/hr	Natural Gas lb/hr	Worst Case Fuel lb/hr	PTE tpy
1,1,1-Trichloroethane	2.36E-07	0	1.82E-04	0	1.82E-04	7.98E-04
1,4-Dichlorobenzene (pa	0	1.20E-09	0	1.25E-04	1.25E-04	5.48E-04
Antimony compounds	0	0	0	0	0	0
Arsenic compounds	4.00E-12	2.00E-10	3.09E-09	2.09E-05	2.09E-05	9.14E-05
Barium	0	4.40E-09	0	4.59E-04	4.59E-04	2.01E-03
Benzene	2.14E-07	2.10E-09	1.65E-04	2.19E-04	2.19E-04	9.60E-04
Beryllium Compounds	8.00E-12	1.20E-11	6.17E-09	1.25E-06	1.25E-06	5.48E-06
Cadmium compounds	3.00E-12	1.10E-09	2.32E-09	1.15E-04	1.15E-04	5.03E-04
Chlorine	0	0	0	0	0	0
Chromium compounds	3.00E-12	1.40E-09	2.32E-09	1.46E-04	1.46E-04	6.40E-04
Cobalt compounds	0	8.40E-11	0.00E+00	8.76E-06	8.76E-06	3.84E-05
Copper	8.28E-07	8.50E-10	6.39E-04	8.87E-05	6.39E-04	2.80E-03
Ethylbenzene	6.36E-08	0	4.91E-05	0	4.91E-05	2.15E-04
Formaldehyde	3.30E-05	7.50E-08	2.55E-02	7.83E-03	2.55E-02	1.12E-01
Hexane	0	1.80E-06	0	1.88E-01	1.88E-01	8.23E-01
Manganese compounds	6.00E-12	3.80E-10	4.63E-09	3.96E-05	3.96E-05	1.74E-04
Mercury	3.00E-12	2.60E-10	2.32E-09	2.71E-05	2.71E-05	1.19E-04
Molybdenum	0	1.10E-09	0	1.15E-04	1.15E-04	5.03E-04
Naphthalene	1.13E-06	6.10E-10	8.72E-04	6.36E-05	8.72E-04	3.82E-03
Nickel compounds	3.00E-12	2.10E-09	2.32E-09	2.19E-04	2.19E-04	9.60E-04
Phosphorus	0	0	0	0	0	0
Polycyclic organic matter	3.30E-06	6.98E-10	2.55E-03	7.28E-05	2.55E-03	1.12E-02
Selenium compounds	1.50E-11	2.40E-11	1.16E-08	2.50E-06	2.50E-06	1.10E-05
Zinc	5.52E-07	2.90E-08	4.26E-04	3.03E-03	3.03E-03	1.33E-02
Toluene	6.20E-06	3.40E-09	4.78E-03	3.55E-04	4.78E-03	2.10E-02
Xylenes, Total	1.09E-07	0	8.41E-05	0	8.41E-05	3.68E-04
Haps Total	4.56E-05	1.92E-06	3.52E-02	2.01E-01	2.01E-01	8.79E-01

POMs	Fuel Oil EF lb/gal	Natural Gas EF lb/scf	Fuel Oil lb/hr	Natural Gas lb/hr	Worst Case Fuel lb/hr	PTE tpy
2-Methylnaphthalene		2.40E-11	0	2.50E-06	2.50E-06	1.10E-05
5-Methylchrysene		1.80E-12	0	1.88E-07	1.88E-07	8.23E-07
7,12-Dimethylbenz[a]anthracene		1.60E-11	0	1.67E-06	1.67E-06	7.31E-06
Acenaphthene	2.11E-08	1.80E-12	1.63E-05	1.88E-07	1.63E-05	7.13E-05
Acenaphthylene	2.53E-10	1.80E-12	1.95E-07	1.88E-07	1.95E-07	8.55E-07
Anthracene	1.22E-09	2.40E-12	9.42E-07	2.50E-07	9.42E-07	4.12E-06
Benzo(a)anthracene	4.01E-09	1.80E-12	3.09E-06	1.88E-07	3.09E-06	1.36E-05
Benzo(b)fluoranthene			0	0	0	0
Benzo(e)pyrene			0	0	0	0
Benzo(ghi)perylene	2.26E-09	1.20E-12	1.74E-06	1.25E-07	1.74E-06	7.64E-06
Benzo(b)fluoranthene	1.48E-09	1.80E-12	1.14E-06	1.88E-07	1.14E-06	5.00E-06
Benzo(k)fluoranthene		1.80E-12	0	1.88E-07	1.88E-07	8.23E-07
Benzo[a]pyrene		1.20E-12	0	1.25E-07	1.25E-07	5.48E-07
Biphenyl			0	0	0	0
Chrysene	2.38E-09	1.80E-12	1.84E-06	1.88E-07	1.84E-06	8.04E-06
Dibenz[a,h]anthracene	1.67E-09	1.20E-12	1.29E-06	1.25E-07	1.29E-06	5.64E-06
Dioxins (OCDD)	3.10E-12	0	2.39E-09	0	2.39E-09	1.05E-08
Fluoranthene	4.84E-09	3.00E-12	3.74E-06	3.13E-07	3.74E-06	1.64E-05
Fluorene	4.47E-09	2.80E-12	3.45E-06	2.92E-07	3.45E-06	1.51E-05
Indeno(1,2,3-cd)pyrene	2.14E-09	1.80E-12	1.65E-06	1.88E-07	1.65E-06	7.23E-06
Naphthalene	1.13E-06	6.10E-10	8.72E-04	6.36E-05	8.72E-04	3.82E-03
Octachlorodibenzo-p-dioxin	3.10E-12		2.39E-09	0	2.39E-09	1.05E-08
PCBs (Polychlorinated biphenyls)			0	0	0	0
Phenanthrene	1.05E-08	1.70E-11	8.10E-06	1.77E-06	8.10E-06	3.55E-05
Pyrene		5.00E-12	0	5.22E-07	5.22E-07	2.28E-06
	4.25E-09	6.98E-10	3.28E-06	7.28E-05	7.28E-05	3.19E-04

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EQUI 6,7, & 8
Boiler Greenhouse Gas (GHG) Emissions
Emission Factors - >100 MMBtu/hour, FGR (Flue gas recirculation)

Boiler Capacity (each)					
107.05	MMBtu / hour - natural gas				
1,026	BTU/cubic ft NG	0.001026	MMBtu/ft3	0.1043	MMcf/hour
106.5	MMBtu / hour - oil				
138,000	Btu/gallon #2 fuel oil per AP42 1.3	0.138	MMBtu/gallon	771.7391	gal/hr

Conversions	
2.205	lb/kg
8760	hr/yr
0.0005	tons/lb

Natural Gas					Mass ER		Uncon. Em		CO2e	
CO2	53.06	kg/mmBTU	116.9973	lb/mmBTU	12524.56097	lb/hr	54857.58	tons/yr	54857.58	tpy
CH4	0.001	kg/mmBTU	0.002205	lb/mmBTU	0.23604525	lb/hr	1.033878	tons/yr	28.94859	tpy
N2O	0.0001	kg/mmBTU	0.0002205	lb/mmBTU	0.023604525	lb/hr	0.103388	tons/yr	27.39777	tpy
									54913.92	tpy
Distillate										
CO2	73.96	kg/mmBTU	163.0818	lb/mmBTU	17457.90669	lb/hr	76465.63	tons/yr	76465.63	tpy
CH4	0.003	kg/mmBTU	0.006615	lb/mmBTU	0.70813575	lb/hr	3.101635	tons/yr	86.84577	tpy
N2O	0.0006	kg/mmBTU	0.001323	lb/mmBTU	0.14162715	lb/hr	0.620327	tons/yr	164.3866	tpy
									76716.86	tpy

Emissions

	CO2 (lb/hr)	CH4 (lb/hr)	N20 (lb/hr)	CO2e * (tpy)	
Natural Gas	12,525	0.2360	0.02360	54,914	
Distillate Oil	17,458	0.7081	0.1416	76,717	
Worst Case:	17,458	0.71	0.14	76,717	
Annual PTE:	**76,466**	**3.1016**	**0.6203**	**76,717**	**tpy each**

GWP	
CO2	1
CH4	28
N2O	265

Notes:

1. Natural Gas and Distillate CO2 emission factors from 40 CFR pt. 98, Table C-1
2. Natural Gas and Distillate CH4 and N2O emission factors from 40 CFR pt. 98, Table C-2
3. CO2e PTE calculated using 40 CFR pt. 98, Equation A-1
4. GWP are from 40 CFR pt. 98

Mayo Foundation - St Marys
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EQUI 5
Generator #7 Criteria Emissions
Emission Factors - >600 hp ICE

Conversions
0.7457 kw/hp
7000 Btu/hp-hr
2045 hr/yr

Generator Specifications

2800	kw	3755	hp	26.2840284	MMBtu/hr diesel fuel only by design
19300	btu/lb	HV of Diesel AP 42 3.4		7.1 lb/gal	0.13703 MMBtu/gal
191.8122194	gal/hr				

Emssion Factors

Fuel:	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Diesel	1.3E-04	1.3E-04	1.3E-04		1.01E-02	2.87E-04	9.04E-04	0	lb/hp-hr
				1.52E-03					lb/MMBtu
Limits:				0.0015	% Low Sulfur Diesel (15 ppm)				

Notes:
1. Distillate PM / Nox / CO / VOC based on manufacture information, assume PM=PM10=PM2.5
2. Distillate EFs for SOx per AP42 3.4 Table 1 based on MMBtu/hr using low sulfur diesel per NSPS Subpart IIII

	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Emission Rate	0.50	0.50	0.50	0.040	38.00	1.08	3.39	0	lb/hr
Uncontrolled PTE	2.17	2.17	2.17	0.174	166.44	4.72	14.87	0.00	tpy
Limited PTE	0.51	0.51	0.51	0.04	38.85	1.10	3.47	0.00	tpy

Notes:
1. Limited PTE based on 2,045 hours / year permit limit.

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EQUI 9
Generator #5 Criteria Emissions
Emission Factors - >600 hp ICE

Conversions

0.7457	kw/hp
7000	Btu/hp-hr
500	hr/yr

Generator Specifications

2500	kw	3353	hp	23.46788	MMBtu/hr	diesel fuel only by design	
19300	btu/lb	HV of Diesel AP 42 3.4		7.1	lb/gal	0.13703	MMBtu/gal
171.26091	gal/hr						

Emssion Factors

Fuel:	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Diesel	0.0697	0.0573	0.0556	0.001515	3.2	0.082	0.85	0	lb/MMBtu
Limits:				0.0015	% Low Sulfur Diesel (15 ppm)				

Notes:

1. Diesel PM per AP42 3.4 Table 2 Large Uncontrolled Stationary Diesel Engines (filterable + condensable)
2. Diesel EFs for SOx/NOx/CO per AP42 3.4 Table 1
3. Diesel EFs for VOC per AP42 3.4 Table 1 (reported as NMTOC)

	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Emission Rate	1.64	1.34	1.30	0.04	75.10	1.92	19.95	0.00	lb/hr
*Limited PTE:	0.41	0.34	0.33	0.01	18.77	0.48	4.99	0.00	tpy

Notes:

*Assumes 500 hours per year operation for emergency generator.

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EQUI 35
Generator #6 Criteria Emissions
Emission Factors - >600 hp ICE

Conversions	
0.7457	kw/hp
7000	Btu/hp-hr
500	hr/yr
2.204624	lb/kg

Generator Specifications

3493 kw	4684 hp		32.78933	MMBtu/hr diesel fuel only by design
19300 btu/lb	HV of Diesel AP 42 3.4	7.1 lb/gal	0.13703	MMBtu/gal
239.28574 gal/hr				

Emssion Factors

Fuel:	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Diesel				1.52E-03		0.082		0	lb/MMBtu
Diesel	0.2	0.2	0.2		6.4		3.50	0	g/kW-hr[2]
Limits:									
				0.0015	% Low Sulfur Oil (15 ppm)				

1. Distillate PM / NOx / CO based on 40 CFR 1039, Appenix I - Table 2, assumes PM=PM10=PM2.5

2. Diesel Fuel Efs for SOx/VOC per AP42 3.4 Table 1

	PM	PM10	PM2.5	SOx	NOx	VOC	CO	Pb	
Emission Rate	1.54	1.54	1.54	0.05	49.28	2.69	26.95	0.00	lb/hr
Limited PTE:	0.39	0.39	0.39	0.012	12.32	0.67	6.74	0.00	tpy

Notes:

*Assumes 500 hours per year operation for emergency generator.

Single Fuel Emission Units

EQUI ID	EQUI 36
Heat Input (MMBTU/hr)	1.96
Unlimited Hours (hr/yr)	500
Limited Hours (hr/yr)	500
Firing Type	Diesel

Pollutant	AP-42 Emission Factor (lb/MMBtu)	Other Emission Factor (lb/MMBtu)	Control Efficiency (%)	Unrestricted Emission Rate (lb/hr)	Controlled Emission Rate (lb/hr)	Unrestricted Emissions (tpy)	Limited Emissions (tpy)
Particulate Matter	3.10E-01			6.08E-01	6.08E-01	1.52E-01	1.52E-01
PM < 10 micron	3.10E-01			6.08E-01	6.08E-01	1.52E-01	1.52E-01
PM < 2.5 micron	3.10E-01			6.08E-01	6.08E-01	1.52E-01	1.52E-01
Nitrogen Oxides	4.41E+00			8.64E+00	8.64E+00	2.16E+00	2.16E+00
Carbon Monoxide	9.50E-01			1.86E+00	1.86E+00	4.66E-01	4.66E-01
Sulfur Dioxide	2.90E-01			5.68E-01	5.68E-01	1.42E-01	1.42E-01
Volatile Organic Compounds	3.60E-01			7.06E-01	7.06E-01	1.76E-01	1.76E-01
HAPs - Total	3.87E-03			7.59E-03	7.59E-03	1.90E-03	1.90E-03
Carbon Dioxide	1.64E+02			3.21E+02	3.21E+02	8.04E+01	8.04E+01
Methane	6.61E-03			1.30E-02	1.30E-02	3.24E-03	3.24E-03
Nitrous Oxide	1.32E-03			2.59E-03	2.59E-03	6.48E-04	6.48E-04
Carbon Dioxide Equivalent	1.65E+02			3.23E+02	3.23E+02	8.06E+01	8.06E+01
1,1,2,2-Tetrachloroethane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1,2-Trichloroethane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dibromoethane (Ethylene dibromide); EDB	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dichloropropane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3-Butadiene	3.91E-05			7.66E-05	7.66E-05	1.92E-05	1.92E-05
1,3-Dichloropropene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,2,4-trimethylpentane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	7.67E-04			1.50E-03	1.50E-03	3.76E-04	3.76E-04
Acrolein	9.25E-05			1.81E-04	1.81E-04	4.53E-05	4.53E-05
Benzene	9.33E-04			1.83E-03	1.83E-03	4.57E-04	4.57E-04
Benzo(e)pyrene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biphenyl	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbon tetrachloride	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chlorobenzene (Monochlorobenzene)	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloroform	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dichloromethane (Methylene chloride)	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Formaldehyde	1.18E-03			2.31E-03	2.31E-03	5.78E-04	5.78E-04
Hexane	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methanol	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	8.48E-05			1.66E-04	1.66E-04	4.16E-05	4.16E-05
Phenol	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Polycyclic organic matter	1.68E-04			3.29E-04	3.29E-04	8.23E-05	8.23E-05
Styrene	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene	4.09E-04			8.02E-04	8.02E-04	2.00E-04	2.00E-04
Vinyl chloride (chloroethene)	0.00E+00			0.00E+00	0.00E+00	0.00E+00	0.00E+00
Xylenes, Total	2.85E-04			5.59E-04	5.59E-04	1.40E-04	1.40E-04

Other Emission Factor and/or Control Efficiency Factor Notes:

Mayo Foundation - St Marys
AQ Permit # 10900008 Renewal

EQUI 5, 9, 35
Generator HAP Emissions

EQUI 9	23.46788253	MMBtu / hour (diesel)	500	hrs
EQUI 35	32.78932547	MMBtu / hour (diesel)	500	hrs
EQUI 5	26.28402843	MMBtu / hour (diesel)	2045	hrs
	3,755	hp		

		EQUI 9			EQUI 35			EQUI 5		
Emission Factors	Diesel	lb/hr	tpy - unlimited	tpy - limited	lb/hr	tpy - unlimited	tpy - limited	lb/hr	tpy - unlimited	tpy - limited
1,1,2,2-Tetrachloroethane		0	0	0	0	0	0	0	0	0
1,1,2-Trichloroethane		0	0	0	0	0	0	0	0	0
1,1-Dichloroethane		0	0	0	0	0	0	0	0	0
1,2-Dibromoethane (Ethylene dibromide); EDB		0	0	0	0	0	0	0	0	0
1,2-Dichloropropane		0	0	0	0	0	0	0	0	0
1,3-Butadiene	0.0000391	9.18E-04	4.02E-03	2.29E-04	1.28E-03	5.62E-03	3.21E-04	1.03E-03	4.50E-03	1.05E-03
1,3-Dichloropropene		0	0	0	0	0	0	0	0	0
2,2,4-trimethylpentane		0	0	0	0	0	0	0	0	0
Acetaldehyde	2.52E-05	5.91E-04	2.59E-03	1.48E-04	8.26E-04	3.62E-03	2.07E-04	6.62E-04	2.90E-03	6.77E-04
Acrolein	7.88E-06	1.85E-04	8.10E-04	4.62E-05	2.58E-04	1.13E-03	6.46E-05	2.07E-04	9.07E-04	2.12E-04
Benzene	7.76E-04	1.82E-02	7.98E-02	4.55E-03	2.54E-02	1.11E-01	6.36E-03	2.04E-02	8.93E-02	2.09E-02
Benzo(e)pyrene		0	0	0	0	0	0	0	0	0
Biphenyl		0	0	0	0	0	0	0	0	0
Carbon tetrachloride		0	0	0	0	0	0	0	0	0
Chlorobenzene (Monochlorobenzene)		0	0	0	0	0	0	0	0	0
Chloroform		0	0	0	0	0	0	0	0	0
Dichloromethane (Methylene chloride)		0	0	0	0	0	0	0	0	0
Ethylbenzene		0	0	0	0	0	0	0	0	0
Formaldehyde	7.89E-05	1.85E-03	8.11E-03	4.63E-04	2.59E-03	1.13E-02	6.47E-04	2.07E-03	9.08E-03	2.12E-03
Hexane		0	0	0	0	0	0	0	0	0
Methanol		0	0	0	0	0	0	0	0	0
Naphthalene	1.30E-04	3.05E-03	1.34E-02	7.63E-04	4.26E-03	1.87E-02	1.07E-03	3.42E-03	1.50E-02	3.49E-03
Phenol		0	0	0	0	0	0	0	0	0
Polycyclic organic matter	2.12E-04	4.98E-03	2.18E-02	1.24E-03	6.95E-03	3.04E-02	1.74E-03	5.57E-03	2.44E-02	5.70E-03
Styrene		0	0	0	0	0	0	0	0	0
Toluene	2.81E-04	6.59E-03	2.89E-02	1.65E-03	9.21E-03	4.04E-02	2.30E-03	7.39E-03	3.23E-02	7.55E-03
Vinyl chloride (chloroethene)		0	0	0	0	0	0	0	0	0
Xylenes, Total	1.93E-04	4.53E-03	1.98E-02	1.13E-03	6.33E-03	2.77E-02	1.58E-03	5.07E-03	2.22E-02	5.19E-03
HAPs - Total	1.61E-03	3.79E-02	1.66E-01	9.46E-03	5.29E-02	2.32E-01	1.32E-02	4.24E-02	1.86E-01	4.34E-02

HAP emission factors include PAH as part of POM. Pollutants included in POM are not included separately.

