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)
N5573	4922	486210	MI-ROP-N5573-2018	

Source Name
Consumers Energy Company – White Pigeon Compressor Station

Street Address
68536 A Road, Route 1

City	State	ZIP Code	County
White Pigeon	MI	49099	St. Joseph

Section/Town/Range (if address not available)

Source Description
A natural gas compressor station. The primary function of the station is to move natural gas along the pipeline system.

☐ 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)
Consumers Energy Company	

Mailing address (☐ check if same as source address)
One Energy Plaza

City	State	ZIP Code	County	Country
Jackson	MI	49201	Jackson	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: N5573	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			
Amy Kapuga	Sr. Environmental Engineer			
Company Name & Mailing address (☐ check if same as source address)				
Consumers Energy Company, 1945 West Parnall Road, P22-330				
City	State	ZIP Code	County	Country
Jackson	MI	49201	Jackson	USA
Phone number		E-mail address		
517-788-2201		AMY.KAPUGA@CMSENERGY.COM		

Contact 2 Name (optional)	Title			
Company Name & Mailing address (☐ check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		

RESPONSIBLE OFFICIAL INFORMATION

Responsible Official 1 Name	Title			
Avelock Robinson	Director, Gas Compression Operations			
Company Name & Mailing address (☐ check if same as source address)				
Consumers Energy Company, St. Clair Compressor Station, 10021 Marine City Highway				
City	State	ZIP Code	County	Country
Ira Township	MI	48023	St. Clair	USA
Phone number		E-mail address		
586-716-3326		AVELOCK.ROBINSON@CMSENERGY.COM		

Responsible Official 2 Name (optional)	Title			
Company Name & Mailing address (☐ check if same as source address)				
City	State	ZIP Code	County	Country
Phone number		E-mail address		

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

SRN: N5573	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)

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.

Signature of Responsible Official **Date**

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-**PARTC

SRN: N5573	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)]
EUAUX1-BLR1	0.8 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN801	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUAUX1-BLR2	0.8 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN801	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUAUX1-BLR3	0.5 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN501	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUAUX2-BLR1	0.5 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN501	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUAUX2-BLR2	0.5 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN501	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUAUX2-BLR3	0.5 MMBtu/hr natural gas-fired hot water heating boiler: Lochinvar Knight XL-KBN501	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUHWHAUXBLDG1	36,000 Btu/hr natural gas-fired hot water heater (Plant 1 Aux Bldg)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUHWHAUXBLDG2	32,000 Btu/hr natural gas-fired hot water heater (Plant 2 Aux Bldg)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUSHSTOBLDG1	45,000 Btu/hr natural gas-fired space heater (Storage Building)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUSHSTOBLDG2	45,000 Btu/hr natural gas-fired space heater (Storage Building)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUSHSTOBLDG3	45,000 Btu/hr natural gas-fired space heater (Storage Building)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUSHSTOBLDG4	45,000 Btu/hr natural gas-fired space heater (Storage Building)	Rule 212(4)(c)	Rule 282(2)(b)(i)
EUDISTTANK15	4,000-gallon AST for pipeline liquids	Rule 212(4)(d)	Rule 284(2)(e)
EUDISTTANK16	4,000-gallon AST for pipeline liquids	Rule 212(4)(d)	Rule 284(2)(e)
EUGASTANK20	1,000-gallon AST for gasoline	Rule 212(4)(d)	Rule 284(2)(g)
EUTANK3-7	4,200-gallon AST for pipeline liquids	Rule 212(4)(d)	Rule 284(2)(e)

Comments:

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

SRN: N5573	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: N5573	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: N5573	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: N5573	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: N5573	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-**

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: N5573	Section Number (if applicable):

1. Additional Information ID
AI-PARTC

Additional Information

2. Is This Information Confidential? ☐ Yes ☒ No

Referenced Plans
FGENGINES PM/MAP
FGENGINES SSM Plan
FGENGINES CPMS Monitoring Plan

NO PROPOSED CHANGES

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

EFFECTIVE DATE: March 14, 2018

ISSUED TO

Consumers Energy Company - White Pigeon Compressor Station

State Registration Number (SRN): N5573

LOCATED AT

68536 A Road, Route 1, White Pigeon, Michigan 49099

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-N5573-2018

Expiration Date: March 14, 2023

Administratively Complete ROP Renewal Application Due Between September 14, 2021 and September 14, 2022

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 Michigan Air Pollution Control Rule 210(1), 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-N5573-2018

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Act 451. Pursuant to Michigan Air Pollution Control Rule 214a, 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.

Michigan Department of Environmental Quality

Mary A. Douglas, Kalamazoo District Supervisor

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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(8))**

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.

SOURCE-WIDE CONDITIONS

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only fire natural gas in the compressor engines and generators at this facility. **(R 336.213(2))**

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 permittee shall record the source-wide natural gas consumption rate for each calendar month. **(R 336.1213(3)(b))**

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)

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	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).

C. EMISSION UNIT 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
EUDEGREASER1	Cold cleaner with air/vapor interface of less than 10 square feet in Plant 1 Auxiliary Building.	01-01-95/ NA	FGDEGREASERS
EUDEGREASER2	Cold cleaner with air/vapor interface of less than 10 square feet in Plant 2 Auxiliary Building.	01-01-95/ NA	FGDEGREASERS
EUDEGREASER3	Cold cleaner with air/vapor interface of less than 10 square feet in Plant 3 Auxiliary Building.	10-01-10/ NA	FGDEGREASERS
EUAUXGEN1	Natural gas-fired emergency RICE; 2.68 MMBTU/hr (<500 HP) in Plant 1 Auxiliary Building.	1964	FGAUXGENS
EUAUXGEN2	Natural gas-fired emergency RICE; 2.68 MMBTU/hr (<500 HP) in Plant 2 Auxiliary Building.	1965	FGAUXGENS
EUEMERGGEN	Natural gas-fired emergency generator - Caterpillar G3516B LE, 1818 HP in Plant 3 Auxiliary Building.	06-15-10/ NA	NA
EUHEATER	Natural gas-fired 3 MMBTU/HR hot water heater for building heat and hot water in Plant 3 Auxiliary Building. Unit is equipped with a low-NOx burner. Heats glycol/water mixture.	06-15-10/ NA	NA
EUENGINE1	Natural gas-fired spark ignition 4-stroke lean-burn reciprocating engine with a 2-way catalyst - Caterpillar G3608, 2370 HP.	06-28-10/ NA	FGENGINES
EUENGINE2	Natural gas-fired spark ignition 4-stroke lean-burn reciprocating engine with a 2-way catalyst - Caterpillar G3616, 4735 HP.	06-28-10/ NA	FGENGINES
EUENGINE3	Natural gas-fired spark ignition 4-stroke lean-burn reciprocating engine with a 2-way catalyst - Caterpillar G3616, 4735 HP.	06-28-10/ NA	FGENGINES
EUENGINE4	Natural gas-fired spark ignition 4-stroke lean-burn reciprocating engine with a 2-way catalyst - Caterpillar G3616, 4735 HP.	06-28-10/ NA	FGENGINES
EU285MM	Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278, 278a, and 285(2)(mm). Routine or emergency venting of natural gas.	1962	NA

EUEMERGGEN
EMISSION UNIT CONDITIONS

DESCRIPTION

Natural gas-fired emergency generator - Caterpillar G3516B LE, 1818 HP in Plant 3 Auxiliary Building.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	0.5 g/HP-hr[2]	Average of 3 1-hour test runs	EUEMERGGEN	SC V.1	**R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(c), (d) and (j), 40 CFR Part 60, Subpart JJJJ, Table 1**
2. CO	4.0 g/HP-hr	Average of 3 1-hour test runs	EUEMERGGEN	SC V.1	**40 CFR Part 60, Subpart JJJJ, Table 1**
3. VOC*	1.0 g/HP-hr	Average of 3 1-hour test runs	EUEMERGGEN	SC V.1	**40 CFR Part 60, Subpart JJJJ, Table 1**

* When calculating emissions of VOC, emissions of formaldehyde should not be included

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee must operate and maintain EUEMERGGEN to achieve the emission limits as required in §60.4233(e) over the entire life of the engine. **(40 CFR 60.4234)**

2. The permittee shall only burn natural gas in EUEMERGGEN.[2] **(R 336.1225, R 336.1702(a), R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

3. The permittee shall not operate EUEMERGGEN for more than 500 hours per 12-month rolling time period as determined at the end of each calendar month.[2] **(R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

4. The permittee may operate EUEMERGGEN for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing is limited to

maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year. **(40 CFR 60.4243(d))**

5. The permittee may operate EUEMERGGEN up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year as described in 40 CFR 60.4243 is prohibited. **(40 CFR 60.4243(d))**

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))**

1. The permittee shall verify NOx, CO, and VOC emission rates from EUEMERGGEN every three years or 8,760 hours (tested on March 28, 2017), whichever comes first, by testing at owner's expense, in accordance with the Department requirements. Testing shall be performed using an approved EPA Method according to the procedures in 40 CFR 63.4244. 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. **(40 CFR 60.4243(b)(2)(ii), R 336.1213(3), R 336.2001, R 336.2003, R 336.2004)**

2. 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 keep, in a satisfactory manner, a log of the monthly and 12-month rolling time period hours of operation for EUEMERGGEN. The log shall include the reason (i.e., emergency, maintenance testing, readiness testing, etc.) The permittee shall keep all records on file for a period of at least five years and make them available to the Department upon request.[2] **(R 336.1205(1)(a)(ii)(B), R 336.1213(3))**

2. The permittee shall keep records of hours of operation that are sufficient to demonstrate compliance with conditions III.4-5 above. **(R 336.1213(3)(b))**

3. The permittee must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 60.4243(b)(2)(ii), R 336.1213(3))**

4. The permittee shall keep records of the following information:
   a. All notifications submitted to comply with 40 CFR Part 60, Subpart JJJJ and all documentation supporting any notification.
   b. Maintenance conducted on the engine. **(40 CFR 60.4245(a)(1) and (2), R 336.1213(3))**

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 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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVEMERGGEN	22[2]	35[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to EUEMERGGEN.[2] **(40 CFR Part 60, Subpart A and JJJJ)**

2. 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, as they apply to EUEMERGGEN.[2] **(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).

EUHEATER
EMISSION UNIT CONDITIONS

DESCRIPTION

Natural gas-fired 3 MMBTU/HR hot water heater for building heat and hot water in Plant 3 Auxiliary Building. Unit is equipped with a low-NOx burner. Heats glycol/water mixture.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Low-NOx Burner

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NO_x	0.025 lb/MMBTU[2]	Hourly	EUHEATER	SC VI.1	**R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(c), (d) and (j)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Natural Gas	12.88 MMscf per year[2]	12-month rolling time period as determined at the end of each calendar month	EUHEATER	SC VI.1	**R 336.2803, R 336.2804, 40 CFR 52.21(c), and (d)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only burn natural gas in EUHEATER.[2] **(R 336.1225, R 336.1702, R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the natural gas usage for EUHEATER on a monthly basis.[2] **(R 336.2803, R336.2804, 40 CFR 52.21(c) and (d))**

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 permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period natural gas usage records for EUHEATER, as required by SC II.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request.[2] **(R 336.1205(1)(a)(ii)(D), R 336.1213(3))**

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)

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVHEATER	8[2]	35[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21 (c) and (d))**

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).

EU285MM
EMISSION UNIT CONDITIONS

DESCRIPTION

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278, 278a, and 285(2)(mm). Routine or emergency venting of natural gas.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall, at a minimum, implement measures to assure safety of employees and the public and minimize impacts to the environment. **(R 336.1285(2)(mm)(ii)(B))**

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))**

NA

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. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall notify the AQD District Supervisor prior to a scheduled pipeline venting. **(R 336.1285(2)(mm)(ii)(A))**

5. For venting of natural gas for routine maintenance or relocation of transmission and distribution systems in amounts greater than 1,000,000 standard cubic feet, the permittee shall provide necessary notification in accordance with the Michigan gas safety standards, the federal pipeline and hazardous materials safety administration standards, and the federal energy regulatory commission standards, as applicable. The permittee is not required to copy the AQD on the notifications. **(R 336.1285(2)(mm)(ii)(B))**

6. For emergency venting of natural gas in amounts greater than 1,000,000 standard cubic feet per event, the permittee shall notify the pollution emergency alert system (PEAS) within 24 hours of an emergency pipeline venting. For purposes of this requirement, an emergency is considered an unforeseen event that disrupts normal operating conditions and poses a threat to human life, health, property, or the environment if not controlled immediately. **(R 336.1285(2)(mm)(iv))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	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 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 (not applicable) 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
FGAUXGENS	Existing emergency spark ignition engines < 500 hp constructed before June 12, 2006, and have not been reconstructed. These units are subject to 40 CFR, Subpart ZZZZ.	EUAUXGEN1 EUAUXGEN2
FGENGINES	Natural gas fired, lean burn, 4-stroke, spark ignited reciprocating engines, each with a 2-way catalyst for control.	EUENGINE1 EUENGINE2 EUENGINE3 EUENGINE4
FGDEGREASERS	Any new cold cleaner (placed into operation after July 1, 1979) that is exempt from NSR permitting by R 336.1281(h) or R 336.1285 (r)(iv). New cold cleaners were placed into operation on or after July 1, 1979.	EUDEGREASER1 EUDEGREASER2 EUDEGREASER3, and any new degreasers that may be added in the future.

FGAUXGENS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Existing emergency spark ignition engines < 500 HP constructed before June 12, 2006, and have not been reconstructed. These units are subject to 40 CFR, Subpart ZZZZ.

