Archived: Tuesday, September 26, 2023 9:35:19 AM
From: Kim Prak
Mail received time: Tue, 19 Sep 2023 19:27:56
Sent: Tue, 19 Sep 2023 19:23:30
To: EGLE-ROP
Subject: B7287 - ROP Renewal Application
Importance: Normal
Sensitivity: None
Attachments:
ROP Renewal Application.pdf

B7287 - ROP Renewal Application attached.

Thank you,

Kim Prak

Electric Department

(269) 659-7287

EGLE

RENEWABLE OPERATING PERMIT
RENEWAL APPLICATION FORM

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Refer to instructions for additional information to complete the Renewable Operating Permit Renewal Application Form.

GENERAL INSTRUCTIONS

This application form should be submitted as part of an administratively complete application package for renewal of a Renewable Operating Permit (ROP). This application form consists of nine parts. Parts A – H must be completed for all applications and must also be completed for each section of a sectioned ROP. Answer all questions in all parts of the form unless directed otherwise. Detailed instructions for this application form can be found at http://michigan.gov/air (select the Permits Tab, "Renewable Operating Permits (ROP)/Title V", then "ROP Forms & Templates").

PART A: GENERAL INFORMATION

Enter information about the source, owner, contact person and the responsible official.

SOURCE INFORMATION

SRN	SIC Code	NAICS Code	Existing ROP Number	Section Number (if applicable)
B7287	**4911**	**221122**	**MI-ROP-B7287-2019**	

Source Name: **Sturgis Municipal Power Plant**

Street Address: **505 W. Chicago Road**

City	State	ZIP Code	County
Sturgis	**MI**	**49091-1610**	**Saint Joseph**

Section/Town/Range (if address not available)

Source Description

Municipal electric power generation plant. Engine #6 was installed in 1981 and is capable of burning No.2 fuel oil or natural gas. The unit was permitted at 249 tons per year NOx. The facility has a 30,000 gallon above ground fuel oil storage tank, cold cleaners for clean-up activities and radiant heaters.

☐ Check here if any of the above information is different than what appears in the existing ROP. Identify any changes on the marked-up copy of your existing ROP.

OWNER INFORMATION

Owner Name	Section Number (if applicable)
City of Sturgis	

Mailing address (☐ check if same as source address)

130 North Nottawa Street

City	State	ZIP Code	County	Country
Sturgis	**MI**	**49091-1197**	**Saint Joseph**	**USA**

☐ Check here if any information in this ROP renewal application is confidential. Confidential information should be identified on an Additional Information (AI-001) Form.

SRN: **B7287**	Section Number (if applicable):

PART A: GENERAL INFORMATION (continued)

At least one contact and responsible official must be identified. Additional contacts and responsible officials may be included if necessary.

CONTACT INFORMATION

Contact 1 Name	Title			
David Johannes	**Administrator of Operations**			
Company Name & Mailing address (☒ check if same as source address)				
City	State	ZIP Code	County	Country
Phone number **O: 269-651-3682 C: 269-753-9020**	E-mail address **djohannes@sturgidmi.gov**			

Contact 2 Name (optional)	Title			
Tyler Stark	**Operations Manager**			
Company Name & Mailing address (☐ check if same as source address) **206 E. West Street**				
City	State	ZIP Code	County	Country
Sturgis	**MI**	**49091**	**Saint Joseph**	**USA**
Phone number **O: 269-659-7287 C: 269-625-7218**	E-mail address **tstark@sturgismi.gov**			

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name	Title			
Chris McArthur	**Electric Superintendent**			
Company Name & Mailing address (☐ check if same as source address) **206 E. West Street**				
City	State	ZIP Code	County	Country
Sturgis	**MI**	**49091**	**Saint Joseph**	**USA**
Phone number **O: 269-659-7287 C: 517-617-5433**	E-mail address **cmcarthur@sturgismi.gov**			

Responsible Official 2 Name (optional)	Title			
Tyler Stark	**Operations Manager**			
Company Name & Mailing address (☐ check if same as source address) **206 E. West Street**				
City	State	ZIP Code	County	Country
Sturgis	**MI**	**49091**	**Saint Joseph**	**USA**
Phone number **O: 269-659-7287 C: 269-625-7218**	E-mail address **tstark@sturgismi.gov**			

☐ Check here if an AI-001 Form is attached to provide more information for Part A. Enter AI-001 Form ID:

SRN: **B7287**	Section Number (if applicable):

PART B: APPLICATION SUBMITTAL and CERTIFICATION by Responsible Official

Identify the items that are included as part of your administratively complete application in the checklist below. For your application to be complete, it must include information necessary to evaluate the source and to determine all applicable requirements. Answer the compliance statements as they pertain to all the applicable requirements to which the source is subject. The source's Responsible Official must sign and date this form.

Listing of ROP Application Contents. Check the box for the items included with your application.

☒ Completed ROP Renewal Application Form (and any AI-001 Forms) (required)	☐ Compliance Plan/Schedule of Compliance
☒ Mark-up copy of existing ROP using official version from the AQD website (required)	☐ Stack information
☐ Copies of all Permit(s) to Install (PTIs) that have not been incorporated into existing ROP (required)	☐ Acid Rain Permit Initial/Renewal Application
☒ Criteria Pollutant/Hazardous Air Pollutant (HAP) Potential to Emit Calculations	☐ Cross-State Air Pollution Rule (CSAPR) Information
☐ MAERS Forms (to report emissions not previously submitted)	☐ Confidential Information
☐ Copies of all Consent Order/Consent Judgments that have not been incorporated into existing ROP	☒ Paper copy of all documentation provided (required)
☐ Compliance Assurance Monitoring (CAM) Plan	☒ Electronic documents provided (optional)
☒ Other Plans (e.g., Malfunction Abatement, Fugitive Dust, Operation and Maintenance, etc.)	☐ Other, explain:

Compliance Statement

This source is in compliance with **all** of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	☒ Yes ☐ No
This source will continue to be in compliance with all of its applicable requirements, including those contained in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and other applicable requirements not currently contained in the existing ROP.	☒ Yes ☐ No
This source will meet in a timely manner applicable requirements that become effective during the permit term.	☒ Yes ☐ No

The method(s) used to determine compliance for each applicable requirement is/are the method(s) specified in the existing ROP, Permits to Install that have not yet been incorporated into that ROP, and all other applicable requirements not currently contained in the existing ROP.

If any of the above are checked No, identify the emission unit(s) or flexible group(s) affected and the specific condition number(s) or applicable requirement for which the source is or will be out of compliance at the time of issuance of the ROP renewal on an AI-001 Form. Provide a compliance plan and schedule of compliance on an AI-001 Form.

Name and Title of the Responsible Official (Print or Type)

Chris McArthur – Electric Superintendent

As a Responsible Official, I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this application are true, accurate, and complete.

Chris McArthur — 9/18/2023

Signature of Responsible Official **Date**

SRN: **B7287**	Section Number (if applicable):

PART C: SOURCE REQUIREMENT INFORMATION

Answer the questions below for specific requirements or programs to which the source may be subject.

C1.	Actual emissions and associated data from **all** emission units with applicable requirements (including those identified in the existing ROP, Permits to Install and other equipment that have not yet been incorporated into the ROP) are required to be reported in MAERS. Are there any emissions and associated data that have not been reported in MAERS for the most recent emissions reporting year? If Yes, identify the emission unit(s) that was/were not reported in MAERS on an AI-001 Form. Applicable MAERS form(s) for unreported emission units must be included with this application.	☐ Yes ☒ No
C2.	Is this source subject to the federal regulations on ozone-depleting substances? (40 CFR Part 82)	☐ Yes ☒ No
C3.	Is this source subject to the federal Chemical Accident Prevention Provisions? (Section 112(r) of the Clean Air Act Amendments, 40 CFR Part 68) If Yes, a Risk Management Plan (RMP) and periodic updates must be submitted to the USEPA. Has an updated RMP been submitted to the USEPA?	☐ Yes ☒ No ☐ Yes ☐ No
C4.	Has this stationary source **added or modified** equipment since the last ROP renewal that changes the potential to emit (PTE) for criteria pollutant (CO, NOx, PM10, PM2.5, SO_2, VOC, lead) emissions? If Yes, include potential emission calculations (or the PTI and/or ROP revision application numbers, or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. If No, criteria pollutant potential emission calculations do not need to be included.	☐ Yes ☒ No
C5.	Has this stationary source **added or modified** equipment since the last ROP renewal that changes the PTE for hazardous air pollutants (HAPs) regulated by Section 112 of the federal Clean Air Act? If Yes, include potential emission calculations (or the PTI and/or ROP revision application numbers or other references for the PTE demonstration) for the added or modified equipment on an AI-001 Form. Fugitive emissions must be included in HAP emission calculations. If No, HAP potential emission calculations do not need to be included.	☐ Yes ☒ No
C6.	Are any emission units subject to the Cross-State Air Pollution Rule (CSAPR)? If Yes, identify the specific emission unit(s) subject to CSAPR on an AI-001 Form.	☐ Yes ☒ No
C7.	Are any emission units subject to the federal Acid Rain Program? If Yes, identify the specific emission unit(s) subject to the federal Acid Rain Program on an AI-001 Form. Is an Acid Rain Permit Renewal Application included with this application?	☐ Yes ☒ No ☐ Yes ☐ No
C8.	Are any emission units identified in the existing ROP subject to compliance assurance monitoring (CAM)? If Yes, identify the specific emission unit(s) subject to CAM on an AI-001 Form. If a CAM plan has not been previously submitted to EGLE, one must be included with the ROP renewal application on an AI-001 Form. If the CAM Plan has been updated, include an updated copy. Is a CAM plan included with this application? If a CAM Plan is included, check the type of proposed monitoring included in the Plan: 1. Monitoring proposed by the source based on performance of the control device, or 2. Presumptively Acceptable Monitoring, if eligible	☐ Yes ☒ No ☐ Yes ☐ No ☐ ☐
C9.	Does the source have any plans such as a malfunction abatement plan, fugitive dust plan, operation/maintenance plan, or any other monitoring plan that is referenced in an existing ROP, Permit to Install requirement, or any other applicable requirement? If Yes, then a copy must be submitted as part of the ROP renewal application.	☒ Yes ☐ No
C10.	Are there any specific requirements that the source proposes to be identified in the ROP as non-applicable? If Yes, then a description of the requirement and justification must be submitted as part of the ROP renewal application on an AI-001 Form.	☐ Yes ☒ No

☒ Check here if an AI-001 Form is attached to provide more information for Part C. Enter AI-001 Form ID: **AI-002 -003**

SRN: **B7287**	Section Number (if applicable):

PART D: PERMIT TO INSTALL (PTI) EXEMPT EMISSION UNIT INFORMATION

Review all emission units at the source and answer the question below.

D1. Does the source have any emission units that do not appear in the existing ROP but are required to be listed in the ROP application under R 336.1212(4) (Rule 212(4)) of the Michigan Air Pollution Control Rules? If Yes, identify the emission units in the table below. ☒ Yes ☐ No

If No, go to Part E.

Note: Emission units that are subject to process specific emission limitations or standards, even if identified in Rule 212, must be captured in either Part G or H of this application form. Identical emission units may be grouped (e.g. PTI exempt Storage Tanks).

Emission Unit ID	**Emission Unit Description**	**Rule 212(4) Citation** [e.g. Rule 212(4)(c)]	**Rule 201 Exemption Rule Citation** [e.g. Rule 282(2)(b)(i)]
EU-HEATERS	**Three (3) natural gas radiant heaters. 200,000 BTU/hr each.**	**R 336.1212(4)(c)**	**R 336.1282(b)(i)**

Comments:

☐ Check here if an AI-001 Form is attached to provide more information for Part D. Enter AI-001 Form ID: **AI-**

SRN: **B7287**	Section Number (if applicable):

PART E: EXISTING ROP INFORMATION

Review all emission units and applicable requirements (including any source wide requirements) in the existing ROP and answer the questions below as they pertain to **all** emission units and **all** applicable requirements in the existing ROP.

E1. Does the source propose to make any additions, changes or deletions to terms, conditions and underlying applicable requirements as they appear in the existing ROP? If Yes, identify changes and additions on Part F, Part G and/or Part H.	☐ Yes ☒ No
E2. For each emission unit(s) identified in the existing ROP, all stacks with applicable requirements are to be reported in MAERS. Are there any stacks with applicable requirements for emission unit(s) identified in the existing ROP that were not reported in the most recent MAERS reporting year? If Yes, identity the stack(s) that was/were not reported on applicable MAERS form(s).	☐ Yes ☒ No
E3. Have any emission units identified in the existing ROP been modified or reconstructed that required a PTI? If Yes, complete Part F with the appropriate information.	☐ Yes ☒ No
E4. Have any emission units identified in the existing ROP been dismantled? If Yes, identify the emission unit(s) and the dismantle date in the comment area below or on an AI-001 Form.	☐ Yes ☒ No

Comments:

☐ Check here if an AI-001 Form is attached to provide more information for Part E. Enter AI-001 Form ID: **AI-**

SRN: **B7287**	Section Number (if applicable):

PART F: PERMIT TO INSTALL (PTI) INFORMATION

Review all emission units and applicable requirements at the source and answer the following questions as they pertain to **all** emission units with PTIs. Any PTI(s) identified below must be attached to the application.

F1. Has the source obtained any PTIs where the applicable requirements from the PTI have not been incorporated into the existing ROP? If Yes, complete the following table. If No, go to Part G. ☐ Yes ☒ No

Permit to Install Number	Emission Units/Flexible Group ID(s)	Description (*Include Process Equipment, Control Devices and Monitoring Devices*)	Date Emission Unit was Installed/ Modified/ Reconstructed

F2. Do any of the PTIs listed above change, add, or delete terms/conditions to **established emission units** in the existing ROP? If Yes, identify the emission unit(s) or flexible group(s) affected in the comments area below or on an AI-001 Form and identify all changes, additions, and deletions in a mark-up of the existing ROP. ☐ Yes ☐ No

F3. Do any of the PTIs listed above identify **new emission units** that need to be incorporated into the ROP? If Yes, submit the PTIs as part of the ROP renewal application on an AI-001 Form, and include the new emission unit(s) or flexible group(s) in the mark-up of the existing ROP. ☐ Yes ☐ No

F4. Are there any stacks with applicable requirements for emission unit(s) identified in the PTIs listed above that were not reported in MAERS for the most recent emissions reporting year? If Yes, identity the stack(s) that were not reported on the applicable MAERS form(s). ☐ Yes ☐ No

F5. Are there any proposed administrative changes to any of the emission unit names, descriptions or control devices in the PTIs listed above for any emission units not already incorporated into the ROP? If Yes, describe the changes on an AI-001 Form. ☐ Yes ☐ No

Comments:

☐ Check here if an AI-001 Form is attached to provide more information for Part F. Enter AI-001 Form ID: **AI-**

SRN: **B7287**	Section Number (if applicable):

PART G: EMISSION UNITS MEETING THE CRITERIA OF RULES 281(2)(h), 285(2)(r)(iv), 287(2)(c), OR 290

Review all emission units and applicable requirements at the source and answer the following questions.

G1. Does the source have any new and/or existing emission units which do not already appear in the existing ROP and which meet the criteria of Rules 281(2)(h), 285(2)(r)(iv), 287(2)(c), or 290.

If Yes, identify the emission units in the table below. If No, go to Part H. ☐ Yes ☒ No

Note: If several emission units were installed under the same rule above, provide a description of each and an installation/modification/reconstruction date for each.

Origin of Applicable Requirements	**Emission Unit Description – *Provide Emission Unit ID and a description of Process Equipment, Control Devices and Monitoring Devices***	**Date Emission Unit was Installed/ Modified/ Reconstructed**
☐ Rule 281(2)(h) or 285(2)(r)(iv) cleaning operation		
☐ Rule 287(2)(c) surface coating line		
☐ Rule 290 process with limited emissions		

Comments:

☐ Check here if an AI-001 Form is attached to provide more information for Part G. Enter AI-001 Form ID: **AI-**

SRN: **B7287**	Section Number (if applicable):

PART H: REQUIREMENTS FOR ADDITION OR CHANGE

Complete this part of the application form for all proposed additions, changes or deletions to the existing ROP. This includes state or federal regulations that the source is subject to and that must be incorporated into the ROP or other proposed changes to the existing ROP. **Do not include additions or changes that have already been identified in Parts F or G of this application form.** If additional space is needed copy and complete an additional Part H.

Complete a separate Part H for each emission unit with proposed additions and/or changes.

H1. Are there changes that need to be incorporated into the ROP that have not been identified in Parts F and G? If Yes, answer the questions below.	☐ Yes	☒ No
H2. Are there any proposed administrative changes to any of the existing emission unit names, descriptions or control devices in the ROP? If Yes, describe the changes in questions H8 – H16 below and in the affected Emission Unit Table(s) in the mark-up of the ROP.	☐ Yes	☐ No
H3. Does the source propose to add a new emission unit or flexible group to the ROP not previously identified in Parts F or G? If Yes, identify and describe the emission unit name, process description, control device(s), monitoring device(s) and applicable requirements in questions H8 – H16 below and in a new Emission Unit Table in the mark-up of the ROP. See instructions on how to incorporate a new emission unit/flexible group into the ROP.	☐ Yes	☐ No
H4. Does the source propose to add new state or federal regulations to the existing ROP? If Yes, on an AI-001 Form, identify each emission unit/flexible group that the new regulation applies to and identify each state or federal regulation that should be added. Also, describe the new requirements in questions H8 – H16 below and add the specific requirements to existing emission units/flexible groups in the mark-up of the ROP, create a new Emission Unit/Flexible Group Table, or add an AQD template table for the specific state or federal requirement.	☐ Yes	☐ No
H5. Has a Consent Order/Consent Judgment (CO/CJ) been issued where the requirements were not incorporated into the existing ROP? If Yes, list the CO/CJ number(s) below and add or change the conditions and underlying applicable requirements in the appropriate Emission Unit/Flexible Group Tables in the mark-up of the ROP.	☐ Yes	☐ No
H6. Does the source propose to add, change and/or delete **source-wide** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes	☐ No
H7. Are you proposing to **streamline** any requirements? If Yes, identify the streamlined and subsumed requirements and the EU ID, and provide a justification for streamlining the applicable requirement below.	☐ Yes	☐ No

SRN: **B7287**	Section Number (if applicable):

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H8. Does the source propose to add, change and/or delete **emission limit** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H9. Does the source propose to add, change and/or delete **material limit** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H10. Does the source propose to add, change and/or delete **process/operational restriction** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H11. Does the source propose to add, change and/or delete **design/equipment parameter** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H12. Does the source propose to add, change and/or delete **testing/sampling** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H13. Does the source propose to add, change and/or delete **monitoring/recordkeeping** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H14. Does the source propose to add, change and/or delete **reporting** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No

PART H: REQUIREMENTS FOR ADDITION OR CHANGE – (continued)

H15. Does the source propose to add, change and/or delete **stack/vent restrictions**? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H16. Does the source propose to add, change and/or delete any **other** requirements? If Yes, identify the addition/change/deletion in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
H17. Does the source propose to add terms and conditions for an alternative operating scenario or intra-facility trading of emissions? If Yes, identify the proposed conditions in a mark-up of the corresponding section of the ROP and provide a justification below.	☐ Yes ☐ No
☐ Check here if an AI-001 Form is attached to provide more information for Part H. Enter AI-001 Form ID: **AI-**	

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

KEEP ALL CONDITIONS
NO CHANGES, ADDITIONS, OR DELETIONS

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EFFECTIVE DATE: April 23, 2019

ISSUED TO

Sturgis Municipal Power Plant

State Registration Number (SRN): B7287

LOCATED AT

505 West Chicago Road, Sturgis, Michigan 49091

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-B7287-2019

Expiration Date: April 23, 2024

Administratively Complete ROP Renewal Application Due Between
October 23, 2022 and October 23, 2023

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). Pursuant to Rule 210(1) of the administrative rules promulgated under Act 451, this ROP constitutes the permittee's authority to operate the stationary source identified above in accordance with the general conditions, special conditions and attachments contained herein. Operation of the stationary source and all emission units listed in the permit are subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-B7287-2019

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(1) of Act 451. Pursuant to Rule 214a of the administrative rules promulgated under Act 451, the terms and conditions herein, identified by the underlying applicable requirement citation of Rule 201(1)(a), constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. Operation of all emission units identified in the PTI is subject to all applicable future or amended rules and regulations pursuant to Act 451 and the federal Clean Air Act.

Rex Lane, Kalamazoo District Supervisor

TABLE OF CONTENTS

AUTHORITY AND ENFORCEABILITY

For the purpose of this permit, the **permittee** is defined as any person who owns or operates an emission unit at a stationary source for which this permit has been issued. The **department** is defined in Rule 104(d) as the Director of the Michigan Department of Environmental Quality (MDEQ) or his or her designee.

The permittee shall comply with all specific details in the permit terms and conditions and the cited underlying applicable requirements. All terms and conditions in this ROP are both federally enforceable and state enforceable unless otherwise footnoted. Certain terms and conditions are applicable to most stationary sources for which an ROP has been issued. These general conditions are included in Part A of this ROP. Other terms and conditions may apply to a specific emission unit, several emission units which are represented as a flexible group, or the entire stationary source which is represented as a Source-Wide group. Special conditions are identified in Parts B, C, D and/or the appendices.

In accordance with Rule 213(2)(a), all underlying applicable requirements are identified for each ROP term or condition. All terms and conditions that are included in a PTI are streamlined, subsumed and/or is state-only enforceable will be noted as such.

In accordance with Section 5507 of Act 451, the permittee has included in the ROP application a compliance certification, a schedule of compliance, and a compliance plan. For applicable requirements with which the source is in compliance, the source will continue to comply with these requirements. For applicable requirements with which the source is not in compliance, the source will comply with the detailed schedule of compliance requirements that are incorporated as an appendix in this ROP. Furthermore, for any applicable requirements effective after the date of issuance of this ROP, the stationary source will meet the requirements on a timely basis, unless the underlying applicable requirement requires a more detailed schedule of compliance.