Where AP-42 emission factors are "< X", X is used as the emission factor.

POM emission factors include naphthalene.However, since naphthalene is a HAP, it is also listed separately. Total HAPS subtracts the separate naphthalene factor so it is not counted twice in the total.

HAP emission factors for diesel taken from AP-42 3.4 Tables 3 & 4

Mayo Foundation - St Marys
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Emission Factors:		Diesel	EQUI 9			EQUI 35			EQUI 5		
		(lb/MMBtu)	lb/hr	tpy		lb/hr	tpy	tpy - limited	lb/hr	tpy	tpy - limited
	Benzene	7.76E-04	1.82E-02	4.55E-03	4.55E-03	2.54E-02	6.36E-03	6.36E-03	###	8.93E-02	2.09E-02
	Ethylbenzene		0	0	0	0	0	0	0	0	0
	Chlorobenzene		0	0	0	0	0	0	0	0	0
	Chloroform		0	0	0	0	0	0	0	0	0
	Styrene		0	0	0	0	0	0	0	0	0
	Ethylene Dibromide		0	0	0	0	0	0	0	0	0
	Phenol		0	0	0	0	0	0	0	0	0
	Biphenyl		0	0	0	0	0	0	0	0	0
	Carbon Tetrachloride		0	0	0	0	0	0	0	0	0
	Hexane		0	0	0	0	0	0	0	0	0
	Methylene Chloride		0	0	0	0	0	0	0	0	0
	Methanol		0	0	0	0	0	0	0	0	0
	Toluene	2.81E-04	6.59E-03	1.65E-03	1.65E-03	9.21E-03	2.30E-03	2.30E-03	###	3.23E-02	7.55E-03
	Xylene	1.93E-04	4.53E-03	1.13E-03	1.13E-03	6.33E-03	1.58E-03	1.58E-03	###	2.22E-02	5.19E-03
	1,3-Butadiene	0.0000391	9.18E-04	2.29E-04	2.29E-04	1.28E-03	3.21E-04	3.21E-04	###	4.50E-03	1.05E-03
	Formaldehyde	7.89E-05	1.85E-03	4.63E-04	4.63E-04	2.59E-03	6.47E-04	6.47E-04	###	9.08E-03	2.12E-03
	Acetaldehyde	2.52E-05	5.91E-04	1.48E-04	1.48E-04	8.26E-04	2.07E-04	2.07E-04	###	2.90E-03	6.77E-04
	Acrolein	7.88E-06	1.85E-04	4.62E-05	4.62E-05	2.58E-04	6.46E-05	6.46E-05	###	9.07E-04	2.12E-04
	1,1,2,2-Tetrachloroethane		0	0	0	0	0	0	0	0	0
	1,1,2-Trichloroethane		0	0	0	0	0	0	0	0	0
	1,3-Dichloropropene		0	0	0	0	0	0	0	0	0
	2,2,4-Trimethlypentane		0	0	0	0	0	0	0	0	0
	Vinyl Chloride		0	0	0	0	0	0	0	0	0
	Naphthalene	1.30E-04	3.05E-03	7.63E-04	7.63E-04	4.26E-03	1.07E-03	1.07E-03	###	1.50E-02	3.49E-03
PAH	2-Methylnephthalene		0	0	0	0	0	0	0	0	0
PAH	Acenaphthylene	9.23E-06	2.17E-04	5.42E-05	5.42E-05	3.03E-04	7.57E-05	7.57E-05	###	1.06E-03	2.48E-04
PAH	Acenapththene	4.68E-06	1.10E-04	2.75E-05	2.75E-05	1.53E-04	3.84E-05	3.84E-05	###	5.39E-04	1.26E-04
PAH	Fluorene	1.28E-05	3.00E-04	7.51E-05	7.51E-05	4.20E-04	1.05E-04	1.05E-04	###	1.47E-03	3.44E-04
PAH	Phenanthrene	4.08E-05	9.57E-04	2.39E-04	2.39E-04	1.34E-03	3.34E-04	3.34E-04	###	4.70E-03	1.10E-03
PAH	Anthracene	1.23E-06	2.89E-05	7.22E-06	7.22E-06	4.03E-05	1.01E-05	1.01E-05	###	1.42E-04	3.31E-05
PAH	Fluoranthene	4.03E-06	9.46E-05	2.36E-05	2.36E-05	1.32E-04	3.30E-05	3.30E-05	###	4.64E-04	1.08E-04
PAH	Pyrene	3.71E-06	8.71E-05	2.18E-05	2.18E-05	1.22E-04	3.04E-05	3.04E-05	###	4.27E-04	9.97E-05
PAH	Benz(a)Anthracene	6.22E-07	1.46E-05	3.65E-06	3.65E-06	2.04E-05	5.10E-06	5.10E-06	###	7.16E-05	1.67E-05
PAH	Chrysene	1.53E-06	3.59E-05	8.98E-06	8.98E-06	5.02E-05	1.25E-05	1.25E-05	###	1.76E-04	4.11E-05
PAH	Benzo(b)Fluoranthene	1.11E-06	2.60E-05	6.51E-06	6.51E-06	3.64E-05	9.10E-06	9.10E-06	###	1.28E-04	2.98E-05
PAH	Benzo(k)Fluoranthene	2.18E-07	5.12E-06	1.28E-06	1.28E-06	7.15E-06	1.79E-06	1.79E-06	###	2.51E-05	5.86E-06
PAH	Benzo(a)Pyrene	2.57E-07	6.03E-06	1.51E-06	1.51E-06	8.43E-06	2.11E-06	2.11E-06	###	2.96E-05	6.91E-06
PAH	Benzo(e)Pyrene		0	0	0	0	0	0	0	0	0
PAH	Indeno(1,2,3-cd)Pyrene	4.14E-07	9.72E-06	2.43E-06	2.43E-06	1.36E-05	3.39E-06	3.39E-06	###	4.77E-05	1.11E-05
PAH	Dibenz(a,h)Anthracene	3.46E-07	8.12E-06	2.03E-06	2.03E-06	1.13E-05	2.84E-06	2.84E-06	###	3.98E-05	9.30E-06
PAH	Benzo(g,h,I)Perylene	5.56E-07	1.30E-05	3.26E-06	3.26E-06	1.82E-05	4.56E-06	4.56E-06	###	6.40E-05	1.49E-05
PAH	Perylene		0	0	0	0	0	0	0	0	0
	Total PAHs	**2.12E-04**	**4.96E-03**	**1.24E-03**	**1.24E-03**	**6.94E-03**	**1.73E-03**	**1.73E-03**	**###**	**2.44E-02**	**5.69E-03**
	Total HAPs		**3.78E-02**	**9.46E-03**	**9.46E-03**	**5.29E-02**	**1.32E-02**	**1.32E-02**	**###**	**1.86E-01**	**4.33E-02**

Notes:

1. HAP emission factors for diesel taken from AP-42 3.4 Tables 3 & 4

Mayo Foundation - St Marys
AQ Permit # 10900008 Renewal

EQUI 5, 9, & 35
Generator GHG Emissions

Generator Ratings

EQUI 9	23.46788	MMBtu / hour (diesel)
EQUI 35	32.78933	MMBtu / hour (dual fuel)
EQUI 5	26.28403	MMBtu / hour (diesel)

GWP	
CH4	28
N2O	265
CO2	1

Emssion Factors

Fuel:	CO2	CH4	N20	
Diesel	163	6.61E-03	1.32E-03	lb/MMBtu

Emission factors from EPA GHG Emission Factors Hub (January 2025) - Distillate Fuel Oil #2

Emissions

	EQUI 9 Generator 5*		EQUI 35 Generator 6*			EQUI 5 Generator 7**		
	lb/hr	tpy	lb/hr	tpy	tpy - limited	lb/hr	tpy	tpy - limited
CO2	3,827	957	5,346	1,337	1,337	4,286	18,771	4,382
CH4	0.155	0.038803	0.22	0.054	0.054	0.17	0.76	0.178
N20	0.031	0.007761	0.043	0.011	0.011	0.03	0.152	0.036
CO2e	3,839	960	5,364	1,341	1,341	4,300	18,833	4,397

CO_2e emission factor from US EPA MRR 11/29/2013

*Emergency generator PTE limited to 500 hours per year.

**Generator limited to 2045 hours per year.

Mayo Foundation - St Marys
AQ Permit # 10900008 Renewal

EQUI 11

Cogen Turbine Engine **5000 kw**

Natural Gas Only by design

Conversions

60.45 MMBtu/hr

0.7457 kw/hp

7000 Btu/hp-hr

Emssions - Criteria Pollutants

Fuel:	**PM**	**PM10**	**PM2.5**	**SOx**	**NOx**	**VOC**	**CO**	**Pb**	
NG EF:	6.6E-03	6.6E-03	6.6E-03	6E-04	9.90E-02	2.1E-03	1.50E-02	0	lb/MMBtu
Limits:				0.0006	% Sulfur Content - Natural Gas				
Emissions	0.40	0.40	0.40	0.03	5.98	0.13	0.91	0	lb/hr
Uncontrolled PTE	1.75	1.75	1.75	0.15	26.21	0.56	3.97	0.00	tpy

Emission factors AP42 3.1 Tables 1 & 2

Emssions - HAPs

	EF lb/MMBtu	**lb/hr**	**PTE tpy**
Benzene	1.20E-05	7.25E-04	3.18E-03
Ethylbenzene	3.20E-05	1.93E-03	8.47E-03
Toluene	1.30E-04	7.86E-03	3.44E-02
Xylene	6.40E-05	3.87E-03	1.69E-02
Formaldehyde	7.10E-04	4.29E-02	1.88E-01
Acetaldehyde	4.00E-05	2.42E-03	1.06E-02
Acrolein	6.40E-06	3.87E-04	1.69E-03
Naphthalene	1.30E-06	7.86E-05	3.44E-04
PAH	2.20E-06	1.33E-04	5.82E-04
Total HAPs	**9.96E-04**	**6.02E-02**	**2.64E-01**

Emission factors AP42 3.1 Table 3

	GWP
CO2	1
CH4	28
N2O	265

Emssions - GHGs

	CO2	**CH4**	**N20**	**CO2e ***	
NG EF	117	2.20E-03	2.20E-04	---	lb/MMBtu
Emissions	7,071	0.13	0.01	7,079	lb/hr
Annual PTE:	**30,972**	**0.58**	**0.06**	**31,004**	**tpy each**

*CO_2e emission factor from US EPA MRR 11/29/2013

Emission factors from 40 CFR pt. 98 table C-1 and C-2

Mayo Foundation - St Marys
AQ Permit # 10900008 Renewal

Cooling Towers (IA)

Circulating Flow Rate (gallons/minute)	Circulating Flow Rate (gallons/hour)	Total Drift (% circulating flow)	Total Drift (gal/hr)	Total Drift (lb/hr)	Total Dissolved Solids (ppm)	**Particulate Emissions (lb/hr)**
6,000	360,000	0.00005	18	150	1,063	**0.16**

Notes:
1. TDS based on 2014 actual plant micromhos averages.
2. PPM x 2 = Conductivity (micromhos).
3. Emissions per cell (7 total) using highest gpm.
4. Drift rate per manufacturer (Brentwood).

ETO Sterilizers

Number of Sterilizers	Maximum Number of Cycles/Day	Potential Number of Cycles/Year	Emissions/Cycle (kg ETO/cycle)	Uncontrolled Potential per Sterilizer (lb/yr)	Uncontrolled Potential per Serilizier (ton/yr)	Controlled Potential per Sterilizer (lb/yr)	Controlled Emissions per Sterilizer (tpy)
5	6	2,190	0.17	820.92	0.41	0.82	0.00041

Notes:
1. 3M EO Abator has 99.9% efficiency.

VOC emission summary for horizontal tanks

	VOC actual emissions (tons/year)	**VOC potential emissions** (tons/year)
Horizontal tank 1	0.00	0.0049
Horizontal tank 2	0.00	0.0049
Horizontal tank 3	0.00	0.0049
Horizontal tank total	**0.01**	**0.015**

Insignificant activity - tanks

List tanks in the table below that qualify as an insignificant activity. Minn. R. 7007.1300, subp. 2(E), 3(C), and 3(F)

Subpart 2(E)

If your tank meets any of the following descriptions, it is not required to be listed on an air permit application.

1. Pressurized storage tanks for anhydrous ammonia, liquid petroleum gas (LPG), liquid natural gas (LNG), or natural gas (NG)
2. Storage tanks holding lubricating oils
3. Above and below ground fuel oil storage tanks with a combined total tankage capacity less than 100,000 gallons
4. Gasoline storage tanks with a combined total tankage capacity of less than 2,000 gallons
5. Storage tanks holding inorganic liquids, including water, except for acids that volatilize hazardous air pollutants (HAPs) or volatile organic compounds (V

Subpart 3(C)

If your tank meets any of the following descriptions, it is required to be listed on an air permit application.

1. Gasoline storage tanks with a combined total tankage capacity of not more than 10,000 gallons
2. Nonhazardous air pollutant VOC storage tanks with a combined total tankage capacity of not more than 10,000 gallons of nonhazardous air pollutants and with a vapor pressure of not more than 1.0 psia at 60 degrees Fahrenheit

Subpart 3(F)

Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than:

1. 4,000 pounds per year of carbon monoxide
2. 2,000 pounds per year each of nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, VOCs (including hazardous air pollutant-containing VOCs), and ozone
3. 1,000 tons per year of CO_2e

Subject to subpart 2(E), 3(C), or 3(F)	Tank ID	Tank contents	Capacity	Location	Color	Vertical or horizontal	Notes
3(F)	16	Diesel	50,000	UST			
3(F)	17	Diesel	50,000	UST			
3(F)	18	Diesel	50,000	UST			

VOC emissions from horizontal tank #1

Enter tank specific information in all blue cells.

Tank information

Tank identification	16
Description	Fuel Oil UST
Location (city)	Rochester

Property	Value	Units	Description
Fuel type	Diesel	select one	Type of fuel stored in the tank.
Storage tank position	Under	select one	Fixed roof structure.
Actual throughput	591,297	gal/yr	Gallons stored in his tank over the period of 12 consecutive months.
Actual hours operated	8760	hours/year	Number of hours the tank is being used.
Potential throughput	768,686	gal/yr	Calculated based on actual tank throughput divided by the hours operated and multiplied by 8760 hours/day.
VOC actual emissions	**0.0039**	ton/yr	Amount of VOC actually released over the 12-month period.
VOC potential emissions	**0.0049**	ton/yr	Amount of VOCs potentially released over a 12-month period.

Physical properties of the tank

Property		Value	Units	Description
Shell length	H_S	60	feet	This is actual length of the tank.
Shell diameter	D	12	feet	This is the actual width of the cylindrical shell.
Shell effective height	H_E	9.42	feet	Calculated effective height of the tank.
Shell effective diameter	D_E	30.28	feet	Calculated effective diameter of the cylindrical shell.
Shell radius	R_S	6	feet	Calculated radius
Working volume		50758.1	gallons	Calculated volume
Turnovers per year (actual)	N	11.6	dimensionless	Calculated number the tank is emptied and refilled, annually.
Turnovers per year (potential)	N	15.1	dimensionless	Calculated number the tank could be emptied and refilled, annually.
Shell color/shade		White/NA	select one	Tank shell color and shade are used to identify **paint solar absorptance**.
Shell condition		Average	select one	Tank condition is used to identify **paint solar absorptance**. Only aboveground.
Paint solar absorptance	α	0.25	dimensionless	**Insert value from table 7.1-6.** Paint effectiveness in absorbing radiant ene
Vacuum setting	P_{BV}	-0.03	psig	Vacuum setting is a value set for the tank at the facility.
Pressure setting	P_{BP}	0.03	psig	Breather vent pressure is a reading from the tank monitoring system.

Weather data

Property		Value	Units	Description
Nearest major city		Rochester, MN	Select one	Nearest major city to the tank location.
Average annual maximum temperature	T_{AX}	53.2	°F	Average over a calendar year.
Average annual minimum temperature	T_{AN}	36.0	°F	Average over a calendar year.
Atmospheric pressure	P_A	14.0	psia	Average for the location.
Solar insolation	I	1169.0	Btu/(ft^2·day)	Total for a horizontal surface.

Calculation of VOC Emission = Total Losses (L_T)

Variable		Calculated value		Notes (equations are from AP-42, Chapter 7)
Total losses (VOC actual emissions)	L_T	**7.78**	lb/yr	Equation 1-1
Total losses (VOC potential emissions)	L_T	**9.80**	lb/yr	Equation 1-1
Standing storage losses	L_S	0.00	lb/yr	Equation 1-2
Working losses (actual)	L_W	7.78	lb/yr	Equation 1-35
Working losses (potential)	L_W	9.80	lb/yr	Equation 1-35
Annual net throughput (actual)	Q	14078.50	bbl/yr	Based on actual throughput entered by user (gal/year) / 42 bbl/gal
Annual net throughput (potential)	Q	18302.05	bbl/yr	Based on calculated potential throughput (gal/year) / 42 bbl/gal
Working loss turnover factor (actual)	K_N	1.00	dimensionless	Saturation; turnovers >36 = (180 + N) / 6N; turnovers at 36 or lower = 1
Working loss turnover factor (potential)	K_N	1.00	dimensionless	Saturation; turnovers >36 = (180 + N) / 6N; turnovers at 36 or lower = 1
Stock vapor density	W_V	0.00	lb/ft^3	Equation 1-22
Vapor Molecular Weight at 60 °F	M_V	130	lb/lb-mole	Table 7.1-2
Vapor pressure	P_{VA}	0.004120512	psia	Equation 1-25, P_{VA} based on T_{LA}
Vapor space volume	V_V	3392.92	ft^3	Equation 1-3
Vapor space tank outage	H_{VO}	4.71	feet	Equation 1-16, note for H_{VO} horizontal
Vapor space expansion factor	K_E	0.031	dimensionless	Equation 1-5
Vented vapor saturation factor	K_S	1.00	dimensionless	Equation 1-21
Working loss product factor	K_P	1	dimensionless	Assume value of 1 for gasoline or diesel.
Ideal gas constant	R	10.731	$psia*ft^3/lb\text{-}mole*°R$	Constant, Equation 1-22
Average vapor temperature	T_V	507.19	°R	Equation 1-33
Daily average liquid surface temperature	T_{LA}	506.29	°R	Equation 1-28
Daily vapor temperature range	ΔT_V	17.89	°R	Equation 1-7
Daily ambient temperature range	ΔT_A	17.20	°R	Equation 1-11
Daily maximum ambient temperature	T_{AX}	512.90	°R	Table 7-1-7. Conversion factor: Rankine = Fahrenheit + 459.7
Daily minimum ambient temperature	T_{AN}	495.70	°R	Table 7-1-7. Conversion factor: Rankine = Fahrenheit + 459.7
Daily average ambient temperature	T_{AA}	504.30	°R	Equation 1-30
Liquid bulk temperature	T_B	505.18	°R	Equation 1-31
Daily vapor pressure range	ΔP_V	0.00	psia	Equation 1-9
Breather vent pressure setting range	ΔP_B	0.06	psi	Equation 1-10
Vapor pressure equation constant	A	12.101	dimensionless	Table 7.1-2
Vapor pressure equation constant	B	8907	°R	Table 7.1-2
Vapor pressure at T_{LX}	P_{VX}	0.0048	psia	Equation 1-9, note 5
Vapor pressure at T_{LN}	P_{VN}	0.0035	psia	Equation 1-9, note 5
Maximum T_{LA}	T_{LX}	510.76	°R	Equation 1-9, note to Figure 7.1-17
Minimum T_{LA}	T_{LN}	501.82	°R	Equation 1-9, note to Figure 7.1-17

VOC emissions from horizontal tank #1

Enter tank specific information in all blue cells.