Emission Units: EUAUXGEN1 and EUAUXGEN2

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee must be in compliance with the applicable emission limits and operating limits in 40 CFR Part 63, Subpart ZZZZ at all times. **(40 CFR 63.6605(a))**

2. The permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine; not to exceed 30 minutes. **(40 CFR 63.6625(h)**

3. The permittee shall operate and maintain FGAUXGENS according to the manufacturer's emission-related operation and maintenance instructions or develop and follow a site-specific maintenance plan. The site-specific maintenance plan must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practices for minimizing emissions. **(40 CFR 63.6605(b), 40 CFR 63.6625(e), 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 6.9)**

4. The permittee shall limit the operation of each unit in FGAUXGENS for maintenance checks and readiness testing provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing is limited to 100 hours per year. **(40 CFR 63.6640(f)(1)(ii))**

5. The permittee may operate each unit in FGAUXGENS up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to supply power to an electric grid except as described in 40 CFR 63.6640(f)(1)(iii). **(40 CFR 63.6640(f)(1)(iii))**

6. The permittee shall change oil and filter every 500 hours of operation or annually, whichever comes first. The permittee has the option to utilize an oil analysis program as described in 40 CFR 63.6625(j), in order to extend

the specified oil change frequency requirement. **(40 CFR 63.6602, 40 CFR Part 63, Subpart ZZZZ, Table 2c.6)**

7. The permittee shall inspect spark plugs every 1,000 hours of operation or annually, whichever comes first. **(40 CFR 63.6602, 40 CFR Part 63, Subpart ZZZZ, Table 2c.6)**

8. The permittee shall inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. **(40 CFR 63.6602, 40 CFR Part 63, Subpart ZZZZ, Table 2c.6)**

9. If the engine is operating during an emergency & it is not possible to shut down the engine in order to perform the work practice requirements in III.1, 2 and 3 above, or if performing the work practice on the required schedule would otherwise pose an unacceptable risk under Federal, State, or local law, the work practice can be delayed until the emergency is over or the unacceptable risk under Federal, State, or local law has abated. The work practice should be performed as soon as practicable after the emergency has ended or the unacceptable risk under Federal, State, or local law has abated. Sources must report any failure to perform the work practice on the schedule required and the Federal, State or local law under which the risk was deemed unacceptable. **(40 CFR Part 63, Subpart ZZZZ, Table 2c)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install a non-resettable hour meter if one is not already installed. **(40 CFR 63.6625(f))**

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 permittee shall keep a copy of each notification and report that was submitted to comply with this 40 CFR Part 63, Subpart ZZZZ, including all supporting documentation. **(40 CFR 63.6655(a)(1))**

2. The permittee shall keep a record of the occurrence and duration of each malfunction of FGAUXGENS. **(40 CFR 63.6655(a)(2))**

3. The permittee shall keep a record 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 & air pollution control & monitoring equipment to its normal or usual manner of operation. **(40 CFR 63.6655(a)(5))**

4. The permittee shall maintain a log of all maintenance activities to demonstrate compliance with conditions III.2, 5, 6, 7, and 9 above. **(R 336.1213(3)(b), 40 CFR 63.6655(d) and (e))**

5. The permittee shall maintain a log of the hours of operation of each emission unit in FGAUXGEN using the non-resettable hour meter. The log shall document the reason for the operation, including how many hours are spent for emergency operation and what classified the operation as an emergency and how many hours are for non-emergency operation. If the engines are used for demand response operation the permittee must keep records of the notification of the emergency situation and the time the engine was operated as part of the demand response. The records shall be sufficient to demonstrate compliance with the conditions in III.3 and 4, above. **(R 336.1213(3)(b), 40 CFR 63.6640(f))**

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 report each instance in which each of the applicable emission limits and operating limits in Table 2c were not met. These instances are deviations and must be reported according to the requirements in §63.6650. **(63.6640(b))**

See Appendix 8

VIII. STACK/VENT RESTRICTION(S)

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
NA	NA	NA	NA

IX. OTHER REQUIREMENT(S)

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.[2] **(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).

FGENGINES
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Natural gas fired, lean burn, 4-stroke, spark ignited reciprocating engines, each with a 2-way catalyst for control.

Emission Units: EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4

POLLUTION CONTROL EQUIPMENT

2-way catalyst

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. NOx	0.5 g/HP-hr[2]	Average of 3 1-hour test runs	Each Engine in FGENGINES	SC V.4	**R 336.2803, R 336.2804, R 336.2810, 40 CFR 52.21(c), (d) and (j), 40 CFR 60 Subpart JJJJ, Table 1**
2. Carbon Monoxide	0.2 g/HP-hr[2]***	Average of 3 1-hour test runs	Each Engine in FGENGINES	SC V.5	**R 336.1205(1), 40 CFR 60 Subpart JJJJ, Table 1**
3. Carbon Monoxide or Formaldehyde	93% reduction in CO emissions or a formaldehyde concentration of ≤ 14 ppmvd at 15% O2[2]*	Average of 3 1-hour test runs	Each Engine in FGENGINES	SC IV.1, V.1 and VI.7	**40 CFR 63.6600(b)**
4. VOC**	1.0 g/HP-hr	Average of 3 1-hour test runs	Each Engine in FGENGINES	SC V.4	**40 CFR 60 Subpart JJJJ, Table 1**

*This limit applies at 100% load (plus or minus 10% load) during all periods of operation except for periods of startup, shutdown, and malfunction. (40 CFR 60 Subpart ZZZZ, Table 2a**,** 40 CFR 63.6605(a)).

** When calculating emissions of VOC, emissions of formaldehyde should not be included.

*** Owners and operators of new lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR Part 63 Subpart ZZZZ, Table 2a do not have to comply with the CO emission standards in 40 CFR Part 60 Subpart JJJJ, Table 1, However, the permitee shall conduct performance tests in accordance with SC V.5.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
NA	NA	NA	NA	NA	NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall implement and maintain a plan that describes how emissions will be minimized during all startups, shutdowns and malfunctions. The plan shall incorporate requirements listed in 40 CFR 63.6(e)(3). Deviations from the emission or operating limitations that occur during a period of startup, shutdown or malfunction are not violations if it is demonstrated that the startup, shutdown and malfunction plan was implemented.[2] **(40 CFR 63.6605(b))**

2. The permittee shall not operate FGENGINES unless an approvable preventative maintenance/malfunction abatement plan (PM/MAP), or an alternate plan approved by the AQD District Supervisor, is implemented and maintained. The plan shall incorporate procedures recommended by the equipment manufacturer as well as incorporating standard industry practices. At a minimum the plan shall include:
   a. Identification of the equipment and, if applicable, air-cleaning device and the supervisory personnel responsible for overseeing the inspection, maintenance and repair.
   b. Description of the items or conditions to be inspected and frequency of the inspections or repairs.
   c. Identification of the equipment and, if applicable, air-cleaning device, operating parameters that shall be monitored to detect a malfunction or failure, the normal operating range of these parameters and a description of the method of monitoring or surveillance procedures.
   d. Identification of the major replacement parts that shall be maintained in inventory for quick replacement.
   e. A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

   If the plan fails to address, or inadequately addresses, an event that meets the characteristics of a malfunction at the time the plan is initially developed, the permittee shall revise the plan within 45 days after such an event occurs and submit the revised plan for approval to the AQD District Supervisor. Should the AQD determine that the PM/MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies.[2] **(R 336.1702(a), R 336.1910, R 336.1911, R 336.1912, R 336.2803, R 36.2804, 40 CFR 52.21 (c) and (d), 40 CFR 63.6(e)(3))**

3. The permittee shall minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standard in I.3 above apply. **(40 CFR 63.6625(h))**

4. The permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engines in a manner consistent with good air pollution control practice for minimizing emissions. In addition, to demonstrate compliance, a performance test must be conducted every 8,760 hours or 3 years, whichever comes first, according to 40 CFR 60.4243(a)(2)(iii).[2] **(40 CFR 60.4243 (b)(2)(ii))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate any engine in FGENGINES unless the associated oxidation catalyst system is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes the following:
   a. Maintaining the catalyst so that the pressure drop across the catalyst does not change by more than two inches of water, at 100 percent load (±10 percent load), from the pressure drop measured during the initial performance test.[2] **(40 CFR 63.6600(b), 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 2b)**
   b. Maintain the engine exhaust temperature so that the 4-hour rolling average catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1350°F.[2] **(40 CFR 63.6600(b), 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 2b)**
   c. Performing the manufacturer's recommended maintenance on the control device and operating it in conjunction with the PM/MAP.[2] **(R336.1702(a), R 336.1910, R 336.2804, 40 CFR 52.21(d))**

V. TESTING/SAMPLING

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

1. A performance test for CO conducted for 40 CFR Part 63 Subpart ZZZZ must be conducted semi-annually. After two consecutive passing events, the testing frequency can be changed to annually, unless results of any subsequent test indicate non-compliance with the CO or formaldehyde emission limitation or there has been a deviation from the catalyst pressure drop or catalyst inlet temperature operating limitation. If the catalyst is changed, the permittee shall reestablish the operating parameters measured during the initial test and conduct a subsequent test to demonstrate compliance with the percent reduction requirement using the equation in 40 CFR 63.6620(e). No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD, as required in 63.7(b)(1). The final plan must be approved by the AQD prior to testing.[2] **(40 CFR 63.6615, 40 CFR 63.6620(a), 40 CFR 63.6640(a) and (b), 40 CFR 63.6645(g), 40 CFR Part 63, Subpart ZZZZ, Tables 2a, 3, and 6, R 336.1213(3), R 336.2001, R336.2003, R 336.2004)**

2. Compliance with SC I.3 above is based on the results of testing the average of three 1-hour runs conducted according to the requirements in 40 CFR 63.6620 and Table 4 of that subpart.[2] **(40 CFR 63.6600, 40 CFR 63.6620(b))**

3. For any CO performance tests conducted for an engine in FGENGINES, the permittee shall conduct three separate test runs, one hour each, and at any load condition within ±10 percent of 100 percent load.[2] **(40 CFR 63.6620(d), 40 CFR Part 63, Subpart ZZZZ, Tables 4 and 6)**

4. Once every three years or 8,760 hours, whichever comes first, the permittee shall verify NOx and VOC emission factors used to calculate emissions for each engine in FGENGINES, by testing at owner's expense, in accordance with 40 CFR Part 60 Subpart JJJJ, Table 2. Any resulting increase in an emission factor shall be implemented to calculate NOx and VOC. Not less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. **(R 336.2003, R 336.2804, R 336.2803, 40 CFR 52.21(c) and (d), R 336.1213(3), 40 CFR 60.4243(b)(2)(ii), R 336.2003, R 336.2004, 40 CFR 60.8(d))**

5. Once every five years, the permittee shall verify the CO emission factor in SC I.2 used to calculate emissions for each engine in FGENGINES, by testing at owner's expense, in accordance with Dept. requirements (tested on March 31, 2017). Testing shall be performed using an approved EPA Method in 40 CFR Part 60, Appendix A. Any resulting increase in the emission factor shall be implemented to calculate CO. Not less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. **(R 336.2003, R 336.2001, R 336.2004, R 336.2804, R 336.2803, 40 CFR 52.21(c) and (d), R 336.1213(3), 40 CFR 60.8(d))**

6. 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))**

7. The permittee must submit a complete report of performance test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.2001(5))**

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 install, operate and maintain a continuous parameter monitoring system (CPMS) for each stationary RICE in FGENGINES, according to the requirements in 40 CFR 63.8 and 40 CFR 63.6635, to continuously monitor the operating parameters. The system shall include, but is not limited to:[2] **(40 CFR 63.6625(b), 40 CFR 63.6635, 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 6, R 336.1213(3))**
   a. Operation and maintenance requirements described in 40 CFR 63.8(c).
   b. A quality control program described in 40 CFR 63.8(d).
   c. Performance evaluations described in 40 CFR 63.8(e).
   d. An alternative monitoring method may be requested and approved pursuant to 40 CFR 63.8(f).
   e. Reduction of data as described in 40 CFR 63.8(g).

2. The permittee shall install, calibrate, maintain and operate, in a satisfactory manner, a device to monitor and record, on a continuous basis and according to the requirements in 40 CFR 63.6625(b) and 40 CFR 63.6635,

the temperature at the inlet of the catalyst for each stationary RICE.[2] **(40 CFR 63.6625(b), 40 CFR 63.6635, 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 6, R 336.1213(3))**

3. The permittee shall measure the pressure drop across the catalyst for each stationary RICE once per calendar month and demonstrate that the pressure drop is within the operating limitation established during the performance test.[2] **(40 CFR 63.6625(b), 40 CFR 63.6640(a), 40 CFR Part 63, Subpart ZZZZ, Table 6, R 336.1213(3))**

4. In lieu of the CPMS specified in VI.1,2 and 3, the permittee can opt to install, calibrate, maintain and operate in a satisfactory manner, a continuous emission monitoring system (CEMS) to monitor and record the CO and either the O_2 or CO_2, at both the inlet and outlet of the control device for each 4SLB engine, according to the procedures in 40 CFR 63.6625(a)(1) through (4) and 40 CFR 63.6635.[2] **(40 CFR 63.6625(a), 40 CFR 63.6635, 40 CFR 63.6640(a), R 336.1213(3))**

5. For each stationary RICE with oxidation catalyst, the permittee shall keep, in a satisfactory manner, records of the 4-hour rolling average for each catalyst inlet temperature and the monthly pressure drop for each catalyst, as required by VI.2 and 3.[2] **(40 CFR 63.6655, 40 CFR 63.6660, 40 CFR Part 63, Subpart ZZZZ, Table 6, R 336.1213(3))**

6. The permittee shall keep the following records:
   a. A copy of each notification and report submitted to comply with 40 CFR Part 60 Subpart JJJJ and Part 63 Subpart ZZZZ, and the documentation supporting any notification.[2] **(40 CFR 60.4245(a)(1), 40 CFR 63.6655(a)(1))**
   b. Records specified in 40 CFR 63.6(e)(3)(iii) through (v) related to startup, shutdown and malfunction.[2] **(40 CFR 63.6655(a)(2))**
   c. Records of performance tests and evaluations as required in 40 CFR 63.10(b)(2)(viii).[2] **(40 CFR 63.6655(a)(3))**
   d. For each CEMS or CPMS, records described in 40 CFR 63.10(b)(2)(vi) through (xi).[2] **(40 CFR 63.6655(b)(1))**
   e. For each CEMS or CPMS, previous versions of the performance evaluation plan as required in 40 CFR 63.8(d)(3).[2] **(40 CFR 63.6655(b)(2))**
   f. For each CEMS or CPMS, requests for alternatives to the relative accuracy test as required in 40 CFR 63.8(f)(6)(i), if applicable.[2] **(40 CFR 63.6655(b)(3))**
   g. Documentation from the manufacturer that each engine is certified to meet the emission limitations and information as required by other applicable regulation in 40 CFR 90, 1048, 1054 and 1060. **(40 CFR 60.4245(a)(3))**

All records shall be kept on file for a period of at least five years (at least two years at the site) and made available to the Department upon request.[2] **(40 CFR 63.6655, 40 CFR 63.6660)**

7. The permittee shall demonstrate continuous compliance with each applicable emission and operating limitation as specified in Table 6 to 40 CFR Part 63 Subpart ZZZZ, using the method(s) described below.[2] **(40 CFR 63.6640(a) and 40 CFR Part 63, Subpart ZZZZ, Table 6)**

For each	Complying with requirement to	You must demonstrate continuous compliance by
4SLB stationary RICE	Reduce CO emissions using an oxidation catalyst and using a CPMS.	i. Conducting semiannual performance tests for CO to demonstrate that the required CO percent reduction is achieved[1]; and ii. Collecting the catalyst inlet temperature data according to 40 CFR 63.6625(b); and iii. Reducing these data to 4-hour rolling averages; and iv. Maintaining the 4-hour rolling averages within the operating limitations for the catalyst inlet temperature; and v. Measuring the pressure drop across the catalyst once per month and demonstrating that the pressure drop across the catalyst is within the operating limitation established during the performance test.

[1] After you have demonstrated compliance for two consecutive tests, you may reduce the frequency of subsequent performance tests to annually. If the results of any subsequent annual performance test indicate the stationary RICE is not in compliance with the CO emission limitation, or you deviate from any of your operating limitations, you must resume semiannual performance tests.

8. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available, by request, by the last day of the calendar month for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition.[2] **(R 336.1201(3))**

9. The permittee shall maintain a log at the facility of all maintenance activities conducted according to the PM/MAP and make it available to the Department upon request.[2]. **(R 336.1702(a), R 336.1911, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d), R 336.1213(3))**

10. The permittee shall keep records of all required maintenance performed on the engines, air pollution control and monitoring equipment.[2] **(40 CFR 60.4243(a)(1), 40 CFR 60.4243(b)(1), 40 CFR 60.4245(a)(2), 40 CFR 63.6655(a)(4), R 336.1213(3))**

11. The permittee shall keep at the facility, in a satisfactory manner, monthly fuel use records or engine output records (i.e., hp-hrs/month) for each engine included in FGENGINES. They shall be made available to the Department upon request.[2] **(R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d), R 336.1213(3))**

12. The permittee shall keep records of action 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))**

13. The permittee shall install, operate and maintain a CPMS as specified below: **(40 CFR 63.6625(b))**
    a. A site-specific monitoring plan shall be prepared that addresses the monitoring system design, data collection, and the quality assurance and quality control elements outlined in 40 CFR 63.6625(b)(1)(i) through (v) and in § 63.8(d). As specified in § 63.8(f)(4), approval of an alternative to the procedures in the site-specific monitoring plan may be requested.
    b. Each CPMS must be installed, operated, and maintained in continuous operation according to the procedures in the site- specific monitoring plan.
    c. The CPMS must collect data at least once every 15 minutes (see also § 63.6635).
    d. The temperature sensor used in the CPMS must have a minimum tolerance of 2.8°C (5°f) or 1% of the measurement range, whichever is larger.
    e. Performance evaluations, system accuracy audits, or other audit procedures specified in the site-specific monitoring plan must be conducted at least annually.