Issuance of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

A. GENERAL CONDITIONS

Permit Enforceability

- All conditions in this permit are both federally enforceable and state enforceable unless otherwise noted. **(R 336.1213(5))**
- Those conditions that are hereby incorporated in a state-only enforceable Source-Wide PTI pursuant to Rule 201(2)(d) are designated by footnote one. **(R 336.1213(5)(a), R 336.1214a(5))**
- Those conditions that are hereby incorporated in a federally enforceable Source-Wide PTI pursuant to Rule 201(2)(c) are designated by footnote two. **(R 336.1213(5)(b), R 336.1214a(3))**

General Provisions

1. The permittee shall comply with all conditions of this ROP. Any ROP noncompliance constitutes a violation of Act 451, and is grounds for enforcement action, for ROP revocation or revision, or for denial of the renewal of the ROP. All terms and conditions of this ROP that are designated as federally enforceable are enforceable by the Administrator of the United States Environmental Protection Agency (USEPA) and by citizens under the provisions of the federal Clean Air Act (CAA). Any terms and conditions based on applicable requirements which are designated as "state-only" are not enforceable by the USEPA or citizens pursuant to the CAA. **(R 336.1213(1)(a))**

2. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this ROP. **(R 336.1213(1)(b))**

3. This ROP may be modified, revised, or revoked for cause. The filing of a request by the permittee for a permit modification, revision, or termination, or a notification of planned changes or anticipated noncompliance does not stay any ROP term or condition. This does not supersede or affect the ability of the permittee to make changes, at the permittee's own risk, pursuant to Rule 215 and Rule 216. **(R 336.1213(1)(c))**

4. The permittee shall allow the department, or an authorized representative of the department, upon presentation of credentials and other documents as may be required by law and upon stating the authority for and purpose of the investigation, to perform any of the following activities: **(R 336.1213(1)(d))**
   a. Enter, at reasonable times, a stationary source or other premises where emissions-related activity is conducted or where records must be kept under the conditions of the ROP.
   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of the ROP.
   c. Inspect, at reasonable times, any of the following:
      i. Any stationary source.
      ii. Any emission unit.
      iii. Any equipment, including monitoring and air pollution control equipment.
      iv. Any work practices or operations regulated or required under the ROP.
   d. As authorized by Section 5526 of Act 451, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the ROP or applicable requirements.

5. The permittee shall furnish to the department, within a reasonable time, any information the department may request, in writing, to determine whether cause exists for modifying, revising, or revoking the ROP or to determine compliance with this ROP. Upon request, the permittee shall also furnish to the department copies of any records that are required to be kept as a term or condition of this ROP. For information which is claimed by the permittee to be confidential, consistent with the requirements of the 1976 PA 442, MCL §15.231 et seq., and known as the Freedom of Information Act, the person may also be required to furnish the records directly to the USEPA together with a claim of confidentiality. **(R 336.1213(1)(e))**

6. A challenge by any person, the Administrator of the USEPA, or the department to a particular condition or a part of this ROP shall not set aside, delay, stay, or in any way affect the applicability or enforceability of any other condition or part of this ROP. **(R 336.1213(1)(f))**

7. The permittee shall pay fees consistent with the fee schedule and requirements pursuant to Section 5522 of Act 451. **(R 336.1213(1)(g))**

8. This ROP does not convey any property rights or any exclusive privilege. **(R 336.1213(1)(h))**

Equipment & Design

9. Any collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2).[2] **(R 336.1370)**

10. Any air cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with the Michigan Air Pollution Control rules and existing law. **(R 336.1910)**

Emission Limits

11. Unless otherwise specified in this ROP, the permittee shall comply with Rule 301, which states, in part, "Except as provided in Subrules 2, 3, and 4 of this rule, a person shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of a density greater than the most stringent of the following:"[2] **(R 336.1301(1))**
    a. A 6-minute average of 20% opacity, except for one 6-minute average per hour of not more than 27% opacity.
    b. A limit specified by an applicable federal new source performance standard.

    The grading of visible emissions shall be determined in accordance with Rule 303.

12. The permittee shall not cause or permit the emission of an air contaminant or water vapor in quantities that cause, alone or in reaction with other air contaminants, either of the following:
    a. Injurious effects to human health or safety, animal life, plant life of significant economic value, or property.[1] **(R 336.1901(a))**
    b. Unreasonable interference with the comfortable enjoyment of life and property.[1] **(R 336.1901(b))**

Testing/Sampling

13. The department may require the owner or operator of any source of an air contaminant to conduct acceptable performance tests, at the owner's or operator's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001(1).[2] **(R 336.2001)**

14. Any required performance testing shall be conducted in accordance with Rule 1001(2), Rule 1001(3) and Rule 1003. **(R 336.2001(2), R 336.2001(3), R 336.2003(1))**

15. Any required test results shall be submitted to the Air Quality Division (AQD) in the format prescribed by the applicable reference test method within 60 days following the last date of the test. **(R 336.2001(5))**

Monitoring/Recordkeeping

16. Records of any periodic emission or parametric monitoring required in this ROP shall include the following information specified in Rule 213(3)(b)(i), where appropriate: **(R 336.1213(3)(b))**
    a. The date, location, time, and method of sampling or measurements.
    b. The dates the analyses of the samples were performed.
    c. The company or entity that performed the analyses of the samples.
    d. The analytical techniques or methods used.
    e. The results of the analyses.
    f. The related process operating conditions or parameters that existed at the time of sampling or measurement.

17. All required monitoring data, support information and all reports, including reports of all instances of deviation from permit requirements, shall be kept and furnished to the department upon request for a period of not less than 5 years from the date of the monitoring sample, measurement, report or application. Support information includes all calibration and maintenance records and all original strip-chart recordings, or other original data records, for continuous monitoring instrumentation and copies of all reports required by the ROP. **(R 336.1213(1)(e), R 336.1213(3)(b)(ii))**

Certification & Reporting

18. Except for the alternate certification schedule provided in Rule 213(3)(c)(iii)(B), any document required to be submitted to the department as a term or condition of this ROP shall contain an original certification by a Responsible Official which states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. **(R 336.1213(3)(c))**

19. A Responsible Official shall certify to the appropriate AQD District Office and to the USEPA that the stationary source is and has been in compliance with all terms and conditions contained in the ROP except for deviations that have been or are being reported to the appropriate AQD District Office pursuant to Rule 213(3)(c). This certification shall include all the information specified in Rule 213(4)(c)(i) through (v) and shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the certification are true, accurate, and complete. The USEPA address is: USEPA, Air Compliance Data - Michigan, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604-3507. **(R 336.1213(4)(c))**

20. The certification of compliance shall be submitted annually for the term of this ROP as detailed in the special conditions, or more frequently if specified in an applicable requirement or in this ROP. **(R 336.1213(4)(c))**

21. The permittee shall promptly report any deviations from ROP requirements and certify the reports. The prompt reporting of deviations from ROP requirements is defined in Rule 213(3)(c)(ii) as follows, unless otherwise described in this ROP: **(R 336.1213(3)(c))**
    a. For deviations that exceed the emissions allowed under the ROP, prompt reporting means reporting consistent with the requirements of Rule 912 as detailed in Condition 25. All reports submitted pursuant to this paragraph shall be promptly certified as specified in Rule 213(3)(c)(iii).
    b. For deviations which exceed the emissions allowed under the ROP and which are not reported pursuant to Rule 912 due to the duration of the deviation, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe reasons for each deviation and the actions taken to minimize or correct each deviation.
    c. For deviations that do not exceed the emissions allowed under the ROP, prompt reporting means the reporting of all deviations in the semiannual reports required by Rule 213(3)(c)(i). The report shall describe the reasons for each deviation and the actions taken to minimize or correct each deviation.

22. For reports required pursuant to Rule 213(3)(c)(ii), prompt certification of the reports is described in Rule 213(3)(c)(iii) as either of the following: **(R 336.1213(3)(c))**
    a. Submitting a certification by a Responsible Official with each report which states that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

b. Submitting, within 30 days following the end of a calendar month during which one or more prompt reports of deviations from the emissions allowed under the ROP were submitted to the department pursuant to Rule 213(3)(c)(ii), a certification by a Responsible Official which states that; "based on information and belief formed after reasonable inquiry, the statements and information contained in each of the reports submitted during the previous month were true, accurate, and complete." The certification shall include a listing of the reports that are being certified. Any report submitted pursuant to Rule 213(3)(c)(ii) that will be certified on a monthly basis pursuant to this paragraph shall include a statement that certification of the report will be provided within 30 days following the end of the calendar month.

23. Semiannually for the term of the ROP as detailed in the special conditions, or more frequently if specified, the permittee shall submit certified reports of any required monitoring to the appropriate AQD District Office. All instances of deviations from ROP requirements during the reporting period shall be clearly identified in the reports. **(R 336.1213(3)(c)(i))**

24. On an annual basis, the permittee shall report the actual emissions, or the information necessary to determine the actual emissions, of each regulated air pollutant as defined in Rule 212(6) for each emission unit utilizing the emissions inventory forms provided by the department. **(R 336.1212(6))**

25. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the appropriate AQD District Office. The notice shall be provided not later than two business days after the start-up, shutdown, or discovery of the abnormal conditions or malfunction. Notice shall be by any reasonable means, including electronic, telephonic, or oral communication. Written reports, if required under Rule 912, must be submitted to the appropriate AQD District Supervisor within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal conditions or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5) and shall be certified by a Responsible Official in a manner consistent with the CAA.[2] **(R 336.1912)**

Permit Shield

26. Compliance with the conditions of the ROP shall be considered compliance with any applicable requirements as of the date of ROP issuance if either of the following provisions is satisfied: **(R 336.1213(6)(a)(i), R 336.1213(6)(a)(ii))**
    a. The applicable requirements are included and are specifically identified in the ROP.
    b. The permit includes a determination or concise summary of the determination by the department that other specifically identified requirements are not applicable to the stationary source.

    Any requirements identified in Part E of this ROP have been identified as non-applicable to this ROP and are included in the permit shield.

27. Nothing in this ROP shall alter or affect any of the following:
    a. The provisions of Section 303 of the CAA, emergency orders, including the authority of the USEPA under Section 303 of the CAA. **(R 336.1213(6)(b)(i))**
    b. The liability of the owner or operator of this source for any violation of applicable requirements prior to or at the time of this ROP issuance. **(R 336.1213(6)(b)(ii))**
    c. The applicable requirements of the acid rain program, consistent with Section 408(a) of the CAA. **(R 336.1213(6)(b)(iii))**
    d. The ability of the USEPA to obtain information from a source pursuant to Section 114 of the CAA. **(R 336.1213(6)(b)(iv))**

28. The permit shield shall not apply to provisions incorporated into this ROP through procedures for any of the following:
    a. Operational flexibility changes made pursuant to Rule 215. **(R 336.1215(5))**
    b. Administrative Amendments made pursuant to Rule 216(1)(a)(i)-(iv). **(R 336.1216(1)(b)(iii))**

c. Administrative Amendments made pursuant to Rule 216(1)(a)(v) until the amendment has been approved by the department. **(R 336.1216(1)(c)(iii))**
d. Minor Permit Modifications made pursuant to Rule 216(2). **(R 336.1216(2)(f))**
e. State-Only Modifications made pursuant to Rule 216(4) until the changes have been approved by the department. **(R 336.1216(4)(e))**

29. Expiration of this ROP results in the loss of the permit shield. If a timely and administratively complete application for renewal is submitted not more than 18 months, but not less than 6 months, before the expiration date of the ROP, but the department fails to take final action before the end of the ROP term, the existing ROP does not expire until the renewal is issued or denied, and the permit shield shall extend beyond the original ROP term until the department takes final action. **(R 336.1217(1)(c), R 336.1217(1)(a))**

Revisions

30. For changes to any process or process equipment covered by this ROP that do not require a revision of the ROP pursuant to Rule 216, the permittee must comply with Rule 215. **(R 336.1215, R 336.1216)**

31. A change in ownership or operational control of a stationary source covered by this ROP shall be made pursuant to Rule 216(1). **(R 336.1219(2))**

32. For revisions to this ROP, an administratively complete application shall be considered timely if it is received by the department in accordance with the time frames specified in Rule 216. **(R 336.1210(10))**

33. Pursuant to Rule 216(1)(b)(iii), Rule 216(2)(d) and Rule 216(4)(d), after a change has been made, and until the department takes final action, the permittee shall comply with both the applicable requirements governing the change and the ROP terms and conditions proposed in the application for the modification. During this time period, the permittee may choose to not comply with the existing ROP terms and conditions that the application seeks to change. However, if the permittee fails to comply with the ROP terms and conditions proposed in the application during this time period, the terms and conditions in the ROP are enforceable. **(R 336.1216(1)(c)(iii), R 336.1216(2)(d), R 336.1216(4)(d))**

Reopenings

34. A ROP shall be reopened by the department prior to the expiration date and revised by the department under any of the following circumstances:
    a. If additional requirements become applicable to this stationary source with three or more years remaining in the term of the ROP, but not if the effective date of the new applicable requirement is later than the ROP expiration date. **(R 336.1217(2)(a)(i))**
    b. If additional requirements pursuant to Title IV of the CAA become applicable to this stationary source. **(R 336.1217(2)(a)(ii))**
    c. If the department determines that the ROP contains a material mistake, information required by any applicable requirement was omitted, or inaccurate statements were made in establishing emission limits or the terms or conditions of the ROP. **(R 336.1217(2)(a)(iii))**
    d. If the department determines that the ROP must be revised to ensure compliance with the applicable requirements. **(R 336.1217(2)(a)(iv))**

Renewals

35. For renewal of this ROP, an administratively complete application shall be considered timely if it is received by the department not more than 18 months, but not less than 6 months, before the expiration date of the ROP. **(R 336.1210(9))**

Stratospheric Ozone Protection

36. If the permittee is subject to Title 40 of the Code of Federal Regulations (CFR), Part 82 and services, maintains, or repairs appliances except for motor vehicle air conditioners (MVAC), or disposes of appliances containing refrigerant, including MVAC and small appliances, or if the permittee is a refrigerant reclaimer, appliance owner or a manufacturer of appliances or recycling and recovery equipment, the permittee shall comply with all applicable standards for recycling and emissions reduction pursuant to 40 CFR Part 82, Subpart F.

37. If the permittee is subject to 40 CFR Part 82 and performs a service on motor (fleet) vehicles when this service involves refrigerant in the MVAC, the permittee is subject to all the applicable requirements as specified in 40 CFR Part 82, Subpart B, Servicing of Motor Vehicle Air Conditioners. The term "motor vehicle" as used in Subpart B does not include a vehicle in which final assembly of the vehicle has not been completed by the original equipment manufacturer. The term MVAC as used in Subpart B does not include the air-tight sealed refrigeration system used for refrigerated cargo or an air conditioning system on passenger buses using Hydrochlorofluorocarbon-22 refrigerant.

Risk Management Plan

38. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall register and submit to the USEPA the required data related to the risk management plan for reducing the probability of accidental releases of any regulated substances listed pursuant to Section 112(r)(3) of the CAA as amended in 40 CFR 68.130. The list of substances, threshold quantities, and accident prevention regulations promulgated under 40 CFR Part 68, do not limit in any way the general duty provisions under Section 112(r)(1).

39. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall comply with the requirements of 40 CFR Part 68, no later than the latest of the following dates as provided in 40 CFR 68.10(a):
    a. June 21, 1999,
    b. Three years after the date on which a regulated substance is first listed under 40 CFR 68.130, or
    c. The date on which a regulated substance is first present above a threshold quantity in a process.

40. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall submit any additional relevant information requested by any regulatory agency necessary to ensure compliance with the requirements of 40 CFR Part 68.

41. If subject to Section 112(r) of the CAA and 40 CFR Part 68, the permittee shall annually certify compliance with all applicable requirements of Section 112(r) as detailed in Rule 213(4)(c)). **(40 CFR Part 68)**

Emission Trading

42. Emission averaging and emission reduction credit trading are allowed pursuant to any applicable interstate or regional emission trading program that has been approved by the Administrator of the USEPA as a part of Michigan's State Implementation Plan. Such activities must comply with Rule 215 and Rule 216. **(R 336.1213(12))**

Permit to Install (PTI)

43. The process or process equipment included in this permit shall not be reconstructed, relocated, or modified unless a PTI authorizing such action is issued by the department, except to the extent such action is exempt from the PTI requirements by any applicable rule.[2] **(R 336.1201(1))**

44. The department may, after notice and opportunity for a hearing, revoke PTI terms or conditions if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of the PTI or is violating the department's rules or the CAA.[2] **(R 336.1201(8), Section 5510 of Act 451)**

45. The terms and conditions of a PTI shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by the PTI. If a new owner or operator submits a written request to the department pursuant to Rule 219 and the department approves the request, this PTI will be amended to reflect the change of ownership or operational control. The request must include all of the information required by Subrules (1)(a), (b) and (c) of Rule 219. The written request shall be sent to the appropriate AQD District Supervisor, MDEQ.[2] **(R 336.1219)**

46. If the installation, reconstruction, relocation, or modification of the equipment for which PTI terms and conditions have been approved has not commenced within 18 months of the original PTI issuance date, or has been interrupted for 18 months, the applicable terms and conditions from that PTI, as incorporated into the ROP, shall become void unless otherwise authorized by the department. Furthermore, the person to whom that PTI was issued, or the designated authorized agent, shall notify the department via the Supervisor, Permit Section, MDEQ, AQD, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, reconstruction, relocation, or modification of the equipment allowed by the terms and conditions from that PTI.[2] **(R 336.1201(4))**

Footnotes:
[1]This condition is state-only enforceable and was established pursuant to Rule 201(1)(b).
[2]This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

B. SOURCE-WIDE CONDITIONS

Part B outlines the Source-Wide Terms and Conditions that apply to this stationary source. The permittee is subject to these special conditions for the stationary source in addition to the general conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply to this source, NA (not applicable) has been used in the table. If there are no Source-Wide Conditions, this section will be left blank.

C. EMISSION UNIT SPECIAL CONDITIONS

Part C outlines terms and conditions that are specific to individual emission units listed in the Emission Unit Summary Table. The permittee is subject to the special conditions for each emission unit in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA (not applicable) has been used in the table. If there are no conditions specific to individual emission units, this section will be left blank.

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-ENG-6	Dual fuel engine generator No. 6. fires No. 2 fuel oil and natural gas. Nameplate capacity is 8,285 HP engine with 6,000 KW generator. The engine uses non-contact cooling water. A diesel oxidation catalyst was installed to control CO as a result of RICE NESHAP regulations. Includes 40 CFR Part 60, Subpart ZZZZ, requirements.	01-01-1981	NA
EU-COLDCLEANERS	Cold cleaner(s).	01-01-1995	FG-COLDCLEANERS
EU-OIL-TANK	30,000 gallon aboveground tank for storing No. 2 fuel oil.	01-01-1995	NA

EU-ENG-6
EMISSION UNIT CONDITIONS

DESCRIPTION

Dual fuel engine generator No. 6. fires No. 2 fuel oil and natural gas. Nameplate capacity is 8,285 HP engine with 6,000 KW generator. The engine uses non-contact cooling water. A diesel oxidation catalyst was installed to control CO as a result of RICE NESHAP regulations. Includes 40 CFR Part 60, Subpart ZZZZ, requirements.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Oxidation catalyst for control of carbon monoxide

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	12.9 grams/HP-hr[2]	Average of three 1-hour or longer runs	EU-ENG-6	SC V.2	**R 336.1201(3)**
2. CO	23 ppmvd at 15% O_2 or reduce CO emissions by 70% or more except during periods of startup	Average of three 1-hour or longer runs.	EU-ENG-6	Method 10 of 40 CFR Part 60, Appendix A or other approved method, SC V.3	**40 CFR 63.6603(a)**

II. MATERIAL LIMIT

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. No. 2 Fuel Oil	0.5% Sulfur[2*]	Calculated on the basis of 19,460 BTUs/pound	EU-ENG-6	SC V.1 and VI.7	**R 336.1201(3)**

*In accordance with Rule 213(2) and Rule 213(6), compliance with this streamlined material limit shall be considered compliance with the material limit established by R 336.1201(3); and also compliance with the material limit established by R 336.1401(1), an additional applicable requirement that has been subsumed within this condition.

