App No. 202400315

FEDERAL-MOGUL POWERTRAIN

December 2, 2024

Ms. Heidi Hollenbach
Michigan Department of Environment, Great Lakes, and Energy (EGLE)
Air Quality Division
Grand Rapids District Office
350 Ottawa Avenue NW, Unit 10
Grand Rapids, MI 49503

RE: Renewable Operating Permit (ROP) Minor Modification Application
Incorporate Permit to Install No. 368-97F
Federal-Mogul Powertrain, LLC [SRN: N6327]

Dear Ms. Hollenbach:

Federal-Mogul Powertrain, LLC (Federal-Mogul) is submitting this minor modification application pursuant to Michigan Air Pollution Control Rule 216(2) to incorporate the terms and conditions of Permit to Install (PTI) No. 368-97F into Renewable Operating Permit (ROP) No. MI-ROP-N6327-2015 (currently pending renewal, per Application 202000019 submitted on February 4, 2020). Our facility is located at 47001 Port Street, Plymouth, Michigan.

Federal Mogul received approval of PTI No. 368-97F on August 9, 2024 to allow Federal-Mogul to perform engine testing using hydrogen, natural gas, and diesel as fuels at the facility's existing test cells 12, 14, 15 and 16, contained in flexible group FG-4CELLS, with the use of an emissions abatement system. Additionally, PTI No. 368-97F contains revised annual fuel use restrictions on gasoline and diesel at the remaining existing 12 test cells in flexible group FG-TESTCELLS. Appendix 10 of PTI No. 368-97F includes temporary conditions that allow operation of the test cells during the transition of the four (4) test cells.

The enclosed ROP modification application includes the modification application form (M-001), ROP certification form (C-001), a copy of ROP No. MI-ROP-N6327-2015, and a copy of PTI No. 368-97F.

If you have questions regarding this ROP minor modification application, please contact Noah Hardy (noah.hardy@tenneco.com) at (734) 209-1569.

Sincerely,

Steve Davis
Chief Engineer

Enclosures

cc: Ms. Katie Koster, EGLE-AQD
Dr. April Wendling, EGLE-AQD
Mr. Dave Thiel, Tenneco
Mr. Ross Gladwin, Tenneco
Mr. Noah Hardy, Tenneco
Mr. Eric Marko, P.E, NTH Consultants, Ltd.

Federal-Mogul Powertrain•Technical Center
47001 Port Street • Plymouth, Michigan 48170
Tel. (734) 254-0100 • Fax (734) 254-8901

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EGLE

Michigan Department of Environment, Great Lakes, and Energy
Air Quality Division

RENEWABLE OPERATING PERMIT
M-001: RULE 215 CHANGE NOTIFICATION
RULE 216 AMENDMENT/MODIFICATION APPLICATION

This information is required by Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, 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.

1. SRN N6327	2. ROP Number MI-ROP-N6327-2015	3. County Wayne
4. Stationary Source Name	Federal-Mogul Powertrain, LLC	
5. Location Address	47001 Port Street	6. City Plymouth

7. Submittal Type - *The submittal must meet the criteria for the box checked below. Check only one box. Attach a mark-up of the affected ROP pages for applications for Rule 216 changes.*

- ☐ **Rule 215(1) Notification of change.** *Complete Items 8 – 10 and 14*
- ☐ **Rule 215(2) Notification of change.** *Complete Items 8 – 10 and 14*
- ☐ **Rule 215(3) Notification of change.** *Complete Items 8 – 11 and 14*
- ☐ **Rule 215(5) Notification of change.** *Complete Items 8 – 10 and 14*
- ☐ **Rule 216(1)(a)(i)-(iv) Administrative Amendment.** *Complete Items 8 – 10 and 14*
- ☐ **Rule 216(1)(a)(v) Administrative Amendment.** *Complete Items 8 – 14. Results of testing, monitoring & recordkeeping must be submitted. See detailed instructions.*
- ☒ **Rule 216(2) Minor Modification.** *Complete Items 8 – 12 and 14*
- ☐ **Rule 216(3) Significant Modification.** *Complete Items 8 – 12 and 14, and provide any additional information needed on ROP application forms. See detailed instructions.*
- ☐ **Rule 216(4) State-Only Modification.** *Complete Items 8 – 12 and 14*

8. Effective date of the change. (MM/DD/YYYY) *See detailed instructions.* 12/13/2024	9. Change in emissions? ☒ Yes ☐ No

10. Description of Change - *Describe any changes or additions to the ROP, including any changes in emissions and/or pollutants that will occur. If additional space is needed, complete an Additional Information form (AI-001).*

Incorporate the terms and conditions of PTI No. 368-97F for flexible groups FG-4CELLS and FG-TESTCELLS. PTI No. 368-97F includes revised fuel limits for FG-TESTCELLS and hydrogen and gasoline capabilities with the installation of an emissions abatement system for FG-4CELLS.

11. New Source Review Permit(s) to Install (PTI) associated with this application? ☒ Yes ☐ No

If Yes, enter the PTI Number(s) 368-97F ____ - ____ ____ - ____ ____ - ____ ____ - ____

12. Compliance Status - *A narrative compliance plan, including a schedule for compliance, must be submitted using an AI-001 if any of the following are checked No.*

a. Is the change identified above in compliance with the associated applicable requirement(s)? ☒ Yes ☐ No

b. Will the change identified above continue to be in compliance with the associated applicable requirement(s)? ☒ Yes ☐ No

c. If the change includes a future applicable requirement(s), will timely compliance be achieved? ☒ Yes ☐ No

13. Operator's Additional Information ID - *Create an Additional Information (AI) ID for the associated AI-001 form used to provide supplemental information.* **AI**

14. Contact Name	Telephone No.	E-mail Address
Noah Hardy	734-209-1569	noah.hardy@tenneco.com

15. This submittal also updates the ROP renewal application submitted on 02/04/2020 ☒ Yes ☐ N/A
(If yes, a mark-up of the affected pages of the ROP must be attached.)

NOTE: A CERTIFICATION FORM (C-001) SIGNED BY A RESPONSIBLE OFFICIAL MUST ACCOMPANY ALL SUBMITTALS

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

RENEWABLE OPERATING PERMIT APPLICATION
C-001: CERTIFICATION

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 provide this information may result in civil and/or criminal penalties. Please type or print clearly.

This form is completed and included as part of Renewable Operating Permit (ROP) initial and renewal applications, notifications of change, amendments, modifications, and additional information.

Form Type **C-001**	SRN N6327

Stationary Source Name Federal-Mogul Powertrain, LLC	
City Plymouth	County Wayne

SUBMITTAL CERTIFICATION INFORMATION

1. Type of Submittal *Check only one box.*

☐ Initial Application (Rule 210) ☒ Notification / Administrative Amendment / Modification (Rules 215/216)

☐ Renewal (Rule 210) ☐ Other, describe on AI-001

2. If this ROP has more than one Section, list the Section(s) that this Certification applies to _____

3. Submittal Media ☒ E-mail ☐ FTP ☐ Disk ☒ Paper

4. Operator's Additional Information ID - Create an Additional Information (AI) ID that is used to provide supplemental information on AI-001 regarding a submittal.

AI

CONTACT INFORMATION

Contact Name Noah Hardy	Title EHS Specialist
Phone number 734-209-1569	E-mail address noah.hardy@tenneco.com

This form must be signed and dated by a Responsible Official.

Responsible Official Name Steve Davis			Title Chief Engineer	
Mailing address 47001 Port Street				
City Plymouth	State MI	ZIP Code 48170	County Wayne	Country U.S.

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

Signature of Responsible Official

12/2/2024
Date

ATTACHMENT A

- **COPY OF ROP No. MI-ROP-N6327-2015**

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Michigan Department Of Environmental Quality
Air Quality Division

EFFECTIVE DATE: AUGUST 21, 2015

ISSUED TO

FEDERAL-MOGUL CORPORATION

State Registration Number (SRN): N6327

LOCATED AT

47001 Port Street, Plymouth, Michigan 48170

RENEWABLE OPERATING PERMIT

Permit Number: MI-ROP-N6327-2015

Expiration Date: August 21, 2020

Administratively Complete ROP Renewal Application Due Between
February 21, 2019 – February 21, 2020

This Renewable Operating Permit (ROP) is issued in accordance with and subject to Section 5506(3) of Article II, Chapter 1, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. 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 PA 451 and the federal Clean Air Act.