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, including RATA 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. For each stationary RICE that uses a CPMS to comply with emission and operating limitations, the permittee shall submit to the AQD District Supervisor, a semi-annual compliance report, as specified in 40 CFR 63.6650, which contains all deviations during the reporting period from any applicable emission limitation or operating limitation and all period during which the CPMS was out of control as defined in 40 CFR 63.8(c)(7). If there were no deviations from any applicable emission limitations or operating limitations or not periods that the CPMS was out of control, the report shall contain a statement that there were no deviations and no periods during which the CPMS was out of control during the reporting periods. The report must cover the semi-annual period from January 1 through June 30, or from July 1 through December 31. The reports must be postmarked or delivered by September 15 or March 15, whichever is the first date following the end of the semiannual reporting period. The compliance report must also contain the following information, as specified in 40 CFR 63.6650(c) and (e):
   a. Company name and address.
   b. Certification of the report by a responsible official.
   c. Date of report and beginning and ending dates of the reporting period.
   d. The number of startups, shutdowns and malfunctions that occurred during the reporting period and demonstration that the Startup/Shutdown/Malfunction Plan was followed during such events.
   e. If there were no deviations from any applicable emission or operating limitations under 40 CFR 63, Subpart ZZZZ during the reporting period, a statement that no such deviations occurred during the reporting period.
   f. If there were no periods during which the continuous monitoring system (CMS), including CEMS and CPMS, was out of control, as specified in §63.8(c)(7), a statement that there were no periods during which the CMS was out of control during the reporting period.
   g. An identification of each parameter monitored and whether CO or formaldehyde was monitored.
   h. The date and time that each malfunction started and stopped.
   i. The date, time and duration that each CPMS was out of control (as defined in 40 CFR 63.8(c)(7)) and the corrective actions taken.
   j. The date, time and duration that each CPMS was inoperative, except for low-level and high-level checks.
   k. The date and time that each deviation started and stopped and whether each deviation occurred during a period of malfunction or during another period.
   l. A summary of the total duration of the deviations during the reporting period and the percent of the total duration during the total source operating time of that reporting period.
   m. A breakdown of the total duration of deviations due to control equipment problems, process problems, other known causes and any unknown causes.
   n. A summary of the total duration of CPMS downtime during the reporting period and the percent of the total duration of downtime during the total source operating time of that reporting period.
   o. A brief description of the stationary RICE.
   p. A brief description of the CMS.
   q. The data of the latest CMS certification or audit.
   r. A description of any changes in the CMS, processes or controls since the last reporting period.

A copy of the compliance report shall be kept on file for a period of at least five years (at least 2 years at the site) and made available to the Department upon request.[2] **(40 CFR 63.6640(b), 40 CFR 63.6650, 40 CFR 63.6600, 40 CFR Part 63, Subpart ZZZZ, Table 7)**

6. The permittee shall submit to the AQD District Supervisor, a startup, shutdown and malfunction report if actions addressing the startup, shutdown or malfunction were not consistent with the Startup/Shutdown/Malfunction

Plan. Notification of the event and the actions taken during the event shall be submitted by fax or telephone within 2 working days after the event occurred. Within 7 working days after the event, the permittee shall submit a letter to the AQD District Supervisor which contains the information specified in 40 CFR 63.10(d)(5)(ii), including:

a. Company name and address.
b. Certification of the report by a responsible official.
c. Circumstances of the event.
d. Reasons for not following the Startup/Shutdown/Malfunction Plan.
e. Whether any excess emissions and/or parameter monitoring exceedances are believed to have occurred.
f. Actions taken to minimize emissions in conformance with 40 CFR 63.6(e)(1)(i).

Notwithstanding the preceding timelines for notifications, the owner or operator may make alternative reporting arrangements with the Department in accordance with 40 CFR 63.9(i). A copy of the compliance report shall be kept on file for a period of at least five years (at least 2 years at the site) and made available to the Department upon request.[2] **(40 CFR 63.6650, 40 CFR 63.6660, 40 CFR 63.10(d)(5)(ii))**

7. The permittee shall submit all applicable notifications specified in 40 CFR 63.7(b) and (c), 63.8(e), (f)(4), and (f)(6), and 63.9(b) through (e), (g), and (h) by the dates specified.[2] **(40 CFR 63.6645(a))**

8. For a continuous compliance demonstration that includes a performance test, the permittee shall submit a Notification of Compliance Status according to 40 CFR 63.9(h)(2)(ii), before the close of the 60th business day following completion of the performance test according to 40 CFR 63.10(d)(2) and shall include the following: **(40 CFR 63.6620(i))**
   a. RICE manufacturer, model number, year of purchase, and the manufacturer's site-rated brake horsepower.
   b. Ambient temperature, pressure and humidity during the performance test.
   c. Average percent load for the RICE and assumptions made to estimate or calculate percent load during the performance test.
   d. The model number of any measuring devices used during the test and the percent accuracy.
   e. Performance test results.

9. The permittee shall report each instance in which requirements of Table 8 of Subpart ZZZZ are not met.[2] **(40 CFR 63.6640(e))**

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 Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVENGINE1	32[2]	95[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d)**
2. SVENGINE2	44[2]	95[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d)**
3. SVENGINE3	44[2]	95[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d)**
4. SVENGINE4	44[2]	95[2]	**R 336.1225, R 336.2803, R 336.2804, 40 CFR 52.21(c) and (d)**

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.[2] **(40 CFR Part 63, Subparts A and ZZZZ)**

2. The permittee shall comply with all applicable provisions of the New Source Performance Standards, as specified in 40 CFR Part 60, Subpart A and Subpart JJJJ, as they apply to each engine in FGENGINES.[2] **(40 CFR Part 60, Subparts A and JJJJ)**

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).

FGDEGREASERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any new cold cleaner (placed in to operation after July 1, 1979) that is exempt from NSR permitting by R336.1281(h) or R336.1285 (r)(iv). New cold cleaners were placed into operation on or after July 1, 1979.

Emission Units: EUDEGREASER1, EUDEGREASER2, EUDEGREASER3, and any new degreasers that may be added in the future.

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 the requirements identified in the table below are not applicable to the specified emission unit(s) and/or flexible group(s). This determination is incorporated into the permit shield provisions set forth in the General Conditions in Part A pursuant to Rule 213(6)(a)(ii). If the permittee

makes a change that affects the basis of the non-applicability determination, the permit shield established as a result of that non-applicability decision is no longer valid for that emission unit or flexible group.

Emission Unit/Flexible Group ID	Non-Applicable Requirement	Justification
EUENGINE1-1 EUENGINE1-2 EUENGINE1-5 EUENGINE1-6 EUENGINE2-1 EUENGINE2-2 EUENGINE2-5 EUENGINE2-6	40 CFR Part 63, Subpart ZZZZ, NESHAP for stationary reciprocating internal combustion engines	The existing units are not subject per Section 63.6590(b)(3)(i) and (ii); however, if these units are reconstructed, or new units are installed, they may become subject.

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	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonable Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition	SO_2	Sulfur Dioxide
SCR	Selective Catalytic Reduction	TAC	Toxic Air Contaminant
SNCR	Selective Non-Catalytic Reduction	Temp	Temperature
SRN	State Registration Number	THC	Total Hydrocarbons
TEQ	Toxicity Equivalence Quotient	tpy	Tons per year
USEPA/EPA	United States Environmental Protection Agency	µg	Microgram
		µm	Micrometer or Micron
VE	Visible Emissions	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-N5573-2013. 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-N5573-2013 is being reissued as Source-Wide PTI No. MI-PTI-N5573-2018.

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

Appendix 7. Emission Calculations

Specific emission calculations to be used with monitoring, testing or recordkeeping data are detailed in the appropriate Source-Wide, Emission Unit and/or Flexible group Special Conditions. 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.

Startup, Shutdown, Malfunction Plan

White Pigeon Compressor Station
Plant 3

Maximum Achievable Control Technology (MACT) Standards for Stationary, Gas-Fired Reciprocating Internal Combustion Engines

Prepared by:
Timothy K. Joyce

February 2010
Revised April 2011

Table of Contents

A. SSM Plan Purpose

The IC Engine MACT (40 CFR 63, Subpart ZZZZ) requires that affected engines have a plan in place to meet requirements of 40 CFR 63.6(e)(3). You must prepare and implement a written plan that describes how you will startup and shutdown your engines to minimize air pollution emissions, and what you will do to minimize emissions when malfunctions occur for the engine, emission controls (e.g., NSCR/oxidation catalyst), or monitoring equipment (pressure drop and inlet temperature CPMS). This is called the SSM Plan.

The purpose of the SSM Plan is to:

- Ensure you operate and maintain your engine and controls to minimize emissions during all startups, shutdowns, and malfunctions (SSM) consistent with safety and good air pollution control practices. [63.6(e)(3)(i)(A)]
- Ensure you are prepared to correct malfunctions as soon as practicable, to minimize emissions. [63.6(e)(3)(i)(B)]
- Reduce the reporting burden associated with SSM periods, since procedures you followed during SSM periods will be covered in your SSM Plan. [63.6(e)(3)(i)(C)]

B. Summary of SSM Plan Requirements

The SSM Plan must provide detailed operation and maintenance procedures that you will follow during startup, shutdown, or malfunction (SSM) events. You must define the SSM events in your Plan.

Development of the SSM Plan may be accomplished by completing the following steps:

1. Identification of equipment to address in SSM Plan.
2. Definition of SSM events.
3. Development of procedures to operate & maintain equipment during SSM events.
4. Development of logs to record SSM events and checklists or other records of actions taken during SSM events, including records of whether actions are consistent with the SSM Plan or not.

Key items to note for each step are discussed below, along with provisions to revise the SSM Plan.

Step 1. Identification of Equipment to Address in SSM Plan

For 4-stroke rich burn engines (4SRB) subject to MACT, include:

- 4SRB engine
- Non-selective catalytic reduction (NSCR) catalyst, including air/fuel ratio controller (AFRC)
- Pressure drop measurement equipment
- Continuous parameter monitoring system (CPMS) for inlet temperature to NSCR, including thermocouple and data acquisition system (CPMS-T)

For 4-stroke lean burn engines (4SLB) or 2-stroke lean burn engines (2SLB) subject to MACT, include:

- 4SLB or 2SLB engine
- Oxidation catalyst (Oxy-Cat)
- Pressure drop measurement equipment
- Continuous parameter monitoring system (CPMS) for inlet temperature to Oxy-Cat, including thermocouple and data acquisition system (CPMS-T)

Step 2. Definition of SSM Events

You must define SSM events for the equipment covered by the SSM Plan. You must define the SSM events consistent with the regulatory definitions for startup, shutdown and malfunction included in 40 CFR 63.2 – see inset below.

For the engine (4SRB, 4SLB, or 2SLB), you must include all three events:

- Startup
- Shutdown
- Malfunction

For catalysts (NSCR/AFRC or Oxy-Cat), you must include:

- Malfunction events

NOTE: In this Plan we have also included "startup" and "shutdown" events to capture catalyst installation and removal. You must track catalyst changes after an engine's compliance date for MACT – and conduct an emissions test (called a performance test) to demonstrate compliance with the newly installed catalyst. You may do this outside the SSM Plan if you wish, however, altering the Plan will require filing the revised Plan and reporting the revision in the semiannual compliance report.

For the pressure drop equipment and CPMS-T, you must include:

- Malfunction events

NOTE: In this Plan we have also included "periods CPMS is inoperable" – which includes QA/QC events (such as calibration checks). You must track downtime for CPMS-T after an engine's compliance date for MACT – and report the downtime in a Semi-Annual Compliance Report. You may do this outside the SSM Plan if you wish, however, altering this Plan will require filing the revised Plan and reporting the revision in the semiannual compliance report.

Regulatory Definitions of Startup, Shutdown, and Malfunction [63.2]

Startup means the setting in operation of an affected source or portion of an affected source for any purpose.

Shutdown means the cessation of operation of an affected source or portion of an affected source for any purpose.

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.

Step 3. Development of Procedures to Operate & Maintain Equipment During SSM Events

You must develop procedures to operate and maintain equipment addressed by the SSM Plan. You may refer to Standard Operating Procedures (SOP) or other manuals if these procedures are already in place. You must define SSM events and detailed procedures to meet the requirements per 63.6(e)(3).

Step 4. Development of Logs to Record SSM Events and Checklists or Other Records of Actions During SSM Events

You must conduct the following recordkeeping and reporting for SSM events:

- Occurrence and duration of SSM events for engine (4SRB, 4SLB or 2SLB)
- Occurrence and duration of malfunction events for catalysts (NSCR/AFRC or Oxy-Cat)
- Occurrence and duration of malfunction events for CPMS-T (also record periods CPMS-T is inoperable – include in Plan or elsewhere)
- Occurrence and duration of malfunction events for the pressure drop measurement equipment
- Actions taken during each SSM event and whether those actions were consistent with the SSM Plan.
  - You may use a checklist if actions are consistent with the SSM Plan
  - If actions are not consistent with the SSM Plan, you must record actions actually taken, circumstances of event, and reasons for not following the SSM Plan. You must submit an Immediate SSM Report within 2 days of event by phone or fax – and by letter within 7 days of event.
  - If a malfunction occurs that is not covered by the plan, you must record actions actually taken and nature of malfunction or circumstances of event. You must submit an Immediate SSM Report within 2 days of the event by phone or fax – and by letter within 7 days of event. You must also revise your SSM Plan within 45 days of such malfunction event.

It may be useful to develop logs, checklists or forms to facilitate the SSM recordkeeping and reporting requirements. In this template, a number of examples are provided for your consideration, including the following:

- SSM Log – to record occurrence & duration of SSM events & periods CPMS-T is inoperable.
- Catalyst Event Checklist – to record actions taken during malfunction event for catalyst (NSCR or Oxy-Cat). This checklist also includes a

place to record catalyst installation or removal to assist you in tracking catalyst changes.

- CPMS-T Event Checklist – to record actions taken during malfunction for CPMS-T.
- Immediate SSM Report Form – to facilitate fax/phone report of SSM events, when actions are not consistent with SSM Plan or malfunction events occur that are not covered by the Plan.

You are not required to use any of these materials – but they may serve as a starting point to develop your SSM recordkeeping and reporting procedures. You may also wish to develop other logs, checklists or forms.