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The maximum sulfur content in the No. 2 fuel oil shall not exceed the equivalent of 0.5%, calculated on the basis of 19,460 BTUs per pound. Compliance with this condition shall be considered compliance with the following applicable requirement that has been subsumed under this streamlined requirement: R 336.1401(1).[2] **(R 336.1201(3))**

2. EU-ENG-6 shall not be used to generate more than 13.1 million KW-hr (17.5 million HP-hr) of electricity per year.[2] **(R 336.1205(3))**

3. The permittee shall operate and maintain EU-ENG-6, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing

emissions. The general duty to minimize emissions does not require the permittee to make further effort to reduce emissions if levels required by this permit have been achieved. Determination of whether such operation and maintenance procedures are being used will be based on information available to the AQD which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. **(40 CFR 63.6605(b))**

4. The permittee shall be in compliance with the emission limitations, operating limitations, and other requirements of 40 CFR Part 63, Subpart ZZZZ that apply at all times. **(40 CFR 63.6605(a))**

5. The permittee shall maintain the catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water from the pressure drop across the catalyst that was measured during the initial performance test except during periods of startup. **(40 CFR 63.6630(b))**

6. The permittee shall maintain the temperature of the stationary RICE exhaust so that the catalyst inlet temperature is greater than or equal to 450^0 F and less than or equal to 1350^0 F except during periods of startup. **(40 CFR 63.6630(b))**

7. The permittee shall minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. **(40 CFR 63.6603(a), 40 CFR 63.6625(h))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall install, operate, and maintain a continuous parameter monitoring system (CPMS) in continuous operation according to the procedures in the site-specific monitoring plan. This shall include a CPMS for catalyst inlet temperature and catalyst pressure drop. **(40 CFR 63.6625(b)(2))**

2. The permittee shall prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in 40 CFR 63.6625(b)(1) through 40 CFR 63.6625(b)(5) and in 40 CFR 63.8(d). These elements shall consist of the following: **(40 CFR 63.6625(b)(1))**
   a. The performance criteria and design specifications for the monitoring system equipment, including the sample interface, detector signal analyzer, and data acquisition and calculations. **(40 CFR 63.6625(b)(1)(i))**
   b. Sampling interface (e.g. thermocouple) location such that the monitoring system will provide representative measurements. **(40 CFR 63.6625(b)(1)(ii))**
   c. Equipment performance evaluations, system accuracy audits, or other audit procedures. **(40 CFR 63.6625(b)(1)(iii))**
   d. Ongoing operation and maintenance procedures in accordance with provisions in 40 CFR 63.8(c)(1)(ii) and (c)(3). **(40 CFR 63.6625(b)(1)(iv))**
   e. Ongoing reporting and recordkeeping procedures in accordance with provisions in 40 CFR 63.10(c), (e)(1), and (e)(2)(i). **(40 CFR 63.6625(b)(1)(v))**

3. The permittee shall conduct a performance evaluation of each CPMS in accordance with the site-specific monitoring plan. **(40 CFR 63.6625(b)(6))**

4. The CPMS shall collect data at least once every 15 minutes. **(40 CFR 63.6625(b)(3))**

5. For a CPMS for measuring temperature range, the temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of the measurement range, whichever is larger. **(40 CFR 63.6625(b)(4))**

6. The permittee shall conduct the CPMS equipment performance evaluation, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan at least annually. **(40 CFR 63.6625(b)(5))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. Testing for percent sulfur content in No. 2 fuel oil shall be performed on an annual basis when fuel oil shipments have been received by the permittee during the calendar year. ASTM D129-64, ASTM D1552-83, ASTM D2622-87, ASTM D1266-87, or an approved equivalent test method shall be used. The oil sample shall be collected from EU-OIL-TANK. **(R 336.1213(3))**

2. The permittee shall verify nitrogen oxides emission rates from EU-ENG-6 by testing at the owner's expense once during the term of this permit, in accordance with the Department requirements. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60 Appendix A, Method 7. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. Testing shall be performed when EU-ENG-6 is firing No.2 fuel oil. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

3. The permittee shall verify carbon monoxide emission rates from EU-ENG-6 every 8,760 operating hours or three years, whichever comes first, by testing at owner's expense, in accordance with 40 CFR 63.6620. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 63, Subpart ZZZZ, Table 4. Testing shall be performed separately with No. 2 fuel oil and with natural gas. Either of the two CO limits (23 ppmvd at 15% O_2 or 70% reduction) may be chosen for each mode of fuel use. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1213(3), R 336.2001, R 336.2003, R 336.2004, 40 CFR 63.6620, 40 CFR 63.6645(g))**

4. The permittee shall notify the AQD Technical Programs Unit Supervisor and the District Supervisor not less than 30 days of the time and place before performance tests are conducted. **(R 336.1213(3))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall maintain records of the amount of electricity produced by EU-ENG-6, in KW-hr, on a monthly basis. **(R 336.1213(3))**

2. The permittee shall maintain records of the amount of electricity produced by EU-ENG-6, in KW-hr, based on a 12-month rolling time period as determined at the end of each calendar month. **(R 336.1213(3))**

3. The permittee shall monitor and record the natural gas consumption rate, in cubic feet or million cubic feet, for EU-ENG-6 on a monthly basis. **(R 336.1213(3))**

4. The permittee shall monitor and record the natural gas consumption rate, in cubic feet or million cubic feet, for EU-ENG-6 based on a 12-month rolling time period as determined at the end of each calendar month. **(R 336.1213(3))**

5. The permittee shall monitor and record the No. 2 fuel oil consumption rate, in gallons, for EU-ENG-6 on a monthly basis. **(R 336.1213(3))**

6. The permittee shall monitor and record the No. 2 fuel oil consumption rate, in gallons, for EU-ENG-6 based on a 12-month rolling time period as determined at the end of each calendar month. **(R 336.1213(3))**

7. The permittee shall maintain records of No. 2 fuel oil specifications and/or a fuel oil analysis for each delivery to demonstrate compliance with the percent sulfur limit. **(R 336.1213(3))**

8. The permittee shall measure the pressure drop across the catalyst once per month and demonstrate that the pressure drop is within the operating limitation established during the performance test. **(40 CFR 63.6625(b))**

9. Except for monitor malfunctions, associated repairs, required performance evaluations, and required quality assurance or control activities, the permittee shall monitor continuously at all times that the stationary RICE is operating. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. **(40 CFR 63.6635(b))**

10. The permittee shall not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emission or operating levels. The permittee shall use, however, all the valid data collected during all other periods. **(40 CFR 63.6635(c))**

11. The permittee shall collect catalyst inlet temperature data, reduce these data to 4-hour rolling averages and maintain the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature. **(40 CFR 63.6625(b))**

12. If the permittee changes the catalyst, the permittee shall reestablish the values of the operating parameters measured during the initial performance test. When the values of the operating parameters are reestablished, the permittee shall also conduct a performance test to demonstrate that the required emission limitation is being met. **(40 CFR 63.6640(b))**

13. The permittee shall keep the following records as they apply to 40 CFR Part 63, Subpart ZZZZ:
    a. A copy of each notification and report that was submitted, including all documentation supporting any Initial Notification or Notification of Compliance Status that was submitted. **(40 CFR 63.6655(a)(1))**
    b. Records of the occurrence and duration of each malfunction of operation (i.e., process equipment) or the air pollution control and monitoring equipment. **(40 CFR 63.6655(a)(2))**
    c. Records of performance tests and performance evaluations as required in 40 CFR 63.10(b)(2)(viii). **(40 CFR 63.6655(a)(3))**
    d. Records of all required maintenance performed on the air pollution control and monitoring equipment. **(40 CFR 63.6655(a)(4))**
    e. Records of actions taken during periods of malfunction to minimize emissions in accordance with 40 CFR 63.6605(b), including corrective actions to restore malfunctioning process and air pollution control and monitoring equipment to its normal or usual manner of operation. **(40 CFR 63.6655(a)(5))**
    f. For each CPMS:
        i. Records described in 40 CFR 63.10(b)(2)(vi) through (xi). **(40 CFR 63.6655(b)(1))**
        ii. Previous (i.e., superseded) versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3). **(40 CFR 63.6655(b)(2))**
        iii. Requests for alternatives to the relative accuracy test for CPMS as required in 40 CFR 63.8(f)(6)(i), if applicable. **(40 CFR 63.6655(b)(3))**

14. If the permittee does not operate EU-ENG-6 during a month it is not necessary to operate the unit for the sole purpose of measuring pressure drop across the catalyst as stated in SC VI.8. above. **(R 336.1213(3)(c)(iii))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The permittee shall submit any performance test reports to the AQD Technical Programs Unit and District Office, in a format approved by the AQD. **(R 336.1213(3)(c), R 336.2001(5))**

5. The permittee shall submit all semiannual compliance reports as required by 40 CFR 63.6650(a). Each semiannual compliance shall cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31. Each semiannual compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date is the first date following the end of the semiannual reporting period. **(40 CFR 63.6650(a), 40 CFR 63.6650(b)(3), 40 CFR 63.6650(b)(4))**

6. The compliance report required in (5.) above shall contain the following information:
   a. Company name and address. **(40 CFR 63.6650(c)(1))**
   b. Statement by a responsible official with that official's name, title, and signature, certifying the accuracy of the content of the report. **(40 CFR 63.6650(c)(2))**
   c. Date of report and beginning and ending dates of the reporting period. **(40 CFR 63.6650(c)(3))**
   d. The number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report shall also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with 40 CFR 63.6605(b), including actions to correct a malfunction. **(40 CFR 63.6650(c)(4))**
   e. If there were no deviations from any emission or operating limitations, a statement that there were no deviations from the emission or operating limitations during the reporting period. **(40 CFR 63.6650(c)(5))**
   f. If there were no periods during which the CPMS was out-of-control as specified in 40 CFR 63.8(c)(7), a statement that there were no periods during which the CPMS was out-of-control during the reporting period. **(40 CFR 63.6650(c)(6))**

7. For each deviation from an emission or operating limitation that occurs, the report required in (5,) above shall contain the following information:
   a. The date and time that each malfunction started and stopped. **(40 CFR 63.6650(e)(1))**
   b. The date, time, and duration that each CPMS was inoperative, except for zero (low-level and high-level checks. **(40 CFR 63.6650(e)(2))**
   c. The date, time, and duration that each CPMS was out-of-control, including the information in 40 CFR 63.8(c)(8). **(40 CFR 63.6650(e)(3))**
   d. The date and time that each deviation started and stopped, and whether each deviation occurred during a period of malfunction or during another period. **(40 CFR 63.6650(e)(4))**
   e. A summary of the total duration of the deviation during the reporting period, and the total duration as a percent of the total source operating time during that reporting period. **(40 CFR 63.6650(e)(5))**
   f. A breakdown of the total duration of the deviations during the reporting period into those that are due to control equipment problems, process problems, other known causes, and other unknown causes. **(40 CFR 63.6650(e)(6))**
   g. A summary of the total duration of CPMS downtime during the reporting period, and the total duration of CPMS downtime as a percent of the total operating time of the stationary RICE at which the CPMS downtime occurred during the reporting period. **(40 CFR 6650(e)(7))**
   h. An identification of each parameter and pollutant (CO) that was monitored at the stationary RICE. **(40 CFR 63.6650(e)(8))**
   i. A brief description of the stationary RICE. **(40 CFR 63.6650(e)(9))**
   j. A brief description of the CPMS. **(40 CFR 63.6650(e)(10))**
   k. The date of the latest CPMS certification or audit. **(40 CFR 63.6650(e)(11))**
   l. A description of any changes in CPMS, processes, or controls since the last reporting period. **(40 CFR 63.6650(e)(12))**

See Appendix 8

VIII. STACK/VENT RESTRICTIONS

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-ENG-6	30[2]	33[2]	**40 CFR 52.21**

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines by the initial compliance date. **(40 CFR Part 63, Subparts A and ZZZZ)**

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2] This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

EU-OIL-TANK
EMISSION UNIT CONDITIONS

DESCRIPTION

30,000 gallon aboveground tank for storing No. 2 fuel oil.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. The facility shall keep readily accessible records showing the dimensions and capacity of EU-OIL-TANK. **(40 CFR Part 60, Subpart Kb)**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:
[1] This condition is state only enforceable and was established pursuant to Rule 201(1)(b).
[2] This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

D. FLEXIBLE GROUP SPECIAL CONDITIONS

Part D outlines the terms and conditions that apply to more than one emission unit. The permittee is subject to the special conditions for each flexible group in addition to the General Conditions in Part A and any other terms and conditions contained in this ROP.

The permittee shall comply with all specific details in the special conditions and the underlying applicable requirements cited. If a specific condition type does not apply, NA has been used in the table. If there are no special conditions that apply to more than one emission unit, this section will be left blank.

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-COLDCLEANERS	Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278, Rule 278a and Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.	EU-COLDCLEANERS

FG-COLDCLEANERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any cold cleaner that is grandfathered or exempt from Rule 201 pursuant to Rule 278, Rule 278a and Rule 281(2)(h) or Rule 285(2)(r)(iv). Existing cold cleaners were placed into operation prior to July 1, 1979. New cold cleaners were placed into operation on or after July 1, 1979.

Emission Unit: EU-COLDCLEANERS

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

1. The permittee shall not use cleaning solvents containing more than five percent by weight of the following halogenated compounds: methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chloroform, or any combination thereof. **(R 336.1213(2))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Cleaned parts shall be drained for no less than 15 seconds or until dripping ceases. **(R 336.1611(2)(b), R 336.1707(3)(b))**

2. The permittee shall perform routine maintenance on each cold cleaner as recommended by the manufacturer. **(R 336.1213(3))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The cold cleaner must meet one of the following design requirements:
   a. The air/vapor interface of the cold cleaner is no more than ten square feet. **(R 336.1281(2)(h))**
   b. The cold cleaner is used for cleaning metal parts and the emissions are released to the general in-plant environment. **(R 336.1285(2)(r)(iv))**

2. The cold cleaner shall be equipped with a device for draining cleaned parts. **(R 336.1611(2)(b), R 336.1707(3)(b))**

3. All new and existing cold cleaners shall be equipped with a cover and the cover shall be closed whenever parts are not being handled in the cold cleaner. **(R 336.1611(2)(a), R 336.1707(3)(a))**

4. The cover of a new cold cleaner shall be mechanically assisted if the Reid vapor pressure of the solvent is more than 0.3 psia or if the solvent is agitated or heated. **(R 336.1707(3)(a))**

5. If the Reid vapor pressure of any solvent used in a new cold cleaner is greater than 0.6 psia; or, if any solvent used in a new cold cleaner is heated above 120 degrees Fahrenheit, then the cold cleaner must comply with at least one of the following provisions:

a. The cold cleaner must be designed such that the ratio of the freeboard height to the width of the cleaner is equal to or greater than 0.7. **(R 336.1707(2)(a))**

b. The solvent bath must be covered with water if the solvent is insoluble and has a specific gravity of more than 1.0. **(R 336.1707(2)(b))**
c. The cold cleaner must be controlled by a carbon adsorption system, condensation system, or other method of equivalent control approved by the AQD. **(R 336.1707(2)(c))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1213(3)(b)(ii))**

1. For each new cold cleaner in which the solvent is heated, the solvent temperature shall be monitored and recorded at least once each calendar week during routine operating conditions. **(R 336.1213(3))**

2. The permittee shall maintain the following information on file for each cold cleaner: **(R 336.1213(3))**
   a. A serial number, model number, or other unique identifier for each cold cleaner.
   b. The date the unit was installed, manufactured or that it commenced operation.
   c. The air/vapor interface area for any unit claimed to be exempt under Rule 281(2)(h).
   d. The applicable Rule 201 exemption.
   e. The Reid vapor pressure of each solvent used.
   f. If applicable, the option chosen to comply with Rule 707(2).

3. The permittee shall maintain written operating procedures for each cold cleaner. These written procedures shall be posted in an accessible, conspicuous location near each cold cleaner. **(R 336.1611(3), R 336.1707(4))**

4. As noted in Rule 611(2)(c) and Rule 707(3)(c), if applicable, an initial demonstration that the waste solvent is a safety hazard shall be made prior to storage in non-closed containers. If the waste solvent is a safety hazard and is stored in non-closed containers, verification that the waste solvent is disposed of so that not more than 20 percent, by weight, is allowed to evaporate into the atmosphere shall be made on a monthly basis. **(R 336.1213(3), R 336.1611(2)(c), R 336.1707(3)(c))**

VII. REPORTING

1. Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. **(R 336.1213(3)(c)(ii))**

2. Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. **(R 336.1213(3)(c)(i))**

3. Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

E. NON-APPLICABLE REQUIREMENTS

At the time of the ROP issuance, the AQD has determined that no non-applicable requirements have been identified for incorporation into the permit shield provision set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii).

APPENDICES

Appendix 1. Acronyms and Abbreviations

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO_2e	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
		gr	Grains
EU	Emission Unit	HAP	Hazardous Air Pollutant
FG	Flexible Group	Hg	Mercury
GACS	Gallons of Applied Coating Solids	hr	Hour
GC	General Condition	HP	Horsepower
GHGs	Greenhouse Gases	H_2S	Hydrogen Sulfide
HVLP	High Volume Low Pressure*	kW	Kilowatt
ID	Identification	lb	Pound
IRSL	Initial Risk Screening Level	m	Meter
ITSL	Initial Threshold Screening Level	mg	Milligram
LAER	Lowest Achievable Emission Rate	mm	Millimeter
MACT	Maximum Achievable Control Technology	MM	Million
MAERS	Michigan Air Emissions Reporting System	MW	Megawatts
MAP	Malfunction Abatement Plan	NMOC	Non-methane Organic Compounds
MDEQ	Michigan Department of Environmental Quality	NO_x	Oxides of Nitrogen
		ng	Nanogram
MSDS	Material Safety Data Sheet	PM	Particulate Matter
NA	Not Applicable	PM10	Particulate Matter equal to or less than 10 microns in diameter
NAAQS	National Ambient Air Quality Standards		
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	%	Percent
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO_2	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

Appendix 2. Schedule of Compliance

The permittee certified in the ROP application that this stationary source is in compliance with all applicable requirements and the permittee shall continue to comply with all terms and conditions of this ROP. A Schedule of Compliance is not required. **(R 336.1213(4)(a), R 336.1119(a)(ii))**

Appendix 3. Monitoring Requirements

Specific monitoring requirement procedures, methods or specifications are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 4. Recordkeeping

Specific recordkeeping requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 5. Testing Procedures

Specific testing requirement plans, procedures, and averaging times are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, this appendix is not applicable.

Appendix 6. Permits to Install

The following table lists any PTIs issued or ROP revision applications received since the effective date of the previously issued ROP No. MI-ROP-B7287-2014 Those ROP revision applications that are being issued concurrently with this ROP renewal are identified by an asterisk (*). Those revision applications not listed with an asterisk were processed prior to this renewal.

Source-Wide PTI No MI-PTI-B7287-2014 is being reissued as Source-Wide PTI No. MI-PTI-B7287-20XX.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
NA	NA	NA	NA

Appendix 7. Emission Calculations

There are no specific emission calculations to be used for this ROP. Therefore, this appendix is not applicable.

Appendix 8. Reporting

A. Annual, Semiannual, and Deviation Certification Reporting

The permittee shall use the MDEQ, AQD, Report Certification form (EQP 5736) and MDEQ, AQD, Deviation Report form (EQP 5737) for the annual, semiannual and deviation certification reporting referenced in the Reporting Section of the Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Alternative formats must meet the provisions of Rule 213(4)(c) and Rule 213(3)(c)(i), respectively, and be approved by the AQD District Supervisor.

B. Other Reporting

Specific reporting requirement formats and procedures are detailed in Part A or the appropriate Source-Wide, Emission Unit and/or Flexible Group Special Conditions. Therefore, Part B of this appendix is not applicable.

EGLE

RENEWABLE OPERATING PERMIT APPLICATION
AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

	SRN: **B7287**	Section Number (if applicable):

1. Additional Information ID
AI- 001

Additional Information

2. Is This Information Confidential? ☐ Yes ☒ No

Site Specific Monitoring Plan

TABLE OF CONTENTS

PURPOSE

This site-specific monitoring plan for the City of Sturgis Municipal Power plant provides information on several subjects regarding Generator Engine No. 6 and the corresponding continuous parametric monitoring system (CPMS). The general purpose of the site-specific monitoring plan gives a comprehensive program for the generator, air pollution control and monitoring equipment.

- The Definitions section supply the representation for the acronyms commonly used in this site-specific monitoring plan.
- The Performance & Design Criteria section presents the various parameters and correlating regulations used to properly size the Diesel Oxidation Catalyst (DOC) in association to Generator Engine No. 6.
- The Data Collection section of the site-specific monitoring plan states all the raw data that is measured and recorded along with the calculated values provided by the Johnson Matthey HAP Guard catalyst monitor software.
- The Performance Evaluation section describes the type of test, who conducts the test, when it is performed, and the various locations the test report is issued.
- The Operation and Maintenance section provides a description for the startup procedure and the operation parameters for Engine No. 6 unit. This section also provides information on maintenance and cleaning schedule for the Johnson Matthey HAPGuard monitor and DualOx Oxidation Catalyst system.
- The Report and Recordkeeping section states the necessary items that must be in the semi-annual compliance report along with the type of records to be filed and maintained in the RICE NESHAP Compliance Binder for Engine No. 6.

DEFINITIONS

AQD means Air Quality Division

CEMS means continuous emissions monitoring system, such as a NO_X or SO_2 system.

CMS means continuous monitoring system, and could be used to describe CEMS and CPMS.

CPMS means continuous parameter monitoring system.

CFR means Code of Federal Regulations.

DOC means Diesel Oxidation Catalyst.

EPA means United States Environmental Protection Agency.

HAP means Hazardous Air Pollutants.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

MDEQ means the Michigan Department of Environmental Quality.

RICE NESHAP means Reciprocating Internal Combustion Engines National Emission Standards for Hazardous Air Pollutants.

PERFORMANCE & DESIGN CRITERIA

On May 24, 2011 emission testing was performed on Engine Model LSVB-20-GDT, which is assigned as Engine No. 6 at the City of Sturgis Municipal Power facility. The emission testing was conducted by Grace Consulting, Inc. a copy of the emissions test report was included in the DOC specification prepared by SSOE Group.

Listed below are the design parameters specified by SSOE Group for Engine No. 6. These parameters along with the stack test report were used by Johnson Matthey to design and construct the DOC.

• Engine Manufacturer	Cooper Bessemer
• Engine Model	LSVB-20-GDT
• Fuel Type	Dual Fuel (Natural Gas and/or Diesel)
• Application	Power Generation
• Rated Output	8,295 bhp
• Design Exhaust Flow Rate	Oil Fired - 64,000 acfm Natural gas firing – 60,000 ACFM

- Design Exhaust Temperature 880 °F
- Inlet Carbon Monoxide Concentration – PPM at 15% Oxygen
  - Natural Gas Firing 320
  - Oil Firing 70

With the given design parameters and the emission testing that was conducted, Johnson Matthey calculated the appropriate catalyst volume and equipment. The oxidation catalyst system is guaranteed to reduce carbon monoxide emissions by 70% or greater if utilizing actual operating conditions. If the actual operating conditions vary from the specified operating procedure, then more catalyst might be required for the system to achieve desired efficiencies. For this reason, all operating conditions must be closely reviewed, as different conditions will void the emission reduction warranty.

DATA COLLECTION

The Johnson Matthey oxidation catalyst system is equipped with a Johnson Matthey HAP Guard Catalyst monitor. The monitor is equipped with a thermocouple to measure and record the exhaust stream pre DOC temperature in degrees Fahrenheit (°F). It also comes with inlet and outlet pressure connection ports to record the pre DOC and post DOC pressure measurements (in psig). The pressure and temperature sensors are located in the catalyst housing.

From these raw measurements, the monitoring system software utilizes this raw data to calculate further values. The calculated values include differential pressure (psig), engine runtime (minutes), and a four (4) hour rolling average temperature (in °F). When the differential pressure and four hour rolling average temperature values become out of range, the monitor is furnished with warning alarms.

All raw measurements, calculated values, and warning periods from the monitor can be stored for up to two years. The functions and parameters of the HAP Guard monitor are compliant to RICE-NESHAP regulations. Print outs, utilizing the HAP Guard monitor software, should be filed and maintained in Section 3.4 – CPMS Measurement Readings of the RICE NESHAP Compliance Binder for a minimum of five (5) years.

PERFORMANCE EVALUATION

The City of Sturgis Municipal Power facility has utilized the services of Grace Consulting, Inc. to conduct the required performance evaluations. Grace Consulting, Inc. is a firm which performs stack testing for the City of Sturgis in order to comply with the requirements set by the facility's MDEQ Renewable Operation permit (ROP) and RICE NESHAP regulations. An initial performance evaluation of the DOC must be completed no later than October 30, 2013. Before conducting the initial performance test, the MDEQ must be given notification at least sixty (60) days before the performance test. Once the performance test has been performed the test results must be submitted within sixty (60) days of the initial performance test. The parameters observed and reported on for the initial performance evaluation are carbon monoxide (CO), oxygen, moisture content, temperature and pressure at the inlet and outlet of the oxidation catalyst. The initial performance evaluation will consist of three (3) runs each one (1) hour in length.

The Air Quality Division (AQD) of the MDEQ approved revisions to the ROP mandates that the stack testing of nitrogen oxides (NOx) be completed every five (5) years. RICE NESHAP regulation states that a performance test needs to be conducted every three (3) years or 8,760 hours of operation whichever comes first. For performance testing after the initial performance test of the DOC, the City of Sturgis should consider performing the NOx testing at the same time that the RICE NESHAP testing is performed.