Tank information

Tank identification	17
Description	Fuel Oil UST
Location (city)	Rochester

Property	Value	Units	Description
Fuel type	Diesel	select one	Type of fuel stored in the tank.
Storage tank position	Under	select one	Fixed roof structure.
Actual throughput	591,297	gal/yr	Gallons stored in his tank over the period of 12 consecutive months.
Actual hours operated	8760	hours/year	Number of hours the tank is being used.
Potential throughput	768,686	gal/yr	Calculated based on actual tank throughput divided by the hours operated and multiplied by 8760 hours/day.
VOC actual emissions	**0.0039**	ton/yr	Amount of VOC actually released over the 12-month period.
VOC potential emissions	**0.0049**	ton/yr	Amount of VOCs potentially released over a 12-month period.

Physical properties of the tank

Property		Value	Units	Description
Shell length	H_S	60	feet	This is actual length of the tank.
Shell diameter	D	12	feet	This is the actual width of the cylindrical shell.
Shell effective height	H_E	9.42	feet	Calculated effective height of the tank.
Shell effective diameter	D_E	30.28	feet	Calculated effective diameter of the cylindrical shell.
Shell radius	R_S	6	feet	Calculated radius
Working volume		50758.1	gallons	Calculated volume
Turnovers per year (actual)	N	11.6	dimensionless	Calculated number the tank is emptied and refilled, annually.
Turnovers per year (potential)	N	15.1	dimensionless	Calculated number the tank could be emptied and refilled, annually.
Shell color/shade		White/NA	select one	Tank shell color and shade are used to identify **paint solar absorptance**.
Shell condition		Average	select one	Tank condition is used to identify **paint solar absorptance**. Only aboveground.
Paint solar absorptance	α	0.25	dimensionless	**Insert value from table 7.1-6.** Paint effectiveness in absorbing radiant ene
Vacuum setting	P_{BV}	-0.03	psig	Vacuum setting is a value set for the tank at the facility.
Pressure setting	P_{BP}	0.03	psig	Breather vent pressure is a reading from the tank monitoring system.

Weather data

Property		Value	Units	Description
Nearest major city		Rochester, MN	Select one	Nearest major city to the tank location.
Average annual maximum temperature	T_{AX}	53.2	°F	Average over a calendar year.
Average annual minimum temperature	T_{AN}	36.0	°F	Average over a calendar year.
Atmospheric pressure	P_A	14.0	psia	Average for the location.
Solar insolation	I	1169.0	Btu/(ft^2·day)	Total for a horizontal surface.

Calculation of VOC Emission = Total Losses (L_T)

Variable		Calculated value		Notes (equations are from AP-42, Chapter 7)
Total losses (VOC actual emissions)	L_T	**7.78**	lb/yr	Equation 1-1
Total losses (VOC potential emissions)	L_T	**9.80**	lb/yr	Equation 1-1
Standing storage losses	L_S	0.00	lb/yr	Equation 1-2
Working losses (actual)	L_W	7.78	lb/yr	Equation 1-35
Working losses (potential)	L_W	9.80	lb/yr	Equation 1-35
Annual net throughput (actual)	Q	14078.50	bbl/yr	Based on actual throughput entered by user (gal/year) / 42 bbl/gal
Annual net throughput (potential)	Q	18302.05	bbl/yr	Based on calculated potential throughput (gal/year) / 42 bbl/gal
Working loss turnover factor (actual)	K_N	1.00	dimensionless	Saturation; turnovers >36 = (180 + N) / 6N; turnovers at 36 or lower = 1
Working loss turnover factor (potential)	K_N	1.00	dimensionless	Saturation; turnovers >36 = (180 + N) / 6N; turnovers at 36 or lower = 1
Stock vapor density	W_V	0.00	lb/ft^3	Equation 1-22
Vapor Molecular Weight at 60 °F	M_V	130	lb/lb-mole	Table 7.1-2
Vapor pressure	P_{VA}	0.004120512	psia	Equation 1-25, P_{VA} based on T_{LA}
Vapor space volume	V_V	3392.92	ft^3	Equation 1-3
Vapor space tank outage	H_{VO}	4.71	feet	Equation 1-16, note for H_{VO} horizontal
Vapor space expansion factor	K_E	0.031	dimensionless	Equation 1-5
Vented vapor saturation factor	K_S	1.00	dimensionless	Equation 1-21
Working loss product factor	K_P	1	dimensionless	Assume value of 1 for gasoline or diesel.
Ideal gas constant	R	10.731	$psia*ft^3/lb\text{-}mole*°R$	Constant, Equation 1-22
Average vapor temperature	T_V	507.19	°R	Equation 1-33
Daily average liquid surface temperature	T_{LA}	506.29	°R	Equation 1-28
Daily vapor temperature range	ΔT_V	17.89	°R	Equation 1-7
Daily ambient temperature range	ΔT_A	17.20	°R	Equation 1-11
Daily maximum ambient temperature	T_{AX}	512.90	°R	Table 7-1-7. Conversion factor: Rankine = Fahrenheit + 459.7
Daily minimum ambient temperature	T_{AN}	495.70	°R	Table 7-1-7. Conversion factor: Rankine = Fahrenheit + 459.7
Daily average ambient temperature	T_{AA}	504.30	°R	Equation 1-30
Liquid bulk temperature	T_B	505.18	°R	Equation 1-31
Daily vapor pressure range	ΔP_V	0.00	psia	Equation 1-9
Breather vent pressure setting range	ΔP_B	0.06	psi	Equation 1-10
Vapor pressure equation constant	A	12.101	dimensionless	Table 7.1-2
Vapor pressure equation constant	B	8907	°R	Table 7.1-2
Vapor pressure at T_{LX}	P_{VX}	0.0048	psia	Equation 1-9, note 5
Vapor pressure at T_{LN}	P_{VN}	0.0035	psia	Equation 1-9, note 5
Maximum T_{LA}	T_{LX}	510.76	°R	Equation 1-9, note to Figure 7.1-17
Minimum T_{LA}	T_{LN}	501.82	°R	Equation 1-9, note to Figure 7.1-17

VOC emissions from horizontal tank #1

Enter tank specific information in all blue cells.

Tank information

Tank identification	18
Description	Fuel Oil UST
Location (city)	Rochester

Property	Value	Units	Description
Fuel type	Diesel	select one	Type of fuel stored in the tank.
Storage tank position	Under	select one	Fixed roof structure.
Actual throughput	591,297	gal/yr	Gallons stored in his tank over the period of 12 consecutive months.
Actual hours operated	8760	hours/year	Number of hours the tank is being used.
Potential throughput	768,686	gal/yr	Calculated based on actual tank throughput divided by the hours operated and multiplied by 8760 hours/day.
VOC actual emissions	**0.0039**	ton/yr	Amount of VOC actually released over the 12-month period.
VOC potential emissions	**0.0049**	ton/yr	Amount of VOCs potentially released over a 12-month period.

Physical properties of the tank

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Shell diameter	D	12	feet	This is the actual width of the cylindrical shell.
Shell effective height	H_E	9.42	feet	Calculated effective height of the tank.
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Shell radius	R_S	6	feet	Calculated radius
Working volume		50758.1	gallons	Calculated volume
Turnovers per year (actual)	N	11.6	dimensionless	Calculated number the tank is emptied and refilled, annually.
Turnovers per year (potential)	N	15.1	dimensionless	Calculated number the tank could be emptied and refilled, annually.
Shell color/shade		White/NA	select one	Tank shell color and shade are used to identify **paint solar absorptance**.
Shell condition		Average	select one	Tank condition is used to identify **paint solar absorptance**. Only aboveground.
Paint solar absorptance	α	0.25	dimensionless	**Insert value from table 7.1-6.** Paint effectiveness in absorbing radiant ene
Vacuum setting	P_{BV}	-0.03	psig	Vacuum setting is a value set for the tank at the facility.
Pressure setting	P_{BP}	0.03	psig	Breather vent pressure is a reading from the tank monitoring system.

Weather data

Property		Value	Units	Description
Nearest major city		Rochester, MN	Select one	Nearest major city to the tank location.
Average annual maximum temperature	T_{AX}	53.2	°F	Average over a calendar year.
Average annual minimum temperature	T_{AN}	36.0	°F	Average over a calendar year.
Atmospheric pressure	P_A	14.0	psia	Average for the location.
Solar insolation	I	1169.0	Btu/(ft^2·day)	Total for a horizontal surface.

Calculation of VOC Emission = Total Losses (L_T)

Variable		Calculated value		Notes (equations are from AP-42, Chapter 7)
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Total losses (VOC potential emissions)	L_T	**9.80**	lb/yr	Equation 1-1
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Working losses (potential)	L_W	9.80	lb/yr	Equation 1-35
Annual net throughput (actual)	Q	14078.50	bbl/yr	Based on actual throughput entered by user (gal/year) / 42 bbl/gal
Annual net throughput (potential)	Q	18302.05	bbl/yr	Based on calculated potential throughput (gal/year) / 42 bbl/gal
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Working loss turnover factor (potential)	K_N	1.00	dimensionless	Saturation; turnovers >36 = (180 + N) / 6N; turnovers at 36 or lower = 1
Stock vapor density	W_V	0.00	lb/ft^3	Equation 1-22
Vapor Molecular Weight at 60 °F	M_V	130	lb/lb-mole	Table 7.1-2
Vapor pressure	P_{VA}	0.004120512	psia	Equation 1-25, P_{VA} based on T_{LA}
Vapor space volume	V_V	3392.92	ft^3	Equation 1-3
Vapor space tank outage	H_{VO}	4.71	feet	Equation 1-16, note for H_{VO} horizontal
Vapor space expansion factor	K_E	0.031	dimensionless	Equation 1-5
Vented vapor saturation factor	K_S	1.00	dimensionless	Equation 1-21
Working loss product factor	K_P	1	dimensionless	Assume value of 1 for gasoline or diesel.
Ideal gas constant	R	10.731	$psia*ft^3/lb\text{-}mole*°R$	Constant, Equation 1-22
Average vapor temperature	T_V	507.19	°R	Equation 1-33
Daily average liquid surface temperature	T_{LA}	506.29	°R	Equation 1-28
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Liquid bulk temperature	T_B	505.18	°R	Equation 1-31
Daily vapor pressure range	ΔP_V	0.00	psia	Equation 1-9
Breather vent pressure setting range	ΔP_B	0.06	psi	Equation 1-10
Vapor pressure equation constant	A	12.101	dimensionless	Table 7.1-2
Vapor pressure equation constant	B	8907	°R	Table 7.1-2
Vapor pressure at T_{LX}	P_{VX}	0.0048	psia	Equation 1-9, note 5
Vapor pressure at T_{LN}	P_{VN}	0.0035	psia	Equation 1-9, note 5
Maximum T_{LA}	T_{LX}	510.76	°R	Equation 1-9, note to Figure 7.1-17
Minimum T_{LA}	T_{LN}	501.82	°R	Equation 1-9, note to Figure 7.1-17

Attachment 2 – Subject item inventory and facility requirements

SI List

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	
Activity	Insignificant Air Emissions Activity	ACTV 3	Null	All IAs	
Agency Interest	Conventional Site	AISI 4920	Null	Null	
Component Group	Air Component Group	COMG 2	GP001	Boilers	
		COMG 3	GP002	Boiler and Generator Sulfur Limit	
Equipment	Boiler	EQUI 6	EU001	Boiler 1	
		EQUI 7	EU002	Boiler 2	
		EQUI 8	EU003	Boiler 3	
	Continuous Emission Monitor	EQUI 2	MR001	NOx Monitor	
		EQUI 3	MR002	O2 Monitor	
		EQUI 34	Null	O2 Monitor	
	Continuous Opacity Monitor	EQUI 4	MR003	Opacity Monitor	
	Data Acquisition System	EQUI 1	DA001	Primary DAS	
	Reciprocating IC Engine	EQUI 5	EU012	Generator 7 (Non-emergency CI; <10 liter/cyl; 2800 kW)	
		EQUI 9	EU004	Generator 5	
		EQUI 35	Null	Generator 6	
		EQUI 38	Null	SMC Parking Ramp Emergency Generator	
	Turbine	EQUI 11	EU006	Turbine Engine	
Structure	Building	STRU 1	BG001	St Marys Campus	
		STRU 2	BG002	St Marys Power Plant	
		STRU 9	Null	Generose	
		STRU 10	Null	Generose Parking Ramp	
	Stack/Vent	STRU 3	SV005	No. 7 Generator Stack	
		STRU 4	SV001	Boiler Stack	
		STRU 5	SV002	No. 5 Generator Stack	
		STRU 7	SV004	Cogeneration Turbine Stack	
		STRU 11	Null	No. 6 Generator Stack	
		STRU 12	Null	SMC Parking Ramp Emergency Generator Stack	
Total Facility	Air Quality Total Facility	TFAC 1	10900008	Mayo Clinic Hospital - Saint Marys Campus	

Insignificant Activities

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Status Description	Sub Attribute Description	
Activity	Insignificant Air Emissions Activity	Active / Existing	Minn. R. 7007.1300, subp. 3(D)	
			Minn. R. 7007.1300, subp. 3(E)	
			Minn. R. 7007.1300, subp. 3(F)	
			Minn. R. 7007.1300, subp. 4	

Emission Units 1

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Firing Method	Subject to CSAPR?	Electric Generating Capacity (MW)	Construction Start Date	Operation Start Date	Modification Date	
Boiler	EQUI 6	EU001	Boiler 1	Nebraska	NSF 865H	107.05	million British thermal units/hours	Heat	Not coal burning	N	Null	1/1/1992	1/1/1992	Null	
	EQUI 7	EU002	Boiler 2	Nebraska	NSF 865H	107.05	million British thermal units/hours	Heat	Not coal burning	N	Null	1/1/1992	1/1/1992	Null	
	EQUI 8	EU003	Boiler 3	Nebraska	NSF 865H	107.05	million British thermal units/hours	Heat	Not coal burning	N	Null	1/1/1992	1/1/1992	Null	
Turbine	EQUI 11	EU006	Turbine Engine	Solar	Taurus 60S CGS001	5,000	kilowatts/each	Energy	Null	N	Null	3/1/1996	6/1/1996	Null	

Emission Units 2

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Type	Subject Item ID	Delta Designation	Description	Manufacturer	Model	Max Design Capacity	Max Design Capacity Units	Material	Engine Use	Firing Method	Engine Displacement	Engine Displacement Units	Construction Start Date	Operation Start Date	Modification Date	
Reciprocating IC Engine	EQUI 5	EU012	Generator 7 (Non-emergency CI; <10 liter/cyl; 2800 kW)	Detroit Diesel	20V-4000	2,800	kilowatts/each	Energy	Unlimited use	CI	10	liters per cylinder	10/14/2010	1/1/2011	Null	
	EQUI 9	EU004	Generator 5	Electro Motive	20-645-E4	2,500	kilowatts/each	Energy	Emergency/blacks..	CI	10.57	liters per cylinder	1/1/1978	1/1/1978	Null	
	EQUI 35	Null	Generator 6	MTU	MTU 20V4000 DS3250	3,493	kilowatts/each	Energy	Emergency/blacks..	CI	4.77	liters per cylinder	4/21/2020	8/11/2020	Null	
	EQUI 38	Null	SMC Parking Ramp Emergency Generator	Caterpillar	D175	209	kilowatts/each	Energy	Emergency/blacks..	CI	1.17	liters per cylinder	TBD	TBD	Null	

Component Groups

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Group Member ID	
COMG 2	GP001	Boilers	EQUI 6	
			EQUI 7	
			EQUI 8	
COMG 3	GP002	Boiler and Generator Sulfur Limit	EQUI 5	
			EQUI 6	
			EQUI 7	
			EQUI 8	
			EQUI 9	
			EQUI 35	

PTE by SI

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Component Group	Air Component Group	COMG 3	GP002	Boiler and Generator Sulfur Limit	Carbon Dioxide			171,248	
					Carbon Dioxide Equivalent			171,439	
					Carbon Monoxide			130.36	
					Lead			0.001102	
					Methane			3.37	
					Nitrogen Oxides			207.05	
					Nitrous Oxide			0.36	
					Particulate Matter			11.72	
					PM < 2.5 micron			11.64	
					PM < 10 micron			11.65	
					Sulfur Dioxide			65.56	
					Volatile Organic Compounds			9.79	
Equipment	Boiler	EQUI 6	EU001	Boiler 1	1,1,1-Trichloroethane	0.000182	0.000798	0.000798	
					1,4-Dichlorobenzene (para-)	0.000125	0.000548	0.000548	
					Arsenic compounds	2.09e-05	9.14e-05	9.14e-05	
					Barium	0.000459	0.00201	0.00201	
					Benzene	0.000219	0.00096	0.00096	
					Beryllium	1.25e-06	5.48e-06	5.48e-06	
					Cadmium compounds	0.000115	0.000503	0.000503	
					Carbon Dioxide	17,457.91	76,465.63	0	
					Carbon Dioxide Equivalent	0	76,716.86	0	
					Carbon Monoxide	8.76	38.39	0	
					Chromium compounds	0.000146	0.00064	0.00064	
					Cobalt compounds	8.76e-06	3.84e-05	3.84e-05	
					Copper	0.000639	0.0028	0.0028	
					Dioxins and Furans	2.39e-09	1.05e-08	1.05e-08	
					Ethylbenzene	4.91e-05	0.000215	0.000215	
					Formaldehyde	0.0255	0.112	0.112	
					HAPs - Total	0.201	0.879	0.879	
					Hexane	0.188	0.823	0.823	
					Lead	0.000959	0.0042	0	
					Manganese compounds	3.96e-05	0.000174	0.000174	
					Mercury	2.71e-05	0.000119	0.000119	
					Methane	0.708	3.1	0	
					Molybdenum	0.000115	0.000503	0.000503	
					Naphthalene	0.000872	0.00382	0.00382	
					Nickel compounds	0.000219	0.00096	0.00096	
					Nitrogen Oxides	10.43	45.7	0	
					Nitrous Oxide	0.142	0.62	0	
					Particulate Matter	2.55	11.15	0	
					PM < 2.5 micron	0.793	3.47	0	
					PM < 10 micron	1.27	5.58	0	
					Polycyclic organic matter	7.28e-05	0.000319	0.000319	
					Selenium compounds	2.5e-06	1.1e-05	1.1e-05	
					Sulfur Dioxide	56.99	249.63	0	
					Toluene	0.00478	0.021	0.021	
					Volatile Organic Compounds	0.574	2.51	0	
					Xylenes, Total	8.41e-05	0.000368	0.000368	
					Zinc	0.00303	0.0133	0.0133	
		EQUI 7	EU002	Boiler 2	1,1,1-Trichloroethane	0.000182	0.000798	0.000798	
					1,4-Dichlorobenzene (para-)	0.000125	0.000548	0.000548	
					Arsenic compounds	2.09e-05	9.14e-05	9.14e-05	
					Barium	0.000459	0.00201	0.00201	
					Benzene	0.000219	0.00095	0.00096	
					Beryllium	1.25e-06	5.48e-06	5.48e-06	
					Cadmium compounds	0.000115	0.000503	0.000503	
					Carbon Dioxide	17,457.91	76,465.63	0	
					Carbon Dioxide Equivalent	0	76,716.86	0	
					Carbon Monoxide	8.76	38.39	0	
					Chromium compounds	0.000146	0.00064	0.00064	
					Cobalt compounds	8.76e-06	3.84e-05	3.84e-05	
					Copper	0.000639	0.0028	0.0028	
					Ethylbenzene	4.91e-05	0.000215	0.000215	
					Formaldehyde	0.0255	0.112	0.112	
					HAPs - Total	0.201	0.879	0.879	
					Hexane	0.188	0.823	0.823	
					Lead	0.000959	0.0042	0	
					Manganese compounds	3.96e-05	0.000174	0.000174	
					Mercury	2.71e-05	0.000119	0.000119	
					Methane	0.708	3.1	0	