SSM Plan Revisions

Periodically you may need to revise your SSM Plan. You must retain copies of all SSM Plan revisions for a period of 5 years. Revisions to the SSM Plan are not considered revisions to the Title V permit. [63.6(e)(3)(ix)]

You must revise your SSM Plan if:

- You changed your operations or SSM procedures since you prepared the last SSM Plan. [63.6(e)(viii)]
- Your SSM Plan does not address a SSM event that has occurred. [63.6(e)(3)(vii)(A)]
- Your SSM Plan includes inadequate procedures inconsistent with your general duty to minimize emissions during SSM events. [63.6(e)(3)(vii)(B)]
- Your SSM Plan includes inadequate procedures to correct malfunctions as quickly as practical. [63.6(e)(3)(vii)(C)]
- Your SSM Plan includes an event that does not meet the regulatory definition of *startup, shutdown,* or *malfunction* per 63.2. [63.6(e)(3)(vii)(D)]

Revisions must be completed within 45 days if the SSM Plan does not address – or inadequately addresses – an event that occurs and meets the characteristics of a malfunction, but was not included in the SSM Plan. The revisions must include procedures to operate and maintain the source during similar malfunction events and a program of corrective action for similar malfunctions of the engine, controls, or monitoring equipment. [63.6(e)(3)(viii)]

If the SSM Plan revisions alter the scope of activities that are considered startup, shutdown, or malfunction, the revised plan will not take effect until after you provide a written notice describing the revision to the permitting authority. [63.6(e)(3)(viii)]

You must report revisions of the SSM Plan in the next SSM Report, which is submitted with the Semi-Annual Compliance Report. [63.6(e)(3)(viii)]

You must maintain revisions of the SSM Plan for 5 years after revision date.

1.0 SSM Plan Overview and Approval

Facility: WHITE PIGEON COMPRESSOR STATION
Physical Address: 68536 A Road, Route 1
White Pigeon, MI 49099
Plan Adoption Date: April 2011
Previous Revisions: February 2010

Purpose of SSM Plan:
The purpose of this SSM Plan is to describe the actions that will be taken at the White Pigeon Compressor Station Plant 3 during SSM events for engines included in **Table 1** of this Plan. These engines are subject to emission limitations and operating limitations under the IC Engine MACT, 40 CFR 63, Subpart ZZZZ.

Copies of the current SSM Plan are on file at the White Pigeon Compressor Station Plant 3. The SSM Plan, and prior versions must be maintained for a period of five (5) years. This SSM Plan does not contain proprietary information.

At White Pigeon Compressor Station Plant 3, the station manager, Timothy B. Wolf or his designee is responsible for assuring that the most recent copy of this SSM Plan is made available to personnel involved with the affected engine operations. This individual is also responsible for ensuring that Station employees are aware of the procedures and requirements contained in this Plan.

All reports for the SSM Plan must be signed by a Responsible Official.

SSM Plan Approval: Initial SSM Plan – Yes [X] or Revision No. 1

Name: Tim Wolf , Date _____

Title: White Pigeon Gas Field Leader

Signature: _____

Table 1. IC Engines Subject to IC Engine MACT & Covered by SSM Plan

Facility: WHITE PIGEON PLANT 3 COMPRESSOR STATION

Engine ID	Engine Description		Site-Rated HP	Emission Controls (NSCR/AFRC or Oxy-Cat)	Pressure Drop & CPMS-T	Subcategory & Compliance Date for MACT Requirements (check one & enter compliance date)
	Manufacturer	Model				
BEN 00515	Caterpillar	G3608TALE	2,370	Oxidation catalyst	Initial ΔP 3.45" water – alarms at 4.45" and 2.45", shutdown @ 5.45 and 1.45" of water column. Initial catalyst inlet temperature at 756° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 28, 2010 (upon startup)
BLB 00456	Caterpillar	G3616TALE	4,735	Oxidation catalyst	Initial ΔP 2.87" water – alarms at 3.87" and 1.87", shutdown @ 4.87 and 0.87" of water column. Initial catalyst inlet temperature at 752° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 30, 2010 (upon startup)
BLB 00485	Caterpillar	G3616TALE	4,735	Oxidation catalyst	Initial ΔP 2.93" water – alarms at 3.93" and 1.93", shutdown @ 4.93 and 0.93" of water column. Initial catalyst inlet temperature at 754° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 27, 2010 (upon startup)
BLB 00487	Caterpillar	G3616TALE	4,735	Oxidation catalyst	Initial ΔP 2.93" water – alarms at 3.93" and 1.93", shutdown @ 4.93 and 0.93" of water column. Initial catalyst inlet temperature at 746° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 26, 2010 (upon startup)

a Only engines subject to full MACT requirements must be covered by the SSM Plan. New or reconstructed emergency or limited use engines do not have to be addressed in the SSM Plan

2.0 Equipment Covered by SSM Plan

This SSM Plan covers the engines, emission controls, and monitoring equipment that are included in **Table 1** of this SSM Plan.

3.0 Engine SSM Events & Procedures

This section addresses the engines included in **Table 1** of this SSM Plan. SSM events are defined to identify events that meet regulatory definitions of startup, shutdown, and malfunction.

NOTE: All startups and shutdowns of the engines in **Table 1** must be addressed by the Plan. Regulatory definitions for startup and shutdown are:

> *Startup* means the setting in operation of an affected source or portion of an affected source for any purpose.
>
> *Shutdown* means the cessation of operation of an affected source or portion of an affected source for any purpose.

ALSO NOTE: Not all "upsets" for the engines in **Table 1** qualify as malfunctions under MACT. Malfunctions for MACT must meet the following regulatory definition for malfunction [40 CFR 63.2]:

> *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.

3.1 Engine Startup Events & Procedures

Definition of Startup Event for Engines in Table 1

Startup means the initiation and completion of a series of steps, the final goal of which is to utilize an internal combustion natural gas fired reciprocating engine to supply power to drive a natural gas compressor. The startup is completed once the engine and catalyst have attained full operating temperatures and, based on manufacturers recommendations, would then be available for maximum speed and load operation. This also includes short duration periods of engine operation for purposes of troubleshooting, if required. Each fully successful start will appear on the SSM log.
NOTE: You must log the occurrence and duration of each startup event for the engines included in Table 1 on the SSM Log.

ALSO NOTE: Ensure times for SSM Logs are synchronized with time for CPMS-T data acquisition system – you will need to compare SSM Logs and the CPMS-T data to identify when data is reported for SSM events.

Startup Procedures for Engines in Table 1

For Startup procedures, please refer to CATERPILLAR OPERATION AND MAINTENANCE MANUAL, G3600 SERIES ENGINES, OPERATION SECTION, ENGINE STARTING.
NOTE: You may refer to Standard Operating Procedures (SOP) or other plans that already address these procedures.

ALSO NOTE: You must operate the Continuous Parameter Monitoring System-Temperature and Delta-P at all times the engines in Table 1 are operating, except during CPMS-T or Delta-P malfunctions, repairs, or QA/QC activities (such as calibration checks).

3.2 Engine Shutdown Events & Procedures

Definition of Shutdown Event for Engines in Table 1

Shutdown means 1) UNSCHEDULED SHUTDOWN, or 2) SCHEDUELD SHUTDOWN, a series of events, including gradual unloading and cool down of the engine, the ultimate intent of which is to cease operation of the engine. *NOTE: You must log the occurrence and duration of each shutdown event for the engines included in Table 1 on the SSM Log.*

ALSO NOTE: Ensure times for SSM Logs are synchronized with time for CPMS-T data acquisition system – you will need to compare SSM Logs and the CPMS-T data to identify when data is reported for SSM events.

Shutdown Procedures for Engines in Table 1

For both UNSCHEDULED and ROUTINE SHUTDOWN PROCEDUES, refer to CATERPILLAR OPERATION AND MAINTENANCE MANUAL, G3600 SERIES ENGINES, OPERATION SECTION, ENGINE STOPPING.

NOTE: You may refer to Standard Operating Procedures (SOP) or other plans that already address these procedures.

ALSO NOTE: You must operate the CPMS-T and Delta-P at all times the engines in Table 1 are operating, except during CPMS-T and Delta-P malfunctions, repairs, or QA/QC activities (such as calibration checks).

3.3 Engine Malfunction Events & Procedures

Malfunction Events Included in SSM Plan for Engines in Table 1

[Include list of malfunction events – it may be useful to "name" each type of event – include detailed definitions for events and procedures below for each malfunction event listed]

The following malfunction events are covered by the SSM Plan for the engines in **Table 1**:

- High Engine Coolant Temperature
  - Shutdown @ 208 degrees F
- Engine Overspeed
  - Shutdown @ 1017 rpm
- High Engine Oil Temperature
  - Shutdown @ 194 degrees F
- Low Engine Oil Pressure
  - Shutdown @ 51.5 PSIG
- High Inlet Air temperature at Low Engine Load
  - Shutdown @ 167 degrees F
- High Inlet Air Temperature at High Engine Load
  - Shutdown @ 140 degrees F
- High Exhaust Temperature
  - Shutdown @ 1202 degrees F
- Natural Gas Compressor Malfunction
  - Shutdown

High aftercooler coolant temperature

Shutdown

High crankcase pressure

Shutdown

Low coolant level

Shutdown

NOTE: You must log the occurrence and duration of each malfunction event for the engines included in Table 1 on the SSM Log.

ALSO NOTE: Ensure times for SSM Logs are synchronized with time for CPMS-T data acquisition system – you will need to compare SSM Logs and the CPMS-T data to identify when data is reported for SSM events.

4.0 Oxidation Catalyst Events & Procedures

This section addresses the catalysts installed on the engines included in **Table 1** of this SSM Plan. The catalysts are installed to reduce emissions as necessary to comply with emission limitations that apply to the engines according to 40 CFR 63, Subpart ZZZZ. Under Subpart ZZZZ, operating limitations are established to ensure the catalysts are performing the required emission reductions.

This SSM Plan addresses the following events for the oxidation catalyst devices listed in **Table 1** of this SSM Plan:

oxidation catalyst element installation

oxidation catalyst element removal

oxidation catalyst malfunctions

NOTE: You must track catalyst changes on or after the engine's compliance date. You may include the procedures here – or include those procedures in a separate document.

The malfunction events are defined to identify events that meet the regulatory definition of malfunction. NOTE: Not all "upsets" for the oxidation catalyst devices in **Table 1** qualify as malfunctions under MACT. Malfunctions for MACT must meet the following regulatory definition for malfunction [40 CFR 63.2]:

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.

4.1 Oxidation Catalyst Malfunction Events & Procedures

Malfunction Events Included in SSM Plan for Oxidation Catalyst Included in **Table 1:**

[Include list of malfunction events – it may be useful to "name" each type of event – include detailed definitions for events and procedures below for each malfunction event listed]

The following malfunction events are covered by the SSM Plan for the engines in **Table 1**: (are these numbers applicable to our specific catalysts?)

- High Oxidation Catalyst Backpressure
  - @ Full speed & load (+,- 10%), shutdown @ (initial test backpressure + 1.2" water column)
- Low Oxidation Catalyst Backpressure (after unit is online)
  - @ Full speed & load (+,- 10%), shutdown @ (initial test backpressure minus 1.6" water column)
- High Oxidation Catalyst Temperature
  - Shutdown @ 950 degrees F
- Low Oxidation Catalyst Temperature
  - After engine 'cold start' & warmup, shutdown @ 650 degrees F
- Catalyst deteriorates to 94% reduction efficiency, shutdown engine and inspect catalyst system

NOTE: Each event noted above will appear in the SSM log. Forms will be completed to indicate the action taken in regard to the catalyst.
ALSO NOTE: Ensure times for SSM Logs are synchronized with time for CPMS-T data acquisition system – you will need to compare SSM Logs and the CPMS-T data to identify when data is reported for SSM events.

High Catalyst Back Pressure

Event Definition:
High backpressure is the original backpressure at full speed and load conditions, plus 1.2 additional inches of water column. The engine is programmed to shut down at this condition.
NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation. Must be due to infrequent event not reasonably preventable – not the result of poor maintenance or careless operation.

Event Procedures:
NOTE: You may refer to Standard Operating Procedures (SOP) or other plans (such as catalyst manuals) that already address these procedures.

Excess fouling of the catalyst may significantly impact the performance of the NSCR/AFRC or Oxidation Catalyst. At the earliest opportunity, conduct the following to evaluate and restore catalyst function:

- Record date & time of event beginning for SSM log.
- Remove Oxidation catalyst element to confirm excess fouling – complete log for catalyst removal

  ⇒ Determine cause of excess fouling (catalyst manual troubleshooting or other), if possible and correct the cause
- Conduct washing of catalyst & re-install or replace - complete log.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.
- Retest efficiency to ensure system meets minimum 93% CO reduction requirement

Catalyst Failure

Event Definition:

Catalyst failure is the inability of the catalyst system to reduce carbon monoxide levels by the requisite 93% from the CO concentrations at the inlet to the catalyst.

*NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation. Must be due to infrequent event not reasonably preventable – not the result of poor maintenance or careless operation. The catalyst **will** undergo a normal aging process over time, and will lose efficiency gradually, eventually falling below the 93% minimum level. This normal aging process, and the relative predictability of catalyst failure, is an O&M function. If catalyst failure is the result of the normal aging process, there will be no 'root cause' to investigate nor remediate.*

Catalyst Failure Event may be caused by the following conditions:

- Catalyst poisoning
- Catalyst physical damage
  (as a result of excess vibration, engine backfire or other cause)

Event Procedures:

NOTE: You may refer to Standard Operating Procedures (SOP) or other plans (such as catalyst manuals) that already address these procedures.

Confirmed catalyst failure will require replacement of the catalyst element. At the earliest opportunity:

- Record date & time of event beginning for SSM log.
- Remove failed catalyst element for oxidation catalyst – complete log for catalyst removal.
- Determine cause of catalyst failure (catalyst manual troubleshooting or other), **if possible** and address underlying cause of catalyst failure, as applicable:
- Install replacement catalyst element(s) - complete log.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.

Catalyst Gasket Failure

Event Definition:

A gasket failure will allow exhaust gasses to bypass the catalyst elements, resulting in both a decline in destruction efficiency of CO, as well as a reduction in backpressure upstream of the catalyst. The backpressure measurement should be observed and recorded by the sensing device in the port upstream of the catalyst, and the engine is programmed to shut down if the backpressure is reduced by 1.5 inches of water column from the initial backpressure measurement taken during the first port engine break-in efficiency test.

NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation. Must be due to infrequent event not reasonably preventable – not the result of poor maintenance or careless operation.

Event Procedures:

NOTE: You may refer to Standard Operating Procedures (SOP) or other plans (such as catalyst manuals) that already address these procedures.

Confirmed catalyst gasket failure will require replacement of the catalyst gasket. At the earliest opportunity:

- Record date & time of event beginning for SSM log.
- Inspect all catalysts and gasket assemblies
- Remove failed catalyst gasket(s) for oxidation catalyst.
- Install replacement catalyst gasket.
- Check for exhaust leaks – correct if present.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.