After each performance evaluation has been completed the stack testing firm will provide a report to the City of Sturgis. The city of Sturgis is responsible for submitting the report to the AQD Kalamazoo District Supervisor. The stack test is the only type of performance evaluation required at the Sturgis Municipal Power plant to maintain in compliance with MDEQ and RICE NESHAP.

OPERATION & MAINTENANCE

Engine No. 6 is a dual fuel engine which can operate using fuel oil or natural gas. The normal startup procedure for the engine is to start the unit by using fuel oil. The average operation time running fuel oil is 45 minutes. Fuel oil is used for the startup procedure due to its higher combustion rate than natural gas. After the engine operates at or close to full capacity for approximately 45 minutes, then the engine is switched to operate on a mixture of approximately 95% natural gas and 5% fuel oil for the remainder of that particular run. One of the numerous design parameters was based on the startup procedure previously specified.

During operation there are certain parameters that should be maintained for proper operation of the catalyst. The first parameter is to maintain a certain pressure drop across the unit. The pressure drop across the catalyst should not change by more than two (2) inches from the pressure drop across the catalyst that occurred during the initial performance evaluation. The second parameter to be maintained is temperature. The temperature of the stationary RICE exhaust should be kept so the catalyst inlet temperature is greater than or equal to 450 degrees Fahrenheit and less than or equal to 1,350 degrees Fahrenheit.

The Johnson Matthey HAPGuard unit monitors the performance of the Johnson Matthey DualOx Oxidation Catalyst System at the City of Sturgis Municipal Power Plant. The HAPGuard monitor should be visually inspected once per week to ensure it functions appropriately. The weekly visual inspection should be completed by internal personnel. Records of each visual inspection performed on the HAPGuard monitor should be maintained in a log sheet. The minimal information required for the log sheet is the date, time, individual's name, operational status, and any additional comments relative to each weekly inspection performed. All completed log sheets for the HAPGuard monitor weekly inspections need to be maintained in the RICE NESHAP Compliance Binder for Engine Generator No. 6 at the City of Sturgis Municipal Power Division.

The Operation & Maintenance (O&M) manual for the Johnson Matthey DualOx Oxidation Catalyst System provides a recommended cleaning and maintenance schedule. Vacuuming and washing are two ways of cleaning the catalyst. Vacuuming the catalyst channels clear is recommended by the manufacturer in order to avoid excessive pressure or contaminated air, which can cause irreversible damage to the catalyst. If

washing is required to remove residues and resins from the catalyst, then an acidic (low pH) wash is appropriate for this type of cleaning. Johnson Matthey should be consulted for further details regarding washing procedures and washing fluids. The maintenance schedule below is provided by Johnson Matthey, but it is suggested that this particular maintenance schedule only be utilized as an initial guideline.

1. Physical inspection every 3-6 months of operation.
2. Vacuuming as needed to reduce ash build up and associated increased back pressure.
3. Approved washing procedure (low pH) will be used to improve performance.

It is important to experiment and to develop a maintenance schedule specific to the catalyst unit installed at the City of Sturgis Municipal Power Plant. The differential pressure readings will be the type of measurement that indicates when the catalyst is becoming dirty or plugged. When the differential pressure starts to increase by more than 1 inch wc, then the catalyst should be inspected and cleaned if needed for optimal operation.

As the City of Sturgis Municipal Power Division creates the maintenance and cleaning schedule for the catalyst unit, it is recommended that each inspection and cleaning be recorded in order to determine the best schedule for that particular catalyst unit.

REPORT & RECORDKEEPING

The City of Sturgis Municipal Power plant is required to submit a semi-annual compliance report. A semi-annual compliance report should be issued to the AQD District Supervisor of the Kalamazoo District Office and a copy of the report to the U.S. EPA Region 5 Office. The reporting periods are identified as January 1st through June 30th and July 1st through December 31st. The semi-annual compliance report provides comprehensive information regarding malfunctions, inoperative periods, and out-of-control periods for Engine No. 6 and the CPMS from the last six months of operation.

The designated template of the semi-annual compliance report for the City of Sturgis Municipal Power facility is filed under Section 4.0 – Semi-Annual Compliance Report area of the RICE NESHAP Compliance Binder. The semi-annual compliance report template contains all the required information required of the RICE NESHAP regulations. 40 CFR 63.6650 (c)(1) – (6), a copy of which is provided below:

> *(c) The Compliance report must contain the information in paragraphs (c)(1) through (6) of this section.*
>
> *(1) Company name and address.*
>
> *(2) Statement by a responsible official, with that official's name, title, and signature, certifying the accuracy of the content of the report.*
>
> *(3) Date of report and beginning and ending dates of the reporting period.*

(4) If you had a malfunction during the reporting period, the compliance report must include the number, duration, and a brief description for each type of malfunction which occurred during the reporting period and which caused or may have caused any applicable emission limitation to be exceeded. The report must also include a description of actions taken by an owner or operator during a malfunction of an affected source to minimize emissions in accordance with § 63.6605(b), including actions taken to correct a malfunction.

(5) If there are no deviations from any emission or operating limitations that apply to you, a statement that there were no deviations from the emission or operating limitations during the reporting period.

(6) If there were no periods during which the continuous monitoring system (CMS), including CEMS and CPMS, was out-of-control, as specified in § 63.8(c)(7), a statement that there were no periods during which the CMS was out-of-control during the reporting period.

All recordkeeping for Engine No. 6 and continuous monitoring system is maintained onsite in the RICE NESHAP Compliance Binder for Engine No. 6. The required parameters for record keeping are listed below from 40 CFR § 63.10 (b)(2)(vi) through (xi) and (b)(2)(xiv).

(vi) Each period during which a CMS is malfunctioning or inoperative (including out-of-control periods);

(vii) All required measurements needed to demonstrate compliance with a relevant standard (including, but not limited to, 15-minute averages of CMS data, raw performance testing measurements, and raw performance evaluation measurements, that support data that the source is required to report);

(A) This paragraph applies to owners or operators required to install a continuous emissions monitoring system (CEMS) where the CEMS installed is automated, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction. An automated CEMS records and reduces the measured data to the form of the pollutant emission standard through the use of a computerized data acquisition system. In lieu of maintaining a file of all CEMS sub hourly measurements as required under paragraph (b)(2)(vii) of this section, the owner or operator shall retain the most recent consecutive three averaging periods of sub hourly measurements and a file that contains a hard copy of the data acquisition system algorithm used to reduce the measured data into the reportable form of the standard.

(B) This paragraph applies to owners or operators required to install a CEMS where the measured data is manually reduced to obtain the reportable form of the standard, and where the calculated data averages do not exclude periods of CEMS breakdown or malfunction. In lieu of maintaining a file of all CEMS sub hourly measurements as required

under paragraph (b)(2)(vii) of this section, the owner or operator shall retain all sub hourly measurements for the most recent reporting period. The sub hourly measurements shall be retained for 120 days from the date of the most recent summary or excess emission report submitted to the Administrator.

(C) The Administrator or delegated authority, upon notification to the source, may require the owner or operator to maintain all measurements as required by paragraph (b)(2)(vii), if the administrator or the delegated authority determines these records are required to more accurately assess the compliance status of the affected source.

(viii) All results of performance tests, CMS performance evaluations, and opacity and visible emission observations;

(ix) All measurements as may be necessary to determine the conditions of performance tests and performance evaluations;

(x) All CMS calibration checks;

(xi) All adjustments and maintenance performed on CMS;

(xiv) All documentation supporting initial notifications and notifications of compliance status under 63.9.

EGLE

RENEWABLE OPERATING PERMIT APPLICATION
AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: B7287	Section Number (if applicable):

1. Additional Information ID
AI- 002

Additional Information

2. Is This Information Confidential? ☐ Yes ☒ No

Potential to Emit Calculations for NOx and HAP's

CITY OF STURGIS
ENGINE GENERATOR NO. 6
POTENTIAL TO EMIT (PTE) CALCULATIONS

MODE OF OPERATION	DUAL FUEL	100% DIESEL
MAXIMUM HP-HR PER YEAR - PERMIT LIMIT	17,500,000	17,500,000
MAXIMUMM KWH PER YEAR - PERMIT LIMIT	13,100,000	13,100,000
MAXIMUM KW - EQUIPMENT RATING	6,000	6,000
EQUIVALENT MAXIMUM FULL LOAD HOURS PER YEAR	2,183	2,183
HEAT RATE BTU/KWH	9,655	9,655
BTU/GALLON OF OIL		138,167
BTU/FT3 OF NATURAL GAS	1,000	
FUEL OIL MAXIMUM SULFUR CONTENT - % BY WEIGHT - PERMIT LIMIT		0.50%
MAX MMBTU/HR	57.93	57.93
MAX MMBTU/YEAR	126,461.2	126,461.2
MAX 1,000 GALLONS OF FUEL OIL PER YEAR		915.3
MAX MILLION CUBIC FEET (MMCF) OF NATURAL GAS PER YEAR	126.5	

	NATURAL GAS			NO. 2 FUEL OIL			MAXIMUM
POLLUTANT	**EMISSIONS FACTOR**		**PTE - TONS**	**EMISSION FACTOR**		**PTE - TONS**	**PTE - TONS**
PM-10	20.1	LBS/MMCF	1.27	42.5	LBS/1,000 GALLONS	19.45	19.45
PM-2.5	20.1	LBS/MMCF	1.27	42.5	LBS/1,000 GALLONS	19.45	19.45
SULFUR DIOXIDE	0.6	LBS/MMCF	0.04	71	LBS/1,000 GALLONS	32.49	32.49
NITROGEN OXIDES	2,840	LBS/MMCF	179.57	12.9	GRAMS/HP-HR	248.84	248.84
CARBON MONOXIDE	399	LBS/MMCF	25.23	130	LBS/1,000 GALLONS	59.49	59.49
VOLATILE ORGANIC COMPOUNDS	116	LBS/MMCF	7.33	49.3	LBS/1,000 GALLONS	22.56	22.56
TOTAL ORGANIC COMPOUNDS				49.3	LBS/1,000 GALLONS	22.56	22.56
XYLENE				0.00684	LBS/1,000 GALLONS	0.0031	0.0031
TOLUENE				0.0386	LBS/1,000 GALLONS	0.0177	0.0177
NAPTHALENE				0.0129	LBS/1,000 GALLONS	0.0059	0.0059
ETHYLBENZENE				0.00307	LBS/1,000 GALLONS	0.0014	0.0014
FLUORANTHENE				0.000131	LBS/1,000 GALLONS	6.00E-05	6.00E-05
FORMALDEHYDE				0.0663	LBS/1,000 GALLONS	0.0303	0.0303
BENZO(A) ANTHRENE				0.00000152	LBS/1,000 GALLONS	6.96E-07	6.96E-07
BENZENE				0.129	LBS/1,000 GALLONS	0.0590	0.059
BENZO(A) PYRENE				0.0000588	LBS/1,000 GALLONS	2.69E-05	2.69E-05
CHRYSENE				0.000012	LBS/1,000 GALLONS	5.49E-06	5.49E-06

NOTES

PTE EMISSIONS FOR NITROGEN OXIDES AND SULFURDIOXIDE WHEN FIRING FUEL OIL ARE BASED ON PERMIT LIMITS
ALL OTHER EMISSIONS ARE BASED ON AP-42
FUEL OIL DENSITY IS ASSUMED TO BE 7.1 LBS/GALLON
DUAL FUEL MODE EMISSIONS ARE BASED ON 100% NATURAL GAS
MAXIMUM PTE IS DETERMINED ON A POLLUTANT BY POLLUTANT BASIS AND IS THE GREATER OF NATURAL GAS PTE AND NO. 2 FUEL OIL PTE

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Sturgis Diesel Storage Tank
City:	Sturgis
State:	Michigan
Company:	Sturgis
Type of Tank:	Vertical Fixed Roof Tank
Description:	Sturgis Diesel Storage Tank

Tank Dimensions

Shell Height (ft):	35.00
Diameter (ft):	12.00
Liquid Height (ft) :	34.00
Avg. Liquid Height (ft):	20.00
Volume (gallons):	28,765.01
Turnovers:	0.12
Net Throughput(gal/yr):	3,568.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.00

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: South Bend, Indiana (Avg Atmospheric Pressure = 14.33 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Sturgis Diesel Storage Tank - Vertical Fixed Roof Tank
Sturgis, Michigan

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	51.15	46.48	55.82	49.54	0.0047	0.0040	0.0057	130.0000			188.00	Option 1: VP50 = .0045 VP60 = .0065

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Sturgis Diesel Storage Tank - Vertical Fixed Roof Tank
Sturgis, Michigan

Annual Emission Calcaulations	
Standing Losses (lb):	2.2484
Vapor Space Volume (cu ft):	1,696.4600
Vapor Density (lb/cu ft):	0.0001
Vapor Space Expansion Factor:	0.0325
Vented Vapor Saturation Factor:	0.9963
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,696.4600
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	15.0000
Tank Shell Height (ft):	35.0000
Average Liquid Height (ft):	20.0000
Roof Outage (ft):	0.0000
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.0000
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0000
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0001
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0047
Daily Avg. Liquid Surface Temp. (deg. R):	510.8175
Daily Average Ambient Temp. (deg. F):	49.5208
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	509.2108
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,202.9028
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0325
Daily Vapor Temperature Range (deg. R):	18.6798
Daily Vapor Pressure Range (psia):	0.0017
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0047
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0040
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0057
Daily Avg. Liquid Surface Temp. (deg R):	510.8175
Daily Min. Liquid Surface Temp. (deg R):	506.1476
Daily Max. Liquid Surface Temp. (deg R):	515.4875
Daily Ambient Temp. Range (deg. R):	17.9917
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9963
Vapor Pressure at Daily Average Liquid:	
Surface Temperature (psia):	0.0047
Vapor Space Outage (ft):	15.0000
Working Losses (lb):	0.0522
Vapor Molecular Weight (lb/lb-mole):	130.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0047
Annual Net Throughput (gal/yr.):	3,568.0000
Annual Turnovers:	0.1240
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	28,765.0072
Maximum Liquid Height (ft):	34.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	2.3006

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Sturgis Diesel Storage Tank - Vertical Fixed Roof Tank
Sturgis, Michigan

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Distillate fuel oil no. 2	0.05	2.25	2.30

EGLE

RENEWABLE OPERATING PERMIT APPLICATION
AI-001: ADDITIONAL INFORMATION

This information is required by Article II, Chapter 1, Part 55 (Air Pollution Control) of P.A. 451 of 1994, as amended, and the Federal Clean Air Act of 1990. Failure to obtain a permit required by Part 55 may result in penalties and/or imprisonment. Please type or print clearly. Refer to instructions for additional information to complete this form.

SRN: B7287	Section Number (if applicable):

1. Additional Information ID
AI- 003

Additional Information

2. Is This Information Confidential? ☐ Yes ☒ No

Actual Emission Calculations for NOx and HAP's

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Source Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE

Form Type	**Source**	AQD Source ID (SRN)	**B7287**

SOURCE IDENTIFICATION

Source Name	**Sturgis Municipal Power Plant**				
NAICS Code	**221112**			Portable	**No**
Physical Address (Street Address 1)	**505 West Chicago Rd.**				
Physical Address (Street Address 2)					
County	**SAINT JOSEPH**	City	**STURGIS**	Zip Code	**49091-**
Latitude	**41.79889 Decimal Degrees**			Longitude	**-85.425846 Decimal Degrees**
Horizontal Collection Method	**001**				
Source Map Scale Number				Horizontal Accuracy Measure	**100 Meters**
Horizontal Reference Datum Code	**02**			Reference Point Code	**101**
Principal Product	**Electricity**			Number of Employees	**4**
Employer Federal Identification Number	**386004653**				

OWNER INFORMATION

Owner Name	**City of Sturgis**		
Mailing Address (Street Address 1)	**130 North Nottawa St.**		
Mailing Address (Street Address 2)			
City	**Sturgis**	State/Pro vince	**MI**
Country	**USA**	Zip or Postal Code	**49091-**

Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Michigan Air Emissions Reporting System (MAERS)

2022 Contact Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Contact**	AQD Source ID (SRN)	**B7287**

EMISSION INVENTORY CONTACT (PRIMARY) INFORMATION							
Contact First Name, Middle Initial	**Chris**			Contact Last Name	**McArthur**		
Contact Title	**Superintendent**						
Mailing Address (Street Address 1)	**130 North Nottawa Street**						
Mailing Address (Street Address 2)							
City	**STURGIS**	State/Province	**MI**	Country	**USA**	Zip Code	**49091**
E-Mail Address (if available)	**cmcarthur@sturgismi.gov**						
Telephone Number	**(269) 6597298**			Telephone Extension			
Fax Number	**()**						

EMISSION INVENTORY CONTACT (SECONDARY) INFORMATION							
Contact First Name, Middle Initial	**Monica**			Contact Last Name	**Steele**		
Contact Title	**SSOE Group, Process Engineer**						
Mailing Address (Street Address 1)	**1001 Madison Ave.**						
Mailing Address (Street Address 2)							
City	**Toledo**	State/Province	**OH**	Country	**USA**	Zip Code	**43604**
E-Mail Address (if available)	**msteele@ssoe.com**						
Telephone Number	**(567) 2182334**			Telephone Extension			
Fax Number	**(419) 2556101**						

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division

Michigan Air Emissions Reporting System (MAERS)

2022 Contact Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Contact**	AQD Source ID (SRN)	**B7287**

FEE INVOICE CONTACT INFORMATION (Fee Subject Facilities Only)			
Contact First Name, Middle Initial	**Tyler**	Contact Last Name	**Stark**
Contact Title	**Electric Operations Manager**		
Mailing Address (Street Address 1)	**130 North Nottawa Street**		
Mailing Address (Street Address 2)			
City **STURGIS**	State/Province **MI**	Country **USA**	Zip Code **49091**
E-Mail Address (if available)	**tstark@sturgismi.gov**		
Telephone Number	**(269) 6597298**	Telephone Extension	
Fax Number	**(269) 6597205**		

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division

Michigan Air Emissions Reporting System (MAERS)

2022 Stack Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Stack**	AQD Source ID (SRN)	**B7287**

STACK IDENTIFICATION					
AQD Stack ID	**SV0005**		Stack ID	**SV-ENG-6**	
Dismantle Date (MM/DD/YYYY)					
Stack Description	**exhaust stack for engine No. 6**				
Actual Stack Height Above Ground	**38**	feet	Inside Stack Diameter	**30**	inches
Exit Gas Temperature	**860**	degrees Fahrenheit	Actual Exit Gas Flow Rate	**5100**	cubic feet per minute
Stack Orientation	**Vertical**		Exit Velocity of Gas (in feet per second):	**17.3161**	
Latitude	**41.79905765**	Decimal Degrees	Longitude	**-85.42623703**	Decimal Degrees
Horizontal Collection Method	**001**	Source Map Scale Number	Horizontal Accuracy Measure	**100**	Meters
Horizontal Reference Datum Code	**02**		Reference Point Code	**101**	
Bypass Stack Only	**N**		If yes, Stack ID of main stack		

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division

Michigan Air Emissions Reporting System (MAERS)

2022 Emission Unit Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE

Form Type	**Emission Unit**	AQD Source ID (SRN)	**B7287**

EMISSION UNIT IDENTIFICATION

AQD Emission Unit ID	**EU0009**	EU ID	**EU-ENG-6**
NAICS Code (if different from Source Form)	**221112**		
Installation Date MM/DD/YYYY	**10/01/1981**	Dismantle Date MM/DD/YYYY	
Emission Unit Description - (Include Process Equipment and Control Devices)	**Dual fuel engine generator No. 6 has a nameplate capacity of 6000 KW , uses No 2 fuel oil & natural gas for fuel. The engine uses cooling tower water for cooling. Fuel oil is from a large outdoor storage tank through a dedicated day tank. Source has a diesel oxidation catalyst for carbon monoxide reduction control directed by the RICE NESHAP Regulations.**		
Emission Unit Type	**Reciprocating IC Engine**		
Is this a combustion source?	**Y**		
Is this combustion source used to generate electricity?	**Y**		

Design Capacity	**8295**	Design Capacity Numerator	**HP**	Design Capacity Denominator	**HR**
Maximum Nameplate Capacity	**6**			Megawatts	

RULE 201 APPLICABILITY

Grandfathered?	**N**		
Exempt from Rule 201?	**N**	If Yes, Rule Number	
If Rule 201 Exempt, Is Throughput Below Reporting Thresholds?			
Permit?	**Y**	If Yes, Enter the Permit Number	**MI-ROP-B7287-2019**
Is This Emission Unit Required To Report Emissions To MAERS For This Reporting Year?	**Y**		

CONTROL DEVICE(S)

21. Control Device Code	**OXIDATION CAT**

EMISSION UNIT STACK(S)

22. Stack ID	**SV-ENG-6**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emission Unit Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Emission Unit**	AQD Source ID (SRN)	**B7287**

EMISSION UNIT IDENTIFICATION			
AQD Emission Unit ID	**EU0016**	EU ID	**EU-COLDCLEANERS**
NAICS Code (if different from Source Form)	**221112**		
Installation Date MM/DD/YYYY	**09/22/2003**	Dismantle Date MM/DD/YYYY	
Emission Unit Description - (Include Process Equipment and Control Devices)	**EU-SOLVENT: SOLVENT NAPTHA: STODDARD USAGE**		
Emission Unit Type	**Degreaser**		
Is this a combustion source?	**N**		
Is this combustion source used to generate electricity?			
Design Capacity	Design Capacity Numerator	Design Capacity Denominator	
Maximum Nameplate Capacity	Megawatts		

RULE 201 APPLICABILITY

Grandfathered?	**N**		
Exempt from Rule 201?	**N**	If Yes, Rule Number	
If Rule 201 Exempt, Is Throughput Below Reporting Thresholds?			
Permit?	**Y**	If Yes, Enter the Permit Number	**MI-ROP-B7287-2019**
Is This Emission Unit Required To Report Emissions To MAERS For This Reporting Year?	**N**		

CONTROL DEVICE(S)

EMISSION UNIT STACK(S)

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emission Unit Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Emission Unit**	AQD Source ID (SRN)	**B7287**

EMISSION UNIT IDENTIFICATION			
AQD Emission Unit ID	**EU0017**	EU ID	**EU-OIL-TANK**
NAICS Code (if different from Source Form)	**221112**		
Installation Date MM/DD/YYYY	**01/01/1995**	Dismantle Date MM/DD/YYYY	
Emission Unit Description - (Include Process Equipment and Control Devices)	**30,000 GALLON TANK FOR STORING #2 FUEL OIL.**		
Emission Unit Type	**Storage Tank**		
Is this a combustion source?	**N**		
Is this combustion source used to generate electricity?			
Design Capacity	Design Capacity Numerator	Design Capacity Denominator	
Maximum Nameplate Capacity	Megawatts		