SOURCE-WIDE PERMIT TO INSTALL

Permit Number: MI-PTI-N6327-2015

This Permit to Install (PTI) is issued in accordance with and subject to Section 5505(5) of Article II, Chapter 1, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. 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 PA 451 and the federal Clean Air Act.

Michigan Department of Environmental Quality

Wilhemina McLemore, Detroit 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 are 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). **(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: **(R 336.1301(1))**
    a. A 6-minute average of 20 percent opacity, except for one 6-minute average per hour of not more than 27 percent 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). **(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. **(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. **(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(9))**

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(7))**

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 portion of the permit will be left blank.

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
EU-TESTCELL1	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL2	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL3	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL4	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL5	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-TESTCELL6	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL7	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL8	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL9	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL10	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL11	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL12	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date/ Modification Date	Flexible Group ID
EU-TESTCELL13	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL14	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL15	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-TESTCELL16	One of 16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	11/01/98	FG-ALLCELLS
EU-GASOLINE_TANKS	Two multi-compartment Steel Underground Storage Tanks for motor fuels (gasoline, E85 or blends of fuels) as described: One 12,000 gallon tank with (2) 6,000 gallon compartments (UST 1 and UST 2). One 6,000 gallon tank with (3) 2,000 gallon compartments (UST 3, UST 4, and UST10) One 2,000 gallon –Blow Off Tank (UST 5)	11/01/98	FG-NESHAP CCCCCC (6C)
EU-SAFETYKLEEN	Parts Washer	01/01/1998	FG-COLDCLEANERS
EU-BEARINGTESTER	Bearing Testing Machine	12/01/2005	FG-RULE290

D. FLEXIBLE GROUP CONDITIONS

Part D outlines 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
FG-ALLCELLS	16 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Fifteen cells test engines ranging in size from 250 to 600 horsepower and one cell tests small engines. Each cell has its own individual stack with identical parameters. (PTI No. 368-97E)	EU-TESTCELL1, EU-TESTCELL2 EU-TESTCELL3, EU-TESTCELL4 EU-TESTCELL5, EU-TESTCELL6 EU-TESTCELL7, EU-TESTCELL8 EU-TESTCELL9, EU-TESTCELL10 EU-TESTCELL11, EU-TESTCELL12 EU-TESTCELL13, EU-TESTCELL14 EU-TESTCELL15, EU-TESTCELL16
FG-NESHAP CCCCCC (6C)	Group of steel underground storage tanks for motor fuels (gasoline, E85 or a combination of fuels) with compartment ranging in size from 2,000 to 12,000 gallons.	EU-GASOLINE_TANKS
FG-COLDCLEANERS	Parts Washer	EU-SAFETYKLEEN
FG-RULE290	Bearing Testing Machine	EU-BEARINGTESTER

FG-ALLCELLS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emission Units: 16 Gasoline/Diesel/E-85 Engine Test Cells. For the purposes of this permit, E-85 means ethanol-gasoline blends of up to 85% ethanol and the remainder gasoline and will be treated as gasoline. (PTI No. 368-97E)

POLLUTION CONTROL EQUIPMENT

Federal-Mogul installed an Air Injection Control System (AICS) in 2004 to control CO and VOC emissions from the test cells. The AICS works by injecting a measured stream of air into the exhaust gas which is hotter than the auto ignition point of CO, causing the CO to oxidize in the exhaust pipe. The air injection rate (scfm) is dependent on the type of durability or deep thermal shock (DTS) test being performed. The exhaust temperature is monitored before and after air injection to assure sufficient destruction efficiency. The exhaust temperature needs to reach 1100°F to oxidize CO; exhaust temperatures using the AICS usually exceed 1400°F. The AICS does, however, cause a minor increase in NOx emissions. The AICS is used with durability and deep thermal shock testing for most gasoline engines, but is not used with diesel or small engines or during developmental testing.

The facility also operates an Automatic Data Acquisition System, which monitors all operating parameters of the test cells on a continuous basis. These parameters include fuel usage, exhaust temperature, and air injection rate.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. VOC	5.6 tons per year[2]	12-month rolling time period	FG-ALLCELLS	SC VI.9, SC VI.19	**R336.1205(1)(a) &(3), R336.1702(a)**
2. Carbon Monoxide	223.3 tons per year[2]	12-month rolling time period	FG-ALLCELLS	SC V.1, SC VI.8, SC VI.19	**R336.1205(1)(a) &(3)**
3. NOx	62.1 tons per year[2]	12-month rolling time period	FG-ALLCELLS	SC V.1, SC VI.7	**R336.1205(1)(a) &(3)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Gasoline including E-85	2,630,750 lb/year[2]	12-month rolling time period	FG-ALLCELLS	SC VI.1, SC VI.12	**R336.1205(1)(a)&(3), 40 CFR 52.21(c)&(d)**
2. Gasoline including E-85	16,713 lb/day[2]	Per day	FG-ALLCELLS	SC VI.1, SC VI.11	**R336.1205(1)(a)&(3), R336.1225**
3. Gasoline including E-85	2,327 lb/hr[2]	Per hour	FG-ALLCELLS	SC VI.1, SC VI.10	**R336.1205(1)(a)&(3), R336.1225, 40 CFR 52.21(c)& (d)**
4. Diesel or fuel oil	1,418,000 lb/year[2]	12-month rolling time period	FG-ALLCELLS	SC VI.2, SC VI.12	**R336.1205(1)(a)&(3), 40 CFR 52.21(c)&(d)**

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
5. Diesel or fuel oil	19,143 lb/day[2]	Per day	FG-ALLCELLS	SC VI.2, SC VI.11	**R336.1205(1)(a)&(3), 40 CFR 52.21 (c)&(d)**
6. Diesel or fuel oil	0.30% sulfur content in fuel[2]	Test Protocol	FG-ALLCELLS	SC VI.18	**R.336.1402, Michigan State Implementation Plan**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The AICS shall maintain the air injection rate as stated below or establish an alternative minimum air injection rate based on a minimum average temperature differential of 190 °F between the exhaust temperature and a point downstream of the air injection location and a minimum oxygen concentration of 1 percent downstream of the air injection location. Operating below the minimum air injection rates in the table below, or alternative air injection rates, for more than 20 seconds is an excursion. Documentation of any alternative minimum air injection rates shall be kept on file for a period of at least five years. Proper operating parameters may be updated and applied by the permittee provided the changes have been submitted to and approved by the District Supervisor, AQD.[2] **(40 CFR 64.6(c)(1)(i), 40 CFR 64.6(c)(2))**

Test	Minimum Air Injection Rate (scfm)
Durability Cycle A	45
Durability Cycle B	50
Durability Cycle C	72
Durability Cycle D	50
Deep Thermal Shock	45

V. TESTING/SAMPLING

Records shall be maintained on file for a period of 5 years. **(R 336.1213(3)(b)(ii))**

1. Once, during the term of the ROP, verification of NOx and CO emission rates from a representative number of test cells included in FG-ALLCELLS, by testing at owner's expense, in accordance with Department requirements will be required. A representative number of test cells shall be defined in the test plan and subject to AQD approval. No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.[2] **(R336.1205(1)(a) & (3), R336.2001, R336.2003, R336.2004)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of 5 years. **(R 336.1213(3)(b)(ii))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the gasoline flow for each engine tested, except for the small engine test cell, on a continuous basis.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the diesel flow for each engine tested, on a continuous basis.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point on a continuous basis during all periods of time when the AICS is operating.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a), 40 CFR 64.6(c)(1)(iii))**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the air injection rate (in scfm) on a continuous basis during all periods of time when the AICS is operating.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a), 40 CFR 64.6(c)(1)(iii))**

5. The permittee shall properly maintain the Automatic Data Acquisition System including keeping necessary parts for routine repair of the monitoring equipment. **(40 CFR 64.7(b))**

6. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NOx emission calculation records for FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3), 40 CFR 52.21 (c) & (d))**

7. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month CO emission calculation records for FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3))**

8. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month VOC emission calculation records for FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

9. The permittee shall calculate the hourly gasoline usage rate for FG-ALLCELLS based upon calendar monthly recordkeeping prorated to an hourly rate using actual operating hours.[2] **(R336.1225, R336.1702(a), 40 CFR 52.21 (c) & (d))**

10. The permittee shall calculate the daily diesel and gasoline usage rate for FG-ALLCELLS based upon calendar monthly recordkeeping prorated to a daily rate using actual operating days.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

11. The permittee shall keep, in a satisfactory manner, monthly gasoline and diesel fuel use records for FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

12. The permittee shall keep, in a satisfactory manner, a written log of the hours of operation for FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a), 40 CFR 52.21 (c) & (d))**