Catalyst Event Checklist

Completed by:_____ **Date:**_____

Type of Event:

- o Catalyst Removal
- o Catalyst Installation
- o Malfunction
- o Other*_____

Catalyst Removal

- Date & Time Catalyst Removed:_____
- Reason for Catalyst Removal: o Catalyst Failure o Excess Catalyst Fouling
  o Catalyst Seal/Seat Failure Other*:_____
  o Routine Maintenance
- Did you follow manufacturer's procedures for catalyst removal? o YES o NO*
- Was the same catalyst element re-installed? o YES o NO*
- Did you record this change in the catalyst log? o YES o NO

Catalyst Installation

- Date & Time Catalyst Installed:_____
- Reason for Catalyst Installation: o Catalyst Failure o Excess Catalyst Fouling
  o Catalyst Seal/Seat Failure Other*:_____
  o Routine Maintenance
- Did you follow manufacturer's procedures for installation? o YES o NO*
- Was the same catalyst element re-installed? o YES o NO*
- Did you record this change in the catalyst log? o YES o NO

Malfunctions

- Date & Time Malfunction Identified:_____
  Duration of Malfunction:_____
- Type of Malfunction: o Catalyst Failure o Excess Catalyst Fouling
  o Catalyst Gasket Failure o Oxygen Sensor Failure o Alarm for Oxygen Sensor
  o Air/Fuel Ratio Controller Failure o Other*:_____

Catalyst Failure:

- Reason for catalyst failure, if known:_____
- Did you remove failed catalyst, install a new catalyst, & complete the catalyst log? o YES o NO*

Excess Catalyst Fouling:

- Reason for excess catalyst fouling, if known:_____
- Did you remove fouled catalyst? o YES o NO*
- Did you remove the fouling & reinstall the same catalyst element or install a new catalyst? o NEW CATALYST o SAME CATALYST RE-INSTALLED
- Did you record this change in the catalyst log? o YES o NO

Catalyst Gasket Failure:

- Reason for excess seal/seat failure, if known:_____
- Did you remove the catalyst to repair/replace the seal/seat? o YES o NO
- Did you repair or replace the seal/seat? or install a new catalyst? o REPAIRED o REPLACED
- Did you record this change in the catalyst log? o YES o NO

*** If "other" or "NO" there may be immediate reporting requirements.**
Contact _____ immediately at _____ (tel)
and fax this form to: _____ (fax) _____

5.0 CPMS-T Malfunction Events & Procedures

This section addresses the continuous parameter monitoring systems (CPMS) for inlet temperature installed on the engines included in **Table 1** of this SSM Plan. The CPMS-T is required to measure inlet temperature into the oxidation catalysts. Inlet temperature must be monitored continuously at all times the engines included in **Table 1** are operating, except during CPMS malfunctions, repairs, and QA/QC activities (such as calibration checks).

This SSM Plan addresses the following events for the CPMS-T devices listed in **Table 1** of this SSM Plan:

- CPMS-T malfunctions
- Periods CPMS-T inoperable

NOTE: You must record periods when the CPMS-T is inoperative. This SSM template includes this recordkeeping requirement in the SSM Plan. You may address this activity in a separate document.

The malfunction events are defined to identify events that meet the regulatory definition of malfunction. NOTE: Not all "upsets" for the CPMS-T systems will qualify as malfunctions under MACT. Malfunctions for MACT must meet the following regulatory definition for malfunction [40 CFR 63.2]:

> *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.

5.1 CPMS-T Malfunction Events & Procedures

Malfunction Events Included in SSM Plan for CPMS-T**:**

The following malfunction events are covered by the SSM Plan for the CPMS-T devices included in **Table 1**:

- Data Acquisition CPMS-T Not Working
- Thermocouple Not Working

NOTE: You must log the occurrence and duration of each malfunction event for the CPMS-T included in Table 1 on the SSM Log. You may choose to use the Inlet Temperature Event Checklist included with this Template or other record.

ALSO NOTE: Ensure times for SSM Logs are synchronized with time for CPMS-T data acquisition system – you will need to compare SSM Logs and the CPMS-T data to identify when data is reported for SSM events.

Data Acquisition CPMS-T Not Continuously Working

Event Definition: Engine parameters are monitored by the CAT ADEM III system and the unit control programmable logic controller (PLC) system. A failure of either of these systems shuts the engine down immediately, eliminating emissions.

The data acquisition system is composed of an Ethernet network that logs catalyst differential pressures and inlet and outlet temperatures. This information is logged at six separate locations. In the event of a failure of the entire network, the PLC will continue to log 24 hours worth of data.

NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation.

Data Acquisition System Not Working Event may be caused by the following conditions:

- Software failure, glitch
- Loss of power or communications
- Improper or failed wiring

Event Procedures:

NOTE: You may refer to Standard Operating Procedures (SOP) or other plans (such as CPMS manuals) that already address these procedures.

If the Data Acquisition System is not working, restore system operation as soon as practical. Procedures for this event may include:

- Record date & time of event beginning for the SSM log.
- Troubleshoot per manufacturer's recommendations, including reinstallation of software, inspection/repair of power or communications connections and wiring, if required.
- Confirm restoration of data acquisition system operation. Record date & time of event ending
- Complete SSM log and prepare Inlet Temperature Event Checklist to document actions taken to respond to this malfunction.

Thermocouple Not Working or Working Improperly

Event Definition:

NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation.

Thermocouple Not Working or Working Improperly Event may be caused by the following conditions:
Thermocouple input failure can indicate a failure of the thermocouple itself, or failed wiring.

Event Procedures:
NOTE: You may refer to Standard Operating Procedures (SOP) or other plans (such as CPMS manuals) that already address these procedures.

If the thermocouple is not working or working improperly, restore system operation as soon as practical. In the event of temperature readings below or in excess of MACT limits, the controls are already programmed to shut the engine down. In the event of a loss of signal, the controller is, again, programmed to shut the engine down. Procedures for this event may include:

- Record date & time of event beginning for the SSM log.
- TC input failure will be logged in the SSM
- Conduct troubleshooting per manufacturer's instructions.
- Identify required adjustment, repair, or replacement, per manufacturer instructions. Complete required actions.
- Thermocouples cannot be calibrated. Once replaced, check the temperature readout on the monitor screen for atmospheric temperature as an indication the thermocouple is giving accurate readings.
- Repair information will be on the inlet temperature event checklist

Inlet Temperature Event Checklist

Completed by:_____ Date:_____

Type of Event:

o **Thermocouple Not Working** o

Other*_____

Thermocouple Not Working

- **Date & Time Noted TC Not Working:_____**
- **Data & Time Last Data Recorded:_____**
- **Date & Time Recorder Operation Restored:_____**
- **Reason for Recorder Failure, if known:_____**

_____

_____

- **Did you follow manufacturer's procedures for troubleshooting?** o **YES** o **NO***
- **Did you repair or replace the data recorder?** o **REPAIR** o **REPLACE**
- **Did you re-calibrate per manufacturer procedures?** o **YES** o **NO***

Other*:

Describe what happened:

_____

_____

_____

When did this event begin:_____

When did this event end: _____

Describe the actions you took to respond:

_____

_____

_____

_____

*** If "other" or "NO" there may be immediate reporting requirements.**
Contact _____ immediately at _____ (tel)
and fax this form to: _____ (fax) _____

6.0 Pressure Drop Malfunction Events & Procedures

This section addresses the measurement equipment for pressure drop for the engines included in **Table 1** of this SSM Plan. The pressure drop equipment measures pressure drop across the oxidation catalysts. Pressure drop **is measured continuously** while the engine is operating.

This SSM Plan addresses the following events for the devices listed in **Table 1** of this SSM Plan to conduct pressure drop measurements. The pressure drop measurement will be accomplished utilizing an electronic pressure sensitive device.

- Malfunctions:
- Failure of a signal from the device
- Abnormal readings

The malfunction events are defined to identify events that meet the regulatory definition of malfunction. NOTE: Not all "upsets" for the pressure drop equipment will qualify as malfunctions under MACT. Malfunctions for MACT must meet the following regulatory definition for malfunction [40 CFR 63.2]:

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.

Signal Failure: in the event of a signal loss, the controller is programmed to shut the engine down.

Record date and time of beginning of event on SSM log

Trouble shoot per manufacturer's recommendation

Adjust, repair, or replace as required, including system check to ensure correct output reads

Abnormal readings – 'out of limit' based on backpressure data acquired during the initial CO efficiency test – engine is programmed to shut down in the event the backpressure exceeds these limits by 1.5 inches of water or more.

Record date and time of beginning of event on SSM log

Trouble shoot per manufacturer's recommendations

Adjust, repair, or replace as required, including subsequent system checks to ensure system is operating correctly

Record date and time of event end on SSM log

7.0 Catastrophic Events

This section addresses events and procedures for catastrophic events. Such events may be considered malfunctions and include:

- Fire
- Lightening
- Weather
- Other 'Acts of God'

Event Definition: Fire, lightening, hazardous weather conditions, or other 'Acts of God' that either occur or have the potential to occur may pose a serious enough threat to the safety of personnel and equipment to warrant emergency shutdown of operating equipment at the facility.

Event Procedures: In the event any of the above described events cause an emergency shut down, after the event has ended and the facility has been deemed safe, conduct the following:

Log in the date and time of the beginning of the event on the SSM log sheet. The beginning time of the event will be logged by the computer system.

Record the end of the event on the SSM log when it is safe for personnel to return and return the equipment (engines) to operation.

NOTE: You may refer to Standard Operating Procedures (SOP) or other plans that already address these procedures.

Malfunction events are defined to identify events that meet the regulatory definition of malfunction. NOTE: Not all "upsets" will qualify as malfunctions under MACT. Malfunctions for MACT must meet the following regulatory definition for malfunction [40 CFR 63.2]:

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.

8.0 What to Do if Actions are Consistent with SSM Plan

If actions taken during SSM events covered by this Plan are consistent with the Plan, you must:

1. Log occurrence & duration of SSM event for SSM Log.
   ⇒ Beginning time & ending time –synchronize with times for CPMS-T, since you will need to compare data from these two systems to identify CPMS-T data recorded during SSM events.
2. Record actions taken during event – checklist.
3. Keep copies of checklists & SSM logs.

9.0 What to Do if Actions are Inconsistent with SSM Plan

If actions taken during SSM events covered by this Plan are inconsistent with the Plan, you must:

1. Log occurrence & duration of SSM event for SSM Log
   ⇒ Beginning time & ending time –synchronize with times for CPMS-T, since you will need to compare data from these two systems to identify CPMS-T data recorded during SSM events.
2. Record actions taken during event, circumstances of event, & why plan was not followed.
3. Assess whether emissions or operating limits have been exceeded.
4. Prepare & submit Immediate SSM Report to [EPA or delegated authority] – see form.
   ⇒ Submit phone or fax report within 2 days
   ⇒ Submit letter report within 7 days – Letter report must include:
   -Actions taken during SSM event.
   –Explanation of circumstances of the event.
   –Description of all excess emissions and/or parameter monitoring exceedances that are believed to have occurred.
   –Name, Title, Signature of owner/operator or other responsible official who is certifying accuracy of the Immediate SSM Reports
5. Keep copies of checklists & SSM logs.
6. Review SSM procedures to determine if SSM Plan should be revised.

Immediate Startup, Shutdown, Malfunction Report

For reporting procedures inconsistent with SSM Plan or Malfunctions not covered by Plan

Facility: _____

Address: _____

Engine: _____

Malfunctioning Device: NSCR: _____

Temperature CPMS: _____

Date of Malfunction: _____

Covered by Plan? Yes [ ] No [ ]

If yes, were actions inconsistent with Plan? Yes [ ] No [ ]

Time Malfunction Began: _____ Time Malfunction Ended: _____

Suspected cause of malfunction: _____

Corrective actions taken _____

If actions inconsistent with plan, why did you take other actions: _____

Do you believe any excess emissions and/or parameter monitoring exceedances occurred during the malfunction? Yes [ ] No [ ]

Were any units shut down due to event? Yes [ ] No [ ]

Your name: _____ Title: _____

Signature of Responsible Official: _____

Fax or call this information into local air permitting agency within 2 working days of the event & send letter within 7 working days

10.0 What to Do if Malfunction Occurs Not Covered by SSM Plan

If malfunction occurs not covered by this SSM Plan, you must:

1. Log occurrence & duration of SSM event for SSM Log
   ⇒ Beginning time & ending time –synchronize with times for CPMS-T, since you will need to compare data from these two systems to identify CPMS-T data recorded during SSM events.
2. Record actions taken during event and circumstances of event.
3. Assess whether emissions or operating limits have been exceeded.
4. Prepare & submit Immediate SSM Report to [EPA or delegated authority] – see form.

   ⇒ Submit phone or fax report within 2 days

   ⇒ Submit letter report within 7 days – Letter report must include:
   -Actions taken during SSM event.
   –Explanation of circumstances of the event.
   –Description of all excess emissions and/or parameter monitoring exceedances that are believed to have occurred.
   –Name, Title, Signature of owner/operator or other responsible official who is certifying accuracy of the Immediate SSM Reports
5. Keep copies of checklists & SSM logs.
6. Revise SSM Plan within 45 days after malfunction event. NOTE: If revision changes the scope of SSM activities, the plan revision does not take effect until written notification of the change is submitted to [EPA or the delegated authority].

Appendix:

Consumers Energy

A CMS Energy Company

Consumers Energy Company

White Pigeon Compressor Station

White Pigeon, Michigan

Units C1, C2, C3 & C4

Continuous Parameter Monitoring System (CPMS)

Monitoring Plan

Revision 2

May 11, 2012

[1]Revisions must be retained for 5 years from the date of the revision.

1945 W. Parnall Road • Jackson, MI 49201 • Fax: 517 788 2329 • www.consumersenergy.com

Monitoring Plan Revision History[1]			
Revision No.	**Revised By**	**Revision Date**	**Comments (e.g. Description of Revisions)**
0	AD Kapuga	June 4, 2010	Draft
1	AD Kapuga	August 29, 2011	Initial Promulgation
2	AD Kapuga	May 11, 2012	Updated DAS information

[1]Revisions must be retained for 5 years from the date of the revision.

TABLE OF CONTENTS

1.0 CPMS Monitoring Plan Overview

Facility: White Pigeon Compressor Station

Physical Address: 68536 A Road, White Pigeon, MI

1.1 Regulatory Requirement

Subpart ZZZZ of 40 CFR 63 [National Emission Standard for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engine (RICE)] requires continuous monitoring of the exhaust catalyst inlet temperature for affected units at the White Pigeon Compressor Station. The primary monitoring requirement are defined in §63.6625(b) and §63.6635 of Subpart ZZZZ. Additional requirements are defined in the General Provisions (part 63, Subpart A). §63.6625(b) requires a Monitoring Plan for the continuous parameter monitoring system (CPMS) that monitors the catalyst inlet temperature to ensure compliance with a specified temperature operating limit. Common criteria associated with CPMS instrumentation and its operation can be used at multiple sites, but Subpart ZZZZ requires a site-specific Monitoring Plan that must be available for review if requested by EPA or delegated state or local air quality agencies.

1.2 Definitions

The following definitions apply:

Unit Startup: Unit startup is initiated in all cases when fuel and ignition are turned on and is considered complete when the unit bypass valve is fully closed.

Unit Shutdown: Unit shutdown is initiated when the issuance of a shutdown command, pushing the shutdown button, or reducing the unit load with intent to shut down if shutting down manually. The shutdown is complete when fuel and ignition have been turned off.

Malfunction: A 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. This definition is provided for information only. Operations should consult

with the Station Supervisor to determine whether or not a malfunction has occurred due to any unit alarm or shutdown for purposes related to the MACT rules.

A CPMS is out-of-control if:

The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or

The CPMS fails a performance test audit, relative accuracy audit, relative accuracy test audit, or linearity test audit.

2.0 Affected Sources and Associated CPMS Equipment

This section provides information on the affected RICE and the CPMS instrumentation and equipment. Per §63.6625(b)(1)(i), the CPMS Monitoring Plan must include monitoring system design specification and equipment performance criteria for the sample interface, detector signal analyzer, and data acquisition and calculations.