RULE 201 APPLICABILITY

Grandfathered?	**N**		
Exempt from Rule 201?	**N**	If Yes, Rule Number	
If Rule 201 Exempt, Is Throughput Below Reporting Thresholds?			
Permit?	**Y**	If Yes, Enter the Permit Number	**MI-ROP-B7287-2019**
Is This Emission Unit Required To Report Emissions To MAERS For This Reporting Year?	**Y**		

CONTROL DEVICE(S)

EMISSION UNIT STACK(S)

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Activity Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Activity**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**

ACTIVITY INFORMATION			
Source Classification Code(SCC)	**20100102**		
SCC Comment	**Diesel Fired Internal Combustion Engine**		
SEASONAL MATERIAL USAGE SCHEDULE, IF THROUGHPUT IS > 0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%			
Winter (Jan,Feb, Dec)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)
32	**14**	**44**	**10**
OPERATING SCHEDULE			
Hours per Day	Days per Week	Days per Year	
1	**1**	**7**	
MATERIAL INFORMATION			
Material Code	Material Throughput	Unit Code	
DIESEL FUEL	**11.191**	**E3 GAL**	
Material Description	**No. 2 Fuel Oil**		
VOC Content (coatings or solvent)	**% by Weight**	Density	
BTUs (fuel)	**138514 BTU/GAL**		
Sulfur Content (fuel)	**0.00092 % by Weight**	Ash Content (fuel)	**% by Weight**

ATTACHMENT:

Document Name: **Sulfur Content Attachment File 2022.xls**

File Name: **Sulfur Content Attachment File 2022.xls**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Activity Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Activity**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**

ACTIVITY INFORMATION			
Source Classification Code(SCC)	**20100202**		
SCC Comment	**Nat Gas Fired Internal Combustion Engine**		
SEASONAL MATERIAL USAGE SCHEDULE, IF THROUGHPUT IS > 0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%			
Winter (Jan,Feb, Dec)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)
28	**5**	**65**	**2**
OPERATING SCHEDULE			
Hours per Day	Days per Week	Days per Year	
1	**1**	**7**	
MATERIAL INFORMATION			
Material Code	Material Throughput	Unit Code	
NATURAL GAS	**5.88**	**MMCF**	
Material Description	**Natural Gas**		
VOC Content (coatings or solvent)	**% by Weight**	Density	
BTUs (fuel)	**1000 BTU/FT3**		
Sulfur Content (fuel)	**% by Weight**	Ash Content (fuel)	**% by Weight**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Activity Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Activity**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-COLDCLEANERS**

ACTIVITY INFORMATION			
Source Classification Code(SCC)	**40100303**		
SCC Comment	**Cold Cleaners**		
SEASONAL MATERIAL USAGE SCHEDULE, IF THROUGHPUT IS > 0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%			
Winter (Jan,Feb, Dec)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)
25	**25**	**25**	**25**
OPERATING SCHEDULE			
Hours per Day	Days per Week	Days per Year	
1	**1**	**1**	
MATERIAL INFORMATION			
Material Code	Material Throughput	Unit Code	
STODDARD	**0**	**GAL**	
Material Description	**Mineral Spirits**		
VOC Content (coatings or solvent)	**100 % by Weight**	Density	**8 LB/GAL**
BTUs (fuel)			
Sulfur Content (fuel)	**% by Weight**	Ash Content (fuel)	**% by Weight**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Activity Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Activity**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-OIL-TANK**

ACTIVITY INFORMATION			
Source Classification Code(SCC)	**40400301**		
SCC Comment	**30,000 Gallon Above Ground Oil Storage Tank**		
SEASONAL MATERIAL USAGE SCHEDULE, IF THROUGHPUT IS > 0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%			
Winter (Jan,Feb, Dec)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)
25	**25**	**25**	**25**
OPERATING SCHEDULE			
Hours per Day	Days per Week	Days per Year	
1	**1**	**7**	
MATERIAL INFORMATION			
Material Code	Material Throughput	Unit Code	
CRUDE OIL	**5.88**	**KGAL-YR**	
Material Description	**No. 2 Fuel Oil**		
VOC Content (coatings or solvent)	**% by Weight**	Density	**7.1 LB/GAL**
BTUs (fuel)	**138514 BTU/GAL**		
Sulfur Content (fuel)	**0.00092 % by Weight**	Ash Content (fuel)	**% by Weight**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100102**	Material Code	**DIESEL FUEL**		

EMISSION INFORMATION			
Pollutant Code	**BENZ(A)ANTHR**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.52**	Exponent	**-6**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**BENZENE**	Annual Emissions	**1.44 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.29**	Exponent	**-1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**BENZO(A)PYRE**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**5.88**	Exponent	**-5**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**CHRYSENE**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.20**	Exponent	**-5**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100102**	Material Code	**DIESEL FUEL**		

EMISSION INFORMATION			
Pollutant Code	**CO**	Annual Emissions	**293.88 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.30**	Exponent	**2**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**79.8 %**
Comment			

EMISSION INFORMATION			
Pollutant Code	**ETHYLBENZENE**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**3.07**	Exponent	**-3**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**FLUORANTHENE**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.31**	Exponent	**-4**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**FORMALDEHYDE**	Annual Emissions	**0.33 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**6.63**	Exponent	**-2**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100102**	Material Code	**DIESEL FUEL**		

EMISSION INFORMATION			
Pollutant Code	**NAPHTHALENE**	Annual Emissions	**0.14 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.29**	Exponent	**-2**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**NOX**	Annual Emissions	**6759.36 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**6.04**	Exponent	**2**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**PM10,FLTRBLE**	Annual Emissions	**475.62 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**4.25**	Exponent	**1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**PM2.5,FLTRBL**	Annual Emissions	**475.62 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**4.25**	Exponent	**1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100102**	Material Code	**DIESEL FUEL**		

EMISSION INFORMATION			
Pollutant Code	**SO2**	Annual Emissions	**1.462 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**3.97**	Exponent	**1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**TOC**	Annual Emissions	**551.72 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**4.93**	Exponent	**1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**TOLUENE**	Annual Emissions	**0.02 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**3.86**	Exponent	**-2**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**VOC**	Annual Emissions	**551.72 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**4.93**	Exponent	**1**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100102**	Material Code	**DIESEL FUEL**		

EMISSION INFORMATION			
Pollutant Code	**XYLENES ISO**	Annual Emissions	**0.08 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**6.84**	Exponent	**-3**
Emission Factor Unit Code	**LB / E3 GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100202**	Material Code	**NATURAL GAS**		

EMISSION INFORMATION			
Pollutant Code	**CO**	Annual Emissions	**353.09 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**3.99**	Exponent	**2**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**84.95 %**
Comment			

EMISSION INFORMATION			
Pollutant Code	**NOX**	Annual Emissions	**16699.2 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**2.84**	Exponent	**3**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**PM10,PRIMARY**	Annual Emissions	**118.25 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**2.01**	Exponent	**1**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**PM2.5,PRIMRY**	Annual Emissions	**118.25 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**2.01**	Exponent	**1**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-ENG-6**
SCC	**20100202**	Material Code	**NATURAL GAS**		

EMISSION INFORMATION			
Pollutant Code	**SO2**	Annual Emissions	**3.53 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**6.00**	Exponent	**-1**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**%**
Comment			

EMISSION INFORMATION			
Pollutant Code	**VOC**	Annual Emissions	**682.08 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**1.16**	Exponent	**2**
Emission Factor Unit Code	**LB / MMCF**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-COLDCLEANERS**
SCC	**40100303**	Material Code	**STODDARD**		

EMISSION INFORMATION			
Pollutant Code	**VOC**	Annual Emissions	**0 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**6.43**	Exponent	**0**
Emission Factor Unit Code	**LB / GAL**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Emissions Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE					
Form Type	**Emissions**	AQD Source ID (SRN)	**B7287**	EU ID	**EU-OIL-TANK**
SCC	**40400301**	Material Code	**CRUDE OIL**		

EMISSION INFORMATION			
Pollutant Code	**VOC**	Annual Emissions	**211.68 LB**
Emission Basis	**MAERS EF**		
List Emission Factor	**3.60**	Exponent	**1**
Emission Factor Unit Code	**LB / KGAL-YR**	Control Efficiency	**%**
Comment			

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Preparer Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Preparer**	AQD Source ID (SRN)	**B7287**

PREPARER'S INFORMATION			
Preparer's First Name, Middle Initial	**Monica**	Preparer's Last Name	**Steele**
Preparer's Title	**Process Engineer**		
Mailing Address (Street Address 1)	**1001 Madison Ave**		
Mailing Address (Street Address 2)			
City	**Toledo**	State/Province	**OH**
Country	**USA**	Zip Code	**43604**
E-Mail Address (if available)	**msteele@ssoe.com**		
Telephone Number	**(567) 2182334**	Telephone Extension	
Fax Number	**()**		

PREPARER'S ID (only complete this area if you have more than one preparer)	
Preparer's Reporting Group or Emission Unit ID	**EU-ENG-6**
Preparer's Reporting Group or Emission Unit ID	**EU-COLDCLEANERS**
Preparer's Reporting Group or Emission Unit ID	**EU-OIL-TANK**

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Preparer Form

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Preparer**	AQD Source ID (SRN)	**B7287**

PREPARER'S INFORMATION			
Preparer's First Name, Middle Initial	**Chris**	Preparer's Last Name	**McArthur**
Preparer's Title	**Electric Superintendent**		
Mailing Address (Street Address 1)	**130 N Nottawa St.**		
Mailing Address (Street Address 2)			
City	**Sturgis**	State/Province	**MI**
Country	**USA**	Zip Code	**49091**
E-Mail Address (if available)	**cmcarthur@sturgismi.gov**		
Telephone Number	**(269) 659-7298**	Telephone Extension	
Fax Number	**()**		

PREPARER'S ID (only complete this area if you have more than one preparer)

Michigan Department of Environment, Great Lakes, and Energy (EGLE) - Air Quality Division
Michigan Air Emissions Reporting System (MAERS)

2022 Submittal Form

(Required Form)

Authorized under 1994 P.A. 451, as amended. Completion of information is required. Civil and/or criminal penalties possible for providing false information.

FORM REFERENCE			
Form Type	**Submittal**	AQD Source ID (SRN)	**B7287**

SOURCE IDENTIFICATION					
Source Name	**Sturgis Municipal Power Plant**				
Mailing Address (Street Address 1)			**505 West Chicago Rd.**		
Mailing Address (Street Address 2)					
County	**SAINT JOSEPH**	City	**STURGIS**	Zip Code	**49091-**
Submittal Method	**Electronic**			Amended Submittal	

PRIMARY PREPARER'S AUTHORIZATION	
Based on information and belief formed after reasonable inquiry, the statements and information in this submittal are true, accurate, and complete.	
Primary Preparer	
Telephone Number	Telephone Extension
E-Mail Address (if available)	
Signature	Date

Certification Receipt:

- Submission ID:
- Submission Received Date:
- Certifier's (Primary Preparer) full name:
- Certifier's Address:
- Email Address:
- Certification Statement:
- Security Question:
- Answer to the security question: Encrypted on file
- PIN used: Encrypted on file
- Submitter's IP address:

Attachment Details:

Document Name	File Name	File Size	Description
Sulfur Content Attachment File 2022.xls	Sulfur Content Attachment File 2022.xls	33280	

Michigan Air Emissions Reporting System (MAERS)

Source Summary Report - AQD Source ID (SRN) B7287

Reporting Year : 2022

S-101 SOURCE INFORMATION

Source Name Sturgis Municipal Power Plant **NAICS Code** 221112 **Portable** No

Address 505 West Chicago Rd.

County SAINT JOSEPH **City** STURGIS **Zip Code** 49091 **District** Kalamazoo

Latitude	Longitude	Horizontal Collection Method	Source Map Scale	Horizontal Accuracy Measure	Horizontal Reference Datum
41.79889	-85.425846	001		100 Meter(s)	02

Reference Point Code	Principal Product	Number of Employees	Employer Federal ID Number
101	Electricity	4	386004653

OWNER INFORMATION

Owner Name City of Sturgis

Mailing Address 130 North Nottawa St. **Address Continued**

City Sturgis **State/Province** MI **Country** USA **Zip/Postal Code** 49091

S-102 CONTACT INFORMATION

Emission Inventory Contact Information (Primary)

Contact Name Chris McArthur **Mailing Address** 130 North Nottawa Street

Contact Title Superintendent **Address Continued**

City STURGIS

E-Mail Address cmcarthur@sturgismi.gov **State/Province** MI

Telephone Number (269)6597298 **Country** USA

Fax Number **Zip or Postal Code** 49091

Emission Inventory Contact Information (Secondary)

Contact Name	Monica Steele	**Mailing Address**	1001 Madison Ave.
Contact Title	SSOE Group, Process Engineer	**Address Continued**	
		City	Toledo
E-Mail Address	msteele@ssoe.com	**State/Province**	OH
Telephone Number	(567)2182334	**Country**	USA
Fax Number	(419)2556101	**Zip or Postal Code**	43604

Fee Invoice Contact Information

Contact Name	Tyler Stark	**Mailing Address**	130 North Nottawa Street
Contact Title	Electric Operations Manager	**Address Continued**	
		City	STURGIS
E-Mail Address	tstark@sturgismi.gov	**State/Province**	MI
Telephone Number	(269)6597298	**Country**	USA
Fax Number	(269)6597205	**Zip or Postal Code**	49091

P-101 PREPARER'S INFORMATION

Preparer's First Name	Monica	**Preparer's Last Name**	Steele			**Preparer's Title**	Process Engineer
		Mailing Address	1001 Madison Ave			**Address Continued**	
City	Toledo	**State/Province**	OH	**Country**	USA	**Zip/Postal Code**	43604
Email Address	msteele@ssoe.com	**Telephone Number**	(567)2182334			**Fax Number**	
Preparer's First Name	Chris	**Preparer's Last Name**	McArthur			**Preparer's Title**	Electric Superintendent
		Mailing Address	130 N Nottawa St.			**Address Continued**	
City	Sturgis	**State/Province**	MI	**Country**	USA	**Zip/Postal Code**	49091
Email Address	cmcarthur@sturgismi.gov	**Telephone Number**	(269)6597298			**Fax Number**	

SV-101 STACK INFORMATION

Stack ID	SV-ENG-6	**AQD Stack ID**	SV0005	**Dismantle Date**	
Stack Description	exhaust stack for engine No. 6				
Actual Stk Height Above Ground	38 FT	**Inside Stack Diameter**	30 IN	**Stack Orientation**	Vertical
Exit Gas Temperature	860 F	**Actual Exit Gas Flow Rate**	5100 FT3/MIN	**Exit Velocity of Gas**	17.3161 FT/SEC
Latitude	41.79905765	**Longitude**	-85.42623703	**Horizontal Collection Method**	001
Source Map Scale		**Horizontal Accuracy**	100 Meter(s)	**Horizontal Reference Datum**	02
Reference Point Code	101	**Bypass Stack Only**	N	**If Yes, Main Stack ID**	

EU-101 EMISSION UNIT INFORMATION

AQD Emission Unit ID	Emission Unit ID	NAICS Code	Remove from MAERS	Installation Date	Dismantle Date
EU0009	EU-ENG-6	221112	N	10/01/1981	

Preparer's Description Dual fuel engine generator No. 6 has a nameplate capacity of 6000 KW , uses No 2 fuel oil & natural gas for fuel. The engine uses cooling tower water for cooling. Fuel oil is from a large outdoor storage tank through a dedicated day tank. Source has a diesel oxidation catalyst for carbon monoxide reduction control directed by the RICE NESHAP Regulations.

Design Capacity	Design Capacity Unit Numerator	Design Capacity Unit Denominator	Maximum Namplate Capacity	Rule 201 Grandfathered?	Rule 201 Exempted?
8295	HP	HR	6	N	N

If Rule 201 exempt, Rule Number	If Rule 201 exempt, is throughput below reporting Thresholds?	Permit?	If Permitted, Permit Number	Is this Emission Unit required to report emissions to MAERS for this reporting year?
		Y	MI-ROP-B7287-2019	Y

CONTROL DEVICE(S)

Control Device Code

OXIDATION CAT

EMISSION UNIT STACK(S)

Stack ID

SV-ENG-6

A-101 ACTIVITY INFORMATION EU/RG ID EU-ENG-6

Source Classification Code (SCC)	Preparer's SCC Comment
2-01-001-02	Diesel Fired Internal Combustion Engine

SEASONAL MATERIAL USAGE SCHEDULE

IF THROUGHPUT IS >0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%				OPERATING SCHEDULE			
Winter (Dec,Jan,Feb)	**Spring (Mar-May)**	**Summer (Jun-Aug)**	**Fall (Sep-Nov)**	**Hours per Day**	**Days per Week**	**Days per Year**	**Hours/Year**
32	14	44	10	1	1	7	7

MATERIAL INFORMATION

Material Code	DIESEL FUEL	**Material Throughput**	11.191	**Unit Code**	1000 GALLONS
Preparer's material description		No. 2 Fuel Oil			

VOC Content	Density	BTUs (fuel)	Sulfur Content (fuel)	Ash Content (fuel)
		138514 BRITISH THERMAL UNITS PER GALLON	0.00092 weight percent	

E-101 EMISSION INFORMATION EU/RG ID EU-ENG-6 SCC Code 2-01-001-02

Pollutant Code	Annual Emissions	Unit code	Emission Basis	List Emission Factor	Exponent	Emission Factor Unit Code	Control Efficiency %	Comment
CO	293.88	POUNDS	MAERS EF	1.3	2	1000 GALLONS	79.8	
NOX	6759.36	POUNDS	MAERS EF	6.04	2	1000 GALLONS		
PM10,FLTRBLE	475.62	POUNDS	MAERS EF	4.25	1	1000 GALLONS		
PM2.5,FLTRBL	475.62	POUNDS	MAERS EF	4.25	1	1000 GALLONS		
SO2	1.462	POUNDS	MAERS EF	3.97	1	1000 GALLONS		
TOC	551.72	POUNDS	MAERS EF	4.93	1	1000 GALLONS		
VOC	551.72	POUNDS	MAERS EF	4.93	1	1000 GALLONS		
BENZ(A)ANTHR	0	POUNDS	MAERS EF	1.52	-6	1000 GALLONS		
BENZENE	1.44	POUNDS	MAERS EF	1.29	-1	1000 GALLONS		
BENZO(A)PYRE	0	POUNDS	MAERS EF	5.877	-5	1000 GALLONS		
CHRYSENE	0	POUNDS	MAERS EF	1.2	-5	1000 GALLONS		
ETHYLBENZENE	0	POUNDS	MAERS EF	3.07	-3	1000 GALLONS		
FLUORANTHENE	0	POUNDS	MAERS EF	1.31	-4	1000 GALLONS		
FORMALDEHYDE	0.33	POUNDS	MAERS EF	6.63	-2	1000 GALLONS		
NAPHTHALENE	0.14	POUNDS	MAERS EF	1.29	-2	1000 GALLONS		
TOLUENE	0.02	POUNDS	MAERS EF	3.86	-2	1000 GALLONS		
XYLENES ISO	0.08	POUNDS	MAERS EF	6.84	-3	1000 GALLONS		

ATTACHMENT FOR EU/RG ID EU-ENG-6 SCC Code 2-01-001-02

Document Name: Sulfur Content Attachment File 2022.xls **File Name:** Sulfur Content Attachment File 2022.xls

A-101 ACTIVITY INFORMATION EU/RG ID EU-ENG-6

Source Classification Code (SCC)	Preparer's SCC Comment
2-01-002-02	Nat Gas Fired Internal Combustion Engine

SEASONAL MATERIAL USAGE SCHEDULE

IF THROUGHPUT IS >0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%

OPERATING SCHEDULE

Winter (Dec,Jan,Feb)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)	Hours per Day	Days per Week	Days per Year	Hours/Year
28	5	65	2	1	1	7	7

MATERIAL INFORMATION

Material Code	NATURAL GAS	**Material Throughput**	5.88	**Unit Code**	MILLION CUBIC FEET
Preparer's material description		Natural Gas			
VOC Content	**Density**	**BTUs (fuel)**	**Sulfur Content (fuel)**	**Ash Content (fuel)**	
		1000 BRITISH THERMAL UNITS PER CUBIC FOOT			

E-101 EMISSION INFORMATION EU/RG ID EU-ENG-6 SCC Code 2-01-002-02

Pollutant Code	Annual Emissions	Unit code	Emission Basis	List Emission Factor	Exponent	Emission Factor Unit Code	Control Efficiency %	Comment
CO	353.09	POUNDS	MAERS EF	3.99	2	MILLION CUBIC FEET	84.95	
NOX	16699.2	POUNDS	MAERS EF	2.84	3	MILLION CUBIC FEET		
PM10,PRIMARY	118.25	POUNDS	MAERS EF	2.011	1	MILLION CUBIC FEET		
PM2.5,PRIMRY	118.25	POUNDS	MAERS EF	2.011	1	MILLION CUBIC FEET		
SO2	3.53	POUNDS	MAERS EF	6	-1	MILLION CUBIC FEET		
VOC	682.08	POUNDS	MAERS EF	1.16	2	MILLION CUBIC FEET		

EU-101 EMISSION UNIT INFORMATION

AQD Emission Unit ID	Emission Unit ID	NAICS Code	Remove from MAERS	Installation Date	Dismantle Date
EU0017	EU-OIL-TANK	221112	N	01/01/1995	
Preparer's Description	30,000 GALLON TANK FOR STORING #2 FUEL OIL.				
Design Capacity	**Design Capacity Unit Numerator**	**Design Capacity Unit Denominator**	**Maximum Namplate Capacity**	**Rule 201 Grandfathered?**	**Rule 201 Exempted?**
				N	N
If Rule 201 exempt, Rule Number	**If Rule 201 exempt, is throughput below reporting Thresholds?**	**Permit?**	**If Permitted, Permit Number**	**Is this Emission Unit required to report emissions to MAERS for this reporting year?**	
		Y	MI-ROP-B7287-2019	Y	

A-101 ACTIVITY INFORMATION EU/RG ID EU-OIL-TANK

Source Classification Code (SCC)	Preparer's SCC Comment
4-04-003-01	30,000 Gallon Above Ground Oil Storage Tank

SEASONAL MATERIAL USAGE SCHEDULE

IF THROUGHPUT IS >0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%

Winter (Dec,Jan,Feb)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)
25	25	25	25