13. The permittee shall keep, in a satisfactory manner, records of the air injection rate (scfm) during all periods of time the AICS is operating.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a), 40 CFR 64.6(c)(1)(ii))**

14. The permittee shall keep, in a satisfactory manner, records of the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point during all periods of time the AICS is operating.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a), 40 CFR 64.6(c)(1)(ii))**

15. The permittee shall keep, in a satisfactory manner, records of all periods of time the AICS is operating in any of the test cells included in FG-ALLCELLS.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

16. The permittee shall keep, in a satisfactory manner, annual average CO and VOC destruction efficiency calculation records.[2] **(R336.1205(1)(a) & (3), R336.1225, R336.1702(a))**

17. The permittee shall maintain a complete record of fuel oil specifications and/or fuel analysis for each delivery, or storage tank, of fuel oil or diesel fuel. These records may include purchase records for ASTM specification fuel oil, specifications or analyses provided by the vendor at the time of delivery, analytical results from laboratory testing, or any other records adequate to demonstrate compliance with the percent sulfur limit in fuel oil.[2] **(R336.1205(1)(a)(ii)(C))**

18. The permittee shall equip and maintain all gasoline engine test cells included in FG-ALLCELLS that conduct Durability and Deep Thermal Shock testing with an air injection control system (AICS). The AICS must achieve a minimum overall annual average CO and VOC destruction efficiency of 77 percent and 90 percent,

respectively. The destruction efficiencies shall be calculated following the procedures in Appendix 7. Appendix 7 may be updated and applied by the permittee provided any changes have been submitted to and approved by the District Supervisor, AQD. Proper operation of the AICS includes maintaining the cycle average exhaust temperature just upstream of the air injection point and downstream of the air injection point at a minimum of 1300 °F and the procedures listed in SC IV.1. Operating below 1300 °F for more than 30 minutes is an excursion. SC IV.1 may be updated and applied by the permittee provided any changes have been submitted to and approved by the District Supervisor, AQD.[2] **(40 CFR 64.6(c)(1)(i), 40 CFR 64.6(c)(2))**

19. Upon detecting an excursion or exceedance, the owner or operator shall restore operation of the pollutant-specific emissions unit (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). In response to an excursion the system will be shut down. **(40 CFR 64.7(d))**

20. The permittee shall operate the Automatic Data Acquisition System during all required periods when FG-ALLCELLS is in operation. Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the owner or operator shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the pollutant-specific emissions unit is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of this part, including data averages and calculations or fulfilling a minimum data availability requirement, if applicable. The owner or operator shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions. **(40 CFR 64.6(c)(3), 40 CFR 64.7(c))**

21. The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan and any activities undertaken to implement a quality improvement plan, and other information such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions. **(40 CFR 64.9(b)(1))**

See Appendix 7

VII. REPORTING

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

2. Semiannual reporting of monitoring and deviations pursuant to Special Condition 23 of Part A. Report shall be received by 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 Special Conditions 19 and 20 of Part A. Report shall be received by appropriate AQD district office by March 15 for the previous calendar year. **(R 336.1213(4)(c))**

4. The permittee shall notify the Division if a change in equipment in FG-ALLCELLS occurs which could affect a change in emissions or emission factors relied upon to demonstrate compliance with R336.1225. The notification shall be submitted to the Division within 30 days of the actual equipment change.[1] **(R336.1225)**

5. The permittee shall notify the Division if a change in land use occurs for property classified as industrial or as a public roadway, where this classification was relied upon to demonstrate compliance with R336.1225 for FG-ALLCELLS. The notification shall be submitted to the Division within 30 days of the actual land use change. Within 60 days of the land use change, the permittee shall submit to the Division a plan for complying with the requirements of R336.1225.[1] **(R336.1225)**

6. Each semiannual report of monitoring and deviations shall include summary information on the number, duration and cause of excursions and/or exceedances and the corrective action taken. If there were no excursions and/or exceedances in the reporting period, then this report shall include a statement that there were no excursions and/or exceedances. **(40 CFR 64.9(a)(2)(i))**

7. Each semiannual report of monitoring and deviations shall include summary information on monitor downtimes. If there were no periods of monitor downtime in the reporting period, then this report shall include a statement that there were no periods of monitor downtime. **(40 CFR 64.9(a)(2)(ii))**

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 Diameter (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. Each of the 16 stacks included in SV-ALLCELLS	6[2]	32[2]	R336.1225, 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

1. If the permittee identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall promptly notify the AQD and if necessary, submit a proposed modification of the CAM Plan to address the necessary monitoring changes. Such a modification may include but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters. **(40 CFR 64.7(e))**

2. The permittee shall comply with all applicable requirements of 40 CFR Part 64. **(40 CFR Part 64)**

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

FG-NESHAP CCCCCC (6C)
FLEXIBLE GROUP CONDITIONS

DESCRIPTION:

This flexible group includes existing and new/reconstructed stationary gasoline dispensing facilities (GDFs) located at an area source of hazardous air pollutants (HAPs) that have a maximum monthly gasoline throughput of one of the following:

1. Less than 10,000 gallons
2. At least 10,000 gallons and no more than 100,000 gallons

GDF means any stationary source which dispenses gasoline into the fuel tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine use solely for competition. These facilities include, but are not limited to, facilities that dispense gasoline into on- and off-road, street, or highway motor vehicles, lawn equipment, boats, test engines, landscaping equipment, generators, pumps, and other gasoline-fueled engines and equipment. For the purpose of this permit E-85 will be treated as gasoline

Emission Unit: EU-GASOLINE_TANKS

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Required measures for a gasoline dispensing facility (GDF) with monthly throughput less than 10,000 gallons

   a. The permittee must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. **(40 CFR 63.11116(a))**

   b. The permittee shall minimize gasoline spills. **(40 CFR 63.11116(a)(1))**

   c. The permittee shall clean up spills as expeditiously as practicable. **(40 CFR 63.11116(a)(2))**

   d. The permittee shall cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use. **(40 CFR 63.11116(a)(3))**

   e. The permittee shall minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators. **(40 CFR 63.11116(a)(4))**

2. Required measures for GDF with monthly throughput > than 10,000 gallons and < than 100,000 gallons

a. The permittee must comply with the requirements cited in Section III.1 for GDF facilities with monthly throughput <10,000 gallons **(40CFR 63.11117(a)**

b. The permittee must only load gasoline into storage tanks utilizing submerged filling as specified in §63.11117(b) (1) and (2).**(40 CFR 63.11117(b))**

c. Submerged fill pipes not meeting the specifications listed on §63.11117 (b) (1) and (2) are allowed if the owner or operator can demonstrate that the liquid level in the tank is always above the entire opening of the fill pipe. Documentation for such demonstration must be made available for inspection **(40 CFR 63.11117(b)(3))**

d. Gasoline storage tanks with capacities of less than 250 gallons are not required to comply with the submerged fill requirements cited on paragraph (b) of this section, but must comply only with all of the requirements in §63.11116. **(40 CFR 63.11117 (c)**

3. If your GDF has a monthly throughput of 100,000 gallons of gasoline or more, you must comply with the requirements in §63.11118. **(40 CFR 63.11111(d))**

4. If your affected source's throughput ever exceeds an applicable throughput threshold, the affected source will remain subject to the requirements for sources above the threshold, even if the affected source throughput later falls below the applicable throughput threshold. **(40 CFR 63.11111(i))**

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. Record of Gasoline Throughput
   a. The permittee shall maintain records of gasoline throughput to demonstrate that their monthly throughput is less than the 10,000-gallon or the 100,000-gallon threshold level, as applicable. The records must be made available to USEPA or to MDEQ within 24 hours of a request **(40 CFR 63.11116(b), 40 CFR 63.11117(d))**
   b. Monthly throughput is the total volume of gasoline loaded into, or dispensed from, all the gasoline storage tanks located at a single affected GDF **(40 CFR 63.11111(h))**
   c. Monthly throughput is calculated by summing the volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the current day, plus the total volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the previous 364 days, and then dividing that sum by 12.**(40 CFR 63.11132)**

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)

1. The permittee shall comply with all applicable provisions of the Gasoline Distribution MACT as specified in 40 CFR 63 Subpart CCCCCC. **(40 CFR 63 Subpart A and CCCCCC)**

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).

FG-COLD CLEANERS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

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

Emission Unit: EU-SAFETYKLEEN

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(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(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(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

FG-RULE 290
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and 290.