2.1 Affected Sources Description

Consumers Energy's White Pigeon Compressor Station (N5573) is a natural gas compression station. The purpose of the facility is to maintain pressure in the pipeline transporting natural gas from a mainline to storage facilities location in Michigan or to local distribution companies. In 2010, three (3) natural gas fired, lean burn, reciprocating engines with a two-way catalyst for control (Caterpillar Model G3616, 4735 hp each) and one (1) natural gas fired, lean burn, reciprocating engine with two-way catalyst for control (Caterpillar Model G3608, 2370 hp) were installed. All engines are of a four stroke design and are spark-ignited (4 stroke lean burn - 4SLB).

Engines Subject to RICE MACT & Provisions of this Plan				
Engine ID	Engine Description		Site-Rated HP	Emission Controls
	Manufacturer	Model		
EUENGINE1	Caterpillar	G3608	2,370	OxyCat
EUENGINE2	Caterpillar	G3616	4,735	OxyCat
EUENGINE3	Caterpillar	G3616	4,735	OxyCat
EUENGINE4	Caterpillar	G3616	4,735	OxyCat

2.2 System Design Considerations

The purpose of the CPMS is to:

- Monitor the catalyst inlet temperature every 15 minutes, not including periods of startup, shutdown, or malfunction.
- Average the data on a 4-hour rolling basis.
- Ensure the catalyst inlet temperature is maintained between the established temperature range of 450°F – 1350°F.

2.2.1 Temperature Measurement Device Specifications

The following specifications apply to the temperature measurement devices:

Parameter	Specification
Location	Immediately upstream of the catalyst face, with an insertion depth of at least 1/3 pipe diameter and no more than ½ pipe diameter into the flow stream. Based on exhaust piping layout and the inclusion of mixing baffles in the catalyst housing, turbulent flow is assured so relatively uniform temperatures are anticipated along an axis across the exhaust duct.
Device Type	A NIST traceable RTD
Range	450°F - 1350°F
Tolerance	±1.0 percent of the temperature range, or 2.8°C (5°F), whichever is larger [§63.6625(b)(4)]

2.2.2 Wiring

Conduit cable is installed per the latest edition of the National Electric Code.

2.2.3 Data Acquisition System

The data acquisition system (DAS) is composed of an Ethernet network that logs catalyst inlet and outlet temperatures. This information is logged at six separate locations. In the event of a failure of the entire network, the PLC will continue to log 24 hours of data. The DAS will provide the following readouts: [§63.8(c)(2)(ii)]

- Instantaneous catalyst inlet temperature
- 15-minute snapshot temperature readings
- 1-hour average temperatures
- 4-hour rolling average temperatures
- Readout or other indication of operation must be readily accessible on-site.

Data will be retained for at least 6 days in the DAS for retrieval in the event of a failure of the reporting system. Additionally, the operator will have the capability of generating a screen print from the DAS in the event of a failure of the reporting system.

2.2.4 Reporting System

A PC with reporting software installed is connected to the DAS for data retention and report generation. The software is used to collect the data from the DAS, collate into a report formatted for printing, and for long-term retention of the data.

3.0 Temperature Monitoring System Performance Evaluation and Periodic QA/QC Procedures

3.1 Periodicity

The requirements for periodic audits consist of equipment requirements and procedural requirements. All equipment has to be calibrated and meet general requirements for accuracy: (1) An accuracy hierarchy of at least three, and (2) an accuracy that is NIST-traceable. An exception to the accuracy requirements for instruments that are used to audit the accuracy of the CPMS is when performing an accuracy audit using a redundant sensor, the redundant sensor would have to have an accuracy equal to or better than the accuracy of the primary sensor.

A factory calibrated unit was installed on each of the units. The calibration certification sheets, or other appropriate documentation, shall be retained demonstrating factory calibration. Annual QA/QC evaluations of the CPMS shall be conducted as described below.

3.2 Methodology

The performance of the temperature CPMS will be validated by comparing measured values to a calibrated measurement device, based on ASTM E220-07e1 (Standard Test Methods for Calibration of Thermocouples by Comparison Techniques). The sensor of the calibrated device will be located adjacent to the CPMS sensor. The measurements made using the CPMS and calibrated temperature measurement device will be concurrent.

3.2.1 Calibration

The calibration of the RTD shall be checked in place in accordance with manufacturer's recommendations and company policies and procedures. The methods used shall address both the RTD and the DAS. A written work order documenting steps to be followed shall be used.

3.2.2 Accuracy

The accuracy criteria for the validation check is ±1.0 percent of the temperature, or 2.8°C (5°F), whichever is greater. The catalyst inlet temperature is required to be maintained at 450°F to 1350°F. Therefore, the system accuracy criterion for the CPMS is ±1 percent of temperature.

3.3 Notification

Notification to MDEQ prior to conducting the performance evaluation or with results after testing is not required.

3.4 Documentation

Closeout of the work order shall be considered sufficient documentation provided factory calibration sheets, field readings, and/or other results, as appropriate, are included in the closeout comments or attached to the work order.

3.5 Malfunctioning CPMS

In the event of a malfunction of the CPMS, the engine shall be shut down until such time as troubleshooting can occur. Operation of the engine while troubleshooting a malfunction of the CPMS is acceptable. Possible indications of a malfunction include, but are not limited to:

- Temperatures out of range (high or low)
- Failure to generate daily printouts of the logs
- Erroneous or nonsensical data on the printed logs
- Failure of the visual display of temperatures from the DAS

3.5.1 Recordkeeping and Reporting

Logs documenting the malfunction of the CPMS, immediate actions and corrective actions shall be taken in accordance with Section 5.3 of this plan. Additionally, the Environmental Department shall be notified immediately of the malfunction.

3.5.2 Troubleshooting a Malfunctioning CPMS

White Pigeon shall troubleshoot the CPMS according with the manufacturer's recommendations, company policy and procedures and good operating practices.

4.0 CPMS Operation and Maintenance

4.1 CPMS Operation

The CPMS will be in operation whenever the monitored engine operates, with the exception of monitoring malfunctions, associated repairs, and required quality assurance or control activities. Data will be collected as follows:

- Sample the catalyst inlet temperature at least once every 15 minutes including startup, shutdown and malfunction periods
- Average the 15-minute samples on an hourly basis. Average the hourly average on a 4-hour rolling average basis. Averaging should start from "end of startup event" (i.e., when the bypass valve is fully closed) and should stop at the "beginning of shutdown (i.e., issuance of the stop command) or malfunction event.
- An hour is defined as a 60-minute period beginning at the o-clock (i.e., 1:00, 2:00, etc.)
- If a unit starts midway through an hour, record 15-minute data points but begin averaging only if there are at least two data points for the first-based 60 minute period. Each of the two data points should represent a 15-minute period.
- If a unit stops midway through an hour, the 15-minute data points will be monitored and recorded; however, the average for that last clock-based 60 minute period should only be computed if at least two data points are available.
- Each 4-hour average calculation will include the most current hourly average and the 3 previous hourly average values collected during normal sequential engine operation.
- A 4-hour average will not be calculated until four 1-hour average values have been tabulated in sequence
- Each engine shutdown will reset the averaging process

Alarms and shutdowns shall be provided as follows:

- The CPMS shall alarm when the oxidation catalyst inlet temperature reaches 550°F decreasing or 1250°F increasing
- The CPMS shall shut down the unit when the oxidation catalyst inlet temperature is below 400°F for 20 minutes, or exceeds 1200°F.
- Alarms and shutdowns shall be disabled as follows:
    - High temperature: never
    - Low temperature: during unit startup

4.2 CPMS Maintenance

4.2.1 Preventative Maintenance

CPMS maintenance will be conducted in according with company policy and procedures. Additionally, daily station walkdowns take place to check on obvious signs of physical failure of the equipment.

4.2.2 Corrective Maintenance

Corrective maintenance will be conducted according to manufacturer's recommendations, company policy and procedures, and good operating practices, in a manner consistent with safety and good air pollution control practices for minimizing emissions in the event of a CPMS malfunction, impending malfunction, or out-of-control CPMS. In lieu of conducting immediate corrective maintenance, operations may shutdown the associated engine until such time as corrective maintenance can be performed.

4.3 Spare Parts

A set list of spare parts of the CPMS will not be maintained in inventory. If a spare part for the system is not available when needed, the affected engine will be shut down until such time as the necessary spare part can be procured and installed.

5.0 Data Management

5.1 Valid Data

Valid data is defined as data not "recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities". Specifically, valid data is comprised of:

- 15-minute readings not recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities
- Hourly averages consisting of at least two (2) valid 15-minute readings
- 4-hour rolling averages consisting of four (4) valid hourly averages

5.2 Data Review

Operations shall review the CPMS daily reports to:

- Confirm all required data was collected
- Identify any data collected that was not valid data, as defined above
- Confirm that no exceedances of temperature limits occurred

Missing data may be recovered by:

- Forcing a new printout
- Recover data from DAS/PLC
- Generating screen print

If missing data is unrecoverable (e.g., due to power failure), exceedances are identified, or non-valid data is identified, the Environmental Department shall be notified immediately. Additionally, in the event of repeated instances of missing data, whether recoverable or unrecoverable, over a short duration of time, an investigation as to the causes is to be conducted.

5.3 Recordkeeping

The following records collected by the CPMS are required to be retained for a period of five years. At a minimum, the most recent two-year data shall be available on site. The other three years data may be stored off site, but should be accessible within a reasonable time. These records can be retained either electronically, via hard copy, or both, and shall be easily accessible.

- Each 4-hour average
- Each hourly average used to calculate the 4-hour average values

- Each 15-minute data point used to calculate hourly averages, as well as 15-minute data points during startup and shutdowns.
- The algorithm/calculation procedure used to reduce data
- All readings taken during periods of CPMS breakdowns and out-of-control periods

Additionally, the following records shall be created and retained regarding the CPMS:

- The date and time identifying each period during which the CPMS was inoperative, except for zero (low-level) and high-level checks
- The date and time identifying each period during which the CPMS was out-of-control
- The date and time of commencement and completion of each time period where the CMPS 4-hour rolling temperature was out of the specified limits in this plan, other than during periods other than startups, shutdowns and malfunctions of the affected source.
- The nature and cause of any malfunction (if known)
- The corrective action taken or preventative measures adopted
- The nature of the repairs or adjustments to the CPMS that was inoperative or out of control
- The total process operating time during the reporting period
- Documentation of any QA/QC procedures performed for CPMS

5.4 Reports

5.4.1 Daily Data Reports

A daily report for each unit shall be generated and printed after midnight for the previous calendar day. The report shall include, at a minimum, the following:

- Each 15-minute data sample of the catalyst inlet temperature
- Each hourly average of the catalyst inlet temperature
- Each 4-hour rolling average of the catalyst inlet temperature
- Each malfunction event and the occurrence and duration of that event (begin time and end time)
- Every unit alarm and shutdown

5.4.2 Compliance Reports

- Immediate notifications of non-compliance
- Semiannual reports and annual compliance reports
- Notification of malfunctioning and out-of-control CPMS events
- Notification of intent to conduct performance test
- Notification of compliance status at the completion of performance tests

6.0 PROGRAM OF CORRECTIVE ACTION FOR A MALFUNCTIONING CPMS

The CPMS-T is required to measure inlet temperature into the oxidation catalysts. Inlet temperature must be monitored continuously at all times the engines are operating, except during CPMS malfunctions, repairs, and QA/QC activities (such as calibration checks).

Malfunction Events Included in SSM Plan for CPMS-T**:**

The following malfunction events are covered by the SSM Plan for the CPMS-T devices:

- Data Acquisition CPMS-T Not Working
- Thermocouple Not Working

Data Acquisition CPMS-T Not Continuously Working

Event Definition: Engine parameters are monitored by the CAT ADEM III system and the unit control programmable logic controller (PLC) system. A failure of either of these systems shuts the engine down immediately, eliminating emissions. The data acquisition system is composed of an Ethernet network that logs catalyst differential pressures and inlet and outlet temperatures. This information is logged at six separate locations. In the event of a failure of the entire network, the PLC will continue to log 24 hours worth of data.

NOTE: Malfunction events may not include events caused in part by poor maintenance or careless operation.

Data Acquisition System Not Working Event may be caused by the following conditions:

- Software failure, glitch
- Loss of power or communications
- Improper or failed wiring

Event Procedures:

If the Data Acquisition System is not working, restore system operation as soon as practical.

Procedures for this event may include:

- Record date & time of event beginning for the SSM log.
- Troubleshoot per manufacturer's recommendations, including reinstallation of software, inspection/repair of power or communications connections and wiring, if required.

- Confirm restoration of data acquisition system operation. Record date & time of event ending
- Complete SSM log and prepare Inlet Temperature Event Checklist to document actions taken to respond to this malfunction.

Thermocouple Not Working or Working Improperly

Event Definition: Thermocouple Not Working or Working Improperly Event may be caused by the following conditions: Thermocouple input failure can indicate a failure of the thermocouple itself, or failed wiring.

Event Procedures:

If the thermocouple is not working or working improperly, restore system operation as soon as practical. In the event of temperature readings below or in excess of MACT limits, the controls are already programmed to shut the engine down. In the event of a loss of signal, the controller is, again, programmed to shut the engine down. Procedures for this event may include:

- Record date & time of event beginning for the SSM log.
- TC input failure will be logged in the SSM
- Conduct troubleshooting per manufacturer's instructions.
- Identify required adjustment, repair, or replacement, per manufacturer instructions. Complete required actions.
- Thermocouples cannot be calibrated. Once replaced, check the temperature readout on the monitor screen for atmospheric temperature as an indication the thermocouple is giving accurate readings.
- Repair information will be on the inlet temperature event checklist

Inlet Temperature Event Checklist

Completed by:_____ Date:_____

Type of Event:

o **Thermocouple Not Working**

o **Other*_____**

Thermocouple Not Working

- **Date & Time Noted TC Not Working:_____**
- **Data & Time Last Data Recorded:_____**
- **Date & Time Recorder Operation Restored:_____**
- **Reason for Recorder Failure, if known:_____**

_____

_____

- **Did you follow manufacturer's procedures for troubleshooting?** o **YES** o **NO***
- **Did you repair or replace the data recorder?** o **REPAIR** o **REPLACE**
- **Did you re-calibrate per manufacturer procedures?** o **YES** o **NO***

Other*:

Describe what happened:

_____

_____

_____

When did this event begin:_____

When did this event end: _____

Describe the actions you took to respond:

_____

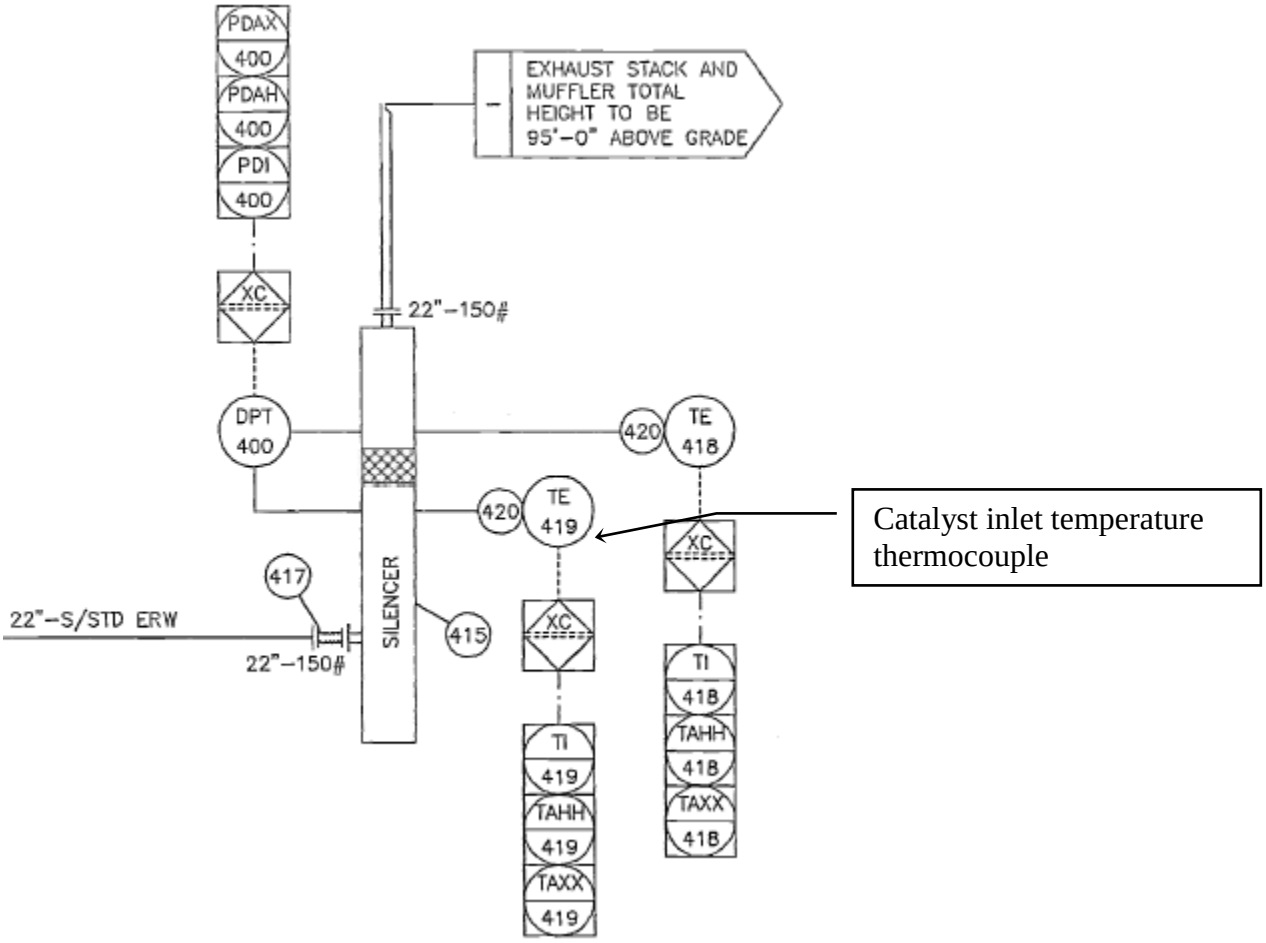
_____

_____

_____

*** If "other" or "NO" there may be immediate reporting requirements.**
Contact _____ immediately at _____ (tel)
and fax this form to: _____ (fax) _____

FIGURES


PDAX
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PDAH
400
PDI
400
XC
DPT
400
EXHAUST STACK AND
MUFFLER TOTAL
HEIGHT TO BE
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22"-150#
420
TE
418
420
TE
419
XC
417
SILENCER
415
22"-S/STD ERW
22"-150#
XC
TI
419
TAHH
419
TAXX
419
XC
TI
418
TAHH
418
TAXX
418
Catalyst inlet temperature thermocouple

Preventative Maintenance/ Malfunction Abatement (PM/MAP) Plan

White Pigeon Compressor Station Plant 3

Prepared by:

Timothy K. Joyce

March 2010
Revised May 2014

Table of Contents

1.0 PM/MAP Overview and Approval

Facility: WHITE PIGEON COMPRESSOR STATION PLANT 3
Physical Address: 68536 A Road, Route 1
White Pigeon, MI 49099
Plan Adoption Date: _____
Previous Revisions: None
_____
_____

Purpose of the PM/MAP:
The purpose of this PM/MAP is to describe the actions that will be taken at the White Pigeon Compressor Station Plant 3 to prevent, detect, and correct malfunctions or equipment failures in emissions exceeding any applicable emission limitation for engines included in **Table 1** of this Plan.

Copies of the current PM/MAP are on file at the White Pigeon Compressor Station. The current PM/MAP, and prior versions, must be maintained for a period of five (5) years. This PM/MAP does not contain proprietary information.

At White Pigeon Compressor Station, the station manager, Timothy B. Wolf or his designee is responsible for assuring that the most recent copy of this PM/MAP is made available to personnel involved with the affected engine operations. This individual is also responsible for ensuring that Station employees are aware of the procedures and requirements contained in this Plan.

All reports for the PM/MAP must be signed by a Responsible Official.

PM/MAP Approval: Initial PM/MAP – Yes [] or Revision No. 1

Name: Tim Wolf , Date _____

Title: White Pigeon Gas Field Leader _____

Signature: _____

Table 1. IC Engines Covered by PM/MAP

Facility: WHITE PIGEON PLANT 3 COMPRESSOR STATION

Engine ID	Engine Description		Site-Rated HP	Emission Controls (NSCR/AFRC or Oxy-Cat)	Pressure Drop & CPMS-T	Subcategory & Compliance Date for MACT Requirements (check one & enter compliance date)
	Manufacturer	Model				
BEN 00515	Caterpillar	G3608TALE	2,370	Oxidation catalyst	Initial ΔP 3.45" water – alarms at 4.45" and 2.45", shutdown @ 5.45 and 1.45" of water column. Initial catalyst inlet temperature at 756° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 28, 2010 (upon startup)
BLB 00456	Caterpillar	G3616TALE	4,735	Oxidation catalyst	ΔP 3.2" water – alarms at 4.2" and 2.2", shutdown @ 5.2" and 1.2". Catalyst inlet temperature at 775.7°F.	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: March 15, 2014 (catalyst change)
BLB 00485	Caterpillar	G3616TALE	4,735	Oxidation catalyst	Initial ΔP 2.93" water – alarms at 3.93" and 1.93", shutdown @ 4.93 and 0.93" of water column. Initial catalyst inlet temperature at 754° F, shutdown at 1350 and 450° F	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: June 27, 2010 (upon startup)
BLB 00487	Caterpillar	G3616TALE	4,735	Oxidation catalyst	ΔP 3.0" water – alarms at 4.0" and 2.0", shutdown @ 5.0" and 1.0". Catalyst inlet temperature at 774.5°F.	☐ 4SRB xx 4SLB ☐ 2SLB compliance date: March 16, 2014 (catalyst change)

2.0 Equipment Covered by PM/MAP

This PM/MAP covers the engines, emission controls, and monitoring equipment that are included in **Table 1**.

3.0 Engine Operating Variables to be Monitored

The Electronic Control Module (ECM) monitors the operating parameters of the engine. The ECM can initiate a warning or a shutdown if a specific engine parameter exceeds an acceptable range.

Engine ECM Monitoring

Low System Voltage

High Engine Coolant Temperature (88° C Jacket Water Rating)

Low Engine Coolant Temperature

High Pump Outlet Pressure

Low Jacket Water Outlet Pressure

Engine Overspeed

Engine Overload

High Engine Oil Temperature

Low Engine Oil Pressure (Under 600 RPM)

Low Engine Oil Pressure (Over 600 RPM)

High Engine Oil Pressure

High Oil Filter Differential Pressure

Low Oil Filter Differential Pressure

High Fuel Temperature

Low Fuel Differential Pressure

High Fuel Differential Pressure

High System Voltage

High Inlet Air Temperature at Low Engine Load 54° SCAC

High Inlet Air Temperature at High Engine Load 54° SCAC

High Engine Load

High Engine Oil to Engine Coolant Differential Temperature

High Inlet Air Restriction (Right)

High Inlet Air Restriction (Left)

The Integrated Combustion Sensing Module (ICSM) monitors the temperature of the cylinder exhaust ports, the inlet of the turbocharger turbine, and the outlets of the turbocharger turbines. The ICSM also monitors the combustion sensors.

Integrated Combustion Sensing Module (ICSM)

High Exhaust Temperature (Port)

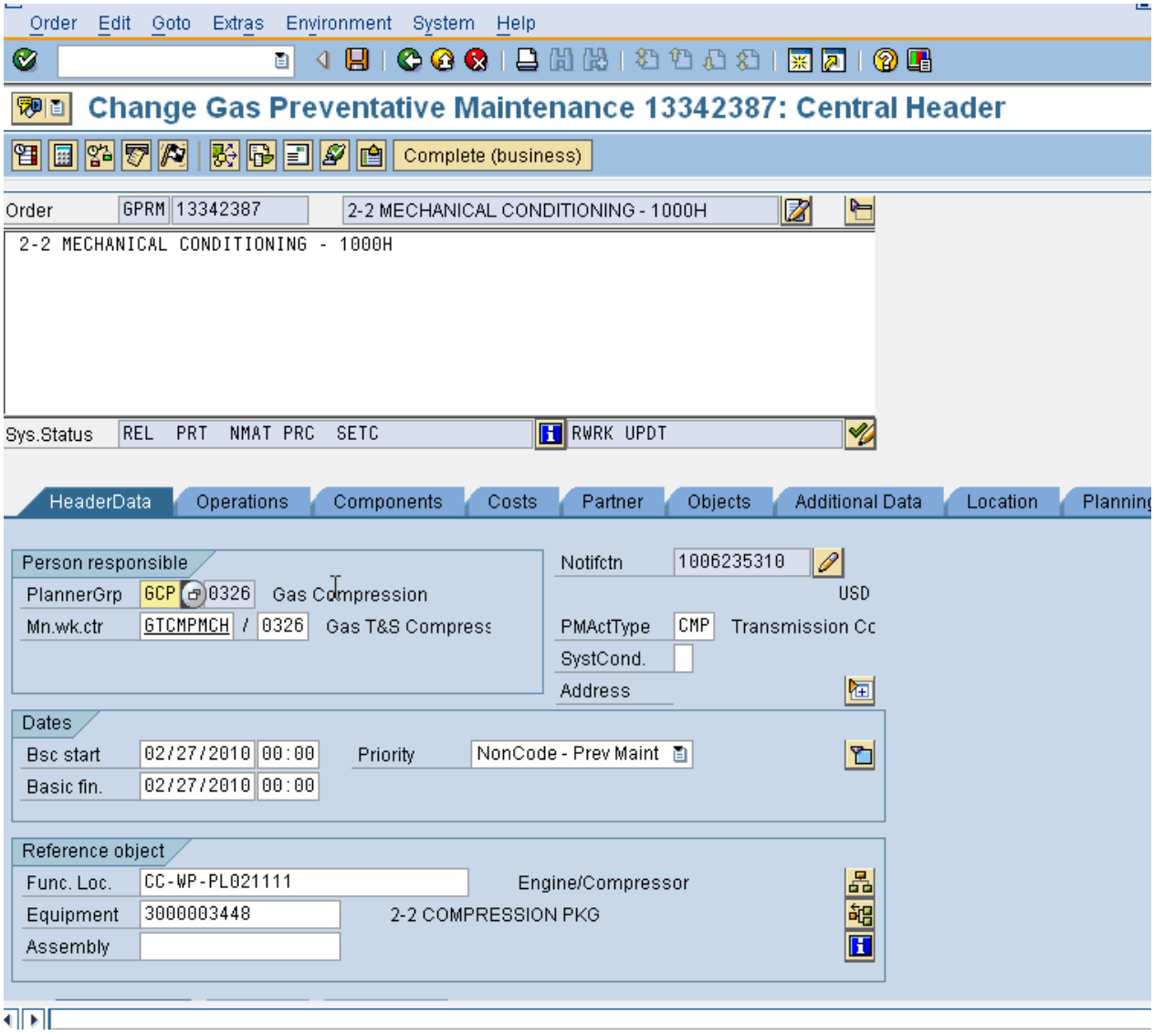
Exhaust Port Temperature High Deviation

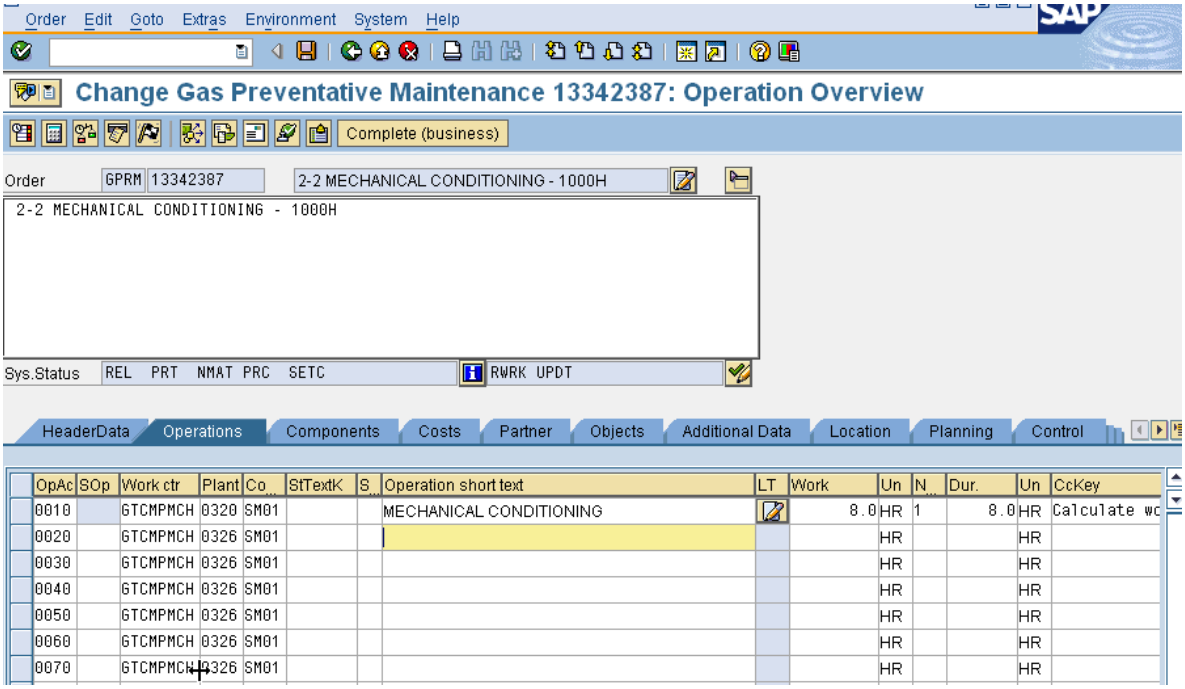
Exhaust Port Temperature Low Deviation

High Turbo Turbine Inlet Temperature

High Turbo Turbine Outlet Temperature

Engine Maintenance logs will be kept in the SAP system. Here is a sample work order:




Order Edit Goto Extras Environment System Help
Change Gas Preventative Maintenance 13342387: Operation Overview
Complete (business)
Order GPRM 13342387 2-2 MECHANICAL CONDITIONING - 1000H
2-2 MECHANICAL CONDITIONING - 1000H
Sys.Status REL PRT NMAT PRC SETC RWRK UPDT
HeaderData Operations Components Costs Partner Objects Additional Data Location Planning Control
OpAc SOp Work ctr Plant Co... StTextK S... Operation short text LT Work Un N... Dur. Un CcKey
0010 GTCMPMCH 0320 SM01 MECHANICAL CONDITIONING 8.0 HR 1 8.0 HR Calculate wo
0020 GTCMPMCH 0326 SM01 HR HR
0030 GTCMPMCH 0326 SM01 HR HR
0040 GTCMPMCH 0326 SM01 HR HR
0050 GTCMPMCH 0326 SM01 HR HR
0060 GTCMPMCH 0326 SM01 HR HR
0070 GTCMPMCH 0326 SM01 HR HR

4.0 Engine Malfunction Events & Procedures

Malfunction Events for Engines in Table 1

Engine ECM Monitoring

- Low System Voltage
  - Shutdown @ 18 Volts
- High Engine Coolant Temperature (88° C Jacket Water Rating)
  - Shutdown @ 208 °F
- High Pump Outlet Pressure
  - Shutdown @ 93 psi
- Low Jacket Water Outlet Pressure
  - Shutdown @ 14.9 psi
- Engine Overspeed
  - Shutdown @ 1017 rpm
- High Engine Oil Temperature
  - Shutdown @ 194 °F
- Low Engine Oil Pressure (Under 600 RPM)
  - Shutdown @ 14.5 psi
- Low Engine Oil Pressure (Over 600 RPM)
  - Shutdown @ 50.8 psi
- High Engine Oil Pressure
  - Shutdown @ 145 psi
- High Oil Filter Differential Pressure
  - Shutdown @ 43.5 psi
- Low Oil Filter Differential Pressure
  - Shutdown @ 0.44 psi
- High Inlet Air Temperature at Low Engine Load 54° SCAC
  - Shutdown @ 185 °F
- High Inlet Air Temperature at High Engine Load 54° SCAC
  - Shutdown @ 167 °F
- High Engine Oil to Engine Coolant Differential Temperature
  - Shutdown @ 59 °F
- High Inlet Air Restriction (Right)
  - Shutdown @ 0.76 psi
- High Inlet Air Restriction (Left)
  - Shutdown @ 0.76 psi

Integrated Combustion Sensing Module (ICSM)

- High Exhaust Temperature (Port)
  - Shutdown @ 1202 °F
- Exhaust Port Temperature High Deviation
  - Shutdown @ 212 °F
- Exhaust Port Temperature Low Deviation
  - Shutdown @ 752 °F
- High Turbo Turbine Inlet Temperature
  - Shutdown @ 1202 °F
- High Turbo Turbine Outlet Temperature
  - Shutdown @ 1112 °F

*Malfunction events listed above will be investigated and mitigated using the CATERPILLAR G3600 Engines Troubleshooting Guide.