PTE by SI

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Boiler	EQUI 7	EU002	Boiler 2	Molybdenum	0.000115	0.000503	0.000503	
					Naphthalene	0.000872	0.00382	0.00382	
					Nickel compounds	0.000219	0.00096	0.00095	
					Nitrogen Oxides	10.43	45.7	0	
					Nitrous Oxide	0.142	0.62	0	
					Particulate Matter	2.55	11.15	0	
					PM < 2.5 micron	0.793	3.47	0	
					PM < 10 micron	1.27	5.58	0	
					Polycyclic organic matter	7.28e-05	0.000319	0.000319	
					Selenium compounds	2.5e-06	1.1e-05	1.1e-05	
					Sulfur Dioxide	56.99	249.63	0	
					TCDD - TE	2.39e-09	1.05e-08	1.05e-08	
					Toluene	0.00478	0.021	0.021	
					Volatile Organic Compounds	0.574	2.51	0	
					Xylenes, Total	8.41e-05	0.000368	0.000368	
					Zinc	0.00303	0.0133	0.0133	
		EQUI 8	EU003	Boiler 3	1,1,1-Trichloroethane	0.000182	0.000798	0.000798	
					1,4-Dichlorobenzene (para-)	0.000125	0.000548	0.000548	
					Arsenic compounds	2.09e-05	9.14e-05	9.14e-05	
					Barium	0.000459	0.00201	0.00201	
					Benzene	0.000219	0.00096	0.00096	
					Beryllium	1.25e-06	5.48e-06	5.48e-06	
					Cadmium compounds	0.000115	0.000503	0.000503	
					Carbon Dioxide	17,457.91	76,465.63	0	
					Carbon Dioxide Equivalent	0	76,716.86	0	
					Carbon Monoxide	8.76	38.39	0	
					Chromium compounds	0.000146	0.00064	0.00064	
					Cobalt compounds	8.76e-06	3.84e-05	3.84e-05	
					Copper	0.000639	0.0028	0.0028	
					Ethylbenzene	4.91e-05	0.000215	0.000215	
					Formaldehyde	0.0255	0.112	0.112	
					HAPs - Total	0.201	0.879	0.879	
					Hexane	0.188	0.823	0.823	
					Lead	0.000959	0.0042	0	
					Manganese compounds	3.96e-05	0.000174	0.000174	
					Mercury	2.71e-05	0.000119	0.000119	
					Methane	0.708	3.1	0	
					Molybdenum	0.000115	0.000503	0.000503	
					Naphthalene	0.000872	0.00382	0.00382	
					Nickel compounds	0.000219	0.00096	0.00096	
					Nitrogen Oxides	10.43	45.7	0	
					Nitrous Oxide	0.142	0.62	0	
					Particulate Matter	2.55	11.15	0	
					PM < 2.5 micron	0.793	3.47	0	
					PM < 10 micron	1.27	5.58	0	
					Polycyclic organic matter	7.28e-05	0.000319	0.000319	
					Selenium compounds	2.5e-06	1.1e-05	1.1e-05	
					Sulfur Dioxide	56.99	249.63	0	
					TCDD - TE	2.39e-09	1.05e-08	1.05e-08	
					Toluene	0.00478	0.021	0.021	
					Volatile Organic Compounds	0.574	2.51	0	
					Xylenes, Total	8.41e-05	0.000368	0.000368	
					Zinc	0.00303	0.0133	0.0133	
	Reciprocating IC Engine	EQUI 5	EU012	Generator 7 (Non-emergency CI; <10 liter/cyl; 2800 kW)	1,3-Butadiene	0.00103	0.0045	0.00105	
					Acetaldehyde	0.000662	0.0029	0.000677	
					Acrolein	0.000204	0.000907	0.000212	
					Benzene	0.0204	0.0893	0.0209	
					Carbon Dioxide	4,286	18,775	0	
					Carbon Dioxide Equivalent	4,299.79	18,833.08	0	
					Carbon Monoxide	3.39	14.87	0	
					Formaldehyde	0.00207	0.00908	0.00212	
					HAPs - Total	0.0424	0.186	0.0433	
					Methane	0.174	0.761	0	
					Naphthalene	0.00342	0.015	0.00349	
					Nitrogen Oxides	38	166.44	0	
					Nitrous Oxide	0.0348	0.152	0	
					Particulate Matter	0.496	2.17	0	
					PM < 2.5 micron	0.496	2.17	0	
					PM < 10 micron	0.496	2.17	0	
					Sulfur Dioxide	0.0398	0.174	0	

PTE by SI

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Reciprocating IC Engine	EQUI 5	EU012	Generator 7 (Non-emergency CI; <10 liter/cyl; 2800 kW)	Toluene	0.00739	0.0323	0.00755	
					Total Polycyclic aromatic hydrocarbons	0.00556	0.0244	0.00569	
					Volatile Organic Compounds	1.08	4.72	0	
					Xylenes, Total	0.00507	0.0222	0.00519	
		EQUI 9	EU004	Generator 5	1,3-Butadiene	0.000918	0.000229	0.000229	
					Acetaldehyde	0.000591	0.000148	0.000148	
					Acrolein	0.000185	4.62e-05	4.62e-05	
					Benzene	0.0182	0.00455	0.00455	
					Carbon Dioxide	3,826.52	956.63	0	
					Carbon Dioxide Equivalent	3,839.1	959.77	0	
					Carbon Monoxide	19.95	4.99	0	
					Formaldehyde	0.00185	0.000463	0.000463	
					HAPs - Total	0.0378	0.00946	0.00946	
					Methane	0.155	0.0388	0	
					Naphthalene	0.00305	0.000763	0.000763	
					Nitrogen Oxides	75.1	18.77	0	
					Nitrous Oxide	0.031	0.00776	0	
					Particulate Matter	1.64	0.409	0	
					PM < 2.5 micron	1.3	0.326	0	
					PM < 10 micron	1.34	0.336	0	
					Sulfur Dioxide	0.0356	0.00889	0	
					Toluene	0.00659	0.00165	0.00165	
					Total Polycyclic aromatic hydrocarbons	0.00496	0.00124	0.00124	
					Volatile Organic Compounds	1.92	0.481	0	
					Xylenes, Total	0.00453	0.00113	0.00113	
		EQUI 35	Null	Generator 6	1,3-Butadiene	0.00128	0.00032	0.00032	
					Acetaldehyde	0.000825	0.000206	0.000206	
					Acrolein	0.000258	6.45e-05	6.45e-05	
					Benzene	0.0254	0.00635	0.00635	
					Carbon Dioxide	5,340	1,335	0	
					Carbon Dioxide Equivalent	0	1,341	0	
					Carbon Monoxide	26.94	6.73	0	
					Formaldehyde	0.00258	0.000646	0.000646	
					HAPs - Total	0.05	0.01	0.01	
					Methane	0.22	0.05	0	
					Naphthalene	0.00426	0.00106	0.00106	
					Nitrogen Oxides	49.28	12.32	0	
					Nitrous Oxide	0.043	0.01	0	
					Particulate Matter	1.54	0.39	0	
					PM < 2.5 micron	1.54	0.385	0	
					PM < 10 micron	1.54	0.385	0	
					Polycyclic organic matter	0.00693	0.00173	0.00173	
					Sulfur Dioxide	0.0496	0.0124	0	
					Toluene	0.0092	0.0023	0.0023	
					Volatile Organic Compounds	2.69	0.671	0	
					Xylenes, Total	0.00632	0.00158	0.00158	
		EQUI 38	Null	SMC Parking Ramp Emergency Generator	1,3-Butadiene	0.0001	2e-05	2e-05	
					Acetaldehyde	0.0015	0.0004	0.0004	
					Acrolein	0.0002	5e-05	5e-05	
					Benzene	0.0018	0.0005	0.0005	
					Carbon Dioxide	321.44	80.36	80.36	
					Carbon Dioxide Equivalent	322.5	80.63	80.63	
					Carbon Monoxide	1.86	0.466	0.466	
					Formaldehyde	0.0023	0.0006	0.0006	
					HAPs - Total	0.0076	0.0019	0.0019	
					Methane	0.013	0.0032	0.0032	
					Naphthalene	0.0002	4e-05	4e-05	
					Nitrogen Oxides	8.64	2.16	2.16	
					Nitrous Oxide	0.0026	0.0006	0.0006	
					Particulate Matter	0.608	0.152	0.152	
					PM < 2.5 micron	0.608	0.152	0.152	
					PM < 10 micron	0.608	0.1519	0.1519	
					Polycyclic organic matter	0.0003	0.0001	0.0001	
					Sulfur Dioxide	0.568	0.142	0.142	
					Toluene	0.0008	0.0002	0.0002	
					Volatile Organic Compounds	0.7056	0.176	0.176	
					Xylenes, Total	0.0006	0.0001	0.0001	
	Turbine	EQUI 11	EU006	Turbine Engine	Acetaldehyde	0.00242	0.0106	0.0106	
					Acrolein	0.000387	0.001695	0.001695	
					Benzene	0.000725	0.00318	0.00318	

PTE by SI

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Pollutant	Potential (lbs/hr)	Unrestricted Potential (tons/yr)	Potential Limited (tons/yr)	Actual Emissions (tons/yr)
Equipment	Turbine	EQUI 11	EU006	Turbine Engine	Carbon Dioxide	7,072	30,977	30,972	
					Carbon Dioxide Equivalent	0	31,003.97	31,003.97	
					Carbon Monoxide	0.907	3.97	3.97	
					Ethylbenzene	0.001934	0.00847	0.00847	
					Formaldehyde	0.04292	0.188	0.188	
					HAPs - Total	0.0602	0.264	0.264	
					Methane	0.133	0.584	0.584	
					Nitrogen Oxides	5.98	26.21	26.21	
					Nitrous Oxide	0.0133	0.0584	0.0584	
					Particulate Matter	0.399	1.75	1.75	
					PM < 2.5 micron	0.399	1.75	1.75	
					PM < 10 micron	0.399	1.75	1.75	
					Sulfur Dioxide	0.0341	0.149	0.149	
					Toluene	0.007859	0.0344	0.0344	
					Total Polycyclic aromatic hydrocarbons	0.000133	0.000582	0.000582	
					Volatile Organic Compounds	0.127	0.556	0.556	
					Xylenes, Total	0.003869	0.0169	0.0169	

Relationships

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

SI Category	SI Type	Subject Item ID	Delta Designation	Description	Relationship	Related SI ID	% Flow	Related SI Type	Related Delta Designation	Relationship Start Date	Relationship End Date	
Equipment	Boiler	EQUI 6	EU001	Boiler 1	is monitored by	EQUI 2	Null	Continuous Emission Monitor	MR001	7/23/2003	Null	
						EQUI 3	Null	Continuous Emission Monitor	MR002	7/23/2003	Null	
						EQUI 4	Null	Continuous Opacity Monitor	MR003	7/23/2003	Null	
						EQUI 34	Null	Continuous Emission Monitor	Null	7/23/2003	Null	
					sends to	EQUI 1	Null	Data Acquisition System	DA001	3/1/2003	Null	
						STRU 4	100	Stack/Vent	SV001	7/23/2003	Null	
		EQUI 7	EU002	Boiler 2	is monitored by	EQUI 2	Null	Continuous Emission Monitor	MR001	7/23/2003	Null	
						EQUI 3	Null	Continuous Emission Monitor	MR002	7/23/2003	Null	
						EQUI 4	Null	Continuous Opacity Monitor	MR003	7/23/2003	Null	
						EQUI 34	Null	Continuous Emission Monitor	Null	7/23/2003	Null	
					sends to	EQUI 1	Null	Data Acquisition System	DA001	3/1/2003	Null	
						STRU 4	100	Stack/Vent	SV001	7/23/2003	Null	
		EQUI 8	EU003	Boiler 3	is monitored by	EQUI 2	Null	Continuous Emission Monitor	MR001	7/23/2003	Null	
						EQUI 3	Null	Continuous Emission Monitor	MR002	7/23/2003	Null	
						EQUI 4	Null	Continuous Opacity Monitor	MR003	7/23/2003	Null	
						EQUI 34	Null	Continuous Emission Monitor	Null	7/23/2003	Null	
					sends to	EQUI 1	Null	Data Acquisition System	DA001	3/1/2003	Null	
						STRU 4	100	Stack/Vent	SV001	7/23/2003	Null	
	Data Acquisition System	EQUI 1	DA001	Primary DAS	receives from	EQUI 2	Null	Continuous Emission Monitor	MR001	3/1/2003	Null	
						EQUI 3	Null	Continuous Emission Monitor	MR002	3/1/2003	Null	
						EQUI 4	Null	Continuous Opacity Monitor	MR003	3/1/2003	Null	
						EQUI 34	Null	Continuous Emission Monitor	Null	3/1/2003	Null	
	Reciprocating IC Engine	EQUI 5	EU012	Generator 7 (Non-emergency CI; <10 liter/cyl; 2800 kW)	sends to	STRU 3	100	Stack/Vent	SV005	10/14/2009	Null	
		EQUI 9	EU004	Generator 5	sends to	STRU 5	100	Stack/Vent	SV002	7/23/2003	Null	
		EQUI 35	Null	Generator 6	sends to	STRU 11	100	Stack/Vent	Null	1/1/2020	Null	
		EQUI 38	Null	SMC Parking Ramp Emergency Generator	sends to	STRU 12	100	Stack/Vent	Null	1/1/2026	Null	
	Turbine	EQUI 11	EU006	Turbine Engine	sends to	STRU 7	100	Stack/Vent	SV004	7/23/2003	Null	

CEMs

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Span (ppm)	System Full Scale Value (ppm)	
EQUI 2	MR001	NOx Monitor	Teledyne	SM8200	82000139-0113	Nitrogen Oxides	Primary	No	3/1/2013	3/19/2013	40 CFR Pt 60	500	750	
EQUI 3	MR002	O2 Monitor	Monitor labs	LS-420	JJ1134A243	Oxygen	Primary	No	3/1/2013	3/19/2013	40 CFR Pt 60	25	1	
EQUI 34	Null	O2 Monitor	Rosemont Analytical	OCX88A	F07000836	Oxygen	B	No	3/1/2013	Null	Null	21	40	

COMs

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Parameter	Primary or Backup?	Bypass Capability?	Install Date (CEMs/COMs)	Certification Date	Certification Basis	Optical Path Length	
EQUI 4	MR003	Opacity Monitor	Teledyne	560	5601336	Opacity	Primary	No	3/1/2013	11/14/2007	40 CFR Pt 60	0.21	

DAS

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Manufacturer	Model	Serial Number	Primary or Backup? (DASs)	Install Date (DASs)	
EQUI 1	DA001	Primary DAS	Teledyne	RegPerfect	RP-P60-00198	Primary	3/1/2013	

Building

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Height	Units (height)	Length	Units (length)	Width	Units (width)	
STRU 1	BG001	St Marys Campus	180	feet	1,000	feet	700	feet	
STRU 2	BG002	St Marys Power Plant	78	feet	340	feet	300	feet	
STRU 9	Null	Generose	110	feet	382	feet	252	feet	
STRU 10	Null	Generose Parking Ramp	52	feet	245	feet	404	feet	

Stack/Vents

AI ID (Name): 4920 (Mayo Clinic Hospital - Saint Mary's Campus)
Activity: IND20230001

Subject Item ID	Delta Designation	Description	Stack Height (feet)	Stack Diameter (feet)	Stack Length (feet)	Stack Width (feet)	Stack Flow Rate (cubic ft/min)	Discharge Temperature (°F)	Flow Rate/Temp Information Source	Discharge Direction	
STRU 3	SV005	No. 7 Generator Stack	66.8	1.6	Null	Null	21,302	886	Manufacturer	Upwards with no cap on stack/vent	
STRU 4	SV001	Boiler Stack	223	3.35	Null	Null	107,535	350	Manufacturer	Upwards with no cap on stack/vent	
STRU 5	SV002	No. 5 Generator Stack	37	2.33	Null	Null	30,500	900	Manufacturer	Upwards with no cap on stack/vent	
STRU 7	SV004	Cogeneration Turbine Stack	64.5	3.9	Null	Null	52,392	300	Manufacturer	Upwards with no cap on stack/vent	
STRU 11	Null	No. 6 Generator Stack	37	2.33	Null	Null	24,791	977	Manufacturer	Upwards with no cap on stack/vent	
STRU 12	Null	SMC Parking Ramp Emergency Generator Stack	6.25	0.26	Null	Null	1,229	948	Manufacturer	Upwards with no cap on stack/vent	