OPERATING SCHEDULE

Hours per Day	Days per Week	Days per Year	Hours/Year
1	1	7	7

MATERIAL INFORMATION

Material Code	CRUDE OIL	Material Throughput	5.88	Unit Code	1000 GALLON YEARS
Preparer's material description		No. 2 Fuel Oil			

VOC Content	Density	BTUs (fuel)	Sulfur Content (fuel)	Ash Content (fuel)
	7.1 POUNDS PER GALLON	138514 BRITISH THERMAL UNITS PER GALLON	0.00092 weight percent	

E-101 EMISSION INFORMATION EU/RG ID EU-OIL-TANK SCC Code 4-04-003-01

Pollutant Code	Annual Emissions	Unit code	Emission Basis	List Emission Factor	Exponent	Emission Factor Unit Code	Control Efficiency %	Comment
VOC	211.68	POUNDS	MAERS EF	3.6	1	1000 GALLON YEARS		

EU-101 EMISSION UNIT INFORMATION

AQD Emission Unit ID	Emission Unit ID	NAICS Code	Remove from MAERS	Installation Date	Dismantle Date
EU0016	EU-COLDCLEANERS	221112	N	09/22/2003	
Preparer's Description	EU-SOLVENT: SOLVENT NAPTHA: STODDARD USAGE				

Design Capacity	Design Capacity Unit Numerator	Design Capacity Unit Denominator	Maximum Namplate Capacity	Rule 201 Grandfathered?	Rule 201 Exempted?
				N	N

If Rule 201 exempt, Rule Number	If Rule 201 exempt, is throughput below reporting Thresholds?	Permit?	If Permitted, Permit Number	Is this Emission Unit required to report emissions to MAERS for this reporting year?
		Y	MI-ROP-B7287-2019	N

A-101 ACTIVITY INFORMATION EU/RG ID EU-COLDCLEANERS

Source Classification Code (SCC)	Preparer's SCC Comment
4-01-003-03	Cold Cleaners

SEASONAL MATERIAL USAGE SCHEDULE

IF THROUGHPUT IS >0, THEN SEASONAL PERCENTAGES MUST TOTAL 100%

OPERATING SCHEDULE

Winter (Dec,Jan,Feb)	Spring (Mar-May)	Summer (Jun-Aug)	Fall (Sep-Nov)	Hours per Day	Days per Week	Days per Year	Hours/Year
25	25	25	25	1	1	1	1

MATERIAL INFORMATION

Material Code	STODDARD	**Material Throughput**	0	**Unit Code**	GALLONS
Preparer's material description		Mineral Spirits			

VOC Content	Density	BTUs (fuel)	Sulfur Content (fuel)	Ash Content (fuel)
100 weight percent	8 POUNDS PER GALLON			

E-101 EMISSION INFORMATION EU/RG ID EU-COLDCLEANERS SCC Code 4-01-003-03

Pollutant Code	Annual Emissions	Unit code	Emission Basis	List Emission Factor	Exponent	Emission Factor Unit Code	Control Efficiency %	Comment
VOC	0	POUNDS	MAERS EF	6.43	0	GALLONS		

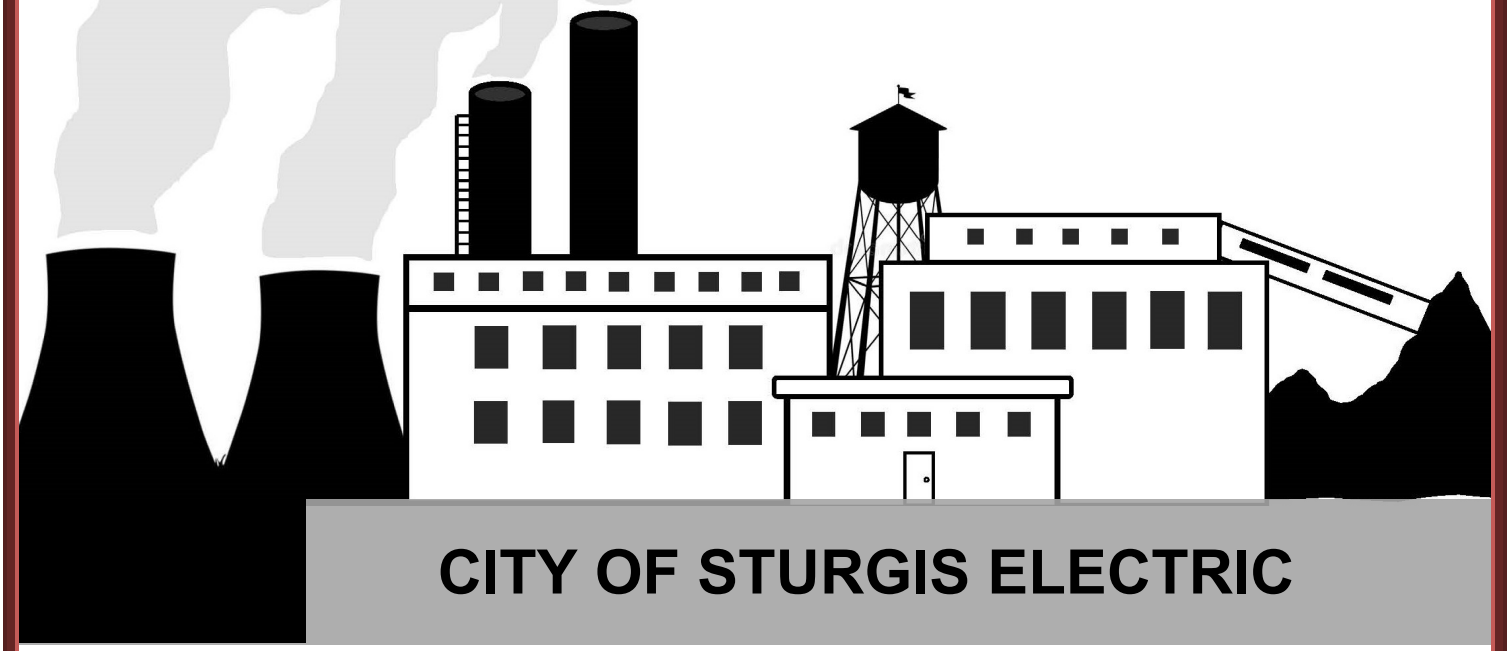
SOURCE EMISSION FACTOR SUBSET REPORT

SCC Code	Pollutant Code	Pollutant Unit Code	Factor Type	Factor	Exponent	Material Code	Material Unit Code	Control Device 1	Code	Control Device Code 2
2-01-001-02										
	AMMONIA	LB	Generic	1.4	0	DIESEL FUEL	E3 GAL	SCR		
	AMMONIA	LB	Generic	2.9	0	DIESEL FUEL	E3 GAL	INJCTN,CARBON		
	BENZ(A)ANTHR	LB	Generic	1.52	-6	DIESEL FUEL	E3 GAL			
	BENZENE	LB	Generic	1.29	-1	DIESEL FUEL	E3 GAL			
	BENZO(A)PYRE	LB	Generic	5.877	-5	DIESEL FUEL	E3 GAL			
	CHRYSENE	LB	Generic	1.2	-5	DIESEL FUEL	E3 GAL			
	CO	LB	Generic	1.3	2	DIESEL FUEL	E3 GAL			

	ETHYLBENZENE	LB	Generic	3.07	-3	DIESEL FUEL	E3 GAL	
	FLUORANTHENE	LB	Generic	1.31	-4	DIESEL FUEL	E3 GAL	
	FORMALDEHYDE	LB	Generic	6.63	-2	DIESEL FUEL	E3 GAL	
	NAPHTHALENE	LB	Generic	1.29	-2	DIESEL FUEL	E3 GAL	
	NOX	LB	Generic	6.04	2	DIESEL FUEL	E3 GAL	
	PM10,FLTRBLE	LB	Generic	4.25	1	DIESEL FUEL	E3 GAL	
	PM2.5,FLTRBL	LB	Generic	4.25	1	DIESEL FUEL	E3 GAL	
	SO2	LB	Generic	3.97	1	DIESEL FUEL	E3 GAL	
	TOC	LB	Generic	4.93	1	DIESEL FUEL	E3 GAL	
	TOLUENE	LB	Generic	3.86	-2	DIESEL FUEL	E3 GAL	
	VOC	LB	State Specific Factors	4.93	1	DIESEL FUEL	E3 GAL	
	XYLENES ISO	LB	Generic	6.84	-3	DIESEL FUEL	E3 GAL	
2-01-002-02								
	AMMONIA	LB	Generic	1.8	1	NATURAL GAS	MMCF	INJCTN,CARBON
	AMMONIA	LB	Generic	9.1	0	NATURAL GAS	MMCF	SCR
	CO	LB	Generic	3.99	2	NATURAL GAS	MMCF	
	NOX	LB	Generic	2.84	3	NATURAL GAS	MMCF	
	PM10,PRIMARY	LB	Generic	2.011	1	NATURAL GAS	MMCF	
	PM2.5,PRIMRY	LB	Generic	2.011	1	NATURAL GAS	MMCF	
	SO2	LB	Generic	6	-1	NATURAL GAS	MMCF	
	VOC	LB	Generic	1.16	2	NATURAL GAS	MMCF	
4-01-003-03								
	VOC	LB	State Specific Factors	6.43	0	STODDARD	GAL	
4-04-003-01								
	VOC	LB	Generic	3.6	1	CRUDE OIL	KGAL-YR	

Grace Consulting, Inc.
Emissions Testing Services

COMPLIANCE TEST REPORT



CITY OF STURGIS ELECTRIC

STACK TESTING ACCREDITATION COUNCIL

ACCREDITED TO ASTM D7036 ONLY CERT #4675.01

NELAP RECOGNIZED TNI ACCREDITATION BODY

City of Sturgis Electric
505 West Chicago Road
Sturgis, MI 49091

EU-ENG-6

Job # 22-611

Test Date: 07-29-22
Report Date: 08-23-22

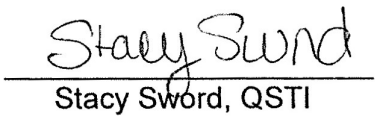
Grace Consulting, Inc.
Emissions Testing Services

August 23, 20212

I, Matt Brittain, hereby certify that the data obtained for the City of Sturgis on EU-ENG-6 is in accordance with procedures set forth by the USEPA. This report accurately represents the data obtained from the testing procedures and analysis of this data.

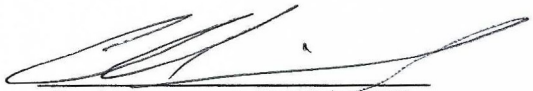
Matt Brittain, QSTI
Crew Chief
mattbrittain@gcitest.com

I, Stacy Sword, hereby certify that the report was prepared under my direction in conformance with the requirements of ASTM D7036. To the best of my knowledge the data and results are complete and accurate.



Stacy Sword, QSTI
Office Manager
stacysword@gcitest.com

I, Carl Vineyard, hereby certify that I have reviewed this report and to the best of my knowledge, the data presented herein is complete and accurate. GCI operated in conformance with the requirements of the ASTM D7036 during the test project.



Carl Vineyard, P.E., QSTI
Test Engineer
carlvineyard@gcitest.com

INTRODUCTION

INTRODUCTION

This report presents the results of the emissions test performed for the City of Sturgis on EU-ENG-6

The purpose of the tests was to determine the emissions of the unit for compliance. The results can be found in the Summary of Test Results section of this report.

The testing was performed by Grace Consulting, Inc., located at 1855 Sipe Road, Conover, NC 28613. Present during the testing from Grace Consulting, Inc. were Matt Brittain, Josh Brittain and Ben Stafford. Keith Skaggs from the City of Sturgis and Trevor Drost with the State of Michigan Department of Environmental Quality were also present during the testing.

The tests were performed on July 29, 2022. The testing was completed in accordance with USEPA test methods as published in the Federal Register.

The sampling and analytical procedures can be found in the Methods and Discussion section of this report. The raw field data and the equations used to determine the final results are presented in the Appendix section.

SUMMARY OF TEST RESULTS

SUMMARY OF TEST RESULTS

The following presents the results of the emissions test performed for the City of Sturgis on EU-ENG-6 Inlet and Outlet.

GASEOUS EMISSIONS

METHOD 7E
Inlet

Run	Date	Fuel	CO ppm	CO lb/mmBtu	CO ppm @ 15% O2	O2 Percent
1	7/29/2022	Oil	83.8	0.123	52.0	11.4
2	7/29/2022	Gas	400.5	0.546	243.6	11.2
3	7/29/2022	Gas	400.8	0.552	246.3	11.3
Avg.			**295.0**	**0.407**	**180.6**	**11.3**

Outlet

Run	Date	Fuel	CO ppm	CO lb/mmBtu	CO ppm @ 15% O2	O2 Percent	Removal Efficiency
1	7/29/2022	Oil	16.9	0.025	10.5	11.4	79.8%
2	7/29/2022	Gas	60.7	0.083	36.9	11.2	84.9%
3	7/29/2022	Gas	60.9	0.083	37.0	11.2	85.0%
Avg.			**46.2**	**0.064**	**28.1**	**11.3**	**83.2%**

Limit: >70% Removal Efficiency

Outlet

Run	Date	Fuel	NOx ppm	NOx lb/hr	NOx g/hp-hr	DSCFM
1	7/29/2022	Oil	483.5	67.21	3.67	19402
2	7/29/2022	Gas	478.6	68.47	3.74	19971
3	7/29/2022	Gas	499.3	71.14	3.89	19889
Avg.			**487.1**	**68.94**	**3.77**	**19754**

Limit: 12.56 grams/hp-hr

The complete results can be found in the computer printouts following.

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Inlet

Date: 7/29/2022
Pollutant: CO
Monitor Span: 993.70

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	84.8	0.20	0.85	0.07	494.52	496.25	0.17	492.10	83.8
2	Gas	402.6	0.85	1.10	0.03	496.25	492.58	-0.37	492.10	400.5
3	Gas	400.7	1.10	0.95	-0.02	492.58	490.88	-0.17	492.10	400.8

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Inlet

Date: 7/29/2022
Pollutant: O2
Monitor Span: 21.78

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	11.4	0.00	0.00	0.00	11.10	11.05	-0.23	11.06	11.4
2	Gas	11.2	0.00	0.00	0.00	11.05	11.09	0.18	11.06	11.2
3	Gas	11.3	0.00	0.00	0.00	11.09	11.10	0.05	11.06	11.3

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

Grace Consulting, Inc.
Moisture Calculations (Runs 1 - 3)

Client: City of Sturgis
Site: Sturgis, MI
Date: 07/29/22
Unit Number: EU-ENG-6 Outlet

Run:	1 Oil	2 Gas	3 Gas
Total Impinger Content:	119.00	104.00	104.00
Volume Metered:	45.379	44.021	44.974
Meter Temperature:	85.00	86.00	87.00
Delta H:	1.867	1.867	1.867
Barometric Pressure:	28.99	28.99	28.99
Meter Correction Factor:	0.999	0.999	0.999
Volume Measured (DSCF):	42.74	41.38	42.20
Water Volume (SCF):	5.61	4.90	4.90
% Moisture in Flue Gas:	11.6	10.6	10.4

Grace Consulting, Inc.

Velocity Traverse Calculations and Results

Client: City of Sturgis
Site: Sturgis, MI
Date: 07/29/22
Unit Number: EU-ENG-6 Outlet

Run:		1 Oil	2 Gas	3 Gas
Start Time:		11:30	12:45	14:00
End Time:		11:39	12:55	14:10
Pitot Coefficient:		0.84	0.84	0.84
Barometric Pressure:	In. Hg.	28.99	28.99	28.99
Static Pressure:	In. H20	4.20	4.10	4.40
Square Root of Delta-P:		2.126	2.159	2.145
Flue Temperature:	Deg. F.	883.80	883.10	883.30
Percent CO2:	%	8.00	6.40	6.30
Percent O2:	%	11.40	11.20	11.20
Percent Moisture:	%	11.6	10.6	10.4
Area of Flue:	Sq. Ft.	4.9	4.9	4.9
Absolute Flue Pressure:	In. Hg.	29.30	29.29	29.31
Molecular Weight:	Lb/Lb Mole	28.37	28.26	28.26
Velocity of Flue Gas:	FPS	194.10	197.50	196.13
Volume of Flue Gas:	ACFM	57066	58066	57663
Volume of Flue Gas:	DSCFM	19402	19971	19889
Volume of Flue Gas:	KSCFM	21.95	22.34	22.20
Volume of Flue Gas:	KSCFH	1316.89	1340.32	1331.83
Volume of Flue Gas:	SCFH	1317000	1340000	1332000

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Outlet

Date: 7/29/2022
Pollutant: NOx
Monitor Span: 1014.00

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	483.2	0.25	1.20	0.09	511.40	513.50	0.21	512.80	483.5
2	Gas	477.9	1.20	0.98	-0.02	513.50	510.52	-0.29	512.80	478.6
3	Gas	499.4	0.98	1.12	0.01	510.52	515.23	0.46	512.80	499.3

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Outlet

Date: 7/29/2022
Pollutant: CO
Monitor Span: 99.27

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	17.0	0.20	0.00	-0.20	51.29	50.20	-1.10	50.59	16.9
2	Gas	60.8	0.00	0.00	0.00	50.20	51.07	0.88	50.59	60.7
3	Gas	60.8	0.00	0.00	0.00	51.07	49.98	-1.10	50.59	60.9

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, ppm
Cavg = Average gas concentration indicated by gas analyzer, dry basis, ppm
Co = Average of initial and final system calibration bias check responses for the zero gas, ppm
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, ppm
Cma = Actual concentration of the upscale calibration gas, ppm

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Outlet

Date: 7/29/2022
Pollutant: CO2
Monitor Span: 17.96

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	7.9	0.00	0.00	0.00	8.97	9.05	0.45	9.091	8.0
2	Gas	6.4	0.00	0.00	0.00	9.05	9.08	0.17	9.091	6.4
3	Gas	6.3	0.00	0.00	0.00	9.08	8.99	-0.50	9.091	6.3

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

City of Sturgis
Sturgis, MI - Unit EU-ENG-6 Outlet

Date: 7/29/2022
Pollutant: O2
Monitor Span: 21.78

Run Number	Fuel	Average Measured Value	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Value, Dry Basis
1	Oil	11.4	0.00	0.00	0.00	11.05	11.07	0.09	11.06	11.4
2	Gas	11.2	0.00	0.00	0.00	11.07	11.12	0.23	11.06	11.2
3	Gas	11.3	0.00	0.00	0.00	11.12	11.10	-0.09	11.06	11.2

Cgas = (Cavg - Co) * Cma / (Cm - Co) Eq. 6C-1

where:
Cgas = Effluent gas concentration, dry basis, percent
Cavg = Average gas concentration indicated by gas analyzer, dry basis, percent
Co = Average of initial and final system calibration bias check responses for the zero gas, percent
Cm = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
Cma = Actual concentration of the upscale calibration gas, percent

METHODS AND DISCUSSION

Test Methods used at the City of Sturgis on the EU-ENG-6 Inlet and Outlet

Methods 2 and 4

GCI performed 3 Method 2 test runs while burning oil and natural gas to determine the DSCFM of flue gas exiting the stack. A 16-point traverse was tested for each Method 2 test run on the Outlet.

One moisture test was performed for each run of Method 2 testing on the Normal load on the Outlet.

Method 3A

O_2 concentrations were determined with 3 Method 3A test runs while burning oil and natural gas. GCI used a monitor range of 0-17.96% for CO_2 and 0-21.78% for O_2 at each location.

Method 7E

CO emissions were determined with 3 Method 7E test runs while burning oil and natural gas. GCI used a monitor span of 1014 ppm for NO_x on the Outlet.

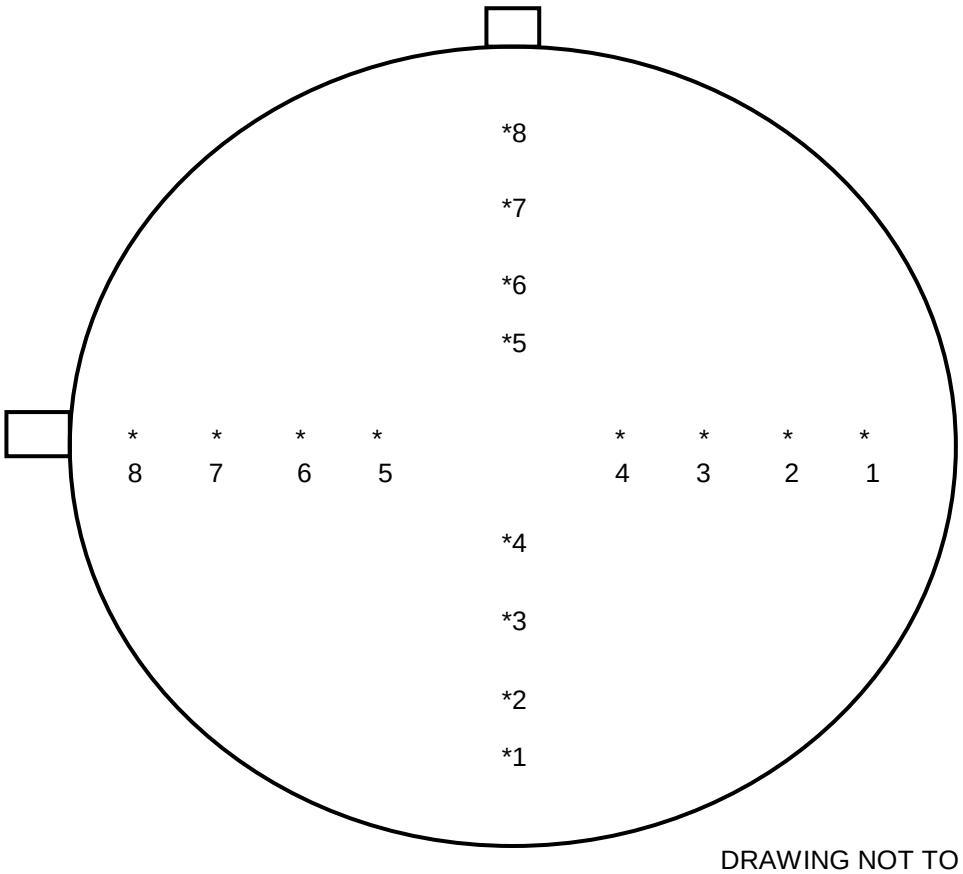
Method 10

CO emissions were determined with 3 Method 10 test runs while burning oil and natural gas. GCI used a monitor span of 99.27 ppm for CO on the Outlet and 993.7 ppm for CO on the Inlet.