5.0 Major Engine Parts Replacement Inventory

Part Number	Part Description
CATE-1948518	Plug, Spark (New Style)
CATE-2835269	Transformer
CATE-9Y6792	Gasket
CATE-1791502	Element, Filter
CATE-6V3349	Seal
CATE-1G8878	Element, Filter
CATE-1059741	Element, Filter
CATE-6V3602	Seal, O-ring
CATE-8T8883	Seal, O-ring
TES-JFG-312R	Fuel Gas Filter
CATE-1101168	Switch Assembly, Jacket Water
CATE-1162649	Thermocouple
CATE-1308299	Sensor Group, Fuel, Air Manifold/Oil Temperature
CATE-1495150	Regulator
CATE-1520807	Sensor Group, TE, Thermocouple
CATE-1593219	Sensor, Combustion
CATE-1638523	Sensor Group, PR, Filtered Oil Pressure
CATE-1945338	Sensor, Speed
CATE-1952431	Sensor Group, KN, Knock Detection
CATE-2076859	Sensor Group, PR, Crankcase Pressure
CATE-4W7103	Element, Filter

Remaining items will be ordered from CAT on an as-needed basis.

6.0 Oxidation Catalyst Operating Variables

The following variables will be constantly monitored using pressure and temperature transmitters feeding data into a digital control system (DCS) with a data historian. Operating ranges will be established during the initial performance test:

Pressure Drop across Catalyst

Maintain the catalyst so that the pressure drop across the catalyst does not change by more than two inches of water, at 100 percent load (+/- 10 percent load), from the pressure drop measured during the initial performance test (initial performance test will be conducted at 100 percent load +/- 10 percent load). Pressure drop across the catalyst will be monitored by an electronic pressure sensitive device

Catalyst Inlet Temperature

Maintain the engine exhaust temperature so that the catalyst inlet temperature is greater than or equal to 450°F and less than or equal to 1350°F. The catalyst inlet temperature will be continuously monitored by a Continuous Parameter Monitoring System (thermocouple).

7.0 Oxidation-Catalyst (Oxy-Cat) Malfunction Events & Procedures

Malfunction Events for Oxy-Cats Included in **Table 1:**

- High OxyCat Catalyst Backpressure
  - @ Full speed & load (+,- 10%), shutdown @ (initial test backpressure + 2" water column)
- Low OxyCat Catalyst Backpressure (after unit is online)
  - @ Full speed & load (+,- 10%), shutdown @ (initial test backpressure minus 2" water column)
- High OxyCat Catalyst Temperature
  - Shutdown @ 950 degrees F
- Low OxyCat Catalyst Temperature
  - After engine 'cold start' & warmup, shutdown @ 650 degrees F
- Catalyst deteriorates to 94% reduction efficiency, shutdown engine and inspect catalyst system

High Catalyst Back Pressure

Event Definition:
High backpressure is the original backpressure at full speed and load conditions, plus 2 additional inches of water column. The engine is programmed to shut down at this condition.

Event Procedures:
Excess fouling of the catalyst may significantly impact the performance of the NSCR/AFRC or Oxy-Cat. At the earliest opportunity, conduct the following to evaluate and restore catalyst function:

- Record date & time of event beginning for SSM log.
- Remove Oxy-Cat catalyst element to confirm excess fouling – complete log for catalyst removal

  ⇒ Determine cause of excess fouling (catalyst manual troubleshooting or other), if possible and correct the cause
- Conduct washing of catalyst & re-install or replace - complete log.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.
- Retest efficiency to ensure system meets minimum 93% CO reduction requirement

Catalyst Failure

Event Definition:
Catalyst failure is the inability of the catalyst system to reduce carbon monoxide levels by the requisite 93% from the CO concentrations at the inlet to the catalyst.

*NOTE: The catalyst **will** undergo a normal aging process over time, and will lose efficiency gradually, eventually falling below the 93% minimum level. This normal aging process, and the relative predictability of catalyst failure, is an O&M function. If catalyst failure is the result of the normal aging process, there will be no 'root cause' to investigate nor remediate.*

Catalyst Failure Event may be caused by the following conditions:

- Catalyst poisoning
- Catalyst physical damage
  (as a result of excess vibration, engine backfire or other cause)

Event Procedures:
Confirmed catalyst failure will require replacement of the catalyst element. At the earliest opportunity:

- Record date & time of event beginning for SSM log.
- Remove failed catalyst element for Oxy-Cat – complete log for catalyst removal.
- Determine cause of catalyst failure (catalyst manual troubleshooting or other), **if possible** and address underlying cause of catalyst failure, as applicable:
- Install replacement catalyst element(s) - complete log.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.

Catalyst Gasket Failure

Event Definition:
A gasket failure will allow exhaust gasses to bypass the catalyst elements, resulting in both a decline in destruction efficiency of CO, as well as a reduction in backpressure upstream of the catalyst. The backpressure measurement should be observed and recorded by the sensing device in the port upstream of the catalyst, and the engine is programmed to shut down if the backpressure is reduced by 2 inches of water column from the initial backpressure measurement taken during the first port engine break-in efficiency test.

Event Procedures:
Confirmed catalyst gasket failure will require replacement of the catalyst gasket. At the earliest opportunity:

- Record date & time of event beginning for SSM log.
- Inspect all catalysts and gasket assemblies
- Remove failed catalyst gasket(s) for Oxy-Cat.
- Install replacement catalyst gasket.
- Check for exhaust leaks – correct if present.
- Complete SSM log and prepare Catalyst Event Checklist to document actions taken to respond to this malfunction.

8.0 Emissions Checks

A portable analyzer will be used following the procedure below:

The O_2 will be measured at the inlet and outlet of the oxidation catalyst with a portable CO and O_2 analyzer using ASTM D6522-00 (incorporated by reference, according to §63.14). Measurements will be made to determine O_2 at the same time as the measurements for CO concentration.

The CO will be measured at the inlet and outlet of the oxidation catalyst with a portable CO and O_2 analyzer using ASTM D6522-00 (incorporated by reference, according to §63.14). The CO concentration must be 15% O_2, dry basis.

9.0 Scheduled Oxidation Catalyst Maintenance

The manufacturer's (Pollution Control Associates) recommended cleaning and/or replacement schedule is listed below:

OPERATION WARNING SIGNS AND GUIDELINES
The major indications of changes, some normal, in catalyst operation that may signal the need for maintenance are:

1. Change in temperature rise across the catalyst. Normal rise may range from a few degrees to 100+ degrees, depending on the application and design. It is affected by the amount of destruction, gas flow rates, the amount of catalyst used and other factors. Consult your initial readings taken when the engine was first commissioned. *A practical guideline* is to remove and inspect the catalyst when the temperature rise drops to one-half the initial value. The change in temperature rise is the useful indicator.

2. Change in pressure drop across the catalyst. If soot or ash is clogging the honeycomb, the pressure difference will rise. *A practical guideline* is to remove and inspect the catalysts when the pressure drop is double the initial value or when engine backpressure becomes too high. Some regulations say that a 2" w.c. increase warrants catalyst inspection. This is about double the initial value, based on PCA sizing practices.

3. Upward trend in emission testing data. The emissions of the system will rise over time due to normal operation. Some exhaust compounds will slowly mask or cover the catalytic material. Most masking can be reversed by regenerating the catalyst periodically. Any sudden change in readings often indicates an unusual circumstances that needs to be investigated:

   a. Are the engine operating parameters still the same or similar to the initial baseline readings?

   b. Has the fuel changed? Engine specifications state the fuel type.

   c. Is the AFRC controller in adjustment? Engine temperatures can change drastically when operated out of mixture range.

   d. Are all engine cylinders firing? Mis-fires add fuel to the exhaust and other cylinders may run hotter to produce rated output.

   e. Has the engine been modified or the engine controller setting changed?

f. Was there a catastrophic event such as a turbo failure?

g. Has the catalyst been poisoned by exposure to antifreeze or the compounds mentioned in the "General" section of this document?

h. Has the catalyst been in operation for months or years without being inspected?

Note: the length of time between inspections will vary based on operating conditions, manufacturers' requirements and duty cycle.

4. Failure of a regular emissions test or pretest.

REMOVAL, PHYSICAL INSPECTION AND TROUBLESHOOTING

When you remove the catalyst look for:

1. Sooty 'tracks' in the housing and gasket that indicates some exhaust is bypassing the catalyst.

2. Large deposits of SOOT or ASH, especially on the face of the element

3. Burned areas in the face of the element, evidence of fuel/oil fires or high temperature

4. Telescoped catalyst bed, evidence of backfiring.

5. Gaps / sags in the catalyst creating a direct path through the bed. This is very rare in PCA catalysts due to active tension control during winding and overpacking and compressing the bed in rectangular units. When a catalyst is not functioning or if monitoring data indicates a decline in performance, the catalyst should be removed and examined.

INSURE THE ENGINE IS RUNNING WITHIN THE ORIGINAL SPECIFICATIONS.

1. Most PCA round catalysts are built with integral bracing that helps them withstand engine backfire pressure pulses or other forces that can cause the catalyst to 'telescope', making removal difficult. If the catalyst has been deformed, try to determine and fix the condition that caused the failure.

2. If gaps or sags or bulges are evident, try to determine the cause such as excessive backfiring due to malfunctions or poor starting procedures. PCA round catalysts are formed, braced and heat treated prior to coating. This results in a 'bonded' substrate that resists gapping/sagging.

3. If deep burns in the face of the element are evident, the engine may be blowing excessive amounts of oil into the exhaust. These may build up in small areas and ignite. Check and service the engine to eliminate the source of excess oil. Other sources of "fire" are raw fuel in the exhaust and "hot" fuel.

4. Chemical Regeneration will be required if mechanical cleaning does not remove the debris and if the catalyst is not too old.
   Field Washing – Regeneration:
   We do not recommend that chemical processing be done in the field unless full laboratory practices are available. Chemicals must be mixed carefully and used properly to avoid damage. After processing, solutions must be neutralized and properly disposed of. Solids removed from catalysts may contain heavy metals and other hazardous compounds.

CATALYST REGENERATION (Washing)

Catalysts, in good condition, can be regenerated 2-3 times before they have to be replaced. Regeneration can often restore much of the effectiveness of the catalyst. However, if the performance of the unit was operating near EPA limits when new, a re-engineered or new element will likely be needed. The process consists of immersing the catalyst into baths using weak non-phosphate alkaline cleaners and acetic acid solutions with deionized water rinses and careful drying to remove organic and inorganic compounds that have been deposited onto the catalyst beds. This work is done by the original manufacturer or its designated contractor. The use of other chemicals or incorrect concentrations can permanently damage the element.

When you receive a regenerated unit you should begin new data logging as though the unit were new. You will notice the initial performance of the regenerated unit to be less than when it was new. After the second or third reprocessing, the performance difference between the before and after stages will be very close, indicating the need to purchase a new element.
A properly sized and maintained system should last several years. If you experience short catalyst life, try to obtain actual engine output data, compare it to the original information used to size the catalyst. PCA will be glad to assist in resizing the catalyst for longer life. See also the appendix on catalyst life for

other factors. The use of “hard” tap water, containing metallic ions will poison a catalyst over time.

Use only deionized water known to be free of calcium, zinc and other metallic ions for washing.

Ultrasonic cleaning, which is really a way of agitating the cleaning solutions to shorten the process time, should be applied with care to prevent extraordinary damage to the catalytic coatings on the steel substrates.
The use of Hi-pressure washing equipment or high pressure air are not likely a good idea. The platinum or other coatings are coatings, not plated on, and can be washed off with high pressure streams. For instance a few hundred psi will penetrate human skin, 6000psi will etch concrete, 20000psi will cut metal.

CATALYST RE-INSTALLATION

1. Clean all mating surfaces of the catalyst and vessel to allow gaskets to seal properly.

2. Reinstall the existing gasket if it is in good condition or install a new gasket of the proper size, material and temperature rating.

3. Reinstall any mounting hardware

4. Seal the vessel cover(s).

5. Perform a final inspection and restart the unit IAW proper operating instructions.

6. Make entries in the data sheets and note readings, logging them as though the unit were new.

DANGER: Exhaust gases are poisonous and must be properly vented to the atmosphere. Do not operate the system unless all covers are sealed and in place.

10.0 Major Oxidation Catalyst Replacement Parts Inventory

The major replacement parts for the oxidation catalyst are:

- Catalyst Element
- Element Gasket

11.0 Supervisory Personnel Responsible for Maintenance of Control Equipment

Name: Tim Wolf

Title: Field Leader

Location: White Pigeon Compressor Station
68536 “A” Road, Route 1
White Pigeon, MI 49099

Phone: (269) 483-2902 office
(269) 921-1879 cell

Email: tbwolf@cmsenergy.com

12.0 Retention of Records

Records shall be maintained on file for a period of 5 years.

13.0 Updates/revisions of PM/MAP

Periodically you may need to revise your PM/MAP. You must retain copies of all PM/MAP revisions for a period of 5 years.

Revisions must be completed within 45 days if the PM/MAP does not address – or inadequately addresses – an event that occurs and meets the characteristics of a malfunction. The revisions must include procedures to operate and maintain the source during similar malfunction events and a program of corrective action for similar malfunctions of the engine, controls, or monitoring equipment. The revised plan shall be submitted to the AQD District Supervisor. Should the AQD determine the PM/MAP to be inadequate, the AQD District Supervisor may request modification of the plan to address those inadequacies. MDNRE recommends the PM/MAP be reviewed annually.