Emission Unit: EU-BEARINGTESTER

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

1. Each emission unit that emits only noncarcinogenic volatile organic compounds or noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone if the total uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 pounds per month, respectively. **(R 336.1290(a)(i))**

2. Each emission unit that the total uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 pounds per month, respectively, and all the following criteria listed below are met: **(R 336.1290(a)(ii))**

   a. For noncarcinogenic air contaminants, excluding noncarcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with initial threshold screening levels greater than or equal to 2.0 micrograms per cubic meter, the uncontrolled or controlled emissions shall not exceed 1,000 or 500 pounds per month, respectively. **(R 336.1290(a)(ii)(A))**

   b. For noncarcinogenic air contaminants, excluding noncarcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with initial threshold screening levels greater than or equal to 0.04 microgram per cubic meter and less than 2.0 micrograms per cubic meter, the uncontrolled or controlled emissions shall not exceed 20 or 10 pounds per month, respectively. **(R 336.1290(a)(ii)(B))**

   c. For carcinogenic air contaminants with initial risk screening levels greater than or equal to 0.04 microgram per cubic meter, the uncontrolled or controlled emissions shall not exceed 20 or 10 pounds per month, respectively. **(R 336.1290(a)(ii)(C))**

   d. The emission unit shall not emit any air contaminants, excluding non-carcinogenic volatile organic compounds and noncarcinogenic materials which are listed in Rule 122(f) as not contributing appreciably to the formation of ozone, with an initial threshold screening level or initial risk screening level less than 0.04 microgram per cubic meter. **(R 336.1290(a)(ii)(D))**

3. Each emission unit that emits only noncarcinogenic particulate air contaminants and other air contaminants that are exempted under Rule 290(a)(i) and/or Rule 290(a)(ii), if all of the following provisions are met: **(R 336.1290(a)(iii))**

a. The particulate emissions are controlled by an appropriately designed and operated fabric filter collector or an equivalent control system which is designed to control particulate matter to a concentration of less than or equal to 0.01 pound of particulate per 1,000 pounds of exhaust gases and which does not have an exhaust gas flow rate more than 30,000 actual cubic feet per minute. **(R 336.1290(a)(iii)(A))**

b. The visible emissions from the emission unit are not more than five percent opacity in accordance with the methods contained in Rule 303. **(R 336.1290(a)(iii)(B))**

c. The initial threshold screening level for each particulate air contaminant, excluding nuisance particulate, is more than 2.0 micrograms per cubic meter. **(R 336.1290(a)(iii)(C))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The provisions of Rule 290 apply to each emission unit that is operating pursuant to Rule 290. **(R 336.1290)**

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 maintain records of the following information for each emission unit for each calendar month using the methods outlined in the DEQ, AQD Rule 290, Permit to Install Exemption Record form (EQP 3558) or in a format that is acceptable to the AQD District Supervisor. **(R 336.1213(3))**

   a. Records identifying each air contaminant that is emitted. **(R 336.1213(3))**

   b. Records identifying if each air contaminant is controlled or uncontrolled. **(R 336.1213(3))**

   c. Records identifying if each air contaminant is either carcinogenic or non-carcinogenic. **(R 336.1213(3))**

   d. Records identifying the ITSL and IRSL, if established, of each air contaminant that is being emitted under the provisions of Rules 290(a)(ii) and (iii). **(R 336.1213(3))**

   e. Material use and calculations identifying the quality, nature, and quantity of the air contaminant emissions in sufficient detail to demonstrate that the actual emissions of the emission unit meet the emission limits outlined in this table and Rule 290. **(R 336.1213(3), R 336.1290(c))**

2. The permittee shall maintain an inventory of each emission unit that is exempt pursuant to Rule 290. This inventory shall include the following information. **(R 336.1213(3))**

   a. The permittee shall maintain a written description of each emission unit as it is maintained and operated throughout the life of the emission unit. **(R 336.1290(b), R 336.1213(3))**

b. For each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(a)(iii), the permittee shall maintain a written description of the control device, including the designed control efficiency and the designed exhaust gas flow rate. **(R 336.1213(3))**

3. For each emission unit that emits noncarcinogenic particulate air contaminants pursuant to Rule 290(a)(iii), the permittee shall perform a monthly visible emission observation of each stack or vent during routine operating conditions. This observation need not be performed using Method 9. The permittee shall keep a written record of the results of each observation. **(R 336.1213(3))**

See Appendix 4

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

APPENDICES

Appendix 1: Abbreviations & Acronyms

The following is an alphabetical listing of abbreviations/acronyms that may be used in this permit.

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 High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (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.
The permittee shall use the approved formats and procedures for the recordkeeping requirements referenced in FG-RULE 290. Alternative formats must be approved by the AQD District Supervisor

Appendix 5. Testing Procedures

There are no specific testing requirement plans or procedures for this ROP. 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-N6327-2009. 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-N6327-2009a is being reissued as Source-Wide PTI No. MI-PTI-N6327-2015.

Permit to Install Number	ROP Revision Application Number	Description of Equipment or Change	Corresponding Emission Unit(s) or Flexible Group(s)
368-97E	201300014/ April 1, 2014	Incorporate Permit to Install (PTI) No. 368-97E.	FG-ALLCELLS

Appendix 7. Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FG-ALLCELLS.

A: Annual Destruction Efficiency Calculation for CO and VOC

1. Identify the gasoline fueled engine type and the type of test cycle being performed. Exclude the small (non-automotive) engines and those used for developmental testing.

2. Record the quantity of gasoline consumed during that test

3. Determine the uncontrolled emission rates by multiplying the appropriate lb pollutant per lb fuel emission factor for CO and VOC by the quantity of fuel consumed

4. Multiply the uncontrolled emission rates from Step 3 by the appropriate destruction efficiency from Table 2 of Section B of the Appendix.

5. Sum the total controlled and uncontrolled emission rates on an annual basis. Divide the annual controlled emission rate by the annual uncontrolled emission rate to determine the overall annual destruction efficiencies for CO and VOCs.

B: CO, VOC and NOx Emission Calculations

Table 1. Uncontrolled Gasoline Engine Emission Factors

Automotive Engine	Overall Uncontrolled Emission Factors (lb pollutant /lb fuel)		
	CO	VOC	NOx
2.0L	0.853	0.011	0.002
2.4T	0.895	0.024	0.009
2.7T	0.895	0.024	0.009
3.0L	0.895	0.024	0.020
4.6L	0.872	0.003	0.005
5.4L	0.551	0.024	0.024
L6 (4.2L)	0.528	0.017	0.004
5.3L	0.693	0.024	0.018
PV8	0.693	0.024	0.018
6.0L	0.693	0.024	0.018
Briggs & Stratton	0.551	0.024	0.016
Auto	0.551	0.024	0.016
Auto w/AICS	0.551	0.024	0.016
Diesel Engines	0.018	0.007	0.085

Table 2. Destruction Efficiencies Based on AICS

Test Cycles	CO Destruction Efficiency (%)	VOC Destruction Efficiency (%)
Durability Cycle A	95%	95%
Durability Cycle B	83%	95%
Durability Cycle C	57%	95%
Durability Cycle D	92%	95%
Deep Thermal Shock	95%	95%
Developmental		
If stack temp. ≥1400 °F	50%	50%
If stack temp. < 1400 °F	0%	0%
Small Engines	0%	0%
Diesel Engines	0%	0%

The permittee shall apply the uncontrolled emission factors and control efficiency factors from Tables 1 and 2 appropriate for an engine in its class and for the type of test being conducted. If engine specific data is not available, the most conservative emission factor for the engine in its class will be used. If no data is available for the class, the most conservative factor for any class will be used. This data, along with the monthly fuel use, shall be used to calculate the monthly and previous 12-month NOx, CO and VOC permit limits.

Durability Cycle A: The engine starts up at idle, no load for 30 minutes and then goes to wide open throttle at a speed which produces the peak torque for the specific engine (determined by initial power curves). Then it operates at no load at elevated speeds and back at the speed and load that produces peak power and peak power plus 6 percent. The cycle repeats as many times as necessary, often for 100 hours or more.

Durability Cycle B: Shaped like a saw tooth with the engine continuously ramping up and down.

Durability Cycle C: Consists of periods of steady operation interrupted by long periods of rapidly changing speed and load conditions

Durability Cycle D: Similar to Cycle A

Deep Thermal Shock (DTS): This cycle alternates between high load (peak torque or peak horsepower) and idle in short intervals. About 1/4 of the time it is at peak horsepower, 1/4 at peak torque and 1/2 at idle.

Developmental: Variety of tests where the engines typically operate at low and intermediate loads. The engines are operated in rich burn conditions (O_2 less than 0.5 percent)

Appendix 8. Reporting

A. Annual, Semi-annual, and Deviation Certification Reporting

The permittee shall use the MDEQ Report Certification form (EQP 5736) and MDEQ Deviation Report form (EQP 5737) for the annual, semi-annual 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.

ATTACHMENT B

- COPY OF PTI NO. 368-97F

App No. 202400315

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION

August 9, 2024

PERMIT TO INSTALL
368-97F

ISSUED TO
Federal Mogul Powertrain, LLC

LOCATED AT
47001 Port Street
Plymouth, Michigan 48170

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
N6327

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: **July 24, 2024**	
DATE PERMIT TO INSTALL APPROVED: **August 9, 2024**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

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

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H_2S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO_x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO_2	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**

2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**

4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**

5. The terms and conditions of this Permit to Install 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 this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit 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 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**

6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**

7. 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 Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department 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 condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

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

10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
    a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
    b) A visible emission limit specified by an applicable federal new source performance standard.
    c) A visible emission limit specified as a condition of this Permit to Install.

12. 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). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

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

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU-TESTCELL1	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 500 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL2	A dynamometer test cell burning diesel, E 85, and gasoline fuel. This test cell can accommodate an engine rated up to 250 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL3	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 400 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL4	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 500 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL5	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 440 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL6	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 500 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL7	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 350 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL8	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 600 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL9	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 300 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL10	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 500 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL11	A dynamometer test cell burning diesel, E-85, and gasoline fuel. This test cell can accommodate an engine rated up to 300 bhp.	11/01/98	FG-TESTCELLS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU-TESTCELL12	A dynamometer test cell using diesel, natural gas, and hydrogen fuel equipped with an emission reduction system that includes a natural gas fired burner with a rated heat input of 1.56 MMBtu/hr and SCR with oxidation catalyst. This test cell can accommodate an engine rated up to 950 hp and no more than 8,059,000 Btu/hr.	11/01/98 TBD	FG-4CELLS
EU-TESTCELL13	A dynamometer test cell using diesel, E-85, and gasoline fuel. This test cell has 6 stands and can accommodate engines rated up to 45 bhp.	11/01/98	FG-TESTCELLS
EU-TESTCELL14	A dynamometer test cell using diesel, natural gas, and hydrogen fuel equipped with an emission reduction system that includes a natural gas fired burner with a rated heat input of 1.56 MMBtu/hr and SCR with oxidation catalyst. This test cell can accommodate an engine rated up to 950 hp and no more than 8,059,000 Btu/hr	11/01/98 TBD	FG-4CELLS
EU-TESTCELL15	A dynamometer test cell using diesel, natural gas, and hydrogen fuel equipped with an emission reduction system that includes a natural gas fired burner with a rated heat input of 1.56 MMBtu/hr and SCR with oxidation catalyst. This test cell can accommodate an engine rated up to 950 hp and no more than 8,059,000 Btu/hr	11/01/98 TBD	FG-4CELLS
EU-TESTCELL16	A dynamometer test cell using diesel, natural gas, and hydrogen fuel equipped with an emission reduction system that includes a natural gas fired burner with a rated heat input of 1.56 MMBtu/hr and SCR with oxidation catalyst. This test cell can accommodate an engine rated up to 950 hp and no more than 8,059,000 Btu/hr	11/01/98 TBD	FG-4CELLS

Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1291.

FLEXIBLE GROUP SPECIAL CONDITIONS

FLEXIBLE GROUP SUMMARY TABLE

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

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FG-TESTCELLS	12 individual dynamometer test cells using diesel, E-85, and gasoline fuel. Eleven cells test engines ranging in size from 250 to 600 bhp and one cell tests small engines. Each cell has its own individual stack with identical parameters.	EU-TESTCELL1, EU-TESTCELL2 EU-TESTCELL3, EU-TESTCELL4 EU-TESTCELL5, EU-TESTCELL6 EU-TESTCELL7, EU-TESTCELL8 EU-TESTCELL9, EU-TESTCELL10 EU-TESTCELL11, EU-TESTCELL13
FG-4CELLS	4 individual dynamometer test cells using diesel, natural gas, and hydrogen fuel. Four cells test engines rated up to 950 horsepower.	EU-TESTCELL12, EU-TESTCELL14, EU-TESTCELL15, EU-TESTCELL16

FG-TESTCELLS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emission Units: 12 Gasoline/Diesel/E-85 Engine Test Cells. For the purposes of this permit, E-85 means ethanol-gasoline blends of up to 85% ethanol and the remainder gasoline and will be treated as gasoline.

Emission Unit: EU-TESTCELL1, EU-TESTCELL2, EU-TESTCELL3, EU-TESTCELL4, EU-TESTCELL5, EU-TESTCELL6, EU-TESTCELL7, EU-TESTCELL8, EU-TESTCELL9, EU-TESTCELL10, EU-TESTCELL11, EU-TESTCELL13

POLLUTION CONTROL EQUIPMENT

Federal-Mogul installed an Air Injection Control System (AICS) in 2004 to control CO and VOC emissions from the test cells. The AICS works by injecting a measured stream of air into the exhaust gas which is hotter than the auto ignition point of CO, causing the CO to oxidize in the exhaust pipe. The air injection rate (scfm) is dependent on the type of durability or deep thermal shock test being performed. The exhaust temperature is monitored before and after air injection to assure sufficient destruction efficiency. The exhaust temperature needs to reach 1100°F to oxidize CO; exhaust temperatures using the AICS usually exceed 1400°F. The AICS does, however, cause a minor increase in NO_x emissions. The AICS is used with durability and deep thermal shock testing for most gasoline engines but is not used with diesel or small engines or during developmental testing.

The facility also operates an Automatic Data Acquisition System, which monitors all operating parameters of the test cells on a continuous basis. These parameters include fuel usage, exhaust temperature, and air injection rate.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	5.6 tons per year[A]	12-month rolling time period	FG-TESTCELLS	SC VI.7, SC VI.16	R 336.1205(1)(a) & (3), R 336.1702(a)
2. CO	188 tons per year[A]	12-month rolling time period	FG-TESTCELLS	SC V.1, SC VI.6, SC VI.16	R 336.1205(1)(a) & (3)
3. NO_x	25 tons per year[A]	12-month rolling time period	FG-TESTCELLS	SC V.1, SC VI.5, SC VI.16	R 336.1205(1)(a) & (3)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
[A] This emission limit is federally enforceable based on the following emission factors and the fuel requirements. This emission calculations in SC VI.16 shall be based on the following emission factors.					
Test Cell Emission Factors					
Gasoline and E-85 Emission Factors: NOx – 0.024 lb pollutant/lb fuel Uncontrolled: VOC – 0.024 lb pollutant/lb fuel CO – 0.895 lb pollutant/lb fuel Controlled during Developmental and Durability Cycle C Testing: VOC – 0.012 lb pollutant/lb fuel CO – 0.448 lb pollutant/lb fuel Controlled during Deep Thermal Shock and Durability Cycle A, B, and D Testing: VOC – 0.001 lb pollutant/lb fuel CO – 0.206 lb pollutant/lb fuel			Diesel Emission Factors: NOx – 0.085 lb pollutant/lb fuel Uncontrolled: VOC – 0.007 lb pollutant/lb fuel CO – 0.018 lb pollutant/lb fuel		

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Gasoline including E-85	118,000 gal/yr	12-month rolling time period	FG-TESTCELLS	SC VI.1, SC VI.16	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
2. Gasoline including E-85	16,713 lb/day	Per day	FG-TESTCELLS	SC VI.1, SC VI.9	R336.1205(1)(a) & (3), R 336.1225
3. Gasoline including E-85	2,327 lb/hr	Per hour	FG-TESTCELLS	SC VI.1, SC VI.8	R 336.1205(1)(a) & (3), R 336.1225, 40 CFR 52.21(c) & (d)
4. Diesel or fuel oil	55,000 gal/yr	12-month rolling time period	FG-TESTCELLS	SC VI.2, SC VI.16	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
5. Diesel or fuel oil	19,143 lb/day	Per day	FG-TESTCELLS	SC VI.2, SC VI.9	R 336.1205(1)(a) & (3), 40 CFR 52.21 (c) and (d)
6. Diesel or fuel oil	0.30% sulfur content in fuel	Instantaneous	FG-TESTCELLS	SC VI.15	R 336.1402, Michigan State Implementation Plan

7. The permittee shall not exceed 45,000 gallons total usage of gasoline including E-85 during testing of small gasoline engines (engines less than 45 bhp) and for developmental testing where exhaust temperature is less than 1400 °F in FG-TESTCELLS per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

8. The permittee shall not exceed 63,000 gallons total usage of gasoline including E-85 during small engines (engines less than 45 bhp), gasoline durability cycle C and developmental testing in FG-TESTCELLS per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

9. The permittee shall not burn any fuels in FG-TESTCELLS other than gasoline, diesel, and an ethanol-gasoline blends consisting of up to 85% ethanol and the remainder gasoline. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only perform the type of tests in FG-TESTCELLS described in Appendix 7. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee shall not perform testing in FG-TESTCELLS without the AICS except during testing of small gasoline engines (engines less than 45 bhp) or diesel engines. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

3. The permittee shall not test engines in FG-TESTCELLS that exceed the brake horsepower output listed in Appendix 9. **(R 336.1205, R 336.1225, R 336.1702)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The AICS shall maintain the air injection rate as stated below or establish an alternative minimum air injection rate based on a minimum average temperature differential of 190 °F between the exhaust temperature and a point downstream of the air injection location and a minimum oxygen concentration of 1 percent downstream of the air injection location. Operating below the minimum air injection rates in the table below, or alternative air injection rates, for more than 20 seconds is an excursion. Documentation of any alternative minimum air injection rates shall be kept on file for a period of at least five years. Proper operating parameters may be updated and applied by the permittee provided the changes have been submitted to and approved by the District Supervisor, AQD. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

Test	Minimum Air Injection Rate (scfm)
Durability Cycle A	45
Durability Cycle B	50
Durability Cycle C	72
Durability Cycle D	50
Deep Thermal Shock	45

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Once, during the term of the ROP, verification of NO_x, CO, and VOC emission rates in SC I.1, SC I.2, and SC I.3 from a representative number of test cells included in FG-TESTCELLS, by testing at owner's expense, in accordance with Department requirements, will be required. The testing must include the largest available engine durability test on wide open throttle for both diesel and gasoline. A representative number of test cells shall be defined in the test plan and subject to AQD approval. No less than 30 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(R 336.1205(1)(a) & (3), R 336.2001, R 336.2003, R 336.2004)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the gasoline flow for each engine tested, except for the small engine test cell (engines less than 45 bhp), on a continuous basis. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the diesel flow for each engine tested, on a continuous basis. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point on a continuous basis during all periods of time when the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the air injection rate (in scfm) on a continuous basis during all periods of time when the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

5. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NO_x emission calculation records for FG-TESTCELLS. This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3), 40 CFR 52.21 (c) & (d))**

6. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month CO emission calculation records for FG-TESTCELLS. This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3))**

7. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month VOC emission calculation records for FG-TESTCELLS. This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

8. The permittee shall calculate the hourly gasoline usage rate for FG-TESTCELLS based upon calendar monthly recordkeeping prorated to an hourly rate using actual operating hours. **(R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

9. The permittee shall calculate the daily diesel and gasoline usage rate for FG-TESTCELLS based upon calendar monthly recordkeeping prorated to a daily rate using actual operating days. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

10. The permittee shall keep, in a satisfactory manner, a written log of the hours of operation for FG-TESTCELLS. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

11. The permittee shall keep, in a satisfactory manner, records of the air injection rate (scfm) during all periods of time the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

12. The permittee shall keep, in a satisfactory manner, records of the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point during all periods of time the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

13. The permittee shall keep, in a satisfactory manner, records of all periods of time the AICS is operating in any of the test cells included in FG-TESTCELLS. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

14. The permittee shall keep, in a satisfactory manner, annual average CO and VOC destruction efficiency calculation records. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

15. The permittee shall maintain a complete record of fuel oil specifications and/or fuel analysis for each delivery, or storage tank, of fuel oil or diesel fuel. These records may include purchase records for ASTM specification fuel oil, specifications or analyses provided by the vendor at the time of delivery, analytical results from laboratory testing, or any other records adequate to demonstrate compliance with the percent sulfur limit in fuel oil. **(R 336.1205(1)(a)(ii)(C))**

16. The permittee shall keep the following information on a monthly basis for FG-TESTCELLS:
    a) Total gallons of each fuel used per month and 12-month rolling time period.
    b) Total gallons of gasoline including E-85 used during small gasoline engine tests (engines less than 45 bhp) and developmental tests where exhaust temperature is less than 1400 °F per month and 12-month rolling time period for comparison to the fuel limit at SC II.7.
    c) Total gallons of gasoline including E-85 used during small engine (engines less than 45 bhp), developmental, and durability cycle C testing per month and 12-month rolling time period for comparison to the fuel limit at SC II.8.
    d) NO_x emission calculations determining the total annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.3 and actual fuel usage recorded in SC VI.16 a through c.
    e) CO emission calculations determining the total annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.2 and actual fuel usage recorded in SC VI.16 a through c.
    f) VOC emission calculations determining the total annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.1 and actual fuel usage recorded in SC VI.16 a through c.

    The permittee shall keep the records in a format acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205)**

17. The permittee shall keep, in a satisfactory manner, a record of the size of engines tested in hp in FG-TESTCELLS updated at least once a month. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

VII. REPORTING

1. The permittee shall notify the Division if a change in equipment in FG-TESTCELLS occurs which could affect a change in emissions or emission factors relied upon to demonstrate compliance with R336.1225. The notification shall be submitted to the Division within 30 days of the actual equipment change.[1] **(R 336.1225)**

2. The permittee shall notify the Division if a change in land use occurs for property classified as industrial or as a public roadway, where this classification was relied upon to demonstrate compliance with R336.1225 for FG-TESTCELLS. The notification shall be submitted to the Division within 30 days of the actual land use change. Within 60 days of the land use change, the permittee shall submit to the Division a plan for complying with the requirements of R336.1225.[1] **(R 336.1225)**

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 Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. Each of the 12 stacks included in SV-TESTCELLS	6	32	R 336.1225, 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with requirements listed in Appendix 10 until the emission reduction systems in FG-4CELLS are operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

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

FG-4CELLS
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Emission Units: 4 Diesel/Natural Gas/Hydrogen Engine Test Cells each equipped with an emission reduction system that includes a natural gas fired burner, particulate filter, and SCR with oxidation catalyst.

Emission Unit: EU-TESTCELL12, EU-TESTCELL14, EU-TESTCELL15, EU-TESTCELL16

POLLUTION CONTROL EQUIPMENT

Federal Mogul will equip each test cell in FG-4CELLS with a duct burner to heat the exhaust prior to entering the SCR. Each SCR will contain ammonia/urea injection to control the NO_x emissions and oxidation catalyst to control the CO and VOC emissions. The emission reduction system will be equipped with a particulate filter.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	11 tons per year[A]	12-month rolling time period	FG-4CELLS	SC VI.2	R 336.1205(1)(a) & (3), R 336.1702(a)
2. VOC	0.42 g/bhp-hr	Hourly when testing a natural gas engine	Each emission unit in FG-4CELLS	SC V.2	R 336.1205(1)(a) & (3), R 336.1702(a)
3. CO	8.9 tons per year[A]	12-month rolling time period	FG-4CELLS	SC VI.2	R 336.1205(1)(a) & (3), 40 CFR 52.21(d)
4. CO	0.018 lb pollutant/gal fuel	Hourly when testing a diesel engine	Each emission unit in FG-4CELLS	SC V.1	R 336.1205(1)(a) & (3), 40 CFR 52.21(d)
5. CO	0.372 lb/MMBtu	Hourly when testing a natural gas engine	Each emission unit in FG-4CELLS	SC V.2	R 336.1205(1)(a) & (3), 40 CFR 52.21(d)
6. NO_x	35 tons per year[A]	12-month rolling time period	FG-4CELLS	SC VI.2	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
7. $PM_{2.5}$	4.9 tons per year[A]	12-month rolling time period	FG-4CELLS	SC VI.2	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
8. $PM_{2.5}$	0.03 lb pollutant/gal	Hourly when testing diesel engines	Each emission unit in FG-4CELLS	SC V.1	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
9. Formaldehyde	3.31E-02 lb/MMBtu	Hourly when testing a natural gas engine	Each emission unit in FG-4CELLS	SC V.2	R 336.1225

[A] This emission limit is federally enforceable based on the burners running at full capacity (8760 hr/yr) and the following emission factors and the fuel requirements for the test cells. This emission calculations in SC VI.2 shall be based on the following emission factors and the burner emissions.

Controlled Test Cell Emission Factors

Diesel:	Natural Gas (engines):
NO_x – 0.018 lb pollutant/lb fuel	NO_x – 859 lb/MMscf
CO – 0.018 lb pollutant/gal fuel	CO – 0.372 lb/MMBtu
VOC – 0.067 lb pollutant/gal	VOC – 0.42 g/bhp-hr
$PM_{2.5}$ – 0.03 lb pollutant/gal (uncontrolled)	$PM_{2.5}$ – 0.048 lb/MMBtu (uncontrolled)

II. MATERIAL LIMIT(S)

1. As of the date reported in SC VII.1, the permittee shall only burn diesel, natural gas, or hydrogen gas as fuel in FG-4CELLS. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

2. The permittee shall not exceed 22,000,000 standard cubic feet total natural gas usage for FG-4CELLS per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

3. The permittee shall not exceed 35,000,000 standard cubic feet total natural gas and total hydrogen fuel combined usage for FG-4CELLS per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

4. As of the date reported in SC VII.1, the permittee shall not exceed 275,000 gallons total diesel fuel usage for FG-4CELLS per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. As of the date reported in SC VII.1, the permittee shall not perform testing in FG-4CELLS without the selective catalytic reduction (SCR) and oxidation catalyst. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee shall only test 4-stroke engines when testing natural gas engines in FG-4CELLS. **(R 336.1225)**

3. The permittee shall only test engines rated up to 950 hp and no more than 8,059,000 Btu/hr in FG-4CELLS. **(R 336.1205, R 336.1225, R 336.1702)**

4. The permittee shall not operate FG-4CELLS unless a malfunction abatement plan (MAP) as described in Rule 911(2) is implemented and maintained. The MAP shall, at a minimum, meet the manufacturer's written instructions for operating and maintaining the test cells and emission control equipment including the burner and particulate filter and shall specify the following:
   a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
   b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures. This shall include the minimum exhaust temperature that would trigger use of the natural gas-fired burner.
   c) 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.
   d) A description of how emissions will be minimized during all startups, shutdowns and malfunctions.

   If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 90 days if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1910, R 336.1911, R 336.1912, 40 CFR 52.21(c) & (d))**

5. The permittee shall not exhaust more than one engine at a time to a single stack in FG-4CELLS. **(R 336.1225, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. As of the date reported in SC VII.1, the permittee shall equip and maintain each engine in FG-4CELLS with a selective catalytic reduction (SCR) and an oxidation catalyst with a 90% CO control efficiency, 80% NOx control efficiency, and 40% VOC control efficiency. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), R 336.1910, 40 CFR 52.21(c) & (d))**

V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. Within 180 days after the completion of the project as reported in SC VII.1, the permittee shall verify CO and $PM_{2.5}$ emission rates in SC I.4 and SC I.8 using diesel from a representative number of test cells from FG-4CELLS by testing at the owner's expense, in accordance with Department requirements. The testing must include the largest available engine durability test including wide open throttle. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60, Appendix A and 40 CFR Part 51, Appendix M. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) & (d))**

2. Within 180 days after the completion of the project as reported in SC VII.2, the permittee shall verify VOC, CO, and formaldehyde emissions rates in SC I.2, SC I.5, and SC I.9 using natural gas from a representative number of test cells at the owner's expense, in accordance with Department requirements. The testing must include the largest available engine durability test including wide open throttle if applicable. Testing shall be performed using an approved EPA Method listed in the table below.

Pollutant	Test Method Reference
CO	40 CFR Part 60, Appendix A
VOCs	40 CFR Part 60, Appendix A
Formaldehyde	40 CFR Part 63, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.2001, R 336.2003, R 336.2004, 40 CFR 52.21(c) & (d))**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a) & (c), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee shall keep the following information on a monthly basis for FG-4CELLS:
   a) A record of the total amount of each fuel used per 12-month rolling time period as determined at the end of each calendar month.

b) NO_x emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.6 and actual fuel usage recorded in SC VI.2(a).
c) CO emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.3 and actual fuel usage recorded in SC VI.2(a).
d) VOC emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.1 and actual fuel usage recorded in SC VI.2(a).
e) $PM_{2.5}$ emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month. This calculation is based on the emission factor for SC I.7 and actual fuel usage recorded in SC VI.2(a).

The permittee shall keep the records in a format acceptable to the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

3. The permittee shall keep, in a satisfactory manner, a record of the size of each engine tested in hp and Btu/hr in FG-4CELLS updated at least once a month. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

4. The permittee shall keep, in a satisfactory manner, a record demonstrating each engine tested in FG-4CELLS is in compliance with SC III.2 updated at least once a month. **(R 336.1225)**

5. The permittee shall maintain a record of all inspection and maintenance activities conducted according to the PM / MAP (pursuant to SC III.4). The permittee shall keep this record on file at a location approved by the AQD District Supervisor and make it available to the Department upon request. **(R 336.1205, R 336.1702(a), R 336.1911, 40 CFR 52.21(c) & (d))**

6. The permittee shall keep records of where each emission unit in FG-4CELLS is exhausted and shall be updated upon any changing configuration. **(R 336.1225, R 336.1910)**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of FG-4CELLS after installing the emissions reduction system. **(R 336.1201(7)(a))**

2. Within 30 days after initial burning of natural gas, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

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 Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-TESTCELL12	14	60	R 336.1225, 40 CFR 52.21 (c) & (d)
2. SV-TESTCELL14	14	60	R 336.1225, 40 CFR 52.21 (c) & (d)

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
3. SV-TESTCELL15	14	60	R 336.1225, 40 CFR 52.21 (c) & (d)
4. SV-TESTCELL16	14	60	R 336.1225, 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with requirements listed in Appendix 10 until the emission reduction systems in FG-4CELLS are operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

Footnotes:

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

APPENDIX 7

Emission Calculations

The permittee shall use the following calculations in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in FG-TESTCELLS.

A: Annual Destruction Efficiency Calculation for CO and VOC

1. Identify the gasoline fueled engine type and the type of test cycle being performed. Exclude the small (non-automotive) engines and those used for developmental testing.

2. Record the quantity of gasoline consumed during that test

3. Determine the uncontrolled emission rates by multiplying the appropriate lb pollutant per lb fuel emission factor for CO and VOC by the quantity of fuel consumed

4. Multiply the uncontrolled emission rates from Step 3 by the appropriate destruction efficiency from Table 2 of Section B of the Appendix.

5. Sum the total controlled and uncontrolled emission rates on an annual basis. Divide the annual controlled emission rate by the annual uncontrolled emission rate to determine the overall annual destruction efficiencies for CO and VOCs.

B: CO, VOC and NO_x Emission Calculations

Table 1. Uncontrolled Gasoline Engine Emission Factors

Automotive Engine	Overall Uncontrolled Emission Factors (lb pollutant /lb fuel)		
	CO	VOC	NO_x
2.0L	0.853	0.011	0.002
2.4T	0.895	0.024	0.009
2.7T	0.895	0.024	0.009
3.0L	0.895	0.024	0.020
4.6L	0.872	0.003	0.005
5.4L	0.551	0.024	0.024
L6 (4.2L)	0.528	0.017	0.004
5.3L	0.693	0.024	0.018
PV8	0.693	0.024	0.018
6.0L	0.693	0.024	0.018
Briggs & Stratton	0.551	0.024	0.016
Auto	0.551	0.024	0.016
Auto w/AICS	0.551	0.024	0.016
Diesel Engines	0.018	0.007	0.085

Table 2. Destruction Efficiencies Based on AICS

Test Cycles	CO Destruction Efficiency (%)	VOC Destruction Efficiency (%)
Durability Cycle A	95%	95%
Durability Cycle B	83%	95%
Durability Cycle C	57%	95%
Durability Cycle D	92%	95%
Deep Thermal Shock	95%	95%
Developmental		
If stack temp. > 1400 °F	50%	50%
If stack temp. < 1400 °F	0%	0%
Small Engines	0%	0%
Diesel Engines	0%	0%

The permittee shall apply the uncontrolled emission factors and control efficiency factors from Tables 1 and 2 appropriate for an engine in its class and for the type of test being conducted. If engine specific data is not available, the most conservative emission factor for the engine in its class will be used. If no data is available for the class, the most conservative factor for any class will be used. This data, along with the monthly fuel use, shall be used to calculate the monthly and previous 12-month NO_x, CO and VOC permit limits.

Durability Cycle A: The engine starts up at idle, no load for 30 minutes and then goes to wide open throttle at a speed which produces the peak torque for the specific engine (determined by initial power curves). Then it operates at no load at elevated speeds and back at the speed and load that produces peak power and peak power plus 6 percent. The cycle repeats as many times as necessary, often for 100 hours or more.

Durability Cycle B: Shaped like a saw tooth with the engine continuously ramping up and down.

Durability Cycle C: Consists of periods of steady operation interrupted by long periods of rapidly changing speed and load conditions.

Durability Cycle D: Similar to Cycle A

Deep Thermal Shock (DTS): This cycle alternates between high load (peak torque or peak horsepower) and idle in short intervals. About 1/4 of the time it is at peak horsepower, 1/4 at peak torque and 1/2 at idle.

Developmental: Variety of tests where the engines typically operate at low and intermediate loads. The engines are operated in rich burn conditions (O_2 less than 0.5 percent).

APPENDIX 9

Engine sizes to be tested in FG-TESTCELLS

The following table shows the engine sizes that were permitted during the last new source review in PTI 368-97C. The permittee would have to obtain a modified permit to install to increase any of these sizes.

Emission Unit	Maximum Engine Size
EU-TESTCELL1	500 bhp
EU-TESTCELL2	250 bhp
EU-TESTCELL3	400 bhp
EU-TESTCELL4	500 bhp
EU-TESTCELL5	440 bhp
EU-TESTCELL6	500 bhp
EU-TESTCELL7	350 bhp
EU-TESTCELL8	600 bhp
EU-TESTCELL9	300 bhp
EU-TESTCELL10	500 bhp
EU-TESTCELL11	300 bhp
EU-TESTCELL13	45 bhp

APPENDIX 10

Temporary Conditions for FG-TESTCELLS and FG-4CELLS

Due to the facility needing time to install the control equipment in FG-4CELLS, the following requirements are necessary until the completion of the emission reduction systems. Upon completion of the project as reported in FG-4CELLS SC VII.1, these requirements (FG-TESTCELLS SC IX.1, FG-4CELLS SC IX.1, and appendix 10) become void.

Appendix 10 applies to the following emission units: EU-TESTCELL1, EU-TESTCELL2, EU-TESTCELL3, EU-TESTCELL4, EU-TESTCELL5, EU-TESTCELL6, EU-TESTCELL7, EU-TESTCELL8, EU-TESTCELL9, EU-TESTCELL10, EU-TESTCELL11, EU-TESTCELL12, EU-TESTCELL13, EU-TESTCELL-14, EU-TESTCELL-15, EU-TESTCELL-16

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	5.6 tons per year[A]	12-month rolling time period	FG-TESTCELLS and FG-4CELLS combined	SC VI.7	R 336.1205(1)(a) & (3), R 336.1702(a)
2. CO	223.3 tons per year[A]	12-month rolling time period	FG-TESTCELLS and FG-4CELLS combined	SC VI.6	R 336.1205(1)(a) & (3)
3. NO_x	62.1 tons per year[A]	12-month rolling time period	FG-TESTCELLS and FG-4CELLS combined	SC VI.5	R 336.1205(1)(a) & (3)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Gasoline including E-85	425,000 gal/yr	12-month rolling time period	FG-TESTCELLS and FG-4CELLS combined	SC VI.1, SC VI.10	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
2. Gasoline including E-85	16,713 lb/day	Per day	FG-TESTCELLS and FG-4CELLS combined	SC VI.1, SC VI.9	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
3. Gasoline including E-85	2,327 lb/hr	Per hour	FG-TESTCELLS and FG-4CELLS combined	SC VI.1, SC VI.8	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
4. Diesel or fuel oil	200,000 gal/yr	12-month rolling time period	FG-TESTCELLS and FG-4CELLS combined	SC VI.2, SC VI.10	R 336.1205(1)(a) & (3), 40 CFR 52.21(c) & (d)
5. Diesel or fuel oil	19,143 lb/day	Per day	FG-TESTCELLS and FG-4CELLS combined	SC VI.2, SC VI.9	R 336.1205(1)(a) & (3), 40 CFR 52.21 (c) and (d)

	Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
6.	Diesel or fuel oil	0.30% sulfur content in fuel	Instantaneous	FG-TESTCELLS and FG-4CELLS combined	SC VI.16	R 336.1402, Michigan State Implementation Plan

7. The permittee shall not burn any fuels in FG-TESTCELLS and FG-4CELLS other than gasoline, diesel, and an ethanol-gasoline blends consisting of up to 85% ethanol and the remainder gasoline. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only perform the type of tests in FG-4CELLS described in Appendix 7. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21(c) & (d))**

2. The permittee shall not test engines in FG-4CELLS that exceed the brake horsepower output listed below. **(R 336.1205, R 336.1225, R 336.1702)**

Emission Unit	Maximum Engine Size
EU-TESTCELL12	500 bhp
EU-TESTCELL14	500 bhp
EU-TESTCELL15	400 bhp
EU-TESTCELL16	600 bhp

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The AICS shall maintain the air injection rate as stated below or establish an alternative minimum air injection rate based on a minimum average temperature differential of 190 °F between the exhaust temperature and a point downstream of the air injection location and a minimum oxygen concentration of 1 percent downstream of the air injection location. Operating below the minimum air injection rates in the table below, or alternative air injection rates, for more than 20 seconds is an excursion. Documentation of any alternative minimum air injection rates shall be kept on file for a period of at least five years. Proper operating parameters may be updated and applied by the permittee provided the changes have been submitted to and approved by the District Supervisor, AQD. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

Test	Minimum Air Injection Rate (scfm)
Durability Cycle A	45
Durability Cycle B	50
Durability Cycle C	72
Durability Cycle D	50
Deep Thermal Shock	45

V. TESTING/SAMPLING

NA

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the gasoline flow for each engine tested, except for the small engine test cell (engines less than 45 bhp), on a continuous basis. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

2. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the diesel flow for each engine tested, on a continuous basis. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point on a continuous basis during all periods of time when the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner the Automatic Data Acquisition System to monitor and record the air injection rate (in scfm) on a continuous basis during all periods of time when the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

5. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NO_x emission calculation records for FG-TESTCELLS and FG-4CELLS (combined). This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3), 40 CFR 52.21 (c) & (d))**

6. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month CO emission calculation records for FG-TESTCELLS and FG-4CELLS (combined). This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3))**

7. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month VOC emission calculation records for FG-TESTCELLS and FG-4CELLS (combined). This calculation is based on the procedure as specified in Appendix 7. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

8. The permittee shall calculate the hourly gasoline usage rate for FG-TESTCELLS and FG-4CELLS (combined) based upon calendar monthly recordkeeping prorated to an hourly rate using actual operating hours. **(R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

9. The permittee shall calculate the daily diesel and gasoline usage rate for FG-TESTCELLS and FG-4CELLS combined based upon calendar monthly recordkeeping prorated to a daily rate using actual operating days. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

10. The permittee shall keep, in a satisfactory manner, monthly and 12 month rolling time period as determined at the end of each calendar month diesel and gasoline fuel use records for FG-ALLCELLS and FG-4CELLS. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

11. The permittee shall keep, in a satisfactory manner, a written log of the hours of operation for FG-TESTCELLS and FG-4CELLS. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

12. The permittee shall keep, in a satisfactory manner, records of the air injection rate (scfm) during all periods of time the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

13. The permittee shall keep, in a satisfactory manner, records of the exhaust gas temperature just upstream of the air injection point and downstream of the air injection point during all periods of time the AICS is operating. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

14. The permittee shall keep, in a satisfactory manner, records of all periods of time the AICS is operating in any of the test cells included in FG-TESTCELLS and FG-4CELLS. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

15. The permittee shall keep, in a satisfactory manner, annual average CO and VOC destruction efficiency calculation records. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a))**

16. The permittee shall maintain a complete record of fuel oil specifications and/or fuel analysis for each delivery, or storage tank, of fuel oil or diesel fuel. These records may include purchase records for ASTM specification fuel oil, specifications or analyses provided by the vendor at the time of delivery, analytical results from laboratory testing, or any other records adequate to demonstrate compliance with the percent sulfur limit in fuel oil. **(R 336.1205(1)(a)(ii)(C))**

17. The permittee shall keep, in a satisfactory manner, a record of the size of engines tested in hp in FG-TESTCELLS and FG-4CELLS updated at least once a month. **(R 336.1205(1)(a) & (3), R 336.1225, R 336.1702(a), 40 CFR 52.21 (c) & (d))**

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 Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. Each of the 16 stacks included in SV-TESTCELLS	6	32	R 336.1225, 40 CFR 52.21 (c) & (d)

IX. OTHER REQUIREMENT(S)

NA