Discussion

Environmental conditions did not adversely affect the test results.

Testing was completed by following GCI's Internal Site-Specific Test Plan #22-611 with no deviations.



DRAWING NOT TO SCALE

POINTS	DISTANCE FROM INSIDE WALL
1)	29.00 "
2)	26.85 "
3)	24.18 "
4)	20.31 "
5)	9.69 "
6)	5.82 "
7)	3.15 "
8)	1.00 "

STACK AREA = 4.9 sq ft

STACK DIAMETER = 2.5 '

City of Sturgis

EU-ENG-6

Grace Consulting, Inc.
Emissions Testing Services

APPENDIX

SAMPLE CALCULATIONS

NOMENCLATURE

A	=	cross-sectional area of stack, (ft^2)
acf	=	actual cubic feet
acfm	=	actual cubic feet per minute
A_n	=	cross-sectional area of nozzle, (ft^2)
B_{ws}	=	water vapor in the gas stream, proportion by volume
C_a	=	acetone blank residue concentration, mg/mg
C_p	=	pitot tube coefficient, dimensionless
$C_{p(s)}$	=	type S pitot tube coefficient, dimensionless
$C_{p(std)}$	=	standard pitot tube coefficient; use 0.99
C_s	=	concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, (gr/dscf)
D_e	=	equivalent diameter
D_l	=	dust loading per heat input, (lb/mmBtu)
dscf	=	dry standard cubic feet
dscm	=	dry standard cubic meters
fps	=	feet per second
gms	=	grams
gm-mole	=	gram-mole
grs	=	grains
ΔH	=	orifice pressure drop in inches water, average
hr	=	hour
I	=	percent of isokinetic sampling
In. Hg	=	inches mercury
L	=	length.
L_1	=	Individual leakage relate observed during the leak-check conducted prior to the first component change, (ft^3/min)
L_a	=	maximum acceptable leakage rate for either a pretest leak-check or for a leak-check following a component change; equal to 0.00057 m^3/min (0.020 cfm) or 4 percent of the average sampling rate, whichever is less
lbs	=	pounds
lb-mole	=	pound-mole
L_i	=	Individual leakage rate observed during the leak-check conducted prior to the "i^{th}" component change (i = 1, 2, 3..n), (cfm)
L_p	=	leakage rate observed during the post-test leak-check, (cfm)
%M	=	percent moisture by volume
m_a	=	mass of residue of acetone after evaporation, mg
M_d	=	molecular weight of stack gas, dry basis, (lb/lb-mole)
mmBtu	=	million Btu
m_n	=	total amount of particulate matter collected, mg
M_s	=	molecular weight of stack gas, wet basis, (lb/lb-mole)
M_w	=	molecular weight of water, (18.0 lb/lb-mole)
n	=	total number of traverse points
P_b	=	barometric pressure at the sampling site, (in Hg)
P_f	=	static pressure in flue in inches water, average
P_g	=	stack static pressure, (in. Hg)
P_s	=	absolute stack gas pressure, (in. Hg)
P_{std}	=	standard absolute pressure, (29.92 in. Hg)
Q_{sd}	=	dry volumetric stack gas flow rate corrected to standard conditions, (dscf/min)
R	=	ideal gas constant, $\{21.85$ [(in Hg) (ft^3)] / [(°R) (lb-mole)]$\}$
$\sqrt{\Delta P}$	=	square root of velocity head in inches water, average

scf	=	standard cubic feet
scm	=	standard cubic meters
T	=	sensitivity factor for differential pressure gauges
T_m	=	absolute average DGM temperature, (°R)
T_s	=	absolute average stack gas temperature, (°R)
T_{std}	=	standard absolute temperature, (528 °R)
V_a	=	volume of acetone blank, ml
V_{aw}	=	volume of acetone used in wash, ml
V_l	=	volume of condensate through the impingers, ml
V_{lc}	=	total volume of liquid collected in impingers and silica gel, ml
V_m	=	volume of gas sample as measured by dry gas meter, (dcf)
$V_{m(std)}$	=	volume of gas sample measured by the dry gas meter, corrected to standard conditions, (dscf)
V_o	=	volume of flue gas at actual conditions in cubic feet per minute
$V_{w(std)}$	=	volume of water vapor in the gas sample, corrected to standard conditions, (scf)
V_{wc}	=	volume of water condensed in impingers corrected to standard conditions
V_{wsg}	=	volume of water collected in silica gel corrected to standard conditions
V_s	=	average stack gas velocity, (ft/sec)
W	=	width
W_a	=	weight of residue in acetone wash, mg
W_d	=	weight of dust collected per unit volume, (lb/dscf)
W_g	=	weight of dust collected in grams
W_h	=	weight of dust collected per unit volume, (lb/hr), dry basis
W_p	=	weight of dust collected in pounds
W_s	=	weight of dust collected per unit volume, (gr/dscf)
W_{sg}	=	weight gain of impinger silica gel in grams
Y	=	dry gas meter calibration factor
$*_a$	=	density of acetone, mg/ml
*	=	total sampling time, min
$*_1$	=	sampling time interval, from the beginning of a run until the first component change, min
*i	=	sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, min
$*_p$	=	sampling time interval, from the final (n^{th}) component change until the end of the sampling run, min
13.6	=	specific gravity of mercury
60	=	sec/min
100	=	conversion to percent

City of Sturgis
EU-ENG-6 Outlet
07-29-22
Run 1, Oil

METHOD 10 (CO) CALCULATION
(O_2 Based)

lb/dscf $= 0.726 \times 10^{-7} \times PPM$

1.23E-06 $= 0.726 \times 10^{-7} \times 16.9$

lb/mmBtu $= \text{lb/dscf} \times \text{F-Factor} \times \frac{20.9}{(20.9 - \%O2)}$

0.025 $= 1.23E\text{-}06 \times 9190 \times \frac{20.9}{(20.9 - 11.4)}$

CO PPM at 15% O2 $= \text{corrected PPM} \times \frac{20.9 - 15}{(20.9 - \%O2)}$

10.5 $= 16.9 \times \frac{20.9 - 15}{(20.9 - 11.4)}$

Removal Efficiency $= \frac{\text{CO Inlet ppm @ 15\% O2} - \text{CO Outlet ppm @ 15\% O2}}{\text{CO Inlet ppm @ 15\% O2}} \times 100$

79.8% $= \frac{52.0 - 10.5}{52.0} \times 100$

*Sample calculations use rounded numbers and computer printouts carry all decimal places.

City of Sturgis
EU-ENG-6 Outlet
07-29-22
Run 1, Oil

METHOD 7E (NO_x) CALCULATION
(O_2 Based)

lb/dscf $= 1.194 \times 10^{-7} \times PPM$

5.77E-05 $= 1.194 \times 10^{-7} \times 483.5$

lb/hr $=$ lb/dscf x DSCFM x60

67.21 $= 5.77E\text{-}05 \times 19402 \times 60$

$$\text{grams/hp-hr} = \frac{(\text{lb/hr} \times 453.59)}{8295}$$

$$3.67 = \frac{(67.21 \times 453.59)}{8295}$$

Engine is rated at 6,000 kW/8,295 BHP

*Sample calculations use rounded numbers and computer printouts carry all decimal places.

TEST DATA SHEETS

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Inlet	Operator:	Brittain
Fuel:	Oil		

Run 1

Time	O2%	CO PPM
11:20	11.3	83.9
11:21	11.3	83.4
11:22	11.3	82.6
11:23	11.4	80.7
11:24	11.3	78.0
11:25	11.3	78.9
11:26	11.3	80.8
11:27	11.4	81.0
11:28	11.4	80.4
11:29	11.3	80.2
11:30	11.4	82.8
11:31	11.4	83.5
11:32	11.4	81.0
11:33	11.4	79.2
11:34	11.4	79.2
11:35	11.4	78.2
11:36	11.3	78.3
11:37	11.4	80.2
11:38	11.4	83.9
11:39	11.4	82.1
11:40	11.4	77.1
11:41	11.4	74.2
11:42	11.4	76.1
11:43	11.5	78.5
11:44	11.5	77.2
11:45	11.4	76.7
11:46	11.4	79.0
11:47	11.4	83.6
11:48	11.3	84.9
11:49	11.4	86.1
11:50	11.4	85.8
11:51	11.4	83.5
11:52	11.4	84.3

Run 1

Time	O2%	CO PPM
11:53	11.4	85.4
11:54	11.5	85.2
11:55	11.4	81.5
11:56	11.5	80.9
11:57	11.4	88.0
11:58	11.4	80.3
11:59	11.4	82.7
12:00	11.4	85.3
12:01	11.4	88.2
12:02	11.4	89.0
12:03	11.3	91.0
12:04	11.3	94.6
12:05	11.3	95.8
12:06	11.3	95.4
12:07	11.3	95.2
12:08	11.4	95.5
12:09	11.4	94.4
12:10	11.4	92.0
12:11	11.4	89.0
12:12	11.3	89.2
12:13	11.3	92.6
12:14	11.4	97.3
12:15	11.4	94.9
12:16	11.4	91.5
12:17	11.4	88.6
12:18	11.4	90.0
12:19	11.4	91.6
Average	**11.4**	**84.8**

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Inlet	Operator:	Brittain
Fuel:	Gas		

Run 2

Time	O2%	CO PPM
12:45	11.2	397.7
12:46	11.2	399.3
12:47	11.2	400.4
12:48	11.2	400.7
12:49	11.3	400.5
12:50	11.3	400.2
12:51	11.3	399.7
12:52	11.3	399.3
12:53	11.3	399.3
12:54	11.3	400.1
12:55	11.3	400.8
12:56	11.2	402.0
12:57	11.2	404.3
12:58	11.2	406.0
12:59	11.2	406.4
13:00	11.2	406.2
13:01	11.2	405.7
13:02	11.3	404.3
13:03	11.3	403.0
13:04	11.3	401.5
13:05	11.3	401.0
13:06	11.2	400.6
13:07	11.3	400.8
13:08	11.3	400.2
13:09	11.3	398.9
13:10	11.2	399.1
13:11	11.2	401.0
13:12	11.1	403.1
13:13	11.1	404.7
13:14	11.2	405.9
13:15	11.2	405.9
13:16	11.2	404.6
13:17	11.2	403.9

Run 2

Time	O2%	CO PPM
13:18	11.1	404.6
13:19	11.2	404.8
13:20	11.2	403.7
13:21	11.1	403.4
13:22	11.1	405.8
13:23	11.1	408.3
13:24	11.1	408.4
13:25	11.1	407.5
13:26	11.2	406.8
13:27	11.2	405.7
13:28	11.2	403.8
13:29	11.3	402.2
13:30	11.3	401.5
13:31	11.2	401.4
13:32	11.2	402.3
13:33	11.2	402.6
13:34	11.2	402.5
13:35	11.3	401.9
13:36	11.3	401.5
13:37	11.3	401.0
13:38	11.3	401.0
13:39	11.3	401.1
13:40	11.2	401.2
13:41	11.3	401.5
13:42	11.2	401.7
13:43	11.1	402.1
13:44	11.2	403.6
Average	**11.2**	**402.6**

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Inlet	Operator:	Brittain
Fuel:	Gas		

Run 3

Time	O2%	CO PPM
14:00	11.2	403.6
14:01	11.2	402.8
14:02	11.3	402.8
14:03	11.3	401.5
14:04	11.3	399.6
14:05	11.3	398.4
14:06	11.3	398.6
14:07	11.3	398.7
14:08	11.3	399.2
14:09	11.3	399.4
14:10	11.3	399.3
14:11	11.3	399.4
14:12	11.3	400.2
14:13	11.2	401.2
14:14	11.3	401.7
14:15	11.3	401.0
14:16	11.3	400.7
14:17	11.3	400.7
14:18	11.3	400.5
14:19	11.2	400.2
14:20	11.2	400.5
14:21	11.2	401.6
14:22	11.2	401.9
14:23	11.2	402.1
14:24	11.3	402.0
14:25	11.2	401.9
14:26	11.2	401.6
14:27	11.3	401.9
14:28	11.3	401.2
14:29	11.3	400.7
14:30	11.3	399.8
14:31	11.3	400.1
14:32	11.3	400.8

Run 3

Time	O2%	CO PPM
14:33	11.3	401.3
14:34	11.3	401.0
14:35	11.3	400.9
14:36	11.2	401.6
14:37	11.3	402.9
14:38	11.3	402.3
14:39	11.3	401.3
14:40	11.3	400.7
14:41	11.3	400.7
14:42	11.3	400.4
14:43	11.3	399.3
14:44	11.3	398.2
14:45	11.3	398.6
14:46	11.3	399.1
14:47	11.3	399.1
14:48	11.2	400.1
14:49	11.3	401.4
14:50	11.2	401.8
14:51	11.3	401.7
14:52	11.3	400.8
14:53	11.3	399.6
14:54	11.3	399.8
14:55	11.3	400.8
14:56	11.3	400.6
14:57	11.3	400.4
14:58	11.3	400.6
14:59	11.3	401.1
Average	**11.3**	**400.7**

Grace Consulting, Inc.

RM 4 Moisture Field Data Sheet

CLIENT	City of Sturgis	**DATE**	07/29/22			Grace Consulting, Inc. Emissions Testing Services	
PLANT NAME	Sturgis, MI	**OPERATOR**	J.Brittain				
PROJECT ID	22-611						
LOCATION	EU-ENG-6 Outlet	**METER NO**	Apex-6			**DAILY FIELD BALANCE CHECK**	500.1
BAROMETRIC PRESSURE	28.99	**METER CORR.**	0.999			**DELTA H@**	1.867

Run Number	**1**	***Sample Point***	***Delta H***	***Probe Set Pt.***	***Imp. Temp***	***Meter Out***	***Vac Press.***	***Initial Dry Gas Volume***	52.223
Start Time	11:20	5	1.867	250	55	85	3	55.93	
Stop Time	12:20	10	1.867	250	54	85	3	59.60	
Initial Weight	3036.0	15	1.867	250	53	85	3	63.27	
Final Weight	3155.0	20	1.867	250	52	85	3	66.95	
Initial Leak Check	.004@16	25	1.867	250	51	85	3	70.65	
Final Leak Check	.000@15	30	1.867	250	52	85	2	74.47	
		35	1.867	250	53	85	3	78.77	
Load	Oil	40	1.867	250	54	85	3	82.22	
		45	1.867	250	54	86	3	86.42	
		50	1.867	250	55	86	3	90.03	
		55	1.867	250	56	86	3	93.62	
		60	1.867	250	57	86	3	97.602	
Average			**1.867**	**250**	**54**	**85**	**3**	**45.379**	

Run Number	**2**	***Sample Point***	***Delta H***	***Probe Set Pt.***	***Imp. Temp***	***Meter Out***	***Vac Press.***	***Initial Dry Gas Volume***	99.258
Start Time	12:45	5	1.867	250	48	86	3	102.10	
Stop Time	13:45	10	1.867	250	47	86	3	105.96	
Initial Weight	3155.0	15	1.867	250	47	86	3	109.66	
Final Weight	3259.0	20	1.867	250	46	86	3	113.29	
Initial Leak Check	.002@17	25	1.867	250	46	86	3	117.14	
Final Leak Check	.001@11	30	1.867	250	45	86	3	121.02	
		35	1.867	250	44	86	3	124.66	
Load	Gas	40	1.867	250	43	86	3	128.44	
		45	1.867	250	44	86	3	132.13	
		50	1.867	250	46	86	3	135.87	
		55	1.867	250	47	86	3	139.58	
		60	1.867	250	48	86	3	143.279	
Average			**1.867**	**250**	**46**	**86**	**3**	**44.021**	

Run Number	**3**	***Sample Point***	***Delta H***	***Probe Set Pt.***	***Imp. Temp***	***Meter Out***	***Vac Press.***	***Initial Dry Gas Volume***	145.081
Start Time	14:00	5	1.867	250	53	87	3	149.03	
Stop Time	15:00	10	1.867	250	53	87	3	152.68	
Initial Weight	2924.0	15	1.867	250	52	87	3	156.28	
Final Weight	3028.0	20	1.867	250	52	87	3	160.13	
Initial Leak Check	.002@18	25	1.867	250	51	87	3	163.88	
Final Leak Check	.001@11	30	1.867	250	49	87	3	167.58	
		35	1.867	250	48	87	3	171.44	
Load	Gas	40	1.867	250	47	87	3	175.12	
		45	1.867	250	49	87	3	179.06	
		50	1.867	250	51	87	3	182.60	
		55	1.867	250	52	87	3	186.27	
		60	1.867	250	53	87	3	190.055	
Average			**1.867**	**250**	**51**	**87**	**3**	**44.974**	

2G Field Data Sheet

Client:	City of Sturgis						Date:	07/29/22								
Plant Name:	Sturgis, MI						Operator:	J.Brittain								
Project Number:	22-611						Area:	4.9								
Sampling Location:	EU-ENG-6 Outlet						Meter Number:	Apex-6								
Barometric Pressure:	28.99						Probe Number:	TP-3					Pitot Number:	Default		0.84
Run Number:	1	Start Time:	11:30	Run Number:	2	Start Time:	12:45	Run Number:	3	Start Time:	14:00	Run Number:		Start Time:		
Static Press:	4.2	Stop time:	11:39	Static Press:	4.1	Stop time:	12:55	Static Press:	4.4	Stop time:	14:10	Static Press:		Stop time:		

Point	Delta P	Sqrt. ΔP	Stack Temp	Point	Delta P	Sqrt. ΔP	Stack Temp	Point	Delta P	Sqrt. ΔP	Stack Temp	Point	Delta P	Sqrt. ΔP	Stack Temp
A-1	5.10	2.258	883	A-1	4.70	2.168	881	A-1	5.00	2.236	883				
A-2	5.40	2.324	883	A-2	5.20	2.280	882	A-2	4.70	2.168	882				
A-3	3.90	1.975	884	A-3	4.20	2.049	883	A-3	4.50	2.121	882				
A-4	4.40	2.098	885	A-4	4.10	2.025	884	A-4	4.20	2.049	884				
A-5	4.60	2.145	886	A-5	5.00	2.236	883	A-5	4.70	2.168	884				
A-6	5.10	2.258	883	A-6	4.90	2.214	883	A-6	5.00	2.236	883				
A-7	4.70	2.168	884	A-7	4.60	2.145	884	A-7	4.20	2.049	884				
A-8	5.20	2.280	882	A-8	4.70	2.168	885	A-8	4.40	2.098	883				
B-1	4.20	2.049	883	B-1	4.20	2.049	885	B-1	4.30	2.074	884				
B-2	4.60	2.145	886	B-2	5.20	2.280	886	B-2	4.90	2.214	883				
B-3	4.70	2.168	884	B-3	4.80	2.191	883	B-3	4.70	2.168	883				
B-4	4.30	2.074	884	B-4	4.20	2.049	883	B-4	4.40	2.098	884				
B-5	3.70	1.924	882	B-5	4.60	2.145	883	B-5	4.50	2.121	882				
B-6	4.20	2.049	884	B-6	5.10	2.258	882	B-6	4.90	2.214	883				
B-7	4.30	2.074	885	B-7	4.50	2.121	882	B-7	4.30	2.074	884				
B-8	4.10	2.025	883	B-8	4.70	2.168	881	B-8	5.00	2.236	885				
Avg	**4.53**	**2.126**	**883.8**	**Avg**	**4.67**	**2.159**	**883.1**	**Avg**	**4.61**	**2.145**	**883.3**	**Avg**			
	Initial Pitot Leak:		OK		Initial Pitot Leak:		OK		Initial Pitot Leak:		OK		Initial Pitot Leak:		
	Final Pitot Leak Check:		OK		Final Pitot Leak Check:		OK		Final Pitot Leak Check:		OK		Final Pitot Leak Check:		

Grace Consulting Inc.

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Outlet	Operator:	Brittain
Fuel:	Oil		

Run 1

Time	O2%	CO2%	NOx PPM	CO PPM
11:20	11.4	7.9	479.9	16.8
11:21	11.3	7.9	479.3	16.4
11:22	11.4	8.0	478.2	16.5
11:23	11.4	7.9	477.7	16.0
11:24	11.3	7.9	476.8	16.5
11:25	11.4	7.9	476.8	16.6
11:26	11.4	7.9	476.2	16.8
11:27	11.4	7.9	475.3	16.1
11:28	11.4	7.9	474.5	16.8
11:29	11.4	7.9	474.2	16.9
11:30	11.4	7.9	474.5	16.9
11:31	11.5	7.9	476.0	16.3
11:32	11.4	7.9	477.1	16.4
11:33	11.4	7.9	478.8	16.6
11:34	11.5	7.9	480.6	16.5
11:35	11.4	7.8	481.5	16.4
11:36	11.3	7.9	482.5	16.8
11:37	11.4	7.9	482.8	17.0
11:38	11.4	7.9	482.7	17.0
11:39	11.5	7.9	482.5	16.0
11:40	11.5	7.9	481.6	15.8
11:41	11.5	7.8	482.0	16.7
11:42	11.5	7.8	482.4	16.5
11:43	11.5	7.8	482.2	16.4
11:44	11.5	7.8	482.5	16.0
11:45	11.4	7.8	482.4	16.6
11:46	11.4	7.9	483.9	16.9
11:47	11.4	7.9	484.9	16.8
11:48	11.4	7.9	483.9	17.3
11:49	11.4	7.9	485.3	16.9
11:50	11.4	7.9	486.1	16.3
11:51	11.4	7.9	485.8	17.0
11:52	11.4	7.9	485.1	17.2

Run 1

Time	O2%	CO2%	NOx PPM	CO PPM
11:53	11.5	7.9	486.1	16.8
11:54	11.5	7.8	486.2	16.2
11:55	11.5	7.8	486.3	16.6
11:56	11.5	7.8	486.4	16.9
11:57	11.4	7.8	488.0	16.6
11:58	11.4	7.8	488.5	16.5
11:59	11.4	7.9	487.9	17.6
12:00	11.4	7.9	488.1	17.8
12:01	11.4	7.9	488.4	17.8
12:02	11.3	7.9	488.3	17.7
12:03	11.3	7.9	488.3	18.4
12:04	11.3	7.9	488.7	17.9
12:05	11.3	7.9	488.2	18.0
12:06	11.3	8.0	487.8	17.9
12:07	11.3	8.0	487.6	17.7
12:08	11.4	8.0	485.6	17.8
12:09	11.4	7.9	484.0	17.5
12:10	11.4	7.9	484.0	17.1
12:11	11.4	7.9	483.9	17.1
12:12	11.3	7.9	483.5	17.8
12:13	11.3	7.9	484.1	18.2
12:14	11.4	8.0	485.6	17.5
12:15	11.4	7.9	486.2	17.4
12:16	11.4	7.9	485.6	17.3
12:17	11.4	7.9	486.3	17.5
12:18	11.4	7.9	486.1	17.8
12:19	11.4	7.9	486.1	17.9
Average	**11.4**	**7.9**	**483.2**	**17.0**

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Outlet	Operator:	Brittain
Fuel:	Gas		

Run 2

Time	O2%	CO2%	NOx PPM	CO PPM
12:45	11.2	6.4	471.2	60.4
12:46	11.2	6.4	470.8	60.8
12:47	11.2	6.4	469.0	60.7
12:48	11.2	6.4	468.2	60.8
12:49	11.2	6.3	467.3	60.4
12:50	11.2	6.3	465.7	60.6
12:51	11.2	6.3	464.9	60.4
12:52	11.3	6.3	463.8	60.7
12:53	11.3	6.3	461.0	60.9
12:54	11.2	6.3	458.3	61.1
12:55	11.2	6.3	458.8	61.0
12:56	11.1	6.4	461.9	61.3
12:57	11.1	6.4	464.2	61.1
12:58	11.2	6.4	464.8	61.5
12:59	11.1	6.4	469.0	61.6
13:00	11.2	6.4	469.8	61.4
13:01	11.2	6.4	471.7	61.2
13:02	11.2	6.3	472.7	61.0
13:03	11.2	6.3	473.5	61.0
13:04	11.3	6.3	473.6	60.6
13:05	11.2	6.4	474.6	61.1
13:06	11.2	6.4	474.7	61.1
13:07	11.3	6.3	474.9	60.7
13:08	11.3	6.3	475.2	60.3
13:09	11.3	6.3	475.0	60.2
13:10	11.2	6.4	477.2	60.5
13:11	11.1	6.4	480.1	61.0
13:12	11.1	6.4	481.0	61.1
13:13	11.1	6.4	482.2	61.2
13:14	11.2	6.4	482.1	60.9
13:15	11.2	6.4	482.1	60.5
13:16	11.2	6.4	482.6	60.7
13:17	11.1	6.4	483.6	60.9

Run 2

Time	O2%	CO2%	NOx PPM	CO PPM
13:18	11.2	6.4	484.7	61.2
13:19	11.2	6.4	481.9	60.7
13:20	11.1	6.3	483.8	60.9
13:21	11.1	6.4	486.9	61.4
13:22	11.0	6.5	487.8	61.5
13:23	11.1	6.4	487.7	60.8
13:24	11.1	6.5	486.5	61.0
13:25	11.1	6.4	485.6	60.9
13:26	11.2	6.4	485.0	60.9
13:27	11.2	6.3	483.7	60.4
13:28	11.2	6.4	482.2	60.6
13:29	11.2	6.4	482.7	60.5
13:30	11.2	6.3	482.2	60.5
13:31	11.2	6.4	483.5	60.5
13:32	11.2	6.4	484.0	60.5
13:33	11.2	6.4	484.2	60.5
13:34	11.2	6.4	485.5	60.4
13:35	11.3	6.4	483.7	60.6
13:36	11.3	6.3	483.6	60.8
13:37	11.2	6.3	485.5	60.3
13:38	11.3	6.3	486.0	60.4
13:39	11.2	6.3	486.6	60.5
13:40	11.2	6.3	487.8	60.9
13:41	11.2	6.4	487.5	60.6
13:42	11.2	6.4	489.1	60.8
13:43	11.1	6.4	491.4	60.8
13:44	11.2	6.4	492.1	61.1
Average	**11.2**	**6.4**	**477.9**	**60.8**

Client:	City of Sturgis	Project #:	22-611
Plant:	Sturgis, MI	Test Date:	7/29/2022
Unit:	EU-ENG-6 Outlet	Operator:	Brittain
Fuel:	Gas		

Run 3

Time	O2%	CO2%	NOx PPM	CO PPM
14:00	11.2	6.3	494.7	60.6
14:01	11.2	6.4	495.4	60.2
14:02	11.3	6.4	495.0	60.2
14:03	11.3	6.3	494.3	60.2
14:04	11.3	6.3	495.6	59.9
14:05	11.2	6.3	498.6	60.0
14:06	11.2	6.3	499.4	60.2
14:07	11.3	6.3	501.5	60.0
14:08	11.3	6.3	502.2	60.2
14:09	11.3	6.3	505.3	59.7
14:10	11.3	6.3	506.4	60.3
14:11	11.2	6.3	505.8	60.2
14:12	11.2	6.3	501.5	60.6
14:13	11.2	6.4	506.3	60.6
14:14	11.3	6.3	510.5	60.5
14:15	11.3	6.3	505.2	60.1
14:16	11.3	6.3	510.4	60.7
14:17	11.3	6.3	504.2	60.4
14:18	11.2	6.3	498.7	60.2
14:19	11.1	6.4	501.6	61.0
14:20	11.2	6.4	495.7	60.6
14:21	11.2	6.4	492.2	60.9
14:22	11.2	6.4	491.8	61.2
14:23	11.2	6.4	490.7	61.3
14:24	11.2	6.3	491.2	61.2
14:25	11.3	6.4	493.1	61.5
14:26	11.2	6.3	493.3	61.2
14:27	11.3	6.4	493.4	61.1
14:28	11.3	6.3	492.1	60.8
14:29	11.3	6.3	492.9	61.1
14:30	11.3	6.3	494.3	60.9
14:31	11.3	6.3	496.9	61.3
14:32	11.3	6.4	498.6	61.3

Run 3

Time	O2%	CO2%	NOx PPM	CO PPM
14:33	11.3	6.3	498.6	61.2
14:34	11.3	6.3	498.8	61.2
14:35	11.2	6.4	505.3	61.5
14:36	11.2	6.4	506.8	61.5
14:37	11.3	6.4	504.3	61.5
14:38	11.3	6.3	506.0	60.9
14:39	11.3	6.3	500.0	61.0
14:40	11.3	6.3	499.6	61.3
14:41	11.3	6.3	498.7	61.0
14:42	11.3	6.3	497.9	60.6
14:43	11.3	6.3	497.3	60.9
14:44	11.3	6.3	497.3	61.3
14:45	11.3	6.3	497.1	61.0
14:46	11.3	6.3	496.8	60.9
14:47	11.3	6.3	496.4	61.5
14:48	11.2	6.4	496.9	61.6
14:49	11.2	6.4	495.8	61.3
14:50	11.2	6.3	495.2	61.4
14:51	11.3	6.3	493.9	60.8
14:52	11.3	6.3	494.9	60.5
14:53	11.3	6.3	496.7	60.9
14:54	11.3	6.3	498.7	61.1
14:55	11.3	6.3	499.7	61.2
14:56	11.3	6.3	500.2	60.9
14:57	11.3	6.3	505.2	61.1
14:58	11.3	6.3	514.2	60.9
14:59	11.3	6.3	521.1	60.7
Average	**11.3**	**6.3**	**499.4**	**60.8**

GCI CALIBRATION DATA

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Inlet	Operator	Matt Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: CO Span: 993.7	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.88	0.88	0.089	
Mid-Range Gas	ALM-059141	**492.10**	493.14	1.04	0.105	
High-Range Gas	CC334194	**993.70**	994.20	0.50	0.050	

Run #: 1 Oil Gas Type: CO Span: 993.7	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.88	0.20	-0.07	0.85	0.00	0.07
Upscale Gas	493.14	494.52	0.14	496.25	0.31	0.17

Run #: 2 Gas Gas Type: CO Span: 993.7	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.88	0.85	0.00	1.10	0.02	0.03
Upscale Gas	493.14	496.25	0.31	492.58	-0.06	-0.37

Run #: 3 Gas Gas Type: CO Span: 993.7	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.88	1.10	0.02	0.95	0.01	-0.02
Upscale Gas	493.14	492.58	-0.06	490.88	-0.23	-0.17

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Inlet	Operator	Matt Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: O2 Span: 21.78	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.00	0.00	0.000	
Mid-Range Gas	CC216537	**11.06**	11.12	0.06	0.275	
High-Range Gas	ALM-016738	**21.78**	21.70	0.08	0.367	

Run #: 1 Oil Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.12	11.10	-0.09	11.05	-0.32	-0.23

Run #: 2 Gas Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.12	11.05	-0.32	11.09	-0.14	0.18

Run #: 3 Gas Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.12	11.09	-0.14	11.10	-0.09	0.05

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Outlet	Operator	Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: NOx Span: 1014	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.15	0.15	0.015	
NO2 to NO Converter Check	CC501283	**44.38**	42.55	1.83	**95.88%**	**PASS**
Mid-Range Gas	CC35961	**512.80**	513.60	0.80	0.079	
High-Range Gas	ALM021427	**1014.00**	1012.45	1.55	0.153	

Run #: 1 Oil Gas Type: NOx Span: 1014	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.15	0.25	0.01	1.20	0.10	0.09
Upscale Gas	513.60	511.40	-0.22	513.50	-0.01	0.21

Run #: 2 Gas Gas Type: NOx Span: 1014	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.15	1.20	0.10	0.98	0.08	-0.02
Upscale Gas	513.60	513.50	-0.01	510.52	-0.30	-0.29

Run #: 3 Gas Gas Type: NOx Span: 1014	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.15	0.98	0.08	1.12	0.10	0.01
Upscale Gas	513.60	510.52	-0.30	515.23	0.16	0.46

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Outlet	Operator	Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: CO Span: 99.27	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.00	0.00	0.000	
Mid-Range Gas	CC120930	**50.59**	50.62	0.03	0.030	
High-Range Gas	CC77305	**99.27**	100.05	0.78	0.786	

Run #: 1 Oil Gas Type: CO Span: 99.27	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.00	0.20	0.20	0.00	0.00	-0.20
Upscale Gas	50.62	51.29	0.67	50.20	-0.42	-1.10

Run #: 2 Gas Gas Type: CO Span: 99.27	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	50.62	50.20	-0.42	51.07	0.45	0.88

Run #: 3 Gas Gas Type: CO Span: 99.27	Analyzer Response	Initial Values		Final Values		Drift % of Span
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	50.62	51.07	0.45	49.98	-0.64	-1.10

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Outlet	Operator	Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: CO2 Span: 17.96	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.00	0.00	0.000	
Mid-Range Gas	CC14296	**9.091**	9.10	0.01	0.050	
High-Range Gas	ALM-016738	**17.96**	18.02	0.06	0.334	

Run #: 1 Oil Gas Type: CO2 Span: 17.96	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	9.10	8.97	-0.72	9.05	-0.28	0.45

Run #: 2 Gas Gas Type: CO2 Span: 17.96	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	9.10	9.05	-0.28	9.08	-0.11	0.17

Run #: 3 Gas Gas Type: CO2 Span: 17.96	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	9.10	9.08	-0.11	8.99	-0.61	-0.50

Client	City of Sturgis	Test Date	7/29/2022
Plant Name	Sturgis, MI	Project #	22-611
Source Identification	EU-ENG-6 Outlet	Operator	Brittain

Calibration Data For Sampling Runs: 1-3 Gas Type: O2 Span: 21.78	Cylinder Number	Cylinder Value % or PPM	Analyzer Response	Absolute Difference % or PPM	Difference % of Span	
Zero Gas	CC408790	**0.00**	0.00	0.00	0.000	
Mid-Range Gas	CC216537	**11.06**	11.10	0.04	0.184	
High-Range Gas	ALM-016738	**21.78**	21.95	0.17	0.781	

Run #: 1 Oil Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.10	11.05	-0.23	11.07	-0.14	0.09

Run #: 2 Gas Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.10	11.07	-0.14	11.12	0.09	0.23

Run #: 3 Gas Gas Type: O2 Span: 21.78	Analyzer Response	Initial Values		Final Values		
		System Response	System Cal. Bias % of Span	System Response	System Cal. Bias % of Span	Drift % of Span
Zero Gas	0.00	0.00	0.00	0.00	0.00	0.00
Upscale Gas	11.10	11.12	0.09	11.10	0.00	-0.09

CALIBRATION/GAS CERTIFICATION SHEETS

Grace Consulting, Inc.

EPA Method 5
522 Series Meter Box Calibration
Calibration Orifice Method
English Meter Box Units, English K' Factor

Date:	6/3/2022
Model:	Apex-6

Barometric Pressure:	29	(in Hg)
Theoretical Critical Vacuum:	13.68	(in Hg)

Important: *For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.*
Important: *The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).*

DRY GAS METER READINGS

ΔH (in H_2O)	*Time (min)*	*Initial Volume (cu ft)*	*Final Volume (cu ft)*	*Total Volume (cu ft)*	*Temp Initial (deg F)*	*Temp Final (deg F)*
0.56	15	226.007	232.264	6.257	71	71
1.1	10	233.002	238.739	5.737	71	72
1.6	10	239.001	246.372	7.371	72	72
3	10	247.009	256.986	9.977	72	72
4.5	10	257.002	269.274	12.272	72	72

Critical Orifice Readings

Orifice Serial #	*K' Orifice Coefficient (see above)*	*Actual Vacuum (in Hg)*	AMBIENT TEMPERATURE		
			Initial (deg F)	*Final (deg F)*	*Average (deg F)*
AY-47	0.3181	23	70	70	70
AY-55	0.4416	22	70	70	70
AY-63	0.5674	20	70	70	70
AY-73	0.7701	17	70	70	70
AY-81	0.9362	15	70	70	70

CORRECTED VOLUME

DRY GAS METER Vm(std) (cu ft)	ORIFICE Vcr(std) (cu ft)
6.036	6.011
5.537	5.563
7.117	7.147
9.667	9.701
11.935	11.793

DRY GAS METER

CALIBRATION FACTOR Y	
Value	Variation
0.996	-0.004
1.005	0.00536
1.004	0.005079
1.004	0.004273
0.988	-0.01116
Average:	0.999

ORIFICE

CALIBRATION FACTOR ΔH	
Value (in H20)	Variation (in H20)
1.962	0.095
2.000	0.132
1.762	-0.106
1.793	-0.074
1.820	-0.047
Average:	1.867

Orifice for Calc.
3.159

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H20 that equates to 0.75 cfm of air at 68 F and 29.92 inches of Hg, acceptable tolerance of individual values from the average .

Signature: *Ridgely deWitt* **Date:** 6/3/2022

$$V_{m(std)} = 17.64 (V_m) \frac{P_b + \frac{\Delta H}{13.6}}{t_m + 460}$$

$$V_{cr(std)} = K' \frac{P_b \theta}{\sqrt{t_{amb} + 460}}$$

$$Y = \frac{V_{cr(std)}}{V_{m(std)}}$$

$$\Delta H_@ = \Delta H \left(\frac{.75\theta}{V_{cr(std)}} \right)^2$$

Doc No. GCI 16-04-14
Effective Date: April 14, 2016
Issuing Authority: Quality Management
Revision 02

Post Test Pitot Inspection

Pitot Tube Assembly		Post Calibration	
Pitot #	Default	Visual Inspection	OK
Pitot Coefficient:	0.84	Recalibrated	N/A
		Adjusted Cp	N/A

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CEM-CAL ZERO

Part Number:	NI CZ15ACT	Reference Number:	122-402281057-1
Cylinder Number:	CC408790	Cylinder Volume:	142.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2000 PSIG
Analysis Date:	Nov 10, 2021	Valve Outlet:	580
Lot Number:	122-402281057-1		

Expiration Date: Nov 10, 2029

ANALYTICAL RESULTS

Component	Requested Purity		Certified Concentration
NITROGEN	99.9995 %		99.9995 %
CARBON DIOXIDE	1.0 PPM	<LDL	0.03 PPM
NOx	0.1 PPM	<LDL	0.02 PPM
SO2	0.1 PPM	<LDL	0.07 PPM
THC	0.1 PPM	<LDL	0.03 PPM
CARBON MONOXIDE	0.5 PPM	<LDL	0.03 PPM

Permanent Notes: Airgas certifies that the contents of this cylinder meet the requirements of 40 CFR 72.2

Impurities verified against analytical standards traceable to NIST by weight and/or analysis.

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02AI99E15W0005	Reference Number:	122-402464736-1
Cylinder Number:	CC501283	Cylinder Volume:	146.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	660
Gas Code:	NO2,BALA	Certification Date:	Jun 20, 2022

Expiration Date: Jun 20, 2025

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	45.00 PPM	44.38 PPM	G1	+/- 1.5% NIST Traceable	06/13/2022, 06/20/2022
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1534012021	CC511391	60.06 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.4%	Dec 17, 2024
PRM	D887665	D887665	74.20 PPM NITROGEN DIOXIDE/AIR	+/- 1.3%	Feb 02, 2022

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018176583	FTIR	Jun 15, 2022

Triad Data Available Upon Request

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48

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02NI99E15A0919	Reference Number:	122-402306552-1
Cylinder Number:	CC35961	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Jan 03, 2022

Expiration Date: Jan 03, 2030

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	500.0 PPM	512.8 PPM	G1	+/- 0.6% NIST Traceable	12/27/2021, 01/03/2022
NITRIC OXIDE	500.0 PPM	512.8 PPM	G1	+/- 0.6% NIST Traceable	12/27/2021, 01/03/2022
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	15060431	CC450510	496.8 PPM NITRIC OXIDE/NITROGEN	+/-0.5%	Mar 05, 2027
PRM	C194051001	D887660	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 02, 2022
GMIS	1534002020105	EB0130069	4.912 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Apr 30, 2024

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2010249 NO	FTIR	Dec 08, 2021
Nicolet iS50 AUP2010249 NO2	FTIR	Dec 08, 2021

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0100	Reference Number:	122-402212167-1
Cylinder Number:	ALM021427	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Sep 14, 2021

Expiration Date: Sep 14, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	1000 PPM	1014 PPM	G1	+/- 0.6% NIST Traceable	09/07/2021, 09/14/2021
NITRIC OXIDE	1000 PPM	1013 PPM	G1	+/- 0.6% NIST Traceable	09/07/2021, 09/14/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	15060256	CC450667	997.2 PPM NITRIC OXIDE/NITROGEN	+/- 0.5%	Nov 16, 2026
PRM	12386	D685025	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 20, 2020
GMIS	401423838102	CC505581	4.348 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.1	Feb 18, 2023

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2010249 NO	FTIR	Aug 19, 2021
Nicolet iS50 AUP2010249 NO	FTIR	Aug 19, 2021

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50

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0302	Reference Number:	122-402153537-1
Cylinder Number:	CC120930	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	Jul 02, 2021

Expiration Date: Jul 02, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	50.00 PPM	50.59 PPM	G1	+/- 0.7% NIST Traceable	07/02/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12011239	KAL004623	49.24 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Aug 31, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801549 CO	FTIR	Jun 24, 2021

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0077	Reference Number:	122-401134975-1
Cylinder Number:	CC77305	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	Mar 02, 2018

Expiration Date: Mar 02, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	100.0 PPM	99.27 PPM	G1	+/- 0.6% NIST Traceable	03/02/2018
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO 1G46EA07	Nondispersive Infrared (NDIR)	Feb 13, 2018

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Customer:	GRACE CONSULTING,		
Part Number:	E02NI99E15A3168	Reference Number:	122-402306554-1
Cylinder Number:	ALM-059141	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	Dec 20, 2021

Expiration Date: Dec 20, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	500.0 PPM	492.1 PPM	G1	+/- 0.7% NIST Traceable	12/20/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010122	ND48000	495.4 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Jul 03, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	Dec 07, 2021

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0101	Reference Number:	122-401807579-1
Cylinder Number:	CC334194	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	May 11, 2020

Expiration Date: May 11, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON MONOXIDE	1000 PPM	993.7 PPM	G1	+/- 0.5% NIST Traceable	05/11/2020
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09010336	KAL004572	970.0 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	May 14, 2021

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	Apr 28, 2020

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02NI89E15A0235	Reference Number:	122-402210738-1
Cylinder Number:	CC216537	Cylinder Volume:	145.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	590
Gas Code:	O2,BALN	Certification Date:	Sep 07, 2021

Expiration Date: Sep 07, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
OXYGEN	11.00 %	11.06 %	G1	+/- 0.4% NIST Traceable	09/07/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	10010616	K014963	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Siemens Oxymat 61 M3299 O2	Paramagnetic	Aug 18, 2021

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI80E15A0007	Reference Number:	122-402001843-1
Cylinder Number:	CC14296	Cylinder Volume:	150.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jan 11, 2021

Expiration Date: Jan 11, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

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ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	9.000 %	9.091 %	G1	+/- 0.6% NIST Traceable	01/11/2021
OXYGEN	11.00 %	11.12 %	G1	+/- 0.7% NIST Traceable	01/11/2021
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	19060402	6162642Y	11.105 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Dec 04, 2025
NTRM	10010616	K014963	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VA-5001 CO2 BF89GV17	Nondispersive Infrared (NDIR)	Jan 06, 2021
Horiba MPA510 O2 41499150042	Paramagnetic	Jan 07, 2021

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI60E15A1069	Reference Number:	122-401517406-1
Cylinder Number:	ALM-016738	Cylinder Volume:	158.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22019	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Jun 10, 2019

Expiration Date: Jun 10, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	18.00 %	17.96 %	G1	+/- 0.6% NIST Traceable	06/10/2019
OXYGEN	22.00 %	21.78 %	G1	+/- 0.5% NIST Traceable	06/10/2019
NITROGEN	Balance			-	

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	08010202	1D003076	23.20 % OXYGEN/NITROGEN	+/- 0.4%	Jun 01, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	May 15, 2019
Horiba MPA510 O2 41499150042	Paramagnetic	May 15, 2019

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ACCREDITATION

STACK TESTING ACCREDITATION COUNCIL

American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

GRACE CONSULTING INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 21st day of October 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3727.01
Valid to September 30, 2023

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

Grace Consulting, Inc.
Emissions Testing Services

Qualified Individual

LET IT BE KNOWN THAT

Matt Brittain

AS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITHTHE GUIDELINES SET FORTH IN ASTM D 7036 FOR QUALIFIED INDIVIDUALS FOR

GROUP III - MEASURING GASEOUS POLLUTANT CONCENTRATIONS WITH INSTRUMENTAL TEST METHODS AND CONDUCTING CEMS RATAS

DATE EXAM COMPLETED:
4/13/22

CERTIFICATION EXPIRES:
4/12/27

Darryl Christy

DARRYL CHRISTY, QUALITY MANAGER

SCOTT TEAGUE, QSTI I-IV, PRESIDENT

Test Administrator: Source Evaluation Society
Contact: qstiprogram@gmail.com

AETB Phone: 1-877-GCI-TEST
AETB Email: contact@gcitest.com
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This is the Last Page
of this Report

Grace Consulting, Inc.
Emissions Testing Services