SI Id	Sequence	Requirement
TFAC 1	1240	Permit Appendices: This permit contains appendices as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in Appendices Appendix A: Insignificant Activities and General Applicable Requirements; Appendix B: 40 CFR pt. 60, subp. A - General Provisions; Appendix C: 40 CFR pt. 60, subp. GG - Standards of Performance for Stationary Gas Turbines Appendix D: 40 CFR pt. 63, subp. WWWWW - National Emission Standards for Hospital Ethylene Oxide Sterilizers; and Appendix E: 40 CFR pt. 60, subp. IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Appendix F: 40 CFR pt. 60, subp. KKKKa - Standards of Performance for Stationary Combustion Turbines Appendix G: 40 CFR pt. 60, subp. Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units Modeling parameters in Appendix H, SO2 Modeling Parameters, are included for reference only as described elsewhere in this permit. [Minn. R. 7007.0800, subp. 2(A) & (B)]
	1260	PERMIT SHIELD: Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements. This permit shall not alter or affect the liability of the Permittee for any violation of applicable requirements prior to or at the time of permit issuance. [Minn. R. 7007.1800(A)(2)]
	1300	Sulfur Dioxide: Modeled Parameters for Sulfur Dioxide: The parameters used in SO2 modeling, as originally included in permit number 10900008-001, are listed in Appendix H of this permit. The parameters describe the operation of the facility at maximum permitted capacity. The purpose of listing the parameters in the appendix is to provide a benchmark for future changes. [Minn. R. 7007.0100, subp. 7(A), 7(L), and 7(M), Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subps. 1-2, Minn. R. 7009.0010-7009.0090, Minn. Stat. 116.07, subd. 4a, Minn. Stat. 116.07, subd. 9]
	1320	The Permittee currently uses ozone-depleting substances as defined in 40 CFR pt. 82. Sections 601-618 of the 1990 Clean Air Act Amendments and 40 CFR pt. 82 may apply to the facility. Read Sections 601-618 and 40 CFR pt. 82 to determine all the requirements that apply to the facility. [40 CFR pt. 82]
	1370	These following 40 CFR 52.21(r)(6) requirements apply if a reasonable possibility (RP) as defined in 40 CFR 52.21(r)(6)(vi) exists that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test (either by itself or as part of the hybrid test at 40 CFR 52.21(a)(2)(iv)(f)) and found to not be part of a major modification, may result in a significant emissions increase (SEI). If the ATPA test is not used for the project, or if there is no RP that the proposed project could result in a SEI, these requirements do not apply to that project. The Permittee is only subject to the Preconstruction Documentation requirement for a project where a RP occurs only within the meaning of 40 CFR 52.21(r)(6)(vi)(b). Even though a particular modification is not subject to New Source Review (NSR), or where there isn't a RP that a proposed project could result in a SEI, a permit amendment, recordkeeping, or notification may still be required by Minn. R. 7007.1150 - 7007.1500. [Minn. R. 7007.0800, subp. 2(A), Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]

SI Id	Sequence	Requirement
	1410	Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following: 1. Project description 2. Identification of any emission unit whose emissions of an NSR pollutant could be affected 3. Pre-change potential emissions of any affected existing emission unit, and the projected post-change potential emissions of any affected existing or new emission unit. 4. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the emission unit could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination. The Permittee shall maintain records of this documentation. [Minn. R. 7007.0800, subps. 4-5, Minn. R. 7007.1200, subp. 4, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	1420	Post-change Emissions - The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions in the hybrid test. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if the hybrid test was used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of five years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	1440	The Permittee must submit a report to the Agency if the annual summed (actual, plus potential if used in hybrid test) emissions differ from the preconstruction projection and exceed the baseline actual emissions by a significant amount as listed at 40 CFR 52.21(b)(23). Such report shall be submitted to the Agency within 60 days after the end of the year in which the exceedances occur. The report shall contain: a. The name and ID number of the Facility, and the name and telephone number of the Facility contact person; b. The annual emissions identified in the Post-change Emissions requirement (above); and c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: 40 CFR 52.21(r)(6) and Minn. R. 7007.3000]
	1460	The Permittee must comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0090. Compliance must be demonstrated upon written request by the MPCA. [Minn. R. 7007.0800, subp. 2(A) & (B), Minn. R. 7009.0020-7009.0090, Minn. Stat. 116.07, subd. 4a(a)]
	1470	Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted. [Minn. R. 7011.0020]
	1490	Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation. [Minn. R. 7007.0800, subp. 14, Minn. R. 7007.0800, subp. 16(J)]

SI Id	Sequence	Requirement
	1510	Operation Changes: In any shutdown, breakdown, or deviation the Permittee must immediately or as soon as possible considering plant and personnel safety take all practical steps to modify operations to reduce the emission of any regulated air pollutant. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment are permitted to operate. [Minn. R. 7019.1000, subp. 4]
	1620	Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150. [Minn. R. 7011.0150]
	1640	Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7030.0010-7030.0080]
	1650	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A). [Minn. R. 7007.0800, subp. 9(A)]
	1660	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16. [Minn. R. 7007.0800, subp. 16]
	1670	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in this permit. [Minn. R. ch. 7017]
	1690	Performance Test Notifications and Submittals: Performance Test Notification and Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due seven days before each Performance Test Performance Test Report: due 45 days after each Performance Test The Notification, Test Plan, and Test Report must be submitted in a format specified by the commissioner. [Minn. R. 7017.2017, Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2]
	1700	Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change. [Minn. R. 7017.2025, subp. 3]
	1720	Monitoring Equipment Calibration - The Permittee shall either: 1. Calibrate or replace required monitoring equipment every 12 months; or 2. Calibrate at the frequency stated in the manufacturer's specifications. For each monitor, the Permittee shall maintain a record of all calibrations, including the date conducted, and any corrective action that resulted. The Permittee shall include the calibration frequencies, procedures, and manufacturer's specifications (if applicable) in the Operations and Maintenance Plan. Any requirements applying to continuous emission monitors are listed separately in this permit. [Minn. R. 7007.0800, subp. 4(D)]
	1740	Operation of Monitoring Equipment: Unless noted elsewhere in this permit, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system. [Minn. R. 7007.0800, subp. 4(D)]
	1760	Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). [Minn. R. 7007.0800, subp. 5(C)]
	3340	Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes. [Minn. R. 7007.0800, subp. 5(B)]

SI Id	Sequence	Requirement
		If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format. [Minn. R. 7007.1200, subp. 4]
	3341	Shutdown Notifications: Notify the commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the Permittee does not have advance knowledge of the shutdown, the Permittee must notify the commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator must inform the commissioner of the cause of the shutdown and the estimated duration. The owner or operator must notify the commissioner when the shutdown is over. [Minn. R. 7019.1000, subp. 3]
	7400	Breakdown Notifications: Notify the commissioner within 24 hours of a breakdown of more than one hour of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in items A, B, and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the Permittee must inform the commissioner of the cause of the breakdown and the estimated duration. The Permittee must notify the commissioner when the breakdown is over. [Minn. R. 7019.1000, subp. 2]
	7420	Notification of Deviations Endangering Human Health or the Environment: Immediately after discovery of the deviation or immediately after when the deviation reasonably should have been discovered, notify the commissioner either orally or by e-mail, or telephone the state duty officer at 800-422-0798 or 651-649-5451, of any deviation from permit conditions that could endanger human health or the environment. [Minn. R. 7019.1000, subp. 1]
	7440	Notification of Deviations Endangering Human Health or the Environment Report: Within two working days of discovery, notify the commissioner in writing of any deviation from permit conditions that could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. [Minn. R. 7019.1000, subp. 1]
	7550	The Permittee must submit a semiannual deviations report : Due semiannually, by the 30th of January and July. The first semiannual report submitted by the Permittee must cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. Submit this on form DRF-2 (Deviation Reporting Form). If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(B)(2)]
	7630	Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed. Upon adoption of a new or amended federal applicable requirement, and if there are three or more years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150 - 7007.1500]

SI Id	Sequence	Requirement
	7670	Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H). [Minn. R. 7007.1400, subp. 1(H)]
	7690	The Permittee must submit a compliance certification : Due annually, by the 31st of January (for the previous calendar year). Submit this on form CR-04 (Annual Compliance Certification Report). This report covers all deviations experienced during the calendar year. If no deviations have occurred, submit the signed report certifying that there were no deviations. [Minn. R. 7007.0800, subp. 6(D)]
	7710	Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance. Submit in a format specified by the Commissioner. [Minn. R. 7019.3000-7019.3100]
	7730	Emission Fees: due 30 days after receipt of an MPCA bill. [Minn. R. 7002.0005-7002.0085]
	7740	The Permittee shall submit excess emission/downtime report : Due by 30 days after the end of each calendar quarter following permit issuance. Submit this on form DRF-1 (Excess Emissions Reporting) as amended. The EER shall indicate all periods of monitor bypass and exceedances of the limit including those allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions, as well as a summary of audit results and frequencies. If no excess emissions, downtime or bypasses occurred during the quarter, submit a signed report supplying the necessary monitor data needed to verify this. [Minn. R. 7017.1110, subp. 1-2]
	7780	The Permittee must comply with Minn. Stat. 116.385. The Permittee may not use trichloroethylene at its permitted facility including in any manufacturing, processing, or cleaning processes, except as described in Minn. Stat. 116.385, subd. 2(b) and 4. This is a state-only requirement and is not enforceable by the U.S. Environmental Protection Agency (EPA) Administrator and citizens under the Clean Air Act. [Minn. R. 7007.0100, subp. 7(X), Minn. Stat. 116.385]
	7820	The Permittee must at all times properly operate and maintain the facilities and systems of treatment and control and the appurtenances related to them that are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. [Minn. R. 7007.0800, subp. 16(J)]
	7910	Within 15 days of a request from the Commissioner, the Permittee must provide a complete summary of all performance tests required at the facility including the subject item, pollutant, most recent test date (if applicable), and the date of the next test in an approved format. [Minn. R. 7007.0800, subp. 16(L)]
	7920	The Permittee shall submit an application for permit reissuance : Due 180 calendar days before Permit Expiration Date. [Minn. R. 7007.0400, subp. 2]
COMG 2	8530	Fuel type: Limited to natural gas or very low sulfur fuel oil only. [Minn. R. 7007.0800, subp. 2(A) & (B)]
	8550	The Permittee shall limit Opacity <= 20 percent opacity 6-minute average except for one 6-minute period per hour of not more than 27 percent opacity. This standard applies at all times, except during periods of startup, shutdown, or malfunction. Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. [40 CFR 60.43b(f), 40 CFR 60.43b(g), Minn. R. 7011.0565]
	8560	The Permittee shall limit Nitrogen Oxides <= 0.10 pounds per million Btu heat input 30-day rolling average This standard applies at all times, including periods of startup, shutdown, or malfunction. [40 CFR 60.44b(a)(1)(ii), 40 CFR 60.44b(h), 40 CFR 60.44b(i), 40 CFR 60.46b(a), Minn. R. 7011.0565]
	8570	The Permittee shall limit Sulfur Content of Fuel <= 0.50 percent by weight sulfur in fuel oil; percent reduction requirement of 40 CFR 60.42b(a) does not apply to this emission unit. [40 CFR 60.42b(j), Minn. R. 7011.0565]
	8580	The Permittee shall install, calibrate, maintain, and operate CEMS for measuring NOx and O2 emissions discharged to the atmosphere, and shall record the output of the system. [40 CFR 60.48b(b)(1), Minn. R. 7011.0565]

SI Id	Sequence	Requirement
	8640	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. Db as follows: 40 CFR 60.40b(a); 40 CFR 60.41b; 40 CFR 60.42b(e); 40 CFR 60.42b(j)(2); 40 CFR 60.43b(f); 40 CFR 60.43b(g); 40 CFR 60.44b(a)(1)(i); 40 CFR 60.44b(h); 40 CFR 60.44b(i); 40 CFR 60.45b(j); 40 CFR 60.46b(a); 40 CFR 60.46b(c); 40 CFR 60.46b(d)(7); 40 CFR 60.46b(e)(4); 40 CFR 60.47b(f); 40 CFR 60.48b(a); 40 CFR 60.48b(b)(1) 40 CFR 60.48b(c); 40 CFR 60.48b(d); 40 CFR 60.48b(e)(2) and (3); 40 CFR 60.48b(f); 40 CFR 60.48b(g)(1); 40 CFR 60.49b(a)(1) and (3); 40 CFR 60.49b(b); 40 CFR 60.49b(d)(1); 40 CFR 60.49b(f)(3); 40 CFR 60.49b(g); 40 CFR 60.49b(h) 40 CFR 60.49b(i); 40 CFR 60.49b(o); 40 CFR 60.49b(r)(1); 40 CFR 60.49b(v); and 40 CFR 60.49b(w). A copy of 40 CFR pt. 60, subp. Db is included in Appendix G. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. Db, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0565]

SI Id	Sequence	Requirement
	8650	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a)-(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6(a); 40 CFR 60.6(b); 40 CFR 60.7(a)(4); 40 CFR 60.7(a)(6); 40 CFR 60.7(b)-(d); 40 CFR 60.9; 40 CFR 60.11(b)-(d); 40 CFR 60.11(e)(2); 40 CFR 60.11(e)(7); 40 CFR 60.11(e)(8); 40 CFR 60.11(f); 40 CFR 60.11(g); 40 CFR 60.12; 40 CFR 60.13(a); 40 CFR 60.13(d); 40 CFR 60.13(f); 40 CFR 60.13(g); 40 CFR 60.13(h); 40 CFR 60.13(i)(1)-(9); 40 CFR 60.13(j); 40 CFR 60.14(a)-(h); 40 CFR 60.15(a)-(g); 40 CFR 60.17; 40 CFR 60.19(a)-(d); and 40 CFR 60.19(f); A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
	8660	The Permittee shall submit excess emission reports as specified in 40 CFR 60.49b(h): Due within 30 days following the end of the 6-month reporting period. Alternatively, the Permittee may submit electronic quarterly reports for opacity in lieu of submitting written reports. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the Permittee, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the Permittee shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format. [40 CFR 60.49b(h), 40 CFR 60.49b(v), 40 CFR 60.49b(w), Minn. R. 7011.0565]

SI Id	Sequence	Requirement
	35700	The Permittee shall submit the reports as specified in 40 CFR 60.49b(g): Due within 30 days following the end of the 6-month reporting period. Alternatively, the Permittee may submit electronic quarterly reports for NOx in lieu of submitting written reports. The format of each quarterly electronic report shall be coordinated with the permitting authority. The electronic report(s) shall be submitted no later than 30 days after the end of the calendar quarter and shall be accompanied by a certification statement from the Permittee, indicating whether compliance with the applicable emission standards and minimum data requirements of this subpart was achieved during the reporting period. Before submitting reports in the electronic format, the Permittee shall coordinate with the permitting authority to obtain their agreement to submit reports in this alternative format. [40 CFR 60.49b(g), 40 CFR 60.49b(i), 40 CFR 60.49b(v), 40 CFR 60.49b(w), Minn. R. 7011.0565]
COMG 3	2	The Permittee shall limit Sulfur Dioxide <= 65.56 tons per year 12-month rolling sum calculated monthly, as described below. [Title I Condition: Avoid major modification under 40 CFR 52.21(b)(2) and Minn. R. 7007.3000]
	4	Daily recordkeeping: On each day of operation, the Permittee shall record the following: 1. The total quantity of natural gas used in million cubic feet; 2. The total quantity of each type of distillate oil used based on the sulfur content by weight of the distillate. [Title I Condition: Avoid major modification under 40 CFR 52.21(b)(2) and Minn. R. 7007.3000]
	5	Monthly Recordkeeping: Sulfur Dioxide By the 15th day of each month, the Permittee shall calculate and record the following: 1. The total quantity of natural gas used in the COMG 3 units during the previous month (G) in million cubic feet; 2. For each type of distillate oil based on sulfur content by weight percent, the total quantity of distillate oil used during the previous month in gallons; 3. The SO2 emissions for the previous month using the formulas specified in this permit; and 4. The 12-month rolling sum SO2 emissions for the previous 12-month period by summing the monthly emissions data for the previous 12 months. [Minn. R. 7007.0800, subps. 4-5]
	6	Monthly Calculations: SO2 Emissions The Permittee shall calculate the total SO2 emissions using the following equations: S = X + Y X = ((A1 x B1) + (A2 x B2) + . . .) x C x D Y = F x G Where: S = total SO2 emissions in tons/month X = SO2 emissions from distillate oil in tons/month Y = SO2 emissions from natural gas in tons/month A# = gallons of distillate oil with sulfur content of B# B# = sulfur content of oil in weight fraction (pounds sulfur/pounds fuel) C = density of fuel oil, 7.05 pounds/gallon D = 0.001 = (2 pounds SO2 / 1 pound sulfur) x (1 ton / 2000 pounds) F = 0.0003 = (0.6 pounds SO2 / million cubic feet of natural gas) x (1 ton / 2000 pounds) G = natural gas combusted in the previous month in million cubic feet. [Minn. R. 7007.0800, subps. 4-5]
EQUI 2	2200	Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090]
	2220	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]

SI Id	Sequence	Requirement
	2230	CEMS Monitor Design: Each CEMS shall be designed to complete a minimum of one cycle of sampling, analyzing, and data recording in each 15-minute period. [40 CFR 60.13(e)(2), Minn. R. 7017.1010, subp. 1(A)]
	2240	Nitrogen Oxides: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 6, 7, and 8. [40 CFR 60.48b(b), Minn. R. 7017.1010, subp 1]
	2260	The Permittee must submit start-up notification: Due 10 working days after Startup of Monitor Date. [Minn. R. 7007.0800, subp. 2(A)]
	2270	QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan must be on site and available for inspection within 30 days after monitor certification. The plan must contain all of the information required by 40 CFR Part 60, Appendix F, Section 3. The plan must include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list. [40 CFR pt. 60, Appendix F, 3, Minn. R. 7017.1010, subp. 1(C), Minn. R. 7017.1170, subp. 2]
	2280	CEMS QA/QC: The Permittee is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection. [40 CFR 60.13(a), 40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(A)]
	2290	CEMS Daily Calibration Drift Test: Check the zero (low level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily. The zero and span must, at a minimum, be adjusted whenever the drift exceeds two times the limit specified in 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, Section 4.3.1 must be used to determine out-of-control periods for CEMS. [40 CFR 60.13(d)(1), 40 CFR pt. 60, Appendix F, 4.1, Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1170, subp. 3]
	2300	Recordkeeping: The Permittee shall retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [40 CFR 60.7(f), Minn. R. 7017.1130, Minn. R. 7019.0100, subp. 1]
	2310	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
		CEMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the CEMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	2320	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2350	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due seven days before Certification Test. Certification Test Report due 45 days after Certification Test. Notify the commissioner prior to making any planned change or if unforeseen, within two working days, when a monitor must be recertified as outlined in Minn. R. 7017.1050, subp. 2. Test plans and reports must be submitted in a format specified by the commissioner. [40 CFR 60.7(a)(5), Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 3	2200	Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090]
	2220	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]

SI Id	Sequence	Requirement
	2230	CEMS Monitor Design: Each CEMS shall be designed to complete a minimum of one cycle of sampling, analyzing, and data recording in each 15-minute period. [40 CFR 60.13(e)(2), Minn. R. 7017.1010, subp. 1(A)]
	2240	Oxygen: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 6, 7, and 8. [40 CFR 60.48b(b), Minn. R. 7017.1010, subp 1]
	2260	The Permittee must submit start-up notification: Due 10 working days after Startup of Monitor Date. [Minn. R. 7007.0800, subp. 2(A)]
	2270	QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan must be on site and available for inspection within 30 days after monitor certification. The plan must contain all of the information required by 40 CFR Part 60, Appendix F, Section 3. The plan must include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list. [40 CFR pt. 60, Appendix F, 3, Minn. R. 7017.1010, subp. 1(C), Minn. R. 7017.1170, subp. 2]
	2280	CEMS QA/QC: The Permittee is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection. [40 CFR 60.13(a), 40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(A)]
	2290	CEMS Daily Calibration Drift Test: Check the zero (low level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily. The zero and span must, at a minimum, be adjusted whenever the drift exceeds two times the limit specified in 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, Section 4.3.1 must be used to determine out-of-control periods for CEMS. [40 CFR 60.13(d)(1), 40 CFR pt. 60, Appendix F, 4.1, Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1170, subp. 3]
	2300	Recordkeeping: The Permittee shall retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [40 CFR 60.7(f), Minn. R. 7017.1130, Minn. R. 7019.0100, subp. 1]
	2310	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
		CEMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the CEMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	2320	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]
	2350	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due seven days before Certification Test. Certification Test Report due 45 days after Certification Test. Notify the commissioner prior to making any planned change or if unforeseen, within two working days, when a monitor must be recertified as outlined in Minn. R. 7017.1050, subp. 2. Test plans and reports must be submitted in a format specified by the commissioner. [40 CFR 60.7(a)(5), Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 4	2680	Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1090]
	2710	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]

SI Id	Sequence	Requirement
	2720	Monitoring Data: All COMS data must be reduced to six-minute averages. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each six-minute period. [40 CFR 60.13(e)(1), 40 CFR 60.13(h)(2), Minn. R. 7017.1200, subp. 1-3]
	2730	QC Program: the facility owner or operator must conduct quality assurance and quality control as specified in Procedure 3 - Quality Assurance Requirements for Continuous Opacity Monitoring Systems at Stationary Sources, 40 CFR Pt. 60, Appendix F. [Minn. R. 7017.1215]
		Emissions Monitoring: The owner or operator shall use a COMS to measure emissions from EQUIs 6, 7, and 8. [40 CFR pt. 60, subp. Db, Minn. R. 7017.1010, subp 1]
	2740	COMS Daily Calibration Drift Test: The Calibration Drift must be quantified and recorded at zero (low-level) and upscale (high-level) calibration drift at least once daily according to the procedures listed in 40 CFR 60.13(d)(2) and pt. 60, Appendix B, PS 1. The zero and upscale calibration levels must be determined using the span value specified in the applicable requirement. If the applicable requirement does not specify a span value, a span value of 60, 70, or 80 percent opacity must be used unless an alternative span value is approved by the commissioner. 40 CFR pt. 60, Appendix F must be used to determine out-of-control periods for COMS. [40 CFR 60.13(d)(1), Minn. R. 7017.1215]
	2750	Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [Minn. R. 7017.1130]
	2760	COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed. [Minn. R. 7017.1220]
	2780	Notification of Compliance Status: Due 30 days before performance test required by 40 CFR 60.8 if COMS data results will be used in lieu of 40 CFR, Part 60, Appendix A, Method 9 observation data to determine compliance with the opacity standard as allowed by 40 CFR 60.11(e)(5). [40 CFR 60.7(a)(7)]
	2790	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due 7 days before Certification Test. Certification Test Report due 45 days after Certification Test. The Test Plan and Test Report must be submitted in a format specified by the commissioner. [Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]
	2830	COMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the COMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [Minn. R. 7017.1050, subp. 1]
	2850	The Permittee must conduct quarterly COMS performance audits: Due once per QA operating quarter (calendar quarter in which the unit operates at least 168 hours) after COMS certification test. Quarterly performance audits will include: optical alignment, calibration error, and zero compensation according to Procedure 3 of 40 CFR Pt. 60, Appendix F, section 10.0(2). Sources that achieve quality assured data for four consecutive quarters may reduce their auditing frequency to semi-annual. If a performance audit is failed, the source must resume quarterly testing for that audit requirement until it again demonstrates successful performance over four consecutive quarters. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
	2860	The Permittee must perform annual zero alignment as described in Procedure 3, section 10.3 of 40 CFR Pt. 60, Appendix F. [40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(C)]
EQUI 5	3	Hours <= 2,045 hours per year 12-month rolling sum to be calculated by the 15th day of each month for the previous 12-month period as described later in this permit. [Title I Condition: Avoid major modification under 40 CFR 52.21(b)(1)(i) and Minn. R. 7007.3000]
	17	The Permittee must limit emissions of Particulate Matter <= 0.54 grams per kilowatt-hour. [40 CFR 60.4204(a), 40 CFR pt. 60, subp. IIII(Table 1), Minn. R. 7011.2305]
	19	The Permittee must limit emissions of Carbon Monoxide <= 11.4 grams per kilowatt-hour. [40 CFR 60.4204(a), 40 CFR pt. 60, subp. IIII(Table 1), Minn. R. 7011.2305]
	20	The Permittee must limit emissions of Nitrogen Oxides <= 9.2 grams per kilowatt-hour. [40 CFR 60.4204(a), 40 CFR pt. 60, subp. IIII(Table 1), Minn. R. 7011.2305]
	3540	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0015 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]

SI Id	Sequence	Requirement
		The Permittee must limit emissions of Volatile Organic Compounds <= 1.3 grams per kilowatt-hour. [40 CFR 60.4204(a), 40 CFR pt. 60, subp. IIII(Table 1), Minn. R. 7011.2305]
	3550	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3830	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
		Fuel type: Diesel only, by design. [Minn. R. 7005.0100, subp. 35a]
	3840	Hours: Daily Recordkeeping. On each day of operation, the Permittee must calculate, record, and maintain a record of the total hours of operation. This must be based on hours of operation logs or hour meter readings. [Minn. R. 7007.0800, subps. 4-5, Title I Condition: Avoid major modification under 40 CFR 52.21(b)(1)(i) and Minn. R. 7007.3000]
	3850	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel oil, certifying that the sulfur content does not exceed 0.0015 percent by weight. [Minn. R. 7007.0800, subps. 4-5]
	4600	Hours: Monthly Recordkeeping. By the 15th of the month, the Permittee must calculate and record the following: 1) The total hours of operation for the previous calendar month using the daily records; and 2) The 12-month rolling sum hours of operation for the previous 12-month period by summing the monthly hours of operation for the previous 12 months. [Minn. R. 7007.0800, subps. 4-5]
	4620	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. IIII as follows: 40 CFR 60.4200(a)(2)(i); 40 CFR 60.4201(b); 40 CFR 60.4204(b); 40 CFR 60.4206; 40 CFR 60.4207(a); 40 CFR 60.4207(b); 40 CFR 60.4208(a); 40 CFR 60.4211(a); 40 CFR 60.4211(c); 40 CFR 60.4211(g)(3); 40 CFR 60.4214(a); 40 CFR 60.4218; 40 CFR 60.4219; and 40 CFR pt. 60, subp. IIII, Table 8. A copy of 40 CFR pt. 60, subp. IIII is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. IIII, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2305]
	19531	EQUI 5 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EQUI 5. [40 CFR 63.6590(c), Minn. R. 7011.8150]

SI Id	Sequence	Requirement
	35700	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a)-(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6(a); 40 CFR 60.6(b); 40 CFR 60.7(a)(4); 40 CFR 60.7(a)(6); 40 CFR 60.7(b); 40 CFR 60.7(d); 40 CFR 60.9; 40 CFR 60.11(b)-(d); 40 CFR 60.11(e)(2); 40 CFR 60.11(e)(7); 40 CFR 60.11(e)(8); 40 CFR 60.11(f); 40 CFR 60.11(g); 40 CFR 60.12; 40 CFR 60.14(a)-(g); 40 CFR 60.15(a)-(g); 40 CFR 60.17; 40 CFR 60.19(a)-(d); and 40 CFR 60.19(f); A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
EQUI 9	3520	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3535	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0015 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3540	Fuel type: Diesel only, by design. [Minn. R. 7005.0100, subp. 35a]
	3550	Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, that allows calculation of potential emissions based on 500 operating hours per year. [Minn. R. 7007.0800, subps. 4-5]
	3560	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel oil, certifying that the sulfur content does not exceed 0.0015 percent by weight. [Minn. R. 7007.0800, subps. 4-5]
	3565	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
EQUI 11	8	Nitrogen Oxides <= 190 parts per million at 15 percent oxygen and on a dry basis when combusting natural gas. [40 CFR 60.332(d), Minn. R. 7011.2350]
	6310	Sulfur Dioxide <= 0.015 percent by volume at 15 percent oxygen and on a dry basis. [40 CFR 60.333, Minn. R. 7011.2350]
	6320	Fuel Type: Limited to pipeline natural gas meeting the definition in 40 CFR 60.331(u). [Minn. R. 7007.0800, subp. 2(A)]

SI Id	Sequence	Requirement
	6330	Reconstructed Units: The Permittee must limit emissions of Sulfur Dioxide <= 110 nanograms per joule (0.90 lb/MWh) gross output or the Permittee must not burn any fuel in EQUI 11 which contains total potential sulfur emissions in excess of 26 ng SO2/J (0.060 lb SO2/MMBtu) heat input. [40 CFR 60.4330a(a)]
	6340	Reconstructed Units: The Permittee must limit emissions of Nitrogen Oxides <= 42 parts per million at 15 percent O2 or 67 ng/J (0.15 lb/MWh) when turbine is operating. [40 CFR 60.4320a(a)]
	6360	Custom Nitrogen Monitoring Schedule: The requirement to monitor the nitrogen content of the fuel is waived, provided only pipeline quality natural gas is combusted in the turbine. (Note: This custom schedule was approved through and is carried forward from the original Title V permit, issued 7/23/2003.). [40 CFR 60.334(c), Minn. R. 7011.2350]
	6370	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. GG as follows: 40 CFR 60.330(a)-(b); 40 CFR 60.331; 40 CFR 60.332(a)(2); 40 CFR 60.332(c); 40 CFR 60.333(a); 40 CFR 60.334(c); 40 CFR 60.334(h)(1)-(4); 40 CFR 60.334(i)(1)-(2); and 40 CFR 60.334(j)(1)-(5). A copy of 40 CFR pt. 60, subp. GG is included in Appendix C. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. GG, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2350]
	18990	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1; 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.7; 40 CFR 60.9; 40 CFR 60.11; 40 CFR 60.12; 40 CFR 60.13; 40 CFR 60.14; 40 CFR 60.15; 40 CFR 60.17; and 40 CFR 60.19; A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]

SI Id	Sequence	Requirement
	19000	Gas Turbine Replacement and Reconstruction: The gas turbine is composed of four main components: an axial compressor, combustor, high pressure turbine (provides mechanical power to drive the axial compressor), and the power turbine (converts thermal to mechanical energy to drive the pipeline compressor). The axial compressor, combustor and high pressure turbine are also known as a gas generator. The gas generator is a Taurus 60S CGS001 and the power turbine is manufactured by Solar. The Permittee is authorized to replace any or all of the four components for maintenance purposes at manufacturer's specified time intervals as specified later in this permit. Replacement of components meeting the definition of 'reconstruction' as defined at 40 CFR 60.15, triggers requirements of 40 CFR pt. 60, subp. KKKKa for reconstructed facilities. This permit includes the 40 CFR pt. 60, subp. KKKKa requirements for reconstructed affected facilities. If 40 CFR pt. 60, subp. KKKKa (subp. KKKKa) requirements are triggered due to reconstruction, the Permittee is no longer subject to 40 CFR pt. 60, subp. GG (subp. GG), and must meet the subp. KKKKa requirements in this subject item. [Minn. R. 7007.0800, subp. 2(A)]
	19020	EQUI 11 Turbine Component Replacement Authorization: The Permittee may make the replacements specified below without the need for a permit amendment if there is no increase in the hourly emissions rate, no new applicable requirements are triggered, and the Permittee continues to comply with all existing applicable permit conditions. The Permittee is allowed to replace any of the four main gas turbine components (defined earlier in this permit) with similar components as needed. The Permittee may also replace the entire gas generator (axial compressor, combustor, and high pressure turbine) with a gas generator of the same model and ISO-rated horsepower. If replacement of components qualifies EQUI 11 as a reconstructed facility for purposes of subp. KKKKa, the Permittee must follow the applicable subp. KKKKa requirements in this subject item instead of the subp. GG requirements. The Permittee is not authorized to install an additional gas turbine, is not authorized to completely replace the entire stationary gas turbine as defined at 40 CFR 60.4420, is not permitted to operate more than one turbine at the facility, and is not authorized to increase the emission rate (lb/hr, tpy, lb/hp-hr, lb/MMBtu, etc.) of any pollutant with this authorization. The gas turbine will continue to be designated as EQUI 11 regardless if these components have been replaced, and the gas turbine must continue to be subject to all applicable requirements listed under subject item EQUI 11. [Title I Condition: Avoid major modification under 40 CFR 52.21(b)(2) and Minn. R. 7007.3000]

SI Id	Sequence	Requirement
	19040	Reconstructed Units: The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. KKKKa as follows: 40 CFR 60.4300a; 40 CFR 60.4305a(a); 40 CFR 60.4315a; 40 CFR 60.4320a; 40 CFR 60.4330a; 40 CFR 60.4333a; 40 CFR 60.4340a; 40 CFR 60.4342a; 40 CFR 60.4345a; 40 CFR 60.4360a; 40 CFR 60.4372a; 40 CFR 60.4374a; 40 CFR 60.4375a(b); 40 CFR 60.4380a; 40 CFR 60.4385a; 40 CFR 60.4390a; 40 CFR 60.4395a; 40 CFR 60.4400a(a); 40 CFR 60.4420a; 40 CFR pt. 60, subp. KKKKa, Table 1; and 40 CFR pt. 60, subp. KKKKa, Table 2. A copy of 40 CFR pt. 60, subp. KKKKa is included in Appendix F. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. KKKKa, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500]
	19050	Turbine Component Replacement Recordkeeping: The Permittee must record the date and nature of each component replacement no later than five business days after completion of each replacement. The Permittee must also record the total cost of the component replacement compared to the cost of an entirely new stationary gas turbine (as defined at 40 CFR 60.4420). This record must be made at least 30 days before a NOx test is conducted on the gas turbine (as a result of the component replacement), but no later than 180 days after each component replacement. [Minn. R. 7007.0800, subp. 2(A), Minn. R. 7007.0800, subp. 4, Minn. R. 7007.0800, subp. 5]
	19090	Nitrogen Oxides: Initial Performance Test for Reconstructed Units: due 180 days after Initial Startup and reconstruction of EQUI 11, for NOx in accordance with 40 CFR 60.8 and 60.4400a. [40 CFR 60.4400a, 40 CFR 60.8(a), Minn. R. 7017.2020, subp. 1]
	19110	Nitrogen Oxides: Annual Performance Test for Reconstructed Units: due 425 days after Initial Performance Test or most recent performance test of EQUI 11, as required in 40 CFR 60.8 and using EPA Reference Methods 1, 2, 3, 3A, 7E, 19, and/or 20, in accordance with 40 CFR 60.4400a. The Permittee must conduct testing on an annual basis, no more than 14 calendar months following the previous performance test. The frequency of performance tests may be reduced to 26 calendar months following the date of the previous performance test, if the NOx emission result from the most recent performance test is less than or equal to 75 percent of the NOx emission standard for the stationary combustion turbine. [40 CFR 60.4333a, 40 CFR 60.4400a, 40 CFR 60.8(a), Minn. R. 7017.2020, subp. 1]

SI Id	Sequence	Requirement
	35700	Performance Test (NOx): due no later than 180 days after replacement of any or all of the EQUI 11 four gas turbine components. Testing shall be performed in accordance with 40 CFR 60.8 and following the procedures specified in 40 CFR 60.335 if reconstruction is not triggered, meeting the definition of 'reconstruction' as defined in 40 CFR 60.15. If the replacement of any or all of the EQUI 11 four gas turbine components triggers reconstruction. as defined in 40 CFR 60.15, then testing shall be performed in accordance 40 CFR 60.8 and the following procedures specified in 40 CFR 60.4400a. [40 CFR 60.335, 40 CFR 60.4400a, 40 CFR 60.8(a), Minn. R. 7011.2350, Minn. R. 7017.2020, subp. 1]
		Nitrogen Oxides: Performance Test Report for Reconstructed Units: In addition to the other notifications and submittals required by Minn. R. ch. 7017, the Permittee must submit a written report of the results of each NOx performance test before the close of business on the 60th day following completion of the performance test. [40 CFR 60.4375a(e)]
EQUI 34	2200	Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [40 CFR 60.13(e), Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1090]
	2220	Additional monitoring requirements may apply. The Permittee is responsible for meeting all applicable requirements. [Minn. R. 7007.0800, subp. 4(A)]
	2230	CEMS Monitor Design: Each CEMS shall be designed to complete a minimum of one cycle of sampling, analyzing, and data recording in each 15-minute period. [40 CFR 60.13(e)(2), Minn. R. 7017.1010, subp. 1(A)]
	2240	Oxygen: Emissions Monitoring: The Permittee must use a CEMS to measure emissions from EQUI 6, 7, and 8. [40 CFR 60.48b(b), Minn. R. 7017.1010, subp 1]
	2260	The Permittee must submit start-up notification: Due 10 working days after Startup of Monitor Date. [Minn. R. 7007.0800, subp. 2(A)]
	2270	QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan must be on site and available for inspection within 30 days after monitor certification. The plan must contain all of the information required by 40 CFR Part 60, Appendix F, Section 3. The plan must include the manufacturer's spare parts list for each CEMS and require that those parts be kept at the facility unless the Commissioner gives written approval to exclude specific spare parts from the list. [40 CFR pt. 60, Appendix F, 3, Minn. R. 7017.1010, subp. 1(C), Minn. R. 7017.1170, subp. 2]
	2280	CEMS QA/QC: The Permittee is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection. [40 CFR 60.13(a), 40 CFR pt. 60, Appendix F, Minn. R. 7017.1010, subp. 1(A)]
	2290	CEMS Daily Calibration Drift Test: Check the zero (low level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily. The zero and span must, at a minimum, be adjusted whenever the drift exceeds two times the limit specified in 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, Section 4.3.1 must be used to determine out-of-control periods for CEMS. [40 CFR 60.13(d)(1), 40 CFR pt. 60, Appendix F, 4.1, Minn. R. 7017.1010, subp. 1(A), Minn. R. 7017.1170, subp. 3]
	2300	Recordkeeping: The Permittee shall retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source. [40 CFR 60.7(f), Minn. R. 7017.1130, Minn. R. 7019.0100, subp. 1]
	2310	Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which a RATA was conducted. [Minn. R. 7017.1180, subp. 3]
		CEMS Certification/Recertification Test: due 90 days after the first excess emissions report required for the CEMS or any change which invalidates the monitor's certification status as outlined in Minn. R. 7017.1050, subp. 2. [40 CFR 60.13(b), Minn. R. 7017.1010, subp. 1(A)]
	2320	Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter in which a CGA was conducted. [Minn. R. 7017.1180, subp. 1]

SI Id	Sequence	Requirement
	2350	Certification Test Plan due 30 days before Certification Test. Certification Test Pretest Meeting due seven days before Certification Test. Certification Test Report due 45 days after Certification Test. Notify the commissioner prior to making any planned change or if unforeseen, within two working days, when a monitor must be recertified as outlined in Minn. R. 7017.1050, subp. 2. Test plans and reports must be submitted in a format specified by the commissioner. [40 CFR 60.7(a)(5), Minn. R. 7017.1060, subp. 1-3, Minn. R. 7017.1080]
	2460	The Permittee must conduct a cylinder gas audit: Due by the end of each three of four calendar quarters but no more than three quarters in succession. A CGA is not required during any calendar quarter in which a RATA was performed. [40 CFR pt. 60, Appendix F, 5.1.2, Minn. R. 7017.1010, subp. 1(C)]
	2470	The Permittee must conduct a relative accuracy test audit: Due one of each four calendar quarters. [40 CFR pt. 60, Appendix F, 5.1.1, Minn. R. 7017.1010, subp. 1(C)]
EQUI 35	3520	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3535	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0015 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3540	The Permittee must limit emissions of NMHC+NOx <= 6.4 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3550	The Permittee must limit emissions of Particulate Matter <= 0.20 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3560	The Permittee must limit emissions of Carbon Monoxide <= 3.5 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3565	The Permittee must limit emissions of Opacity <= 20 percent opacity during the acceleration mode. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	19530	The Permittee must limit emissions of Opacity <= 15 percent opacity during the lugging mode. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	28100	The Permittee must limit emissions of Opacity <= 50 percent opacity during the peaks in either the acceleration or lugging modes. [40 CFR 60.4202(b)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	28110	The Permittee must limit Sulfur Content of Fuel <= 15.0 parts per million and either a minimum cetane index of 40 or a maximum aromatic content of 35 percent by volume, as required by 40 CFR 1090.305. [40 CFR 60.4207(b), Minn. R. 7011.2305]
	28120	Fuel type: Diesel only, by design. [Minn. R. 7005.0100, subp. 35a]
	28130	Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, that allows calculation of potential emissions based on 500 operating hours per year. [Minn. R. 7007.0800, subps. 4-5]
	28140	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
	28150	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel oil, certifying that the sulfur content does not exceed 0.0015 percent by weight. [Minn. R. 7007.0800, subps. 4-5]
	28160	EQUI 35 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EQUI 35. [40 CFR 63.6590(c), Minn. R. 7011.8150]

SI Id	Sequence	Requirement
	35680	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. IIII as follows: 40 CFR 60.4200(a)(2)(i); 40 CFR 60.4202(b)(2); 40 CFR 60.4205(b); 40 CFR 60.4206; 40 CFR 60.4207(b); 40 CFR 60.4208(a); 40 CFR 60.4209(a); 40 CFR 60.4211(a); 40 CFR 60.4211(c); 40 CFR 60.4211(f)(1); 40 CFR 60.4211(f)(2)(i); 40 CFR 60.4211(f)(3); 40 CFR 60.4214(b); 40 CFR 60.4218; 40 CFR 60.4219; and 40 CFR pt. 60, subp. IIII, Table 8. A copy of 40 CFR pt. 60, subp. IIII is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. IIII, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2305]
	35685	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a); 40 CFR 60.1(b); 40 CFR 60.1(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7(b); 40 CFR 60.7(f)(3); 40 CFR 60.7(g); 40 CFR 60.7(h); 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.12; 40 CFR 60.14; 40 CFR 60.15; 40 CFR 60.17(a); and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]

SI Id	Sequence	Requirement
	35700	If the emergency stationary engine operates for the purposes specified in 40 CFR 60.4211(f)(3)(i), the Permittee must submit an annual report for each calendar year no later than March 31 of the following calendar year. The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emission Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). However, if the reporting form not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR 60.4 and emailed to the MPCA as directed in Section 2 of this permit for other compliance submittals. Beginning on February 26, 2025, submit the annual report electronically according to 40 CFR 60.4214(g). [40 CFR 60.4214(d), 40 CFR 60.4214(g), Minn. R. 7011.2305]
EQUI 38	3090	Opacity <= 20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
	3100	Sulfur Dioxide <= 0.0015 pounds per million Btu heat input. The potential to emit from the unit is 0.0015 lb/MMBtu due to equipment design and allowable fuels. [Minn. R. 7011.2300, subp. 2(B)]
	3110	The Permittee must limit Sulfur Content of Fuel <= 15.0 parts per million and either a minimum cetane index of 40 or a maximum aromatic content of 35 percent by volume, as required by 40 CFR 1090.305. [40 CFR 60.4207(b), Minn. R. 7011.2305]
	3520	The Permittee must limit emissions of NMHC+NOx <= 6.5 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3535	The Permittee must limit emissions of Particulate Matter <= 0.20 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3540	The Permittee must limit emissions of Carbon Monoxide <= 3.5 grams per kilowatt-hour as described in 40 CFR pt. 1039, Appendix I. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3550	The Permittee must limit emissions of Opacity <= 20 percent opacity during the acceleration mode. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3560	The Permittee must limit emissions of Opacity <= 15 percent opacity during the lugging mode. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	3565	The Permittee must limit emissions of Opacity <= 50 percent opacity during the peaks in either the acceleration or lugging modes. [40 CFR 60.4202(a)(2), 40 CFR 60.4205(b), Minn. R. 7011.2305]
	19530	Fuel type: Diesel only, by design. [Minn. R. 7005.0100, subp. 35a]
	28160	The Permittee is authorized to construct and operate EQUI 38 and STRU 12. The authorization to start construction of EQUI 38 and STRU 12 expires 18 months after permit issuance of Air Emissions Permit No. 10900008-103. The units shall meet all applicable permit requirements. [Title I Condition: Avoid major modification under 40 CFR 52.21(b)(1)(i) and Minn. R. 7007.3000]
	35500	Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, that allows calculation of potential emissions based on 500 operating hours per year. [Minn. R. 7007.0800, subps. 4-5]
	35510	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of diesel fuel oil, certifying that the sulfur content does not exceed 0.0015 percent by weight. [Minn. R. 7007.0800, subps. 4-5]
	35520	The Permittee shall keep records of fuel type and usage on a monthly basis. [Minn. R. 7007.0800, subp. 5]
	35530	EQUI 38 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR 63.2. The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EQUI 38. [40 CFR 63.6590(c), Minn. R. 7011.8150]

SI Id	Sequence	Requirement
	35540	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. IIII as follows: 40 CFR 60.4200(a)(2)-(4); 40 CFR 60.4200(c); 40 CFR 60.4200(d); 40 CFR 60.4202(a)(2); 40 CFR 60.4205(b); 40 CFR 60.4205(e); 40 CFR 60.4206; 40 CFR 60.4207(b); 40 CFR 60.4208(a); 40 CFR 60.4209(a); 40 CFR 60.4211(a); 40 CFR 60.4211(c); 40 CFR 60.4211(f); 40 CFR 60.4211(g)(2); 40 CFR 60.4214(b); 40 CFR 60.4218; 40 CFR 60.4219; and 40 CFR pt. 60, subp. IIII, Table 8. A copy of 40 CFR pt. 60, subp. IIII is included in Appendix E. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. IIII, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.2305]

SI Id	Sequence	Requirement
	35550	The Permittee must comply with all applicable requirements of 40 CFR pt. 60, subp. A as follows: 40 CFR 60.1(a); 40 CFR 60.1(b); 40 CFR 60.1(c); 40 CFR 60.2; 40 CFR 60.3; 40 CFR 60.4; 40 CFR 60.5; 40 CFR 60.6; 40 CFR 60.7(b); 40 CFR 60.7(f)(3); 40 CFR 60.7(g); 40 CFR 60.7(h); 40 CFR 60.9; 40 CFR 60.10; 40 CFR 60.12; 40 CFR 60.14; 40 CFR 60.15; 40 CFR 60.17(a); and 40 CFR 60.19. A copy of 40 CFR pt. 60, subp. A is included in Appendix B. If the standard changes or upon adoption of a new or amended federal applicable requirement, and if there are more than three years remaining in the permit term, the Permittee shall file an application for an amendment within nine months of promulgation of the applicable requirement, pursuant to Minn. R. 7007.0400, subp. 3. [40 CFR pt. 60, subp. A, Minn. R. 7007.0400, subp. 3, Minn. R. 7007.1150-7007.1500, Minn. R. 7011.0050, subp. 1(A), Minn. R. 7017.1010 & 7017.2015, subp. 2, Minn. R. 7019.0100]
	35700	If the emergency stationary engine operates for the purposes specified in 40 CFR 60.4211(f)(3)(i), the Permittee must submit an annual report for each calendar year no later than March 31 of the following calendar year. The annual report must be submitted electronically using the subpart specific reporting form in the Compliance and Emission Data Reporting Interface (CEDRI) that is accessed through EPA's Central Data Exchange (CDX) (https://cdx.epa.gov/). However, if the reporting form not available in CEDRI at the time that the report is due, the written report must be submitted to the Administrator at the appropriate address listed in 40 CFR 60.4 and emailed to the MPCA as directed in Section 2 of this permit for other compliance submittals. Beginning on February 26, 2025, submit the annual report electronically according to 40 CFR 60.4214(g). [40 CFR 60.4214(d), 40 CFR 60.4214(g), Minn. R. 7011.2305]
	35710	The Permittee shall submit a notification of date construction began: Due 30 calendar days after Date of Construction Start (or reconstruction). Submit the name and number of the Subject Item and the date construction began. The notification shall be submitted electronically on Form CS-02. [40 CFR 60.7(a)(1), Minn. R. 7007.0800, subp. 16(L), Minn. R. 7019.0100, subp. 1]
	35720	The Permittee shall submit a notification of the actual date of initial startup: Due 15 calendar days after Initial Startup Date. The notification shall be submitted electronically on Form CS-02. [40 CFR 60.7(a)(3), Minn. R. 7007.0800, subp. 16(L), Minn. R. 7019.0100, subp. 1]
	35730	The Permittee shall submit a notification of anticipated date for conducting opacity observations: Due 30 calendar days before Opacity Observation Date. [40 CFR 60.7(a)(6), Minn. R. 7019.0100, subp. 1]

Attachment 3- Points Calculator

Points Calculator

1) AI ID No.:	4920
2) Facility Name:	Mayo Clinic Hospital – Saint Mary's Campus
3) Small business? y/n?	no
4) Air Project Tracking **Numbers (including all rolled) :**	7315, 7895
5) Date of each Application Received:	2/15/2023, 10/6/2025
6) Final Permit No.	10900008-103
7) Permit Staff	Jacqueline Hammond

Total Points 24

Application Type	Air Project Tracking No.	Tempo Activity ID	Qty.	*Points*	Total Points	Total Additionl Cost	Details
Administrative Amendment				*1*	0	$ -	
Minor Amendment	7895	IND20250001	1	*4*	4	$ 1,140.00	
Applicability Request				*10*	0	$ -	
Moderate Amendment				*15*	0	$ -	
Major Amendment				*25*	0	$ -	
Individual State Permit (not reissuance)				*50*	0	$ -	
Individual Part 70 Permit (not reissuance)				*75*	0	$ -	
Additional Points							
Modeling Review				*15*	0	$ -	
BACT Review				*15*	0	$ -	
LAER Review				*15*	0	$ -	
CAA section 110(a)(2)(D)(i)(I) Review (i.e., Transport Rule/CAIR/CSAPR)				*10*	0	$ -	
Part 75 CEM analysis				*10*	0	$ -	
NSPS Review	7895	IND20250001	1	*10*	10	$ 2,850.00	NSPS IIII
NESHAP Review	7895	IND20250001	1	*10*	10	$ 2,850.00	NESHAPS ZZZZ
Case-by-case MACT Review				*20*	0	$ -	
Netting				*10*	0	$ -	
Limits to remain below threshold				*10*	0	$ -	
Plantwide Applicability Limit (PAL)				*20*	0	$ -	
AERA review				*15*	0	$ -	
Variance request under 7000.7000				*35*	0	$ -	
Confidentiality request under 7000.1300				*2*	0	$ -	
EAW review					0		
Part 4410.4300, subparts 18, item A; and 29				*15*	0	$ -	
Part 4410.4300, subparts 8, items A & B; 10, items A to C; 16, items A & D; 17, items A to C & E to G; and 18, items B & C				*35*	0	$ -	
Part 4410.4300, subparts 4; 5 items A & B; 13; 15; 16, items B & C; and 17 item D				*70*	0	$ -	

Add'l Points 20

NOTES:

Total additional fees are $5,7000.00

Attachment 4 – EPA Memo on Custom Monitoring/Letter to EPA Seeking Approval/EPA Approval Letter

Minnesota Pollution Control Agency

April 14, 2003

Mr. George Czerniak
AE-17J
U. S. Environmental Protection Agency – Region V
77 West Jackson Boulevard
Chicago, IL 60604-3507

RE: Proposal for Custom Monitoring Schedule for Air Emission Permit No. 10900008-001, to be Issued to St. Marys Hospital, located at 1216 Southwest 2nd Street, Rochester, Olmsted County, Minnesota.

Dear Mr. Czerniak:

St. Marys is a hospital operating, among other equipment, a natural gas cogeneration turbine subject to the requirements of 40 CFR pt. 60, Subpart GG. Only pipeline quality natural gas is used as fuel for the turbine.

For this permit, a custom fuel monitoring schedule has been developed, as is allowed under 40 CFR § 60.334(b)(2). We believe this proposed schedule meets the requirements outlined in the U.S. Environmental Protection Agency's (EPA) guidance memo from John B. Rasnik, dated August 14, 1987. A copy of the draft permit and the guidance memo are enclosed. The proposed custom schedule can be found on page A-8 of the draft permit.

In addition, St. Marys seeks approval for two alternative sulfur monitoring methods, as follows: First, St. Marys would like to use sulfur content data obtained from Rochester Public Utilities (RPU). RPU monitors the sulfur content of the pipeline natural gas burned in their Cascade Creek turbine, using the requirements at 40 CFR Part 75 in lieu of the requirements at 40 CFR 60 Subpart GG, as approved by U.S. Environmental Protection Agency (EPA) in a letter dated April 3, 2001 (enclosed). St. Marys and the RPU Cascade Creek plant get their pipeline natural gas from the same source; most of the sulfur in the gas comes from the odorant, which is added west of Rochester, prior to the St. Marys or RPU facilities. Enclosed is a letter from St. Marys showing the sulfur content data obtained by RPU.

Second, St. Marys would like to use the Gas Processors Association Standard Method 2377-86, "Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes." They propose using two length of stain tubes for each sample, one to detect hydrogen sulfide and one to detect mercaptans. This proposed monitoring method also appears on page A-8 of the draft permit. Enclosed are two EPA Applicability Determinations, Control Numbers NS08 and 0200023, in which approvals for this alternative method were given.

The permit is assigned to Toni Volkmeier, of my staff. Please direct all comments regarding the custom monitoring schedule to the assigned staff person at (651)297-7708. I can also be contacted at (651)296-7711.

Sincerely,

Carolina Espejel-Schutt, P.E.
Supervisor
Majors and Air Construction Section
Majors and Remediation Division

CES/TV:lao

Enclosures

cc: David Senjem, Mayo Foundation
Robert Miller, EPA
Greg Berger, MPCA
Toni Volkmeier, MPCA
AQ File No. 989

MAYO CLINIC

200 First Street SW
Rochester, Minnesota 55905
507-284-2511

March 28, 2003

Ms. Toni Volkmeier
Minnesota Pollution Control Agency
Majors Air and Construction Section
Majors Air and Remediation Division
520 Lafayette Rd.
St. Paul MN 55155-4194

Re: Sulfur Monitoring for Saint Marys Turbine

Dear Ms. Volkmeier:

As I mentioned in my letter dated March 24, 2003, we have been trying to determine the most efficient manner in which to collect the natural gas sulfur content data required by 40 CFR Part 60 Subpart GG. We have discussed this issue with Rochester Public Utilities (RPU) and have found out that they monitor the sulfur content of the natural gas that they burn in their turbine at the Cascade Creek plant in Rochester on a monthly basis. The gas burned in their turbine is identical to the gas burned in the turbine at Saint Marys. The majority of the sulfur in the gas comes from odorant, which is added West of Rochester prior to the gas going to RPU and Saint Marys.

Attached is a table showing natural gas sulfur data collected by RPU. RPU is required to collect this data by 40 CFR Part 75 Appendix D. The same data is used to demonstrate compliance with Subpart GG as allowed by EPA. As can be seen from the table the sulfur content is well below the limit in Subpart GG (1.1 ppm measured vs. 0.8% or 8000 ppm allowed by the standard) and there is little variability, which is expected considering that the primary contributor to the sulfur content is the odorant which is added in a constant amount. We believe that ASTM Method D 3246 was used to measure the gas sulfur content.

RPU has agreed to make the data available to us on a continuing basis. We request that the custom fuel monitoring schedule in our final permit specifically allow the use of natural gas sulfur content data obtained from RPU.

Please call me at (507) 284-8890 or contact me via e-mail at senjem.david@mayo.edu if you have any questions.

Sincerely,

David Senjem
Environmental Affairs Officer

Natural Gas Sulfur Content Data
Rochester Public Utilities - Cascade Creek Plant
Rochester, Minnesota

SampleID	Lab Name	LabNo	Descript	SampleDate	Type	Parameter	Value	Units
1553	Texas Oil Tech	25553-02	Engine B	24-Apr-02	Natural Gas	Total Sulfur	1.1	ppm
1565	Texas Oil Tech	25475-01	Engine A	24-Apr-02	Natural Gas	Total Sulfur	1.1	ppm
1561	Texas Oil Tech	25475-02	Engine B	24-Apr-02	Natural Gas	Total Sulfur	1.2	ppm
1557	Texas Oil Tech	25553-01	Engine A	24-Apr-02	Natural Gas	Total Sulfur	1.1	ppm
1548	Texas Oil Tech	25656-02	CCGT2	15-May-02	Natural Gas	Total Sulfur	1.1	ppm
1543	Texas Oil Tech	25656-01	CCGT2	15-May-02	Natural Gas	Total Sulfur	1	ppm
1596	Texas Oil Tech	25975-01	CCGT2	31-May-02	Natural Gas	Sulfur	1.1	ppm
1598	Texas Oil Tech	25975-02	CCGT2	12-Jun-02	Natural Gas	Sulfur	1.1	ppm
1600	Texas Oil Tech	26223	CCGT2	25-Jun-02	Natural Gas	Sulfur	1	ppm
1762	Texas Oil Tech	26800	CCGT2	29-Aug-02	Natural Gas	Sulfur	1	ppm
1761	Texas Oil Tech	27127	CCGT2	06-Sep-02	Natural Gas	Sulfur	1	ppm
1760	Texas Oil Tech	27289	CCGT2	18-Oct-02	Natural Gas	Sulfur	1	ppm
1759	Texas Oil Tech	28281	CCGT2	20-Nov-02	Natural Gas	Sulfur	<1	ppm

Average 1.067 ppm

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

APR 03 2001

REPLY TO THE ATTENTION OF
(AE-17J)

Official File Stamp
File Name Rochester Public Utilities - Cascade Creek
File Number 499C
Page # _____ Staff JSC
Category 2001 Correspondence

Don Smith, P.E., Supervisor
Major Facilities
Minnesota Pollution Control Agency - South District
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Dear Mr. Smith:

I am writing in response to your letter dated March 13, 2001. Your letter asks for the approval of several requests regarding compliance with the Standards of Performance for Stationary Gas Turbines (40 CFR Part 60, Subpart GG). Your request was made for the Rochester Public Utilities Cascade Creek facility. The units included in your request were identified as EU-003 and EU-004.

Your letter states that each unit identified above are dual fuel combustion turbines (fuel oil and natural gas). You state each unit will be equipped with water injection to control Nitrogen Oxide (NO_x) emissions and a NO_x continuous emission monitoring system (CEM). In general, you ask for approval to use requirements of 40 CFR Part 75 in lieu of the requirements of 40 CFR part 60, Subpart GG. Specifically, you requested the following three determinations be made:

1. Use of continuous emission monitors (CEMs) for nitrogen oxides (NO_x), in lieu of fuel monitoring requirements for nitrogen given at 40 CFR Subpart GG.

2. The use of RATA results obtained during certification of the NO_x CEMs to demonstrate initial compliance [with 40 CFR Part 60, Subpart GG].

3. Use of fuel monitoring provisions for sulfur at 40 CFR Part 75, in lieu of fuel monitoring provisions for sulfur given at 40 CFR Part 60, Subpart GG.

Determination:

We have reviewed the information you provided, the underlying regulations and previous determinations. Our review has led to

the following determinations regarding the two affected units identified above.

1. Use of continuous emission monitors for NO_x.

We approve your request to use NO_x CEMs, instead of water-to-fuel ratios and nitrogen fuel content, as an alternate monitoring method for NO_x to comply with 40 CFR Part 60, Subpart GG. These CEMs can be used if the following conditions are met:

A. Each turbine meets the emission limitation (STD) determined according to 40 CFR §60.332. The "Y" value for the applicable equation and supporting documentation should be provided by the applicant and the limitation for NO_x emissions from pipeline quality natural gas should be fixed assuming the "F" value equals 0. The emission limitation must be expressed in ppmv, dry, corrected to 15 percent oxygen (O_2).

B. Each NO_x CEMs meets the applicable requirements of 40 CFR Part 60, Appendix B, Performance Specification 2, and Appendix F for certifying, maintaining, operating and assuring quality of the system.

C. Each NO_x CEMs must be capable of calculating NO_x emissions concentrations corrected to 15 percent O_2 and International Standards Organization (ISO) standard conditions.

D. Each owner or operator of the NO_x CEMs shall submit an excess emissions and monitoring systems performance report [40 CFR §60.13(h)] and/or summary report form to the Administrator on a quarterly basis, if excess emissions are determined, or semi-annually, if no excess emissions are determined. The report shall be postmarked by the 30th day following the end of each reporting period. Written reports must include information required at 40 CFR §60.7(c-d). This report shall also contain the content of nitrogen in fuel oil for each reporting period when oil is fired and a clearly calculated corresponding emission limitation.

E. Record-keeping requirements shall follow the requirements specified at 40 CFR §60.7.

It is also recommended the NO_x CEMs be used to demonstrate compliance with the emission limitation on a continuous basis and that the quarterly report include the NO_x mass emissions for the reported period as reported to the State.

2. Use of RATA data for initial compliance demonstration at CEM-equipped units

We approve your request to use data collected during a Relative Accuracy Test Audit (RATA) of the NO_x CEMs installed on the listed combustion turbines to demonstrate initial compliance of those combustion turbines with requirements of 40 CFR Part 60, Subpart GG. This approval is granted if 1) U.S. EPA reference test methods are used during the RATA, and 2) a minimum of nine 21-minute test runs are completed for the RATA.

3. Use of fuel monitoring requirements for sulfur at 40 CFR Part 75, in lieu of fuel monitoring requirements for sulfur given at 40 CFR Subpart GG.

We approve your request to use the monitoring requirements for sulfur at 40 CFR Part 75, Appendix D, Section 2.3 in lieu of fuel monitoring requirements for sulfur at 40 CFR Part 60, Subpart GG. These alternate monitoring requirements can only be used when pipeline quality natural gas is the only fuel being burned and must be in accordance with 40 CFR Part 75, Appendix D, Section 2.3.

We also approve your request to use the monitoring requirements for sulfur at 40 CFR Part 75, Appendix D, Section 2.2 in lieu of fuel monitoring requirements for sulfur at 40 CFR Part 60, Subpart GG. These alternate monitoring requirements can only be used when distillate oil [number 2 fuel oil] is the only fuel being burned and must be in accordance with 40 CFR Part 75, Appendix D, Section 2.2.

The above approvals do not waive the right of U.S. EPA or another regulating agency to require monitoring at any time for determining compliance. In addition, if monitoring reveals any emissions in excess of those allowed by Subpart GG, Rochester Public Utilities' Cascade Creek facility could be required to change the monitoring program and may be subject to an enforcement action. Finally, the above approval is based on Federal regulations and provides the minimum conditions for compliance. The State of Minnesota is a delegated authority and maintains the right to require more stringent requirements than those outlined above.

If you have any questions regarding this determination, please do not hesitate to contact Kevin Vuilleumier, of my staff, at (312) 886-6188.

Sincerely yours,

George Czerniak, Chief
Air Enforcement and Compliance Assurance Branch

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Determination Detail

Control Number: NS08

Category: NSPS
EPA Office: SSCD
Date: 08/07/1991
Title: Alternative Method of Fuel Sulfur Monitoring
Recipient: Robinson, Judith
Author: Miller, Mamie R.
Comments:

Subparts: Part 60, GG Stationary Gas Turbines

References: 60.330
60.334

Abstract:

Can the "Test for Hydrogen Sulfide in Natural Gas Using Length of Stain Tubes" be approved as an alternative method to ASTM sulfur monitoring for natural gas fired turbines subject to NSPS Subpart GG?

The Technical Support Division approved the use of this method for the testing of sulfur content only. The method does not replace the required monitoring frequencies which are provided for ensuring compliance with 40 CFR Part 60.334.

Letter:

Control Number: NS08

August 07 1991

MEMORANDUM

SUBJECT: Subpart GG, Alternative Method of Sulfur Fuel Monitoring

FROM: Mamie Miller, Chief
Compliance Monitoring Branch
Stationary Source Compliance Division

TO: Judith Robinson
Air Compliance Section
Air and Toxics Division, Region VII

This is in response to your memo of July 5, 1991 regarding the Gas Processors Association þTest for Hydrogen Sulfide in Natural Gas Using Length of Stain Tubesþ. This method has been proposed for use as an alternative method to ASTM sulfur monitoring for natural gas fired turbines subject to NSPS Subpart GG. Your office requested that the methods be reviewed for enforceability by Seth Heminway, the coordinator for Regions IV and VII. I have requested Scott Nelson of my staff to review the test method, since he is the SSCD contact for NSPS Subpart GG.

As discussed in the July 17, 1991 phone conversation between yourself and Scott Nelson, we concur with the Technical Support Divisionþs recommendation to approve the use of this test method. However, please note that the procedures outlined in the method are only for the testing of the sulfur content in fuel. The method does not replace the required monitoring frequencies which are provided for ensuring compliance with NSPS in 40 CFR 60.334.

If you have any questions of my staff regarding this issue, please feel free to call Scott Nelson at FTS 398-8708.

cc: Seth Heminway (EN-41)
Scott Nelson (EN-341W)
Subpart GG file

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Determination Detail

Control Number: 0200023

Category: NSPS
EPA Office: Region 5
Date: 11/08/2001
Title: Alternative to ASTM Sulfur Content Test Method
Recipient: Paul Yeung
Author: George Czerniak
Comments:

Subparts: Part 60, GG Stationary Gas Turbines

References: 60.335(b)(2)
66.334(b)(2)

Abstract:

Q: May the GPA test method 2377-86 be used in lieu of approved ASTM methods for analyzing the sulfur content of natural gas?

A: Yes. The GPA test method entitled "Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes" (GPA Standard 2377-86) is an alternative method that EPA has approved for other facilities that combust pipeline quality natural gas.

Letter:

Paul O. Yeung, P.E.
Permit Review Engineer
Bureau of Air Management
Wisconsin Department of Natural Resources
101 S. Webster Street
P.O. Box 7921
Madison, Wisconsin 53707-7921

Re. Alternate ASTM method for NSPS Subpart GG

Dear Mr. Yeung:

Thank you for your October 4, 2001, letter. In your letter you proposed a revision to a monitoring method for the sulfur content of natural gas to be fired in the proposed Belleville Compressor Station in Green County, Wisconsin, to be operated by Northern Natural Gas Company.

The New Source Performance Standards (NSPS) at 40 C.F.R. Sec. 60.334(b)(2) (Subpart GG), stipulates that the owner or operator of a stationary gas turbine will monitor the sulfur and nitrogen content of the fuel being fired in the turbine, and that if the turbine is supplied its fuel without intermediate bulk storage, the values will be determined and recorded daily.

Analysis for fuel sulfur content of the natural gas shall be conducted using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels, or an approved alternative method. The approved reference methods are: ASTM D1072-80; ASTM D3031-81; ASTM D3246-81; and ASTM D4084-82 as referenced in 40 CFR Sec. 60.335(b)(2). The Gas Processors Association (GPA) test method entitled "Test for Hydrogen Sulfide and Carbon Dioxide in Natural Gas Using Length of Stain Tubes" (GPA Standard 2377-86) is an alternative method that has been approved by the United States Environmental Protection Agency (U.S. EPA) for other facilities.

In your letter, you ask whether the alternate ASTM method is approvable for the Belleville Compressor Station. The station will combust "pipeline quality" natural gas. Given that the sulfur content of the fuel is expected to be much lower than the NSPS standard of 0.8 percent by weight, U.S. EPA concurs that this alternate ASTM method is approvable for the Belleville Compressor Station. If you have any questions, feel free to contact Jeffrey Gahris, of my staff, at (312) 886-6794.

Sincerely,

George T. Czerniak, Jr., Chief
Air Enforcement and Compliance Assurance Branch

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Determination Detail

Control Number: NS33

Category: NSPS
EPA Office: SSCD
Date: 08/14/1987
Title: Delegation of Authority to Regions for Custom Fuel Moitoring
Recipient: Regions
Author: Rasnic, John B.
Comments:

Subparts: Part 60, GG Stationary Gas Turbines

References: 60.330
60.333
60.334(b)(2)

Abstract:

Can Regions approve custom fuel monitoring schedules under Subpart GG?

Yes, schedules that the Regions issue for pipeline quality natural gas should be no less stringent than the following: sulfur monitoring should be bimonthly, followed by quarterly and then semiannually, and nitrogen monitoring can be waived. Requests by sources using oil should be consulted on, but the Regions need not send the request itself to SSCD.

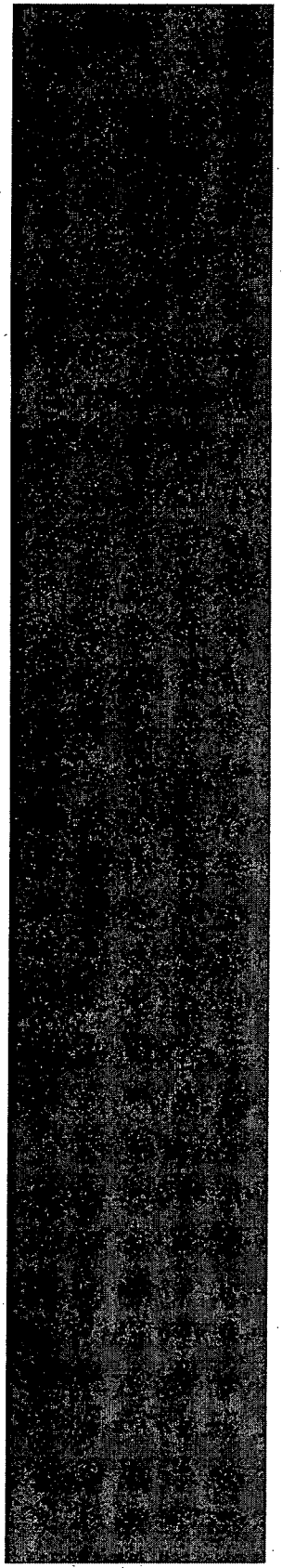
Letter:

Control Number: NS33

August 14, 1987

MEMORANDUM

SUBJECT: Authority for Approval of Custom Fuel Monitoring Schedules under NSPS Subpart GG



FROM: John B. Rasnic, Chief
Compliance Monitoring Branch

TO: Air Compliance Branch Chiefs
Regions II, III, IV, V, VI, and IX

Air Programs Branch Chiefs
Regions I-X

The NSPS for Stationary Gas Turbines (Subpart GG) at 40 CFR 60.334(b)(2) allows for the development of custom fuel monitoring schedules as an alternative to daily monitoring of the sulfur and nitrogen content of fuel fired in the turbines. Regional Offices have been forwarding custom fuel monitoring schedules to the Stationary Source Compliance Division (SSCD) for consideration since it was understood that authority for approval of these schedules was not delegated to the Regions. However, in consultation with the Emission Standards and Engineering Division, it has been determined that the Regional Offices do have the authority to approve Subpart GG custom fuel monitoring schedules. Therefore it is no longer necessary to forward these requests to Headquarters for approval.

Over the past few years, SSCD has issued over twenty custom schedules for sources using pipeline quality natural gas. In order to maintain national consistency, we recommend that any schedules Regional Offices issue for natural gas be no less stringent than the following: sulfur monitoring should be bimonthly, followed by quarterly, then semiannual, given at least six months of data demonstrating little variability in sulfur content and compliance with □60.333 at each monitoring frequency; nitrogen monitoring can be waived for pipeline quality natural gas, since there is no fuel-bound nitrogen and since the free nitrogen does not contribute appreciably to NOx emissions. Please see the attached sample custom schedule for details. Given the increasing trend in the use of pipeline quality natural gas, we are investigating the possibility of amending Subpart GG to allow for less frequent sulfur monitoring and a waiver of nitrogen monitoring where natural gas is used.

Where sources using oil request custom fuel monitoring schedules, Regional Offices are encouraged to contact SSCD for consultation on the appropriate fuel monitoring schedule. However, Regions are not required to send the request itself to SSCD for approval.

If you have any questions, please contact Sally M. Farrell at FTS 382-2875.

Attachment

cc: John Crenshaw
George Walsh
Robert Ajax
Earl Salo

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF: (AE-17J)

MAY 02 2003

Carolina Espejel-Schutt, P.E., Supervisor
Majors and Air Construction Section
Majors and Remediation Division
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155-4194

Dear Ms. Schutt:

I'm writing in response to your letter dated April 14, 2003, concerning St. Mary's Hospital located at 1216 Southwest 2nd Steet, Rochester, Olmsted County, Minnesota. Your letter states that St. Mary's Hospital has a natural gas cogeneration turbine subject to 40 CFR Part 60, Subpart GG (Standards of Performance for Stationary Gas Turbines). The turbine will burn only pipeline natural gas as fuel. Specifically, your letter requests:

1. Approval of a custom monitoring schedule for fuel sulfur content

2. Approval to use fuel sulfur content data obtained from Rochester Public Utilities to demonstrate compliance

3. Approval to use an alternative test method to monitor fuel sulfur content

Determinations:

We have reviewed the information you provided, the underlying regulations and previous United States Environmental Protection Agency (U.S. EPA) determinations. Our review has led to the following determinations regarding the cogeneration turbine in use by St. Mary's Hospital.

1. Custom Monitoring Schedule for Fuel Sulfur Content

We approve the request to allow St. Mary's Hospital to use a custom monitoring schedule, as outlined in the August 14, 1987 memorandum from John B. Rasnic. We do not, however, approve the monitoring schedule described on page A-8 of the draft permit

supplied with the determination request. The reason for this is that the permit schedule is not consistent with the August 14, 1987, memorandum (i.e., quarterly monitoring must be conducted for six quarters, not six months). The facility may immediately begin monitoring bi-weekly. We grant this approval in accordance with 40 CFR §§60.334(b)(2) and 60.13(i). The following schedule applies to the St. Mary's Hospital cogeneration turbine:

A. Conduct fuel sulfur content monitoring twice monthly (bi-weekly) for six months. If bi-weekly fuel sulfur content monitoring indicates compliance with limits at 40 CFR §60.333 (0.8 percent sulfur by weight) and shows little or no variability, St. Mary's Hospital may reduce fuel sulfur content monitoring to once per quarter.

B. Conduct fuel sulfur content monitoring once per quarter for six quarters. If quarterly fuel sulfur content monitoring indicates compliance with limits at 40 CFR §60.333 (0.8 percent sulfur by weight) and shows little or no variability, St. Mary's Hospital may reduce fuel sulfur content monitoring to a semi-annual basis (first and third quarters).

C. Conduct semi-annual fuel sulfur content monitoring.

D. If, at any time, sulfur analysis indicates non-compliance with limits at 40 CFR §60.333, St. Mary's Hospital must notify U.S. EPA and the Minnesota Pollution Control Agency (MPCA) of the excess emissions. In addition, St. Mary's Hospital must begin fuel sulfur content monitoring on a weekly basis. U.S. EPA and/or MPCA will then re-examine the custom monitoring schedule and determine if a more frequent monitoring period is necessary.

E. If, at any time, a change in the type of fuel or fuel supply/supplier occurs, St. Mary's Hospital must notify U.S. EPA and MPCA of the change(s). In addition, St. Mary's Hospital must begin fuel sulfur content monitoring on a weekly basis while the custom schedule is being reviewed by U.S. EPA and/or MPCA.

2. <u>Use Fuel Sulfur Content Data from Rochester Public Utility</u>

We do not approve your request to use sulfur content data obtained by Rochester Public Utilities (RPU) to determine compliance on a continuous basis. RPU requested an alternative monitoring program (i.e., Acid Rain Monitoring Procedures under 40 CFR Part 75) for fuel sulfur content and was granted approval

by U.S. EPA on April 3, 2001. This monitoring is not the same as the custom monitoring schedule you requested. Since determinations must be made on a case-by-case basis, if St. Mary's Hospital wants to use monitoring provided for under 40 CFR Part 75, it must request such alternative monitoring separately.

3. Use of Alternative Test Method to Measure Fuel Sulfur Content

The authority to approve alternative testing methods has not been delegated to the States or Regional offices. The current delegation has been given to the Office of Air Quality Planning and Standards (OAQPS). Your letter included one approval from U.S. EPA's Stationary Source Compliance Division (the division to which OAQPS previously was part of) to use the Gas Processors Association Standard Method 2377-86 at another facility; however, determinations must be made on a case-by-case basis. We have forwarded your request for an alternative test method to OAQPS for a response. We will notify you of their decision once we receive it.

Please be advised that U.S. EPA and other regulating agencies retain the right to require additional monitoring at any time for determining compliance. In addition, if monitoring reveals any emissions in excess of those allowed by 40 CFR Part 60, Subpart GG, St. Mary's Hospital could be required to change the monitoring program and may be subject to an enforcement action. Finally, the above approval is based on Federal regulations and provides the minimum conditions for compliance. The State of Minnesota maintains the right to require more stringent requirements than those outlined above.

Revisions to 40 CFR Part 60, Subpart GG:

I would like to inform you that U.S. EPA published revisions to 40 CFR Part 60, Subpart GG on April 14, 2003, at 68 FR 17990-18002. U.S. EPA published the rule as a Direct Final action with a 30-day comment period. If U.S. EPA does not receive any adverse comments during the 30-day public comment period, the effective date of the new rule is May 14, 2003. If U.S. EPA receives adverse comments, U.S. EPA will publish a Federal Register notice to address those comments and to identify any rule revisions resulting from consideration of the comments.

The revised 40 CFR Part 60, Subpart GG is a joint effort by the Regions, Office of Enforcement and Compliance Assurance, Office of Air Quality Planning and Standards and various workgroups within the Agency to update 40 CFR Part 60, Subpart GG. The

revisions codify a variety of determinations U.S. EPA has made related to 40 CFR Part 60, Subpart GG over the years. These include: custom monitoring schedules for turbines combusting fuel other than natural gas, use of NO_x CEMS to demonstrate compliance, alternative test methods (including the Gas Processors Association Method 2377-86) and use of Acid Rain program methodology for monitoring sulfur content in fuel. These determinations have been necessary due to changes in technology for monitoring NO_x emissions, use of various fuels with very low sulfur content in steam generating units and newly developed methods to monitor fuel sulfur content.

If you have any questions regarding this determination, please do not hesitate to contact Kevin Vuilleumier, of my staff, at (312) 886-6188.

Sincerely yours,

George T. Czerniak, Chief
Air Enforcement and Compliance Assurance Branch