



## DEPARTMENT OF NATURAL RESOURCES

## MISSOURI AIR CONSERVATION COMMISSION

## PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 052012-009

Project Number: 2011-06-024  
Installation Number: 183-0076

Parent Company: General Motors LLC

Parent Company Address: 300 Renaissance Center, Detroit, MI 48265

Installation Name: General Motors - Wentzville Assembly

Installation Address: 1500 East Route A , Wentzville, MO 63385

Location Information: St. Charles County, S20, T47N, R2E

Application for Authority to Construct was made for:

A Plantwide Applicability Limitation for volatile organic compounds with pre-approved changes. This review was conducted in accordance with Section (7), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- 
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAY 16 2012

EFFECTIVE DATE

  
\_\_\_\_\_  
DIRECTOR OR DESIGNEE  
DEPARTMENT OF NATURAL RESOURCES

## STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within 18 months from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within 18 months after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Departments' Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information must be made available within 30 days of actual startup. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

*The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."*

General Motors - Wentzville Assembly  
St. Charles County, S20, T47N, R2E

1. **Superseding Condition**  
The conditions of this permit supersede all special conditions found in the following construction permits previously issued by the Air Pollution Control Program.
  - A. 0580-004
  - B. 1089-003
  - C. 0294-015
  - D. 0396-011
  
2. **Emission Limitations from Previous Construction Permits**
  - A. General Motors - Wentzville Assembly shall comply with the following Lowest Achievable Emission Rate (LAER) restrictions originally required by permit number 0580-004 and amended by permit number 0294-015.
    - 1) Emissions of Volatile Organic Compounds (VOC) from the application of Electrostatically Plated Anti-Corrosion Paint (ELPO) (EPN-1) shall not exceed a monthly average of 1.34 pounds VOC per gallon of coating solids applied.
    - 2) Emissions of VOC from the application of primer surfacer (EPN-2) shall not exceed a monthly average of 8.82 pounds VOC per gallon of coating solids applied.
    - 3) Emissions of VOC from the application of topcoat (EPN-3) shall not exceed a monthly average of 12.26 pounds VOC per gallon of coating solids applied.
  
  - B. General Motors - Wentzville Assembly shall demonstrate compliance with the emission limits specified in Special Condition 2.A. according to the procedures set forth in 40 CFR Part 60 Subpart MM.

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The permittee is authorized to construct and operate subject to the following special conditions:

- C. General Motors - Wentzville Assembly shall comply with the following Best Available Control Technology (BACT) restriction originally required by permit number 0580-004 and amended by permit number 1089-003. Emissions of particulate matter less than ten microns in diameter (PM<sub>10</sub>) from the major spray booth (EPN-2 and EPN-3) stack (ST-200) shall not exceed 2.0 grains per 1000 dry standard cubic feet of air exhausted.
3. Annual Emission Limitation – Plantwide Applicability Limitation (PAL)
- A. General Motors - Wentzville Assembly shall emit less than 1,002.5 tons of VOC from the emission units listed in Attachment A, or an equivalent form, in any consecutive 12-month period. The consecutive 12-month period shall not include time periods prior to issuance of this construction permit. Fugitive emissions and emissions associated with start-up, shutdown, and malfunction shall be counted towards this limit during the consecutive 12-month period.
  - B. Attachment B, or an equivalent form that includes a determination of each emission units 12-month rolling VOC emissions total, shall be used to demonstrate compliance with Special Condition 3.A. General Motors - Wentzville Assembly shall determine the monthly and consecutive 12-month VOC emissions (including monthly during the first 11 months from permit issuance) from the emission units listed in Attachment A according to the following approved methods. Failure to use an approved method is a violation of this construction permit.
    - 1) Mass balance calculations specified in Special Condition 4. “Mass Balance Calculations”
    - 2) Control Device calculations specified in Special Condition 5. “Control Device Calculations”
    - 3) Approved emission factors specified in Special Condition 6. “Approved Emission Factors”
    - 4) The procedures set forth in the EPA document AP-42, Fifth Edition, Volume I, Section 7.1 *Organic Liquid Storage Tanks* (November 2006), or the EPA software program entitled "TANKS"
  - C. General Motors - Wentzville Assembly shall account for fugitive emissions and emissions associated with start-up, shutdown, and malfunction of VOC control systems using the mass balance calculation methods specified in Special Condition 4. “Mass Balance Calculations”.

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The permittee is authorized to construct and operate subject to the following special conditions:

- D. General Motors - Wentzville Assembly shall complete the calculations required by special condition 3.B. no later than 30 days after the end of the month.
  
- E. If at any time during the PAL effective period, General Motors - Wentzville Assembly uses a capture and/or control device to comply with any applicable VOC emission limit, including but not limited to the emission limit specified in Special Condition 3.A., then General Motors - Wentzville Assembly shall:
  - 1) Use the VOC emission calculation procedures specified in Special Condition 5. "Control Device Calculations" for demonstrating compliance with Special Condition 3.A.
  - 2) Use the VOC emission calculation procedures specified in Special Condition 5. "Control Device Calculations" for the annual emissions reporting required by 10 CSR 10-6.110, *Submission of Emission Data, Emission Fees and Process Information*.
  
- F. Attachment A, or an equivalent form, shall contain a list of all existing, new, and modified emission units located at the installation during the PAL effective period. The list must be current in order to account for all emission units present at the installation at any given time. The list shall contain at a minimum a description of each existing, new, or modified emission unit, the date construction commenced of each new or modified unit, the date operation began of each new or modified unit, the date existing equipment is removed, and all applicable federal and state regulations. (Note: If an existing emission unit is modified, then the date of removal of the existing emission unit shall be the date that construction of the modification commences.)
  
- G. General Motors - Wentzville Assembly shall keep documentation sufficient to support all emission calculations required by Special Condition 3. for not less than five years.
  
- H. General Motors - Wentzville Assembly shall maintain accuracy of all data used to establish the PAL pollutant according to the Quality Assurance and Quality Control plan required by Special Condition 17. "Quality Assurance and Quality Control Plan".

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- I. All data used to establish the PAL pollutant must be re-validated through performance testing or other scientifically valid means approved by the Air Pollution Control Program. Such testing must occur at least once every five years after permit issuance.
  
- J. In order to ensure continuous compliance with the PAL limit specified in Special Condition 3.A., General Motors - Wentzville Assembly shall estimate emissions according to the following requirements.
  - 1) Emission estimates shall begin no later than 30 days after the end of the month that the records required by Special Condition 3.B. indicate that emissions surpass 897.8 tons VOC.
  - 2) Emission estimates may be discontinued when the records required by Special Condition 3.B. indicate that emissions have been less than 897.8 tons VOC for three consecutive months.
  - 3) Emission estimates shall be calculated for the current calendar month by multiplying the projected number of vehicles produced during the current month times the pounds VOC emitted per vehicle.
  - 4) Emission estimates shall be calculated for the following calendar month by multiplying the projected number of vehicles produced during the following month times the pounds VOC emitted per vehicle.
  - 5) The pounds VOC emitted per vehicle shall be determined by General Motors - Wentzville Assembly using representative data. General Motors - Wentzville Assembly shall keep records that indicate how this value was determined.
  - 6) The emission estimate for the current month's 12-month rolling total shall be calculated by summing the actual emissions determined for the previous 11 months according to Attachment B, or equivalent form, plus the emission estimate for the current calendar month determined according to Special Condition 3.J.3). A summary of the calculation follows:

$$\left( \begin{array}{c} \text{emission estimate} \\ \text{of the current month's} \\ \text{12-month rolling total} \end{array} \right) = \left( \begin{array}{c} \text{actual emissions} \\ \text{for the previous} \\ \text{11 months} \end{array} \right) + \left( \begin{array}{c} \text{current} \\ \text{month's} \\ \text{emission} \\ \text{estimate} \end{array} \right)$$

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The permittee is authorized to construct and operate subject to the following special conditions:

- 7) The emission estimate for the following month's 12-month rolling total shall be calculated by summing the actual emissions determined for the previous ten months according to Attachment B, or equivalent form, plus the emission estimate for the current calendar month determined according to Special Condition 3.J.3) plus the emission estimate for the following calendar month determined according to Special Condition 3.J.4). A summary of the calculation follows:

$$\left( \begin{array}{c} \text{emission estimate} \\ \text{of the following} \\ \text{month's 12-month} \\ \text{rolling total} \end{array} \right) = \left( \begin{array}{c} \text{actual emissions} \\ \text{for the previous} \\ \text{10 months} \end{array} \right) + \left( \begin{array}{c} \text{current} \\ \text{month's} \\ \text{emission} \\ \text{estimate} \end{array} \right) + \left( \begin{array}{c} \text{following} \\ \text{month's} \\ \text{emission} \\ \text{estimate} \end{array} \right)$$

- 8) Emission estimates shall be subject to the recordkeeping requirements of Special Condition 15. "Record Keeping Requirements".
- 9) If the records required by Special Condition 3.B. demonstrate an exceedance of the limit specified in Special Condition 3.A., then the emission estimates recorded for the previous 12-month period shall be submitted with the Deviation Report required by Special Condition 16.B.

**4. Mass Balance Calculations**

When required by Special Condition 3. "Annual Emission Limitation – Plantwide Applicability Limitation (PAL)" to use the VOC mass balance method, General Motors - Wentzville Assembly shall determine the VOC emissions from activities using coatings or solvents according to the following requirements:

- A. General Motors - Wentzville Assembly shall obtain the VOC content of all coatings or solvents according to the following approved methods. The Director reserves the right to require General Motors - Wentzville Assembly to determine the VOC contents of any material according to U.S. EPA reference methods.
  - 1) Material Safety Data Sheet (MSDS) Note: Where the vendor of a material, publishes a range of VOC content, General Motors - Wentzville Assembly shall use the highest value of the range to calculate the VOC emissions.
  - 2) laboratory test data

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The permittee is authorized to construct and operate subject to the following special conditions:

- B. The amount of VOC recovered from material shipped off-site, such as hazardous waste, solvent recovery, or fuel blending, shall be calculated as the mass of material shipped off-site times the VOC content of the material. The VOC content of material shipped off-site is the weighted average of the VOC content of all shipments made during a one-month block time period. General Motors - Wentzville Assembly shall verify the VOC content of each shipment according to U.S. EPA reference methods.
  - C. The amount of VOC emitted according to the mass balance method shall be calculated as the total mass of VOC containing materials used times the respective VOC content. The amount of VOC recovered shall be subtracted from this amount.
5. Control Device Calculations
- At the time of permit issuance, General Motors - Wentzville Assembly does not use a control device to comply with any applicable VOC emission limit. Subsequent to permit issuance, if General Motors - Wentzville Assembly uses a control device to meet any emission limit, including but not limited to the emission limit specified in Special Condition 3.A., General Motors - Wentzville Assembly shall calculate the VOC emissions according to the procedures outlined below.
- A. For Primer-Surfacer and Topcoat Operations, General Motors - Wentzville Assembly shall use the procedures set forth in the Auto Protocol (EPA-453/R-08-002) entitled, *Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations*, (September 2008). An example of the Auto Protocol calculation method is provided in Appendix E. This example is intended to summarize the Auto Protocol procedures. Any differences between the example and the Auto Protocol method are unintentional, and if differences exist then the Auto Protocol shall take precedence.
    - 1) General Motors - Wentzville Assembly shall determine the transfer efficiency according to the procedures outlined in the Auto Protocol, Section 18, "Transfer Efficiency Test Procedure – In Plant".
    - 2) General Motors - Wentzville Assembly shall determine the oven solvent loading according to the procedures outlined in the Auto Protocol, Section 23, "Test Procedures for Determining Exhaust Control Device VOC Loading (Capture Efficiency) by Stack Test per EPA Method 204 or Alternative Methods".

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The permittee is authorized to construct and operate subject to the following special conditions:

- 3) General Motors - Wentzville Assembly shall determine the destruction efficiency according to the procedures outlined in the Auto Protocol, Section 22, "Test Procedures for Determining Oxidizer or Concentrator Control Device Efficiency".
- 4) General Motors - Wentzville Assembly shall validate the transfer efficiency, oven solvent loading, and control device efficiency according to the procedures set forth in Special Condition 7. "Performance Testing Requirements".

- B. For all other operations, General Motors - Wentzville Assembly shall account for the use of a VOC control device according to the following formula:

$$\left( \text{VOC} \right)_{\text{emissions}} = \left( \text{VOC} \right)_{\text{generated}} \times \left( 1 - \left( \text{capture efficiency} \right) \times \left( \text{control efficiency} \right) \right)$$

- 1) General Motors - Wentzville Assembly shall determine the VOC generated according to the procedures outlined in Special Condition 4." Mass Balance Calculations".
- 2) General Motors - Wentzville Assembly shall validate the capture efficiency and control efficiency according to the procedures set forth in Special Condition 7. "Performance Testing Requirements".
- 3) In order to use data from a representative source in lieu of the performance testing required by Special Condition 5.B.2) (i.e. data in lieu of testing), General Motors - Wentzville Assembly must adhere to the following requirements:
  - a) General Motors - Wentzville Assembly must submit a request in writing to the Air Pollution Control Program's New Source Review Unit, P.O. Box 176, Jefferson City, MO 65102 in order to waive the performance testing required by Special Condition 5.B.2).
  - b) The request must include proposed capture and control efficiencies along with the supporting justification.
  - c) General Motors - Wentzville Assembly may forego the performance testing and use the proposed capture and control efficiencies upon receipt of written approval from the Director.

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

**6. Approved Emission Factors**

- A. General Motors - Wentzville Assembly shall use the following emission factors to determine VOC emissions from existing emission units:

Table 1: Approved Emission Factors for Existing Emission Units

Emission Unit Type	Emission Factor	Units	SCC
Coal Combustion (Boiler)	0.05	pounds VOC per ton bituminous coal burned	1-02-002-04
Natural Gas Combustion (Boiler)	5.5	pounds VOC per million cubic feet natural gas burned	1-02-006-01
Natural Gas Combustion (Process Equipment)	5.5	pounds VOC per million cubic feet natural gas burned	1-02-006-03

SCC= Emission Factor Source Classification Code

- B. General Motors - Wentzville Assembly shall use the following emission factors to determine VOC emissions from pre-approved changes:

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The permittee is authorized to construct and operate subject to the following special conditions:

Table: 2 Approved Emission Factors for Pre-Approved Changes

Pre-Approved Change Category	Emission Unit Type	Emission Factor	Units	SCC
47	Natural Gas Combustion (Boiler)	5.5	pounds VOC per million cubic feet natural gas burned	1-02-006-01
47	Fuel Oil Combustion (Boiler)	0.2	pounds VOC per thousand gallons fuel oil burned	1-02-005-01
47	Propane Combustion (Boiler)	1.0	pounds VOC per thousand gallons propane burned	1-02-010-02
1,6,7,9,10,13,14 17,19,22,24,28 31,33,34,37,38 39,40,52,53	Natural Gas Combustion (Process Equipment)	5.5	pounds VOC per million cubic feet natural gas burned	1-02-006-03
1,6,7,9,10,13,14 17,19,22,24,28 31,33,34,37,38 39,40,52,53	Propane Combustion (Process Equipment)	1.0	pounds VOC per thousand gallons propane burned	1-02-010-02
54	Natural Gas Combustion (Engine)	0.12	pounds VOC per million Btu	2-02-002-52
54	Fuel Oil Combustion (Engine)	0.35	pounds VOC per million Btu	2-03-001-01
54	Gasoline Combustion (Engine)	2.10	pounds VOC per million Btu	2-03-003-01

SCC= Emission Factor Source Classification Code

- C. General Motors - Wentzville Assembly has the option to submit an application for an amendment to this construction permit in order to make additions or corrections to Table: 2 "Approved Emission Factors for Pre-Approved Changes". The application must be submitted to the Air Pollution Control Program's New Source Review Unit, and the amendment must be issued, prior to the use of the emission factor.
7. Performance Testing Requirements  
At the time of permit issuance, General Motors - Wentzville Assembly does not use a control device to comply with any applicable VOC emission limit. Subsequent to permit issuance, if General Motors - Wentzville Assembly uses a capture and/or control device to comply with any applicable VOC emission limit during the PAL effective period, including but not limited to the emission limit

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The permittee is authorized to construct and operate subject to the following special conditions:

specified in Special Condition 3.A., then General Motors - Wentzville Assembly shall validate the capture efficiency and control efficiency through performance testing according to the following requirements:

- A. Initial performance testing shall be completed within 180 days after the initial use of the control equipment.
  - B. Each capture and control efficiency shall be re-validated through performance testing at least once every 5 years.
  - C. A proposed test plan shall be submitted in accordance with the procedures outlined in Special Condition 8. "Test Plan Procedures".
8. Test Plan Procedures
- A. A completed Proposed Test Plan Form must be submitted to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, within 30 days prior to the proposed test date so that the Compliance/Enforcement Section, may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Compliance/Enforcement Section prior to conducting the required testing.
  - B. Two copies of a written report of the performance test results shall be submitted to the Compliance/Enforcement Section within 30 days of completion of any required testing, unless an extension is requested and approved by the Director. The extension must be submitted in writing at least ten days prior to the 30 day deadline. The report must include legible copies of the raw data sheets, analytical instrument laboratory data and complete sample calculations from the required U.S. EPA Method for at least one sample run.
  - C. The test report is to fully account for all operational and emission parameters addressed both in the construction permit conditions as well as in any other applicable state or federal rules or regulations.
9. Emission Limitations for Pre-Approved Changes
- A. General Motors - Wentzville Assembly shall emit less than the following emission rates in any consecutive 12-month period from the pre-approved changes (i.e. the equipment that is newly constructed or modified under authority of this permit).

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

Table 3: Emission Limitations

Pollutant	Tons per year
Particulate Matter (PM)	25.0
Particulate Matter less than 10 microns in diameter (PM <sub>10</sub> )	15.0
Particulate Matter less than 2.5 microns in diameter (PM <sub>2.5</sub> )	10.0
Sulfur dioxide (SO <sub>2</sub> )	40.0
Nitrogen oxides (NO <sub>x</sub> )	40.0
Carbon monoxide (CO)	100.0
Lead (Pb)	0.60
Greenhouse Gases (GHGs)	75,000 <sup>[1]</sup>

<sup>1</sup>Units are tons carbon dioxide equivalents (CO<sub>2</sub>e) per year

- B. Attachment C, or an equivalent form, shall be used for demonstrating compliance with the emission limitations specified in Special Condition 9. A.
- C. General Motors - Wentzville Assembly shall complete the calculations required by Special Condition 9.B. no later than 30 days after the end of the month.
- D. If General Motors - Wentzville Assembly uses a capture and/or control device to comply with the emission limitations specified in Special Conditions 9.A. then General Motors - Wentzville Assembly shall validate the capture efficiency and control efficiency through performance testing within 180 days after the initial use of the control equipment. A proposed test plan shall be submitted in accordance with the procedures outlined in Special Condition 8. "Test Plan Procedures".
- E. In order to use data from a representative source in lieu of the performance testing required by Special Condition 9.D. (i.e. data in lieu of testing), General Motors - Wentzville Assembly must adhere to the following requirements:
  - 1) General Motors - Wentzville Assembly must submit a request in writing to the Air Pollution Control Program's New Source Review Unit, P.O. Box 176, Jefferson City, MO 65102 in order to waive the performance testing required by Special Condition 9.D.

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The permittee is authorized to construct and operate subject to the following special conditions:

- 2) The request must include proposed capture and control efficiencies along with the supporting justification.
  - 3) General Motors - Wentzville Assembly may forego the performance testing and use the proposed capture and control efficiencies upon receipt of written approval from the Director.
10. HAP Requirements for Pre-Approved Changes  
Pre-approved changes that are subject to a regulation under 40 CFR Part 63, *National Emission Standards for Hazardous Air Pollutants for Source Categories (a.k.a. Maximum Achievable Control Technology (MACT))*, have no additional compliance requirements. The following requirements apply only to pre-approved changes that are not subject to a regulation under 40 CFR Part 63.
- A. General Motors - Wentzville Assembly shall demonstrate that the maximum ambient impact of HAP emissions from pre-approved changes is less than the Risk Assessment Level according to the procedures specified in Special Condition 11. "Ambient Impact Analysis Procedures for Individual or Aggregate Group HAPs". The Screening Model Action Level shall be obtained from the most recent revision of the Air Pollution Control Program's *Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels*.
  - B. In lieu of the modeling requirement specified in Special Condition 10.A., General Motors - Wentzville Assembly has the option to limit HAP emissions from pre-approved changes to less than the Screening Model Action Level for any consecutive 12-month period according to the following requirements:
    - 1) General Motors - Wentzville Assembly must submit a request in writing with the notification requirements outlined in Special Condition 13. "Notification of the Start of Construction or Modification".
    - 2) General Motors - Wentzville Assembly shall keep monthly emission calculations on hand demonstrating continuous compliance with this condition.
11. Ambient Impact Analysis Procedures for Individual or Aggregate Group HAPs
- A. General Motors - Wentzville Assembly shall follow the modeling guidelines set forth in 40 CFR Part 51 Appendix W, "*Guideline on Air Quality Models*" using either the recommended screening model or the recommended refined model.

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The permittee is authorized to construct and operate subject to the following special conditions:

- B. General Motors - Wentzville Assembly shall prepare and submit a modeling protocol to the Air Pollution Control Program's New Source Review Unit for approval prior to the execution of the ambient air quality impact analysis.
- C. The emission rates used in the model shall be based upon the potential to emit of the individual or aggregate group HAP from all emission units at the site (i.e. including the proposed changes and each new, modified, and existing emission unit listed on Attachment A, or an equivalent form).
  - 1) For Individual HAPs, the emission rate shall be the total mass of the compound.
  - 2) For Aggregate Group HAPs, the emission rate shall be consistent with the guidance set forth in the most recent revision of the Air Pollution Control Program's *Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels*.
- D. The Risk Assessment Levels shall be obtained from the most recent revision of the Air Pollution Control Program's *Table of Hazardous Air Pollutants, Screening Model Action Levels, and Risk Assessment Levels*.
- E. If the maximum ambient impacts are less than the Risk Assessment Levels, then General Motors - Wentzville Assembly shall prepare a modeling report containing sufficient detail to verify compliance with the Risk Assessment Levels. This report shall be submitted with the notification requirements outlined in Special Condition 13. "Notification of the Start of Construction or Modification".
- F. If the maximum ambient impact is greater than the Risk Assessment Level, then General Motors - Wentzville Assembly shall apply for and obtain a construction permit according to the requirements of 10 CSR 10-6.060, *Construction Permits Required*.
  - 1) The permit review shall address only non-VOC emissions
  - 2) VOC emissions shall be subject to the requirements of Special Condition 3. "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)"
  - 3) The construction permit shall apply restrictions (such as emission rate limits or control device requirements) that achieve sufficient emission reductions to reduce the maximum ambient impact to less than the Risk Assessment Level.

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## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

### 12. Authorized Construction/Operation of Pre-Approved Changes

- A. General Motors - Wentzville Assembly is authorized to construct any of the pre-approved changes (i.e. the equipment that is newly constructed or modified under authority of this permit) during the PAL effective period without applying for or obtaining a construction permit or an amendment according to the following requirements:
- 1) The construction or modification shall be consistent with the authorized changes listed in Appendix D, *Pre-Approved Changes*.
  - 2) The construction or modification shall be recorded in Attachment A, or an equivalent form.
  - 3) Emissions of VOC associated with the construction or modification shall be subject to the requirements of Special Condition 3. "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)"
  - 4) All construction or modifications combined are subject to the emission limitations referenced in Special Condition 9.A.
  - 5) All construction or modifications shall meet the requirements of Special Condition 10. "HAP Requirements for Pre-Approved Changes".
- B. General Motors - Wentzville Assembly is authorized to make like-kind replacements during the PAL effective period without applying for or obtaining a construction permit or an amendment according to the following requirements:
- 1) The replacement would qualify as a like-kind replacement according to 10 CSR 10-6.061, *Construction Permits Exemptions*.
  - 2) Like-kind replacements shall be recorded in Attachment A, or an equivalent form.
  - 3) Like-kind replacements shall be considered existing emission units for purposes of Attachment A.
  - 4) Emissions of VOC associated with like-kind replacements shall be subject to the requirements of Special Condition 3. "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)"
  - 5) Like-kind replacements are not subject to the emission limitations referenced in Special Condition 9. "Emission Limitations for Pre-Approved Changes" or the HAP requirements of Special Condition 10. "HAP Requirements for Pre-Approved Changes"

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- C. Permission to construct may be revoked if the Air Pollution Control Program determines that the construction or modification is not consistent with the authorized changes listed in Appendix D, *Pre-Approved Changes*.
  - D. Prior to the start of construction of any new emission unit or the modification of any existing emission unit that is deemed not consistent with the authorized changes listed in Appendix D, *Pre-Approved Changes*, General Motors - Wentzville Assembly shall apply for and obtain a construction permit or an amendment according to the requirements of 10 CSR 10-6.060, *Construction Permits Required*.
    - 1) The permit review shall address only non-VOC emissions.
    - 2) VOC emissions shall be subject to the requirements of Special Condition 3. "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)".
  - E. Failure to obtain a construction permit or an amendment for any construction or modification that is deemed not consistent with the authorized changes listed in Appendix D, *Pre-Approved Changes*, is a violation of 10 CSR 10-6.060, *Construction Permits Required*.
  - F. General Motors - Wentzville Assembly has the option to submit an application for an amendment to this construction permit in order to make additions or corrections to Appendix D, *Pre-Approved Changes*. The application must be submitted to the Air Pollution Control Program's New Source Review Unit, and the amendment must be issued prior to the start of construction.
13. Notification of the Start of Construction or Modification
- A. General Motors - Wentzville Assembly shall submit written notification to the Air Pollution Control Program's New Source Review Unit and the St. Louis Regional Office no less than ten days prior to the start of any construction or modification meeting the requirements of Special Condition 12.A. The notification shall contain the following:
    - 1) A detailed description of the construction or modification including the effects on the emissions of any existing emission unit that will not be physically changed;
    - 2) A plant layout diagram with representation of the existing equipment and the new construction or modification;
    - 3) A schedule of construction activities;

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 4) A statement of applicability of any New Source Performance Standard, National Emissions Standard of Hazardous Air Pollutants and/or state regulations not identified as core requirements in the operating permit;
  - 5) A calculation sheet detailing the expected actual emissions of all pollutants for each emission unit affected by the construction or modification;
  - 6) A statement of verification that the construction or modification will not result in actual emissions exceeding the limitations referenced in Special Conditions 3. "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)" and 9. "Emission Limitations for Pre-Approved Changes";
  - 7) Any modeling reports required to demonstrate compliance with Special Condition 10.A.; and
  - 8) Any request to limit HAP emissions below the Screening Model Action Level in accordance with Special Condition 10.B.
- B. This notification shall become an enforceable part of this construction permit upon receipt by the Air Pollution Control Program.
14. Notification of the Start of Operation  
General Motors - Wentzville Assembly shall submit written notification to the Air Pollution Control Program's New Source Review Unit and the St. Louis Regional Office no less than ten days prior to the start of operation of any construction or modification meeting the requirements of Special Condition 12.A. The notification shall contain the following:
- A. Reference to the notification pertaining to the start of construction or modification; including the date of the notification and a brief description of the change;
  - B. Verification that the construction or modification was completed as described in the original notification; and
  - C. Scheduled date for the start of operation.
15. Record Keeping Requirements
- A. General Motors - Wentzville Assembly shall maintain all records required by this permit for not less than five years. These records shall include Material Safety Data Sheets (MSDS) for all materials used.

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. General Motors - Wentzville Assembly shall maintain a copy of the PAL permit application and any applications for revisions to the PAL for the duration of the PAL effective period plus five years.
  - C. General Motors - Wentzville Assembly shall maintain a copy of each annual certification of compliance pursuant to Title V and the data relied on in certifying compliance for the duration of the PAL effective period plus five years.
  - D. General Motors - Wentzville Assembly shall keep all records required by this permit on-site and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request.
16. Reporting Requirements
- A. General Motors - Wentzville Assembly shall submit a semi-annual emissions report to the Air Pollution Control Program's Compliance/Enforcement Section, no later than 30 days after the end of each reporting period. The reporting periods are January 1 - June 30 and July 1 – December 31. The report shall contain the following information:
    - 1) Specification of the site;
    - 2) Identification of the owner and operator;
    - 3) The permit number and the project number;
    - 4) A copy of Attachment A, or an equivalent form, including at a minimum a list of any emission units modified or added to the installation during the preceding 6-month period;
    - 5) A copy of Attachment B, or an equivalent form, including at a minimum the total annual emissions in tons per year based on a 12-month rolling total for each month in the reporting period (or for all prior months if the PAL has not been in effect for a full 12 months);
    - 6) A statement indicating compliance with the PAL;
    - 7) A summary of all data relied upon in calculating the monthly and annual VOC emissions as well as the method of emissions calculations including formulas, emission factors, and capture and control efficiencies;
    - 8) The number, duration, and cause of any deviations or control device malfunctions, and any corrective actions taken;

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- 9) Information relating to the shutdown of any VOC control system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the control system will be fully operational or replaced with another system, and whether the emissions unit controlled by the VOC control system continued to operate during the shutdown, and the method that was used to calculate emissions during the shutdown;
  - 10) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the report.
- B. General Motors - Wentzville Assembly shall submit a deviation report to the Air Pollution Control Program's Compliance/Enforcement Section no later than 30 days after any deviations or exceedance of permitting requirements. The deviation report shall contain the following information:
- 1) Specification of the site;
  - 2) Identification of the owner and operator;
  - 3) The permit number and the project number;
  - 4) The permit requirement that experienced the deviation or that was exceeded;
  - 5) Emissions resulting from the deviation or the exceedance; and
  - 6) A signed statement by the responsible official certifying the truth, accuracy, and completeness of the information provided in the report.
17. Quality Assurance and Quality Control Plan
- A. Within 90 days of permit issuance, General Motors - Wentzville Assembly shall develop and implement a quality assurance and quality control plan to verify the proper collection and validation of the data relied upon in demonstrating compliance with the PAL.
- B. At a minimum the plan shall include a description of how General Motors - Wentzville Assembly assures that the following data remain accurate:
- 1) the emission units added, modified, or removed and the corresponding dates;
  - 2) the amount of fuel combusted;
  - 3) the amount of coatings and solvents used and the corresponding VOC content;
  - 4) the emissions calculations including formulas, emission factors, and transfer, capture, and control efficiencies (if applicable);

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- C. The plan shall be incorporated into General Motors - Wentzville Assembly's Part 70 Operating Permit. The plan shall be available for review by any Missouri Department of Natural Resources' personnel upon request.
18. PAL Effective Period
- A. The PAL effective date shall be the date of permit issuance.
  - B. The PAL shall expire ten years following the PAL effective date.
  - C. General Motors - Wentzville Assembly shall submit a complete application for a new construction permit at least six months prior to, but no earlier than 18 months from, the expiration date of the PAL. The application shall follow the requirements of one of the following:
    - 1) Expiration of a PAL as outlined in Special Condition 19. "Expiration of a PAL".
    - 2) Renewal of a PAL as outlined in Special Condition 20. "Renewal of a PAL".
  - D. If an application is not received by the Air Pollution Control program according to the requirements of Special Condition 18.C. then General Motors - Wentzville Assembly will be required to submit an application for a new construction permit appropriate for the expiration of the PAL according to the requirements of Special Condition 19. "Expiration of a PAL".
19. Expiration of a PAL
- A. In order to terminate the PAL at the end of the PAL effective period, General Motors - Wentzville Assembly must submit a timely application in accordance with Special Condition 18.C. for a new construction permit.
  - B. The application shall include a proposed allowable emission limitation for each emission unit, or each group of emission units, by distributing the PAL allowable emissions among each of the emission units that existed under the PAL. If the compliance date for an applicable State or Federal requirement occurred during the PAL effective period, and the PAL had not yet been adjusted, the distribution shall be made as if the PAL had been adjusted.

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**SPECIAL CONDITIONS:**

The permittee is authorized to construct and operate subject to the following special conditions:

- C. The Air Pollution Control Program shall decide how the PAL allowable emissions will be distributed and issue a revised permit incorporating allowable limits for each emission unit, or each group of emission units, as the Air Pollution Control Program determines is appropriate. Each emission unit(s) shall comply with the allowable emission limitation on a 12-month rolling basis.
- D. Until the Air Pollution Control Program issues the revised permit incorporating the allowable limits for each emission unit:
  - 1) Special Condition 3 "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)" shall remain in effect.
  - 2) General Motors - Wentzville Assembly shall cease construction of any Pre-Approved changes that have not begun operation during the PAL effective period.
- E. Any physical change or change in the method of operation that occurred during the PAL effective period will be subject to the nonattainment major New Source Review (NSR) requirements if such change meets the definition of major modification for VOC.
- F. General Motors - Wentzville Assembly shall continue to comply with any applicable State or Federal requirements that may have applied either during the PAL effective period or prior to the PAL effective period except for the emission limitations that are superseded in Special Condition 1. "Superseding Condition".
- G. The PAL effective period shall expire on the expiration date and Special Condition 12. "Authorized Construction/Operation of Pre-Approved Changes" will no longer be effective.
- H. The non-VOC emission limits specified in Special Condition 9. "Emission Limitations for Pre-Approved Changes" do not expire. General Motors - Wentzville Assembly shall continue to comply with the emission limits that apply to the equipment that was constructed or modified according to Special Condition 12. "Authorized Construction/Operation of Pre-Approved Changes".

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## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

### 20. Renewal of a PAL

- A. In order to renew the PAL at the end of the PAL effective period, General Motors - Wentzville Assembly must submit a timely application in accordance with Special Condition 18.C. for a new construction permit. The application shall contain the following required elements:
- 1) A proposed PAL level;
  - 2) A list of all emission units with applicable Federal or State requirements;
  - 3) The potential emissions of all current equipment at the installation;
  - 4) Identification of the baseline period;
  - 5) Baseline actual emissions; and
  - 6) A compliance plan for the proposed PAL.
- B. The Air Pollution Control Program shall have the final authority to set the new PAL based on the following guidelines:
- 1) If the baseline actual emissions at the time of renewal are equal to or greater than 80 percent of the PAL, the PAL may be renewed at the same level.
  - 2) The PAL may not be set at a level that is greater than the potential to emit of the entire installation.
  - 3) The PAL shall be adjusted to account for any applicable State or Federal requirement with a compliance date that occurs during the effective period of this PAL.
  - 4) A PAL level higher than the current PAL level cannot be approved unless otherwise approved through Special Condition 21. "Increase of the PAL during the Effective Period"
- C. Any request to renew the PAL level is required to be placed on public notice for at least a 30-day period for submittal of public comment.
- D. Special Condition 3 "Annual Emission Limitation - Plantwide Applicability Limitation (PAL)" shall remain in effect until a new permit has been issued to General Motors - Wentzville Assembly.
- 1) The PAL effective period shall expire on the expiration date and Special Condition 12 "Authorized Construction/Operation of Pre-Approved Changes" will no longer be effective.
  - 2) General Motors - Wentzville Assembly shall cease construction of any Pre-Approved changes that have not begun operation during the PAL effective period.

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## SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- E. The non-VOC emission limits specified in Special Condition 9. "Emission Limitations for Pre-Approved Changes" do not expire. General Motors - Wentzville Assembly shall continue to comply with the emission limits that apply to the equipment that was constructed or modified according to Special Condition 12. "Authorized Construction/Operation of Pre-Approved Changes". All pre-approved changes proposed for the PAL renewal shall be considered as part of the PAL renewal project and subject to the emission limits established during the PAL renewal.
21. Increase of the PAL during the Effective Period
- A. In order to increase in the PAL limit for a PAL major modification, General Motors - Wentzville Assembly must submit an application for a new construction permit requesting to increase the PAL limit according to the following requirements:
    - 1) The application shall identify the emissions unit(s) contributing to the increase in emissions so as to cause the emissions to equal or exceed the PAL.
    - 2) General Motors - Wentzville Assembly shall determine the Best Available Control Technology (BACT) equivalent controls for each emission unit using current technology.
    - 3) The application must demonstrate that the sum of the baseline actual emissions of the small emission units, plus the sum of the baseline actual emissions of the significant and major emission units assuming application of BACT equivalent controls, plus the sum of the allowable emissions of the new or modified emissions units exceeds the PAL.
      - a) Small emission unit means an emission unit that emits or has the potential to emit the PAL pollutant in an amount less than the significant emission rate for nonattainment areas.
      - b) Significant emission unit means an emission unit that emits or has the potential to emit the PAL pollutant in an amount that is equal to or greater than the significant emission rate for nonattainment areas but less than the amount that would qualify the unit as a major emission unit.
      - c) Major emission unit means any emission unit that emits or has the potential to emit the PAL pollutant in an amount that is equal to or greater than the major source threshold for nonattainment areas.

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#### SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- 4) These emission unit(s) identified by Special Condition 21.A.1) shall comply with any requirements resulting from the nonattainment major NSR program process (for example, LAER), even though they have also become subject to the PAL or continue to be subject to the PAL.
  - B. The increased PAL level shall be effective on the day any emission unit that is part of the PAL major modification becomes operational and begins to emit VOC.
  - C. Any request to increase the PAL level is required to be placed on public notice for at least a 30-day period for submittal of public comment.
22. Reopening of the PAL  
The Air Pollution Control Program may reopen this construction permit to reduce the PAL for the following reasons:
- A. To account for any applicable State or Federal requirement with a compliance date that occurs during the effective period of this PAL permit.
  - B. To avoid causing or contributing to a National Ambient Air Quality Standard (NAAQS) or Prevention of Significant Deterioration (PSD) increment violation, or to an adverse impact on air quality in a Class I area.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE  
SECTION (7) REVIEW

Project Number: 2011-06-024  
Installation ID Number: 183-0076  
Permit Number:

General Motors - Wentzville Assembly  
1500 East Route A  
Wentzville, MO 63385

Complete: June 22, 2011

Parent Company:  
General Motors LLC  
1500 East Route A  
Detroit, MI 48265

St. Charles County, S20, T47N, R2E

REVIEW SUMMARY

- General Motors - Wentzville Assembly has applied for the authority to construct any of the pre-approved changes specified in Appendix D under the condition of a Plantwide Applicability Limitation for volatile organic compounds.
- Hazardous Air Pollutant (HAP) emissions are expected from the pre-approved changes specified in Appendix D. However, most HAP generating emission units will be subject to regulation under 40 CFR Part 63. For those emission sources that are not regulated under 40 CFR Part 63, the special conditions of this permit require General Motors - Wentzville Assembly to demonstrate that the maximum ambient impact will be less than the Risk Assessment Levels (RALs) or restrict the HAP emissions to less than the Screening Model Action Levels (SMALs).
- 10 CSR 10-5.330, *Control of Emissions From Industrial Surface Coating Operations*, applies to the surface coating and related cleaning operations (EPN-1, EPN-2, EPN-3, EPN-4, EPN-5, and EPN-7).
- 10 CSR 10-5.455, *Control of Emissions from Industrial Solvent Cleaning Operations*, applies to the purging/solvent cleaning of surface coating equipment (EPN-7).
- 40 CFR 60 Subpart MM, "Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations" applies to the surface coating operations (EPN-1, EPN-2, and EPN-3).
- 40 CFR 63 Subpart IIII, "National Emission Standards for Hazardous Air Pollutants: Surface Coating of Automobiles and Light-Duty Trucks" applies to the surface coating operations (EPN-1, EPN-2, EPN-3, EPN-4, EPN-5, and EPN-7).

- 40 CFR 63 Subpart EEEE, “National Emission Standard for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)” applies to the Windshield Washer Fluid storage tank because it contains methanol (EPN-6).
- 40 CFR 63 Subpart ZZZZ, “National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines” applies to the emergency generators (EPN-6).
- The paint curing ovens (EPN-1, EPN-2, and EPN-3) are equipped with oven air seals and catalytic oxidizers. However, GM-Wentzville has been able to meet their VOC emission limits without using these controls. As a result, GM-Wentzville is not required to use them. The only VOC control device that GM-Wentzville is required to use is a stage 2 vapor recovery system.
- The review for the PAL was conducted in accordance with Section (7) *Nonattainment Area Permits* of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Emissions of VOCs for the entire installation are conditioned with a PAL.
- The review for the pre-approved changes was conducted in accordance with Section (5) *De Minimis Permits* of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. The NSR pollutants, except for VOC, are limited to less than de minimis increases during the PAL effective period for all new emission units and for all modifications to existing emission units.
- This installation is located in St. Charles County, a nonattainment area for the eight-hour ozone standard and the standard for particulate matter less than 2.5 microns in aerodynamic diameter (PM<sub>2.5</sub>). St. Charles County is an attainment area for all other criteria pollutants.
- This installation is on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2 because the installation is subject to 40 CFR 60, Subpart MM, “Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations” which is a source category classified as item number 27. *Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.* Being classified as source category number 27, fugitive emissions are counted toward major source applicability, and the major source levels are 100 tons per year for PM<sub>2.5</sub>, NO<sub>x</sub>, and VOC and 250 tons per year for all other criteria pollutants.
- Ambient air quality modeling was not performed since emissions of criteria pollutants are conditioned to below de minimis levels.

- At the time of permit issuance, General Motors - Wentzville Assembly does not use a control device to comply with any applicable VOC emission limit. Subsequent to permit issuance, if General Motors - Wentzville Assembly uses a control device to meet any emission limit then emissions testing will be required as specified in Special Condition 5. "Control Device Calculations" and Special Condition 9. "Emission Limitations for Pre-Approved Changes".
- A revised application for the renewal of the Part 70 Operating Permit is required within one year of PAL permit issuance.
- Approval of this permit is recommended with special conditions.

### INSTALLATION DESCRIPTION

General Motors - Wentzville Assembly (GM-Wentzville) is an automobile body fabrication and general assembly plant. Body fabrication processes include: stamping, welding, and surface coating. General assembly activities include body-trim assembly, body-chassis marriage, fluid filling, and final testing. The site also includes a powerhouse consisting of 4 coal-fired boilers supplying steam to the assembly plant. GM-Wentzville is an existing major source with emissions of PM, PM<sub>10</sub>, SO<sub>x</sub>, CO, and CO<sub>2</sub> exceeding 250 tons per year, emissions of NO<sub>x</sub>, VOC, and PM<sub>2.5</sub> exceeding 100 tons per year, and emissions of individual and combined HAPs exceeding ten and 25 tons per year, respectively. A detailed process flow and the corresponding descriptions are summarized in Appendix A and Appendix B of this permit.

### PERMIT HISTORY

GM-Wentzville has requested a plantwide applicability limit (PAL) on emissions of VOC. The PAL permit specifies the compliance requirements that will allow GM-Wentzville to make the pre-approved changes specified in Appendix D, including alterations to existing emissions units and the addition of new emissions units, without having to obtain a construction permit from the Air Pollution Control Program. According to 40 CFR 51.165, a major stationary source receiving a PAL permit must continue to comply with all applicable Federal and State requirements, such as New Source Performance Standards (NSPS), Maximum Achievable Control Technology (MACT) regulations, state requirements such as Reasonably Available Control Technology (RACT) rules, and also any Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) limits resulting from review under Prevention of Significant Deterioration (PSD) or Nonattainment New Source Review (NA-NSR). Therefore, nothing in this permit or review shall be construed as changing the LAER and BACT emission rates already established for this facility. However, any previous permit restriction applied in order to avoid NSR review may be removed under a PAL permit. Hence, the following summarizes the history of the construction permits issued by the Air Pollution Control Program for the GM-Wentzville facility and explains which permit restrictions remain and which conditions have been removed as a result of this PAL permit.

- GM-Wentzville was constructed in 1980 as a new major source in a nonattainment area for ozone. The permit application included the coal-fired powerhouse and the automotive assembly plant and was subject to NA-NSR for VOC and PSD review for total suspended particulate (TSP), SO<sub>2</sub>, NO<sub>2</sub>, and CO. At that time, NO<sub>2</sub> was not regulated as an ozone precursor and was not subject to LAER. The Air Pollution Control Program issued construction permits 0580-003 and 0580-004 for the powerhouse and automotive assembly plant, respectively. Since Missouri did not yet have authority to issue permits subject to PSD review, a PSD permit was issued by the EPA which incorporated the BACT limits described in permits 0580-003 and 0580-004. None of the special conditions in permit 0580-003 have been superseded because the permit for the powerhouse did not address VOC emissions. However, all special conditions of permit 0580-004 were superseded by this permit. Since a PAL permit cannot remove or change a BACT or LAER emission rate, all permit restrictions were reinstated in Special Condition 2 of this permit.
- Permit 1089-003 was issued for the switch to a water-borne base coat and the associated replacement of the main color paint booth with two parallel paint booths. The reduced VOC content of the water-borne topcoat and a permit restriction of 75 cars per hour resulted in a VOC net emissions decrease of 58 tons per year. Additionally, the LAER limit for primer surfacer application was reduced from the original 8.9 lb VOC per gallon to 8.82 lb VOC per gallon. All special conditions of permit 1089-003 were superseded by this permit, but since a PAL permit cannot remove or change a LAER emission rate, the modification to the LAER emission rate for the application of primer surfacer was reinstated in Special Condition 2 of this permit.
- Permit 0387-007A was issued for the clean-up of soil contaminated with 9,000 gallons of gasoline spilled in 1984. This was a temporary activity with no special conditions and no continuing compliance requirements.
- Permit 0294-015 was issued for the modification of the painting operations to support the change from car assembly to van assembly. A permit restriction of 225,000 vans per year resulted in a VOC net emissions increase less than 26 tons per year. All special conditions of Permit 0294-015 were superseded by this permit.
- Permit 0396-011 was issued for the addition of metal fabrication equipment consisting of two transfer press lines. This permit considered the increase in VOC emissions associated with the application of an oil/water-based lubricant (drawing compound) prior to stamping. Emissions from this activity were limited to less than 11 tons per year in order to keep the combined emissions from Permits 0396-011 and 0294-015 to less than 40 tons per year. All special conditions of Permit 0396-011 were superseded by this permit.

- Permits 092001-007 and 052002-006 were issued for the temporary operation of a portable compressor. The permits were temporary and the compressors were removed prior to July 15, 2002, and there are no continuing compliance requirements.

## PROJECT DESCRIPTION

This project establishes a PAL for emissions of VOC at the GM-Wentzville facility. A PAL is a pollutant-specific, rolling 12-month emissions cap for the entire installation. This PAL permit covers all of the VOC-emitting equipment and activities that are located at GM-Wentzville at the time of permit issuance, and it also covers any future construction, reconstruction, or modification as long as the PAL permit is in effect. Additionally, this permit limits the emissions of the non-PAL NSR pollutants associated with the pre-approved changes to less than de minimis increases. In the case of Greenhouse Gases (GHGs), this permit limits the increase in carbon dioxide equivalent (CO<sub>2</sub>e) emissions to less than major source levels. These restrictions will allow GM – Wentzville to make any of the pre-approved changes listed in appendix D without having to obtain a construction permit from the Air Pollution Control Program.

The VOC tons per year (tpy) PAL is calculated as follows:

$$\text{PAL} = \left( \begin{array}{c} \text{Baseline} \\ \text{Actual} \\ \text{Emissions} \end{array} \right) - \left( \begin{array}{c} \text{Excess} \\ \text{Emissions} \end{array} \right) - \left( \begin{array}{c} \text{Downward} \\ \text{Adjustment} \end{array} \right) + \left( \begin{array}{c} \text{PTE of} \\ \text{New} \\ \text{Equipment} \end{array} \right) - \left( \begin{array}{c} \text{BAE of} \\ \text{Removed} \\ \text{Equipment} \end{array} \right) + \left( \begin{array}{c} \text{Significant} \\ \text{Emission} \\ \text{Rate} \end{array} \right)$$

$$\text{PAL} = (962.5 \text{ tpy}) - (0 \text{ tpy}) - (0 \text{ tpy}) + (0 \text{ tpy}) - (0 \text{ tpy}) + (40 \text{ tpy}) = 1,002.5 \text{ tpy}$$

- *Baseline actual emissions (BAE) means the average rate, in tons per year, at which the source actually emitted the pollutant during any consecutive 24-month period (the baseline period) within the ten-years immediately preceding the date a complete permit application is received. The BAE includes fugitive emissions and emissions associated with startups, shutdowns, and malfunctions.*

GM-Wentzville calculates emissions of VOC from process operations using a mass balance approach and assuming 100% of the VOC in the process materials are emitted. Some of the VOC-containing materials are collected and shipped off-site for either solvent recovery or use in fuel blending. The VOC-content of the materials that are collected and shipped off-site is subtracted from the calculation. All other VOC are assumed to be emitted. Although the ELPO oven (EPN-1), primer surfacer oven (EPN-2), and the topcoat ovens (EPN-3) are all equipped with capture systems (oven air seals) and control devices (catalytic oxidizers) to control VOC emissions, GM-Wentzville achieves compliance with the applicable emission rate limits without the use of these controls. The mass balance approach is considered the worst case method to calculate VOC emissions, and would include all fugitive emissions and emissions associated with start-ups, shut-downs, and malfunctions.

GM-Wentzville calculates emissions of VOC from the combustion of coal and natural gas using the emission factors provided in WebFIRE (Factor Information Retrieval System), EPA's online emission factor repository.

The following table summarizes the VOC emissions and the corresponding two-year average VOC emissions for the last ten years for the GM-Wentzville facility. These emissions were obtained from the Missouri Emissions Information System (MOEIS). GM-Wentzville selected the highest consecutive two-year average emissions (962.5 tons per year) as the BAE. This baseline period corresponds to the years 2004 and 2005.

Table 4: Ten-Year VOC Emissions summary (tons/year)

Emission Year	VOC Emissions	Two-year Averaging period	Consecutive two-year average
2010	450.8	N/A	N/A
2009	304.3	2009-2010	377.6
2008	550.7	2008-2009	427.5
2007	649.7	2007-2008	600.2
2006	821.7	2006-2007	735.7
2005	1,013.4	2005-2006	917.6
2004	911.6	2004-2005	962.5
2003	902.2	2003-2004	906.9
2002	885.3	2002-2003	893.8
2001	872.6	2001-2002	878.9

- *Excess emissions means any emissions occurring during the baseline period that exceeded an applicable standard (including 40 CFR Parts 60 and 61 but not including 40 CFR Part 63) or an applicable emission limit (as set forth in a state implementation plan or a permit condition).*

During the baseline period, GM-Wentzville was subject to the rules and permit restrictions pertaining to VOC emissions that are summarized in Appendix C. GM-Wentzville was in compliance with all applicable emission rate limits during the baseline period, hence there are no excess emissions that need to be subtracted from the BAE.

- *Downward adjustment means any emissions that would not have occurred during the baseline period if any currently applicable standard or emission limit had been in effect at that time.* No construction permits were issued after the baseline period. However, the following rules were modified after the baseline period and the corresponding changes are included in Appendix C. GM-Wentzville was also in compliance with all of the amended emission rate limits during the baseline period, and there are no downward adjustments that need to be subtracted from the BAE.

- 10 CSR 10-5.330, *Control of Emissions From Industrial Surface Coating Operations*, Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011
- 10 CSR 10-5.455, *Control of Emissions from Industrial Solvent Cleaning Operations*, Amended: Filed Nov. 30, 2010, effective Aug. 30, 2011
- *New equipment means any equipment installed after the baseline period.* According to GM-Wentzville, no new equipment has been installed since the baseline period. Therefore, the PTE of new equipment is 0 tons per year.
- *Removed equipment means any equipment removed after the baseline period.* According to GM-Wentzville, no equipment has been removed since the baseline period. Therefore, the BAE of removed equipment is 0 tons per year.
- *Significant emission rate means the emission rate, in tons per year, which triggers major source review.* According to 40 CFR 51.165, the significant emission rate for VOC in a moderate ozone nonattainment area is 40 tons per year.

Based on the review summarized above, the PAL for GM-Wentzville has been established as 1,002.5 tons VOC per year as specified in Special Condition 3. “Annual Emission Limitation – Plantwide Applicability Limitation (PAL)”. The requirements of Special Condition 3. allow GM-Wentzville 30 days to collect, analyze, and quality assure the VOC emissions data for the previous calendar month. In order to ensure that GM-Wentzville will not unknowingly exceed the PAL limit, Special Condition 3.J. requires GM-Wentzville to begin projecting emissions once the 12-month rolling total approaches the PAL. The threshold to begin projecting emissions was developed based on the highest one month vehicle production that occurred during the highest baseline year.

40 CFR 51.165 contains specific requirements for calculating emissions of the PAL pollutant for compliance demonstration purposes. The regulation allows the use of the following approved methods: mass balance (for coatings and solvents), Continuous Emissions Monitoring Systems (CEMS), Continuous Parametric Monitoring Systems (CPMS), or emission factors. GM-Wentzville does not currently use, and does not plan to use, CEMS or CPMS to monitor emissions of VOCs, therefore these methods were not evaluated for use in this PAL permit.

Special Conditions 3, 4, 5, and 6 outline the compliance methods GM-Wentzville may use to demonstrate compliance with the PAL which includes the use of the mass balance method for the processes involving coatings and solvents. As the table below indicates, the majority of GM-Wentzville’s emissions are generated from activities using coatings and solvents. For these processes, the use of the mass balance method results in the highest potential emissions.

Note that the coating processes (EPN-1, EPN2, EPN3) are all subject to LAER, NSPS (40 CFR 60 Subpart MM) and RACT (10 CSR 10-5.330) regulations. Although the processes with the highest emissions include cleaning solvents (EPN-7), cleaning

activities are not subject regulation under Subpart MM and are also not subject to LAER. However, cleaning (EPN-7) is now subject to RACT (10 CSR 10-5.330).

Table 5: Emissions Summary by Individual Process

<b>EIQ</b>	<b>Description</b>	<b>2004 VOC Emissions (tons)</b>	<b>2005 VOC Emissions (tons)</b>
EPN-1	ELPO (Prime)	17.9	18.7
EPN-2	Primer Surfacer (Guidecoat)	120.4	141.1
EPN-3	Topcoat (Basecoat Replacement, Basecoat, and Clearcoat)	503.6	555.8
EPN-4	Final Repair	0.7	0.8
EPN-5	Miscellaneous Sealers and Adhesives	25.6	28.3
EPN-6	Process materials	33.1	27.4
EPN-7	Cleaning Solvents	206.5	237.8
EPN-8	Powerhouse	1.3	1.4
EPN-9	Plant-Wide Natural Gas Usage	0.7	0.7
EPN-10	Stamping	1.6	1.2

The RACT, LAER, and NSPS emission limits for ELPO, Primer Surfacer, and Topcoat are all in terms of the amount of VOC emitted per gallon coating solids applied. Compliance with these limits can be achieved through any of the following: reducing the VOC content of the paint, increasing the transfer efficiency, or using a control device. As previously indicated, the coating ovens (EPN-1, EPN-2, and EPN-3) are all equipped with a capture and control system in the event that GM-Wentzville would need to use them in order to comply with a RACT or LAER limit. Special Condition 3. “Annual Emission Limitation – Plantwide Applicability Limitation (PAL)” requires GM-Wentzville to use the Auto Protocol method of calculating VOC emissions for demonstrating compliance with the PAL when a control device is being used to meet any of these limits. This is because the Auto Protocol method provides the guidelines for determining the appropriate transfer efficiency, capture efficiency, and control efficiency. Otherwise, GM-Wentzville may choose to use the mass balance method in demonstrating compliance with the PAL.

Special Condition 6. “Approved Emission Factors” includes all approved VOC emission factors that may be used for demonstrating compliance with the PAL. If GM-Wentzville wishes to use a different emission factor than what is listed in Special Condition 6, GM-Wentzville must seek approval from the Air Pollution Control Program prior to use in any compliance demonstration. For new equipment, approval can be requested through the notification process. GM-Wentzville must seek approval before changing an emission factor so that the Air Pollution Control Program can evaluate what effects this change may have on the PAL. For example, lowering an emission factor for an existing emission unit may require a corresponding adjustment to the baseline emissions.

A PAL permit allows a facility to make changes without triggering major New Source Review (NSR). However, GM-Wentzville must also comply with the Air Pollution Control Program's minor NSR regulations. In order to allow GM-Wentzville the flexibility to make changes without having to obtain a large number of minor NSR permits, the Air Pollution Control Program utilizes the state regulation pertaining to special case de minimis permitting set forth in 10 CSR 10-6.060, *Construction Permits Required, Section (5) De Minimis Permits*. This PAL permit gives GM-Wentzville the authority to construct new emission units or modify existing emission units during the PAL effective period without obtaining a construction permit as long as the changes are consistent with the requirements of a de minimis permit. All changes made under the authority of the PAL permit are considered a single project. Hence, Special Condition 9. "Emission Limitations for Pre-Approved Changes" limits the actual emissions associated with the pre-approved changes listed in Appendix D to de minimis levels.

The special case de minimis permit also requires an ambient impact analysis for emissions of individual and aggregate group HAP that exceed the screening model action level (SMAL). The ambient impact analysis is only required for those processes that are not subject to regulation under 40 CFR Part 63, *National Emission Standards for Hazardous Air Pollutants for Source Categories (a.k.a. Maximum Achievable Control Technology (MACT))*. For modifications that are not subject to a MACT regulation, GM-Wentzville has the option to limit the actual emissions of individual and aggregate group HAP from the pre-approved changes to less than the SMAL or to perform an ambient impact analysis. If the results of an ambient impact analysis show that the potential emissions result in a maximum ambient impact less than the risk assessment levels (RAL), then the conditions of a special case de minimis permit are satisfied and an emission limit is unnecessary. GM-Wentzville would need to submit a new modeling analysis for any subsequent change that would cause an increase in the potential emissions of the HAP.

Special Conditions 13. "Notification of the Start of Construction or Modification" and 14. "Notification of the Start of Operation" require GM-Wentzville to notify the Air Pollution Control Program of the impending start of construction and the start of operation for any pre-approved change. Once received, these notifications will become incorporated into the construction permit, and compliance with the notifications will be enforceable.

GM-Wentzville has the option of using capture and control equipment in demonstrating compliance with any of the emission limits established by this permit or in determining the potential emissions used in an ambient impact analysis for HAP. In order to take credit for the use of capture and control equipment, GM-Wentzville must make their use an enforceable part of this permit by including the control device in the notification of construction.

This construction permit may be amended to include activities that are not identified in the list of pre-approved changes. However, GM-Wentzville may not amend this construction permit to increase the PAL itself for any reason. To amend the PAL would result in the termination of this construction permit, and GM-Wentzville would need to apply for a new permit according to Special Condition 21. "Increase of the PAL during the Effective Period."

For modifications that would result in an increase in potential emissions above the de minimis level for non-HAP pollutants, GM-Wentzville must submit a construction permit application for evaluation and approval under the major NSR program. As required under the major NSR program, all changes that are considered related to the project undergoing major NSR review must be included in the project evaluation even if some of the changes were made under authority of this PAL permit.

Although GM-Wentzville will have the flexibility to install any of the pre-approved changes listed in Appendix D without having to obtain a construction permit, this increased flexibility will be offset by a requirement to track the emissions associated with these units to verify that the actual emissions of the non-VOC pollutants are less than de minimis levels. Alternatively, GM-Wentzville may obtain a new construction permit for any modification during the PAL effective period. Accordingly, equipment installed under the authority of another construction permit is not subject to the de minimis emission limits of this permit.

Special Condition 17. "Quality Assurance and Quality Control Plan" is intended to ensure that GM-Wentzville maintains the accuracy and completeness of the data gathered for verifying compliance with the PAL. The plan should identify potential failure modes of the data gathering process and describe the procedures that will be taken to prevent any inaccuracies.

According to 40 CFR 51.165, the contents of a PAL permit must include the following:

- Term of the PAL effective period marked by the effective date and the expiration date
- Requirements associated with the expiration of a PAL permit
- Requirements associated with the renewal of a PAL permit
- Procedures for increasing a PAL during the PAL effective period
- Approved methods for monitoring emissions of the PAL pollutant (e.g. Mass Balance, Emission Factors, etc.)
- Record keeping and reporting requirements

Special Conditions 18-22 of this permit are intended to address all of these provisions and should be consistent with the regulations regarding PAL permitting in nonattainment areas found in 40 CFR 51.165. A detailed explanation for these conditions can be found in the Federal Register, Volume 67, Number 251 (December 31, 2002). The following is a summary of the requirements.

A PAL permit can be in effect no longer than ten years. After this ten year period a PAL may be renewed or allowed to expire. Prior to the expiration of the PAL, GM-Wentzville must submit an application appropriate for a PAL renewal or a PAL expiration. If the application is received at least six months (but no earlier than 18 months) prior to the expiration of the PAL, then the existing PAL will continue as an enforceable requirement until a new permit is issued. Until a valid construction permit is issued for a PAL renewal or the expiration of a PAL, GM-Wentzville must continue to comply with the plantwide limitation in Special Condition 3 of this construction permit.

Upon expiration, the PAL must be distributed among the existing emissions units, and a new permit shall be issued with individual limits allocated to each emission unit or group of emission units on a 12-month rolling basis. Alternatively, a PAL renewal requires review similar to the initial PAL permitting review procedures. At the time of renewal the Air Pollution Control Program will review the baseline actual emissions of the PAL-pollutant. This review may result in the PAL being renewed at the same level or the PAL may be adjusted downward to reflect newly applicable requirements or a level that is more representative of the baseline actual emissions. In either case, permission to construct any of the pre-approved changes is void once the PAL effective period has elapsed.

The PAL may be increased during the effective period if GM-Wentzville proposes to add new emission units or change existing emission units in a way that would cause an exceedance of the PAL. However, the modification must go through major NSR permitting, regardless of the proposed emissions increase. The modification must comply with any requirements resulting from the major NSR process (for example, LAER), even though they will also be subject to the PAL.

Federal or State regulatory requirements (e.g. NSPS, RACT) that become effective during the PAL effective period may require a reduction in the PAL. The Air Pollution Control Program has the authority to reopen the PAL permit at any time to adjust the PAL level, as needed; or the Air Pollution Control Program may wait to make the required adjustment at the time of the Title V permit renewal or the PAL permit renewal.

Potential emissions of the application represent the potential of the new and modified emission units (pre-approved changes) constructed during the PAL effective period. The following table provides an emissions summary for this project.

Table 6: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2010 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM <sub>2.5</sub>	10.0	N/D	23.9	<10.0	N/D
PM <sub>10</sub>	15.0	N/D	33.3	<15.0	N/D
SO <sub>x</sub>	40.0	N/D	378.4	<40.0	N/D
NO <sub>x</sub>	40.0	N/D	246.8	<40.0	N/D
VOC	40.0	1,709	450.8	N/A	<1,002.5
CO	100.0	N/D	91.6	<100.0	N/D
GHGs	N/A	N/D	N/D	<75,000 <sup>[1]</sup>	N/D
HAPs	10.0/25.0	N/D	46.8	N/A	N/D

N/A = Not Applicable; N/D = Not Determined

<sup>1</sup>Units are tons carbon dioxide equivalents (CO<sub>2</sub>e) per year

## PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (7) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. This permit establishes a PAL for VOC. All other pollutants associated with the pre-approved changes are conditioned to de minimis increases. Greenhouse gases are conditioned to levels that are not subject to PSD review.

## APPLICABLE REQUIREMENTS

General Motors - Wentzville Assembly shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

### GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information*, 10 CSR 10-6.110
- *Operating Permits*, 10 CSR 10-6.065
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*, 10 CSR 10-6.170
- *Restriction of Emission of Visible Air Contaminants*, 10 CSR 10-6.220
- *Restriction of Emission of Odors*, 10 CSR 10-6.165

### SPECIFIC REQUIREMENTS

- 10 CSR 10-5.330, *Control of Emissions From Industrial Surface Coating Operations*
- 10 CSR 10-5.455, *Control of Emissions from Industrial Solvent Cleaning Operations*
- *New Source Performance Regulations*, 10 CSR 10-6.070 – *Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations*, 40 CFR Part 60, Subpart MM
- *Maximum Achievable Control Technology (MACT) Regulations*, 10 CSR 10-6.075, *National Emission Standards for Hazardous Air Pollutants: Surface Coating of Automobiles and Light-Duty Trucks*, 40 CFR Part 63, Subpart IIII

- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standard for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline), 40 CFR Part 63, Subpart EEEE*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, 40 CFR Part 63, Subpart ZZZZ*

#### STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (7), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

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Kathi Jantz  
Environmental Engineer

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Date

## PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated June 9, 2011, received June 10, 2011, designating General Motors LLC as the owner and operator of the installation.
- St. Louis Regional Office Site Survey, dated July 1, 2011.
- Emission Inventory Questionnaire (EIQ) data for the baseline period received during a site visit on October 26, 2011.
- ELPO NSPS Compliance Reports for the baseline period received during a site visit on October 26, 2011.
- Topcoat Protocol Reports for the baseline period received during a site visit on October 26, 2011.
- Primer Surfacer NSPS Compliance Reports for the baseline period received by email on December 19, 2011.
- WebFIRE (Factor Information Retrieval System), U.S. EPA's online emissions factor repository.
- U.S. EPA document EPA-453/R-08-002, *Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer-Surfacer and Topcoat Operations* (September 2008)
- U.S. EPA document EPA-453/R-08-006, *Control Techniques Guidelines for Automobile and Light-Duty Truck Assembly Coatings* (September 2008)
- The Emissions Inventory Questionnaire (EIQ) forms, for reporting years 2004 and 2005, designating General Motors LLC as the owner and operator of the installation.
- Part 70 Operating Permit Number OP1999-003, designating General Motors LLC as the owner and operator of the installation.

Appendix A – Existing Process Flow

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

Note: This appendix provides an outline of the existing process flow and is included for informational purposes only.

Process	Description	EQ
<b>Stamping</b>	Steel blanks pressed into parts	N/A
	Drawing compound applied as part of stamping process	EPN-10
<b>Body Shop</b>	Body Parts welded together	N/A
	Body Sealers applied	EPN-5
	Body washed in Body Washer	EPN-6
<b>Paint Shop</b>	Phosphate Process	EPN-6
	Prime/ELPO	EPN-1
	ELPO Oven	EPN-1
	ELPO Oven (Natural Gas Combustion)	EPN-9
	Sealer applied	EPN-5
	Basecoat Replacement (Interior Prime)	EPN-3
	Primer Surfacer (Exterior Prime) a.k.a. Guidecoat	EPN-2
	Primer Surfacer Oven	EPN-2
	Primer Surfacer Oven (Natural Gas Combustion)	EPN-9
	Topcoat (Basecoat and Clearcoat)	EPN-3
	Topcoat Ovens	EPN-3
	Topcoat Ovens (Natural Gas Combustion)	EPN-9
	Spot and Heavy Repair	EPN-3
	Purging-Cleaning of Booth Equipment	EPN-7
<b>General Assembly Trim</b>	Trim Parts added to body	N/A
	Deadener applied	EPN-5
	Windshield Install	EPN-5
<b>General Assembly Chassis</b>	Body-Chassis Marriage	N/A
	Fluid Fill	EPN-6
	Van Start	N/A
	Roll Test	N/A
<b>Final Process</b>	Final Paint Repair	EPN-4
	Mechanical Repair	N/A
	Electrical Repair	N/A

## Appendix B – Detailed Process Descriptions

General Motors - Wentzville Assembly  
St. Charles County, S20, T47N, R2E  
Project Number: 2011-06-024  
Installation Number: 183-0076  
Permit Number: \_\_\_\_\_

Note: This appendix provides a detailed description of the existing processes and is included for informational purposes only.

### Stamping (EPN-10)

Body fabrication begins with pressing and stamping sheet metal into formed parts. The stamping process consists of two parallel operating transfer press lines that use successive pressing machines to stamp and die cut the flat sheets into body panels. Transfer press operations are automated and do not require worker manipulation of parts between each press station. Drawing compound is an oil/water-based lubricant applied to the steel panel prior to being stamped in order to provide a smooth finish.

### Body Shop Operations

The body panels are welded together in the Body Shop to form a vehicle body. Body sealers (seam sealers) (EPN-5) are applied to fill welding joints completely. The body is then cleaned in a series of washers using a mixture of water and detergents to remove oils and grease that may have accumulated on the vehicle parts in the Body Shop. The washers are exhausted to the atmosphere to remove humidity from the workplace.

### Phosphate Process (EPN-6)

Following the washers, the vehicle body enters the phosphate pre-treatment system. The purpose of the phosphate pre-treatment is to cover the metal surface with a micro-crystalline coating to enhance paint adhesion and inhibit corrosion. The system consists of several dip and rinse stages which are exhausted to the atmosphere.

### Prime/ELPO System (EPN-1)

The primer coating is an electrostatically plated anti-corrosion paint applied by an electro deposition dip coating process known as ELPO. The vehicle body is submerged in a tank consisting of electrically charged water-borne particles made up of a mixture of resins and pigments. The vehicle serves as an electrode and the charged paint particles are deposited on the metal body until sufficient coating thickness is achieved. ELPO is followed by a permeate rinse (filtered ELPO water) and then a de-ionized water rinse. Additional equipment associated with the ELPO system include: filtration equipment, the resin and de-ionized water storage tanks, and pigment storage totes.

### ELPO Oven (EPN-1)

The ELPO curing oven is natural gas-fired (EPN-9) and equipped with entrance and exit air seals. The ELPO oven has 10 temperature zones each exhausted through a separate catalytic oxidizer. A catalytic oxidizer is a type of VOC control device (abatement device) consisting of a fixed-bed metal catalyst and an incinerator. The catalyst improves the VOC destruction efficiency allowing the incinerator to operate at a lower temperature range.

### Prep Operation

The prep operation prepares the vehicle surface for subsequent coatings and is located in an exhausted enclosure at the entrance of the interior primer spray booth. The prep operations include minor scuff sanding, manual wiping using solvent, tack cloths and/or mechanical feather dusters, additional body sealer application (EPN-5) and/or otherwise prepare the surface for painting.

### Basecoat Replacement (Interior Prime) (EPN-3)

The basecoat replacement (BCR) coatings are applied to the interior surface areas that require a color coat matching the topcoat color. BCR coatings are applied with automatic spray applicators in the interior prime spray booth. Once BCR coatings are applied they are not cured until after the application of the exterior primer (primer surfacer). Since BCR coatings match the topcoat colors, the coatings are considered a type of topcoat, and the BCR emissions are included with the topcoat emissions (EPN-3). Particulate emissions (overspray) from all of the spray booths (BCR, primer surfacer, basecoat, and clearcoat) are controlled with a wet eliminator. The wet eliminator is considered an integral part of the spray booth operation because of the venturi effect that it creates exhausts the air from the spray booths. The booths cannot

operate without this airflow because the paint quality would be unacceptable.

#### Primer Surfacer (Exterior Prime) (EPN-2)

Following the application of BCR, the vehicle passes through the exterior prime spray booth where primer surfacer and anti-chip materials can be applied to the vehicle surface using various spray types applicators. All paint materials are supplied to the booth from the mix tanks in the paint mix room or satellite tanks via a central paint circulation system (tanks, pumps and piping). The paint is reduced as needed with a solvent-based thinner. The VOC content of the paint including reducer is considered the VOC content "as applied" when calculating the emissions from the application of primer surfacer.

#### Primer Surfacer Oven (EPN-2)

Vehicle bodies proceed into a flash-off tunnel and then the primer surfacer oven. The flash zone allows the coating to settle before being exposed to the oven heat. The primer surfacer oven is natural gas-fired (EPN-9) and is designed with a bottom entry oven configuration equipped with mechanical air curtains to retain heat within the oven. The oven has 9 temperature zones each exhausted through a separate catalytic oxidizer. The oven is followed by a cool-down enclosure to quickly reduce the vehicle surface temperature.

#### Topcoat (EPN-3)

Topcoat includes the application of basecoat (color) and clearcoat. There are two identical topcoat lines operating in parallel, referred to as color 1 and color 2. They are comprised of a prep booth, paint spray booths and ovens. Prep activities consist of minor sanding, manual wiping, mechanical feather dusting, masking, and polishing. Basecoat is a water-based coating and is applied with robotically controlled spray applicators. Following the basecoat application, vehicle bodies enter a heated flash zone to allow the paint to properly flash before subsequent applications of the solvent-borne clearcoat. Clearcoat is a solvent-borne "clear" paint and is also applied using robotically controlled spray applicators. All paint materials are supplied to the booths from mix tanks in the paint mix room or satellite tanks via a central paint circulating system (tanks, pumps and piping). The clearcoat is reduced as needed with a solvent-based thinner, and a catalyst is added so the paint will cure at lower temperatures. The VOC content of the paint including reducer and catalyst is considered the VOC content "as applied" when calculating the emissions from the application of basecoat and clearcoat.

#### Topcoat Oven (EPN-3)

Vehicle bodies proceed into a flash-off tunnel and then through the topcoat ovens. Each color line has its own set of natural gas-fired (EPN-9) oven zones equipped with entrance and exit air seals. Color 1 oven has 8 temperature zones and Color 2 oven has 7 temperature zones, each zone is exhausted through a separate catalytic oxidizer. At the exit end of the oven, the vehicle body travels through a cool-down enclosure to quickly reduce the vehicle surface temperature.

#### Spot Repair and Heavy Panel Repair (EPN-3)

After leaving the topcoat system, the vehicles are inspected for paint defects. If minor defects are identified, spot repairs are performed. Spot repairs consist of repairs to small areas, usually less than a few square inches. These repairs are made with various techniques such as finessing, with polishing compounds, touch-up brushes and/or airbrushes. If major paint defects are identified, the vehicle is sent through the tutone/repair booth or to the prep operations associated with Color 1 and Color 2 painting lines.

#### Purge/Paint Clean-up (EPN-7)

Purge solvents are used to clean the paint lines in order to prepare the lines for a color change and to clean the applicators.

#### General Assembly (EPN-5 and EPN-6)

After leaving the paint shop, the vehicle body goes to general assembly where various sealers, adhesives, and fillers (EPN-5) are used throughout the assembly process. These materials are used in low volume specialty applications such as sound deadening and window installation. All materials applied in the general assembly are air-dried. The chassis, includes the vehicle frame plus the engine, transmission, and suspension. The chassis arrives at the facility by train as a completed assembly. Once the trim parts are installed on the body, the chassis and vehicle body are joined. Among the final assembly processes includes fluid fill (EPN-6), consisting of gasoline and other bulk fluid fill operations.

#### Final Repair (EPN-4)

After general assembly, any paint defects are corrected in final repair consisting of prep operations and spot repair paint booths. Spot repairs are repairs to small areas, usually less than a few square inches.

Powerhouse (EPN-8)

The powerhouse operations include four coal-fired boilers which provide process and building steam to the automotive assembly plant. Boiler #1 can also be fired with natural gas.

Plant Wide Natural Gas Usage (EPN-9)

Emissions from natural gas combustion for process equipment are accounted for in a single plant wide emission source (EPN-9). Natural gas usage is determined from the meter at the main gas header entering the facility. Natural gas combustion occurs at various locations throughout the facility, including makeup air units, paint ovens, door heaters, hot water heaters, the vehicle assembly area, and the catalytic oxidizers.

Appendix C –Table of Applicable Baseline Requirements

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

Note: This table summarizes the rules and permit restrictions that GM-Wentzville was subject to during the baseline period and is provided for informational purposes only. Since GM-Wentzville was in compliance with all of the emission rate limits during the baseline period, no emissions were subtracted from the baseline actual emissions in calculating the PAL.

<b>Appendix C: Table of Applicable Baseline Requirements</b>				
<b>EQ Source Description</b>		<b>Applicable VOC Requirements</b>		
		<b>Source</b>	<b>Limit</b>	<b>Averaging Period</b>
EPN-1 ELPO		LAER	1.34 lbs/gal CSA	Monthly
		40 CFR 60 Subpart MM	1.41 lbs/gal CSA	Monthly
		10 CSR 10-5.330	1.4 lbs/gal CSA	Daily
		10 CSR 10-5.330 Amended	0.7 lbs/gal CSA	Daily
EPN-2 Primer Surfacer (Exterior Prime)		LAER	8.82 lbs/gal CSA	Monthly
		40 CFR 60 Subpart MM	11.68 lbs/gal CSA	Monthly
		10 CSR 10-5.330	15.1 lbs/gal CSA	Daily
		10 CSR 10-5.330 Amended	12.0 lbs/gal CSA	Daily
EPN-3 Topcoat (Basecoat Replacement, Basecoat, and Clearcoat)		LAER	12.26 lbs/gal CSA	Monthly
		40 CFR 60 Subpart MM	12.26 lbs/gal CSA	Monthly
		10 CSR 10-5.330	15.1 lbs/gal CSA	Daily
		10 CSR 10-5.330 Amended	12.0 lbs/gal CSA	Daily
EPN-4 Final Repair		10 CSR 10-5.330	4.8 lbs/gal	Monthly
		10 CSR 10-5.330 Amended	4.8 lbs/gal	Monthly
EPN-5	Adhesive, Deadener, Sealer, Glass Bonding Primer, Weatherstrip Adhesive	10 CSR 10-5.330	3.5 lbs/gal	Daily
	Adhesive	10 CSR 10-5.330 Amended	2.1 lbs/gal	Daily
	Deadener, Sealer	10 CSR 10-5.330 Amended	5.4 lbs/gal	Daily
	Glass Bonding Primer	10 CSR 10-5.330 Amended	7.5 lbs/gal	Daily
	Weatherstrip Adhesive	10 CSR 10-5.330 Amended	6.3 lbs/gal	Daily
EPN-6 Process materials	N/A			
EPN-7 Cleaning Solvents		10 CSR 10-5.330	N/A	
		10 CSR 10-5.330 Amended	Work Practice Requirements	
		10 CSR 5.445	30% VOC Reduction by May 31, 1996	
		10 CSR 5.445 Amended	N/A	
EPN-8 Powerhouse	N/A			
EPN-9 Plant-Wide Natural Gas Usage	N/A			
EPN-10 Stamping	N/A			

lbs/gal CSA = pounds VOC per gallon coating solids applied.

lbs/gal = pounds VOC per gallon (excluding water and exempt compounds).

Appendix D – Pre-Approved Changes

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

Appendix D: Table of Pre-Approved Changes						
Category	Process Step	New Construction or Modification to Existing Equipment	Pollutants	Applicable Federal Regulations	Applicable State Regulations	Approved PAL Compliance Method
1	Stamping	New Stamping Operations using Natural Gas and/or Propane	All Pollutants	N/A	10 CSR 10-6.405	Emission Factor
2	Body	Welding and/or Grinding Equipment	PM	N/A	10 CSR 10-6.400	N/A
3	Body	Sealer and Adhesive Application Equipment	VOC, HAP, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400	Mass Balance
4	Body	Sealers/Adhesives Application Equipment	VOC, HAP	40 CFR 63 (IIII)	10 CSR 10-5.330	Mass Balance
5	Body	Sealers/Adhesives Application Automation	VOC, HAP	40 CFR 63 (IIII)	10 CSR 10-5.330	Mass Balance
6	Body	Sealer Oven using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII)	10 CSR 10-6.405	Emission Factor
7	Body	Sealers/Adhesives Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
8	Body	High Bake, Low Bake & No Bake Sealer Adhesives and Foam Applicator Equipment	VOC, HAP	40 CFR 63 (IIII)	10 CSR 10-5.330	Mass Balance
9	Body	High Bake, Low Bake & No Bake Sealer Adhesives and Foam Oven using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII)	10 CSR 10-6.405	Emission Factor

**Appendix D: Table of Pre-Approved Changes**

<b>Category</b>	<b>Process Step</b>	<b>New Construction or Modification to Existing Equipment</b>	<b>Pollutants</b>	<b>Applicable Federal Regulations</b>	<b>Applicable State Regulations</b>	<b>Approved PAL Compliance Method</b>
10	Body	High Bake, Low Bake & No Bake Sealer Adhesives and Foam Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
11	Body Phosphate Pretreatment / Thin Film	Tanks, Washers, Spray Zones to Prepare Vehicle Metal for Coating Operations	VOC, HAP, PM	NA	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
12	ELPO	Tanks (Dip and Rinse)	VOC, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
13	ELPO	ELPO Oven Burners using Natural Gas or Propane	All Pollutants	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
14	ELPO	Emission Control Equipment using Natural Gas or Propane	All Pollutants	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
15	Primer Surfacer	New Applicators or Automation Equipment	VOC, HAP, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
16	Primer Surfacer	Primer Surfacer Booth(s)	VOC, HAP, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance or Auto Protocol
17	Primer Surfacer	Primer Surfacer Oven and Burners using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII)	10 CSR 10-6.405	Emission Factor
18	Primer Surfacer	Purge Solvent Recover Equipment	VOC, HAP	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-5.330	Mass Balance
19	Primer Surfacer	Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
20	Topcoat	New Applicators or Automation Equipment	VOC, HAP, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance

**Appendix D: Table of Pre-Approved Changes**

<b>Category</b>	<b>Process Step</b>	<b>New Construction or Modification to Existing Equipment</b>	<b>Pollutants</b>	<b>Applicable Federal Regulations</b>	<b>Applicable State Regulations</b>	<b>Approved PAL Compliance Method</b>
21	Topcoat	Construction of New Topcoat Booths	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance or Auto Protocol
22	Topcoat	Topcoat Oven and Burners using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III)	10 CSR 10-6.405	Emission Factor
23	Topcoat	Purge Solvent Recover Equipment	VOC, HAP	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-5.330	Mass Balance
24	Topcoat	Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
25	Primer Surfacers/ Topcoat	Anti-Chip Coating Booths, Application Equipment and Bake Ovens	VOC, HAP, PM	NA	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
26	Primer Surfacers/ Topcoat	Construction of New Spot Repair Booths	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
27	Primer Surfacers/ Topcoat	New Spot Repair Applicators or Automation of Spot Repair Equipment	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
28	Primer Surfacers/ Topcoat	Spot Repair Ovens using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
29	Final repair	Construction of New Final Repair Booths	VOC, HAP	40 CFR 63 (III)	10 CSR 10-5.330	Mass Balance
30	Final repair	New Applicators or Automation Equipment	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
31	Final repair	Repair Ovens using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III)	10 CSR 10-6.405	Emission Factor

**Appendix D: Table of Pre-Approved Changes**

<b>Category</b>	<b>Process Step</b>	<b>New Construction or Modification to Existing Equipment</b>	<b>Pollutants</b>	<b>Applicable Federal Regulations</b>	<b>Applicable State Regulations</b>	<b>Approved PAL Compliance Method</b>
32	Paint	High Bake, Low Bake & No Bake Sealer, Foam and Adhesives Applicator Equipment	VOC, HAP	40 CFR 63 (III)	10 CSR 10-5.330	Mass Balance
33	Paint	High Bake, Low Bake & No Bake Sealer, Foam and Adhesives Oven using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III)	10 CSR 10-6.405	Emission Factor
34	Paint	High Bake, Low Bake & No Bake Sealer, Adhesives and Foam Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
35	Assembly /Paint	Cavity Wax Application Equipment and Automation	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
36	Assembly /Paint	Deadener New Applicators or Automation Equipment	VOC, HAP, PM	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
37	Assembly /Paint	Sprayable Bedliner Oven using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
38	Assembly /Paint	Sprayable Bedliner Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
39	Assembly	High Bake, Low Bake & No Bake Sealer, Foam Adhesives Oven using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III)	10 CSR 10-6.405	Emission Factor
40	Assembly	High Bake, Low Bake & No Bake Sealer, Adhesives and Foam Emission Control Equipment using Natural Gas and/or Propane	All Pollutants	40 CFR 63 (III) 40 CFR 60 (MM)	10 CSR 10-6.405	Emission Factor
41	Assembly	High Bake, Low Bake & No Bake Sealer, Foam and Adhesives Applicator Equipment	VOC, HAP	40 CFR 63 (III)	10 CSR 10-5.330	Mass Balance
42	Assembly	Roll Test / Dynamometer Vehicle and Engine Test Booths	VOC, HAP, PM	NA	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance

**Appendix D: Table of Pre-Approved Changes**

<b>Category</b>	<b>Process Step</b>	<b>New Construction or Modification to Existing Equipment</b>	<b>Pollutants</b>	<b>Applicable Federal Regulations</b>	<b>Applicable State Regulations</b>	<b>Approved PAL Compliance Method</b>
43	Assembly	New Glass Install Applicators or Automation Equipment	VOC, HAP, PM	40 CFR 63 (IIII) 40 CFR 60 (MM)	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
44	Assembly	Fluid Fill Dispensing Equipment and Abatement Equipment	VOC, HAP	N/A	N/A	Mass Balance
45	Assembly	Installation of New Fluid Fill Tanks Underground Storage Tanks and/or Aboveground Storage Tanks	VOC, HAP	N/A	N/A	TANKS
46	Assembly /Paint	Sprayable Bedliner Booth and Application Equipment	VOC, HAP, PM	40 CFR 63 (IIII)	10 CSR 10-5.330 10 CSR 10-6.400	Mass Balance
47	Powerhouse	Installation of Boilers using Natural Gas, Propane, or Fuel Oil	All Pollutants	N/A	10 CSR 10-6.405	Emission Factor
48	Maintenance	Construct Booths for Maintenance Painting, Cutting, Grinding, Machining Woodworking	VOC, HAP, PM	NA	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
49	Maintenance	Construction / Operation of Carrier Cleaning Booth	VOC, HAP, PM	NA	10 CSR 10-6.400 10 CSR 10-5.330	Mass Balance
50	Plantwide	Installation of Miscellaneous Products Tanks Underground Storage Tanks and/or Aboveground Storage Tanks	VOC, HAP	N/A	N/A	TANKS
51	Plantwide	Air Supply Houses	All Pollutants	N/A	10 CSR 10-6.405	Emission Factor
52	Plantwide	Natural Gas and/or Propane Heaters	All Pollutants	N/A	10 CSR 10-6.405	Emission Factor
53	Plantwide	Water Heaters (Natural Gas and/or Propane)	All Pollutants	N/A	10 CSR 10-6.405	Emission Factor

**Appendix D: Table of Pre-Approved Changes**

<b>Category</b>	<b>Process Step</b>	<b>New Construction or Modification to Existing Equipment</b>	<b>Pollutants</b>	<b>Applicable Federal Regulations</b>	<b>Applicable State Regulations</b>	<b>Approved PAL Compliance Method</b>
54	Plantwide	Emergency Generators (Natural Gas, Fuel Oil, or Gasoline)	All Pollutants	40 CFR 60 (III) 40 CFR 60 (JJJJ) 40 CFR 63 (ZZZZ)	N/A	Emission Factor
55	Plantwide	Insignificant Emission Unit <sup>1</sup>	Any	N/A	N/A	Mass Balance Or Emission Factor
56	Plantwide	Like-Kind Replacements	Existing	Existing	Existing	Existing

40 CFR 60 (MM) = 40 CFR 60, Subpart MM, Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations

40 CFR 60 (III) = 40 CFR 60 Subpart III, Standards of Performance for Stationary Compression Ignition Internal Combustion

40 CFR 60 (JJJJ) = 40 CFR 60, Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR 63 (III) = 40 CFR 63 Subpart III, National Emission Standard for Hazardous Air Pollutants: Surface Coating of Automobiles and Light-Duty Trucks

40 CFR 63 (ZZZZ) = 40 CFR 63, Subpart ZZZZ, National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

<sup>1</sup>Insignificant Emission Unit means an activity or emission unit in which the only applicable requirement would be to list the requirement in an operating permit application under 10 CSR 10-6.065 and is also listed in 10 CSR 10-6.061 as exempt or excluded from construction permit review under 10 CSR 10-6.060.

Appendix E – Example Calculations when using Abatement

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

Note: This example is intended to summarize the Auto Protocol procedures and is for informational purposes only. Any differences between the example and the Auto Protocol method are unintentional, and if differences exist then the Auto Protocol shall take precedence. *Auto Protocol* means the EPA document (EPA-453/R-08-002) entitled, Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Primer- Surfacer and Topcoat Operations, (September 2008)

Calculation	Step	Description	Units	Paint A	Paint B	Paint C
See Below	A	Paint Usage	gal	10	5	20
See Below	B	Paint Percent Solids by Volume	%	46.03	38.36	47.24
See Below	C	Paint Formula VOC Content	lb VOC/gal	4.01	4.6	3.88
See Below	D	Paint Analytical VOC Content	lb VOC/gal	4.25	4.78	4.13
See Below	E	Solvent (thinner) Usage	gal	0.2	0.01	0
See Below	F	Solvent (thinner) VOC Content	lb VOC/gal	7.91	7.91	7.91
See Below	G	Transfer Efficiency	%	78	78	78
See Below	H	Oven Solvent Loading	lb VOC/gal csa	3.03	3.03	3.03
See Below	J	Destruction Efficiency	%	95.7	95.7	95.7
$(G \times A) / (A + E)$	K	Calculate (paint + thinner ) Percent Solids by Volume	%	45	38	47
$[(C \times A) + (F \times E)] / (A + E)$	L	Calculate (paint + thinner ) Formula VOC Content	lb VOC/gal	4.09	4.61	3.88
$[(D \times A) + (F \times E)] / (A + E)$	M	Calculate (paint + thinner ) Analytical VOC Content	lb VOC/gal	4.32	4.79	4.13
$A + E$	N	Calculate (paint + thinner ) Usage	gal	10.20	5.01	20.00
$N \times K$	O	Calculate Volume Solids Sprayed	gal	4.60	1.92	9.45
$O \times G$	P	Calculate Volume Solids Applied	gal csa	3.59	1.50	7.37
$[L \times (1-G)] + (M \times G)$	Q	Calculate VOC Generated per Gallon (paint + thinner ) Used	lb VOC/gal	4.27	4.75	4.08
$R = N \times Q$	R	Calculate VOC Generated	lb VOC	43.55	23.78	81.50
$S = H \times J \times P$	S	Calculate VOC Abated	lb VOC	10.41	4.34	21.37
$T = R - S$	T	Calculate VOC Emitted	lb VOC	T1 = 33.14	T2 =19.44	T3 =60.13
Total VOC emitted = T1 + T2 +T3 = 112.3 lbs						

- A = Measure the paint usage in gallons (gal)
- B = Obtain the paint percent (%) solids by volume from the supplier
- C = Obtain the paint formula VOC content (lb VOC per gal) from the supplier
- D = Obtain the paint analytical VOC content (lb VOC per gal) from the supplier
- E = Measure the solvent usage in gallons
- F = Obtain the solvent VOC content (lb VOC per gal) from the supplier
- G = Measure the transfer efficiency according to the Auto Protocol, Section 18 "Transfer Efficiency Test Procedure – In Plant"
- H = Measure the oven solvent loading lb VOC per gal coating solids applied (lb/gal csa) according to the Auto Protocol Section 23, "Test Procedures for Determining Exhaust Control Device VOC Loading Capture Efficiency) by Stack Test per EPA Method 204 or Alternative Methods"
- J = Measure the destruction efficiency (%) according to the Auto Protocol Section 22, "Test Procedures for Determining Oxidizer or Concentrator Control Device Efficiency"

Attachment A – Equipment List

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

This sheet covers the month of \_\_\_\_\_ in the year \_\_\_\_\_.

Attachment A: Equipment List								
EQ Source Description	Emission Unit Description	Existing New Modified	Pre-Approved Change Category	Start of Construction	Start of Operation	Date of Removal	Pollutants	Applicable VOC Requirements
EPN-1 ELPO	electro deposition dip coating process	Existing	N/A	N/A	N/A	N/A	VOC	LAER 40 CFR 60 (MM) 10 CSR 10-5.330
EPN-2 Primer Surfacer	Exterior Prime Booth	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	LAER 40 CFR 60 (MM) 10 CSR 10-5.330
EPN-3 Topcoat	Interior Prime Booth	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	LAER 40 CFR 60 (MM) 10 CSR 10-5.330
EPN-3 Topcoat	Color Line 1 Spray Booth	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	LAER 40 CFR 60 (MM) 10 CSR 10-5.330
EPN-3 Topcoat	Color Line 2 Spray Booth	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	LAER 40 CFR 60 (MM) 10 CSR 10-5.330
EPN-3 Topcoat	Spot / Panel Repair	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	LAER 40 CFR 60 (MM) 10 CSR 10-5.330

**Attachment A: Equipment List**

<b>EQ Source Description</b>	<b>Emission Unit Description</b>	<b>Existing New Modified</b>	<b>Pre-Approved Change Category</b>	<b>Start of Construction</b>	<b>Start of Operation</b>	<b>Date of Removal</b>	<b>Pollutants</b>	<b>Applicable VOC Requirements</b>
EPN-4 Final Repair	6 Spot Repair Booths	Existing	N/A	N/A	N/A	N/A	VOC, PM, HAP	10 CSR 10-5.330
EPN-5 Miscellaneous Sealers and Adhesives	Adhesives	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-5 Miscellaneous Sealers and Adhesives	Deadener	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-5 Miscellaneous Sealers and Adhesives	Glass Bonding Primer	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-5 Miscellaneous Sealers and Adhesives	Weatherstrip adhesive	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-6 Process materials	Phosphate Process	Existing	N/A	N/A	N/A	N/A	VOC	NA
EPN-6 Process materials	Fluid Fill (e.g. gasoline, Fuel Oil, automatic transmission fluid, coolant, windshield washer fluid, refrigerant)	Existing	N/A	N/A	N/A	N/A	VOC	NA

**Attachment A: Equipment List**

<b>EQ Source Description</b>	<b>Emission Unit Description</b>	<b>Existing New Modified</b>	<b>Pre-Approved Change Category</b>	<b>Start of Construction</b>	<b>Start of Operation</b>	<b>Date of Removal</b>	<b>Pollutants</b>	<b>Applicable VOC Requirements</b>
EPN-6 Process materials	Misc Process Materials (e.g. materials used for boiler treatment, wastewater treatment, and gases (CO <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , acetylene, etc.))	Existing	N/A	N/A	N/A	N/A	VOC	NA
EPN-6 Process materials	Misc Maintenance Materials (e.g. oils and lubricants for process equipment and conveyors, welding rods, and fluxes, housekeeping products)	Existing	N/A	N/A	N/A	N/A	VOC	NA
EPN-6 Process materials	Misc Maintenance Paint	Existing	N/A	N/A	N/A	N/A	VOC	NA
EPN-7 Cleaning Solvents	Purge solvents used to clean paint lines (mainly EPN-2 and EPN-3)	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-7 Cleaning Solvents	Booth Cleaning Materials	Existing	N/A	N/A	N/A	N/A	VOC	10 CSR 10-5.330
EPN-8 Powerhouse	Coal or NG-Fired Boiler 1 82.5 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-8 Powerhouse	Coal Fired Boiler 2 248 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA

**Attachment A: Equipment List**

<b>EIQ Source Description</b>	<b>Emission Unit Description</b>	<b>Existing New Modified</b>	<b>Pre-Approved Change Category</b>	<b>Start of Construction</b>	<b>Start of Operation</b>	<b>Date of Removal</b>	<b>Pollutants</b>	<b>Applicable VOC Requirements</b>
EPN-8 Powerhouse	Coal Fired Boiler 3 248 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-8 Powerhouse	Coal Fired Boiler 4 248 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-9 Plant-Wide Natural Gas Usage	ELPO NG Fired Oven 19.5 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-9 Plant-Wide Natural Gas Usage	Primer Surfacer NG Fired Oven 20 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-9 Plant-Wide Natural Gas Usage	Color Line 1 NG Fired Oven 16 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-9 Plant-Wide Natural Gas Usage	Color Line 2 NG Fired Oven 14 MMBtu/hr	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-9 Plant-Wide Natural Gas Usage	Misc NG Fired Equipment	Existing	N/A	N/A	N/A	N/A	All Pollutants	NA
EPN-10 Stamping	"A" Press	Existing	N/A	N/A	N/A	N/A	VOC	NA

Attachment A: Equipment List								
EQ Source Description	Emission Unit Description	Existing New Modified	Pre-Approved Change Category	Start of Construction	Start of Operation	Date of Removal	Pollutants	Applicable VOC Requirements
EPN-10 Stamping	"B" Press	Existing	N/A	N/A	N/A	N/A	VOC	NA

For purposes of Attachment A only, the following definitions apply:

- *Existing* means any emission unit that is installed at the time of permit issuance. Like-kind replacements of existing emission units, i.e. those replacements that would otherwise qualify as a like-kind replacement according to 10 CSR 10-6.061, *Construction Permits Exemptions*, are considered existing.
- *New* means a new emissions unit that is (or will be) newly constructed after the PAL effective date.
- *Modified* means an existing emission unit that is physically changed or de-bottlenecked such that the potential emissions of the emission unit is increased.

Attachment B – VOC Emissions from Existing, New or Modified Emission Units

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

<b>Attachment B: VOC PAL Compliance Worksheet</b>			
<b>IQ Source Description</b>	<b>Equipment Description</b>	<b>Approved PAL Compliance Method</b>	<b>VOC Emissions this month in tons</b>
EPN-1 ELPO	Electro Deposition Dip Coating Process	Mass Balance	
EPN-2 Primer Surfacer	Exterior Prime Booth	Mass Balance or Auto Protocol	
EPN-3 Topcoat	Interior Prime Booth	Mass Balance or Auto Protocol	
	Color Line 1 Prep Booth	Mass Balance or Auto Protocol	
	Color Line 1 Spray Booth	Mass Balance or Auto Protocol	
	Color Line 2 Spray Booth	Mass Balance or Auto Protocol	
	Spot / Panel Repair	Mass Balance	
EPN-4 Final Repair	Spot Repair Booths	Mass Balance	
EPN-5 Miscellaneous Sealers and Adhesives	Adhesive	Mass Balance	
	Deadener	Mass Balance	
	Glass Bonding Primer	Mass Balance	
	Weatherstrip adhesive	Mass Balance	
EPN-6 Process materials	Phosphate Process	Mass Balance	
	Fluid Fill	Mass Balance	
	Misc Process Materials	Mass Balance	
	Misc Maintenance Materials	Mass Balance	
	Misc Maintenance Paint	Mass Balance	
EPN-7 Cleaning Solvents	Purge solvents used to clean paint lines	Mass Balance	
	Booth Cleaning Materials	Mass Balance	
EPN-8 Powerhouse	Coal Fired Boiler 1	0.05 lbs VOC per tons bituminous coal	
	Coal Fired Boiler 2	0.05 lbs VOC per tons bituminous coal	
	Coal Fired Boiler 3	0.05 lbs VOC per tons bituminous coal	
	Coal Fired Boiler 4	0.05 lbs VOC per tons bituminous coal	
EPN-9 Plant-Wide Natural Gas Usage	NG-Fired Boiler 1	5.5 lbs VOC per million cubic feet natural gas	
	ELPO NG Fired Oven	5.5 lbs VOC per million cubic feet natural gas	

Attachment B: VOC PAL Compliance Worksheet			
EQ Source Description	Equipment Description	Approved PAL Compliance Method	VOC Emissions this month in tons
	Primer Surfacer NG Fired Oven	5.5 lbs VOC per million cubic feet natural gas	
	Color Line 1 NG Fired Oven	5.5 lbs VOC per million cubic feet natural gas	
	Color Line 2 NG Fired Oven	5.5 lbs VOC per million cubic feet natural gas	
	Misc NG Fired Equipment	5.5 lbs VOC per million cubic feet natural gas	
EPN-10 Stamping	"A" Press	Mass Balance	
	"B" Press	Mass Balance	
N/A	Tank emissions	TANKS program	
Add New and Modified Emission Units (Pre-Approved Changes) Below			
(a) Total Emissions for this Month, in Tons per month:			
(b) Total Emissions for this Month + previous 11 months, in Tons per year:			

**Instructions: This worksheet must include VOC emissions from all emission units operating during the PAL effective period, including all existing, modified or new emission units.**

- (a) Record the total monthly VOC emissions total in Tons per month;
- (b) Calculate the new 12-month VOC emissions total. **A 12-Month VOC emissions total (b) of less than 1,002.5 tons indicates compliance.**

Attachment C – Emissions from Pre-Approved Changes

General Motors - Wentzville Assembly  
 St. Charles County, S20, T47N, R2E  
 Project Number: 2011-06-024  
 Installation Number: 183-0076  
 Permit Number: \_\_\_\_\_

(a) Emission Unit			(b) Actual Emissions (tons per month)							
Pre-Approved Change Category	EIQ Source Description	Equipment Description	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	Lead	CO <sub>2e</sub>
<b>(c) Total Emissions for this Month, in Tons per month:</b>										
<b>(d) Current 12-month Total Emissions in tons per year:</b>										
<b>(e) Regulatory Thresholds (tons per year)</b>			<b>25.0</b>	<b>15.0</b>	<b>10.0</b>	<b>40.0</b>	<b>40.0</b>	<b>100.0</b>	<b>0.6</b>	<b>75,000.0</b>

- (a) List all emission units constructed or modified during the PAL effective period as indicated on Attachment A
- (b) Calculate this month's actual emissions, considering controls, for all pollutants except HAP and VOC
- (c) Sum all of this month's emissions for all emission units
- (d) Sum (c) + previous 11 months. Emissions less than the regulatory thresholds (e) indicates compliance.

## Attachment D - Comments and Responses

General Motors - Wentzville Assembly  
St. Charles County, S20, T47N, R2E  
Project Number: 2011-06-024  
Installation Number: 183-0076  
Permit Number: \_\_\_\_\_

This attachment contains the response to comments regarding the draft permit. Comments have been summarized or paraphrased as necessary for the sake of clarity. The numbers of the Special Conditions in the comments refer to the draft permit and may have changed in the final permit. The numbers referenced in the response reflect the Special Condition numbering in the final permit.

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The following comments were submitted to the Air Pollution Control Program by General Motors - Wentzville Assembly (GM) on April 17, 2012.

**Comment:** GM requests that Special Condition 3.J.9) (Page 6) be revised to remove emission estimates when determining actual compliance. A deviation is only required when the limit in Special Condition 3.A. is actually exceeded. Emission estimates are not used to determine compliance. The emission estimates as required 3.J.(1-6) impose a method of maintaining compliance as a guide until the official emissions data is processed.

**Response:** The Air Pollution Control Program has reviewed the request and determined that no change is required. A PAL permit allows a facility to make major modifications without going through PSD review. In exchange for this increased flexibility, the Air Pollution Control Program requires the facility to manage their emissions with increased diligence. The emission estimates allow General Motors - Wentzville Assembly the flexibility to modify production as needed to ensure compliance with the PAL, and the emission estimates are only required when General Motors - Wentzville Assembly is operating close to their limit.

Furthermore, General Motors - Wentzville Assembly is located in an ozone non-attainment area. The Air Pollution Control Program is working to bring this area into attainment. An exceedance of the PAL could hinder the Air Pollution Control Program's efforts in achieving attainment, and the emission estimate method of maintaining compliance provides added assurance that General Motors - Wentzville Assembly will not exceed the PAL.

**Comment:** Emission factor for Fuel Oil Combustion (Boiler) Special Condition 6.B. (Page 10) should be 0.25 pounds VOC per thousand gallons fuel oil burned.

**Response:** The Air Pollution Control Program has reviewed the request and determined that no change is required. The emission factor of 0.25 pounds volatile organic compounds (VOC) per thousand gallons burned includes methane which is not a VOC. The approved emission factor is more appropriate as it was developed for total organic compounds excluding methane.

**Comment:** The emission limits for Non VOC Pre-approved changes in Special Condition 9 (Page 12) are specified in Table 3. As stated in 9.A. General Motors shall emit less than the following emission rates in any consecutive 12-month period from the pre-approved changes. GM requests that the paragraph include the ability to seek a construction permit (negotiate outside of the PAL) for the Table 3 Emissions in order to exclude these emissions from the recordkeeping requirements of the VOC PAL Permit.

**Response:** The Air Pollution Control Program has reviewed the request and determined that no change is required. Special Condition 9 "Emission Limitations for Pre-Approved Changes" does not preclude General Motors - Wentzville Assembly from obtaining a new construction permit for any of the pre-approved changes or other modifications that have not been pre-approved. Special Condition 9 clearly states that the emission limits only apply to emission units constructed or modified under the authority of this PAL permit. Therefore, modifications made under the authority of a new permit would not be subject to the emission limitations referenced in Special Condition 9.

In accordance with 10 CSR 10-6.060, *Construction Permits Required*, if General Motors - Wentzville Assembly intends to obtain a construction permit outside of the PAL permit, they must do so prior to the start of construction. The PAL permit may not be used to circumvent the preconstruction prohibition requirement of 10 CSR 10-6.060, and it will be considered a violation of this rule if General Motors - Wentzville Assembly applies for a new construction permit for emission units that have already begun construction or modification under the authority of this PAL permit.

**Comment:** Special Condition 15.C. (Page 18) is a Title V Requirement and should not be included in this permit.

**Response:** The Air Pollution Control Program has reviewed the request and determined that no change is required. Special Condition 15.C. is required to be included in the permit by 40 CFR 51.165 (f) *Actuals PALs*. (13) *Recordkeeping Requirements*. (ii)(B)

**Comment:** GM requests that the semi-annual report due dates specified in Special Condition 16. (Page 18) be changed to be consistent with Missouri DNR's Title V program which are due April 1<sup>st</sup> and October 1<sup>st</sup>. Multiple reporting dates create additional reporting burdens for the facility.

**Response:** The Air Pollution Control Program has reviewed the request and determined that no change is required. The due dates specified in Special Condition 16. are specified by 40 CFR 51.165 (f) *Actuals PALs*. (14) *Reporting and notification requirements*. (i) *Semi-Annual Report*.

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The following comments were submitted to the Air Pollution Control Program by the U.S. Environmental Protection Agency (EPA) on April 9, 2012.

**Comment:** The word consecutive is misspelled in Special Condition 3. A.

**Response:** The Air Pollution Control Program agrees and has updated the special condition.

**Comment:** Special Condition 13. A. and 14 identifies the St. Louis Regional Office as a recipient of notifications. Please confirm.

**Response:** The Air Pollution Control Program has reviewed the comment and determined that no change is required. Notifications of the start of construction and the start of operation should be sent to the St. Louis Regional Office in addition to the Air Pollution Control Program's New Source Review Unit.

**Comment:** Special Condition 7 describes the requirements regarding performance testing including an initial performance test within 180 days after the initial use of control equipment and a capture and control efficiency re-validation at least once every 5 years. MDNR should consider adding a statement that would require GM to conduct performance testing at any other time that may be required by the Director. This would allow for the verification of performance at times other than every 5 years, should verification be deemed necessary.

**Response:** The Air Pollution Control Program has reviewed the comment and determined that no change is required. The suggested change is unnecessary because 10 CSR 10-6.180, *Measurement of Emissions of Air Contaminants*, provides that any source shall complete emissions testing upon request by the Director. Furthermore, General Motors – Wentzville Assembly is required to use the procedures specified in the Auto Protocol when using an add-on pollution control device to control emissions from their surface coating operations. The Auto Protocol procedures describe the conditions that require re-validation of their transfer efficiency, capture efficiency, and control efficiency. The Air Pollution Control Program has decided against restating these requirements in the PAL permit as this may inadvertently cause confusion or create inconsistencies.

Ms. Midge Winkler  
Sr. Environmental Engineer  
General Motors - Wentzville Assembly  
1500 East Route A  
Wentzville, MO 63385

RE: New Source Review Permit - Project Number: 2011-06-024

Dear Ms. Winkler:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct", is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Kathi Jantz, at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102, or by telephone at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp  
New Source Review Unit Chief

SH:kjk

Enclosures

c: St. Louis Regional Office  
PAMS File: 2011-06-024

Permit Number: