

CONSTRUCTION PERMIT

PERMITTEE

Electro-Motive Diesel
Attn: John Kaps
9301 West 55th Street
LaGrange, Illinois 60525

Application No.: 12070033

I.D. No.: 031174AAA

Applicant's Designation:

Date Received: July 18, 2012

Construction of: New Engine Durability Test Cells MU 6 & MU 7

Date Issued: DRAFT

Source Location: 9301 West 55th Street, McCook, Cook County, 60525

This Permit is hereby granted to the above-designated Permittee to CONSTRUCT emissions source(s) and/or air pollution control equipment consisting of two new durability engine test cells (MU 6 and MU 7), as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Introduction

Electro-Motive Diesel, Inc. (EMD) manufactures locomotive components and diesel engines at its McCook facility. This permit authorizes installation of two new durability engine test cells, MU 6 and MU 7 (the affected test cells). The Permittee plans to use the new durability test cells as part of its work to develop engines that meet USEPA's new Tier 4 engine emission standards and for other engine development activities.

The two new durability test cells would replace two existing durability test cells, MU 3 and MU 4. As a result, the net increase in nitrogen oxides (NO_x) emissions with this project would not be significant (See Attachment 1). The emissions of other pollutants from the project would not be significant.

2. Applicable Regulations

- a. The affected test cells are subject to 35 IAC 214.301, which provides that no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm.
- b. i. The affected test cells are subject to 35 IAC 212.123, which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from an emission unit.

- ii. Notwithstanding the above, if the Permittee conducts appropriate opacity observations and keeps relevant records, as also provided by 35 IAC 212.123, emissions of smoke or other particulate matter from a unit may have an opacity greater than 30 percent but not greater than 60 percent for a period or periods aggregating 8 minutes in any 60 minute period provided that such opaque emissions permitted during any 60 minute period shall occur from only one emission unit owned or operated by the Permittee located within a 305 meter (1000 foot) radius from the center point of any other unit owned or operated by the Permittee, and provided further that such opaque emissions permitted from each such unit shall be limited to 3 times in any 24 hour period.

3. Non-Applicability Provisions

- a. This permit is issued based on this project not constituting a major modification under Prevention of Significant Deterioration (PSD), 40 CFR 52.21, or Major Stationary Sources Construction and Modification (MSSCAM), 35 IAC Part 203, for emissions of NO_x, this is because the net increase in emissions will not be significant. (See Attachment 1)
- b. The affected test cells are not subject to the National Emission Standard for Hazardous Air Pollutants (NESHAP) for Engine Test Cells and Stands, 40 CFR 63 Subpart P, because the source is not a major source of hazardous air pollutants (HAPs).
- c. The engines being tested in the affected test cells are not subject to the NESHAP for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart Z, pursuant to 40 CFR 63.6585.
- d. The engines being tested in the affected test cells are not subject to Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart I, or Standards of Performance for Stationary Spark Ignition Internal Combustion Engines, 40 CFR 60 Subpart J, pursuant to 40 CFR 60.4200(b) and 40 CFR 60.4230(b), respectively.
- e. The affected test cells are not subject to 35 IAC 212.321 or 212.322, pursuant to 35 IAC 212.323. This is because there is not an appropriate process weight rate for the cells, to enable these standards to be reasonably applied.
- f. The affected test cells are not subject to state emissions standards for fuel combustion emission units, including IAC 212.206 (particulate matter), 35 IAC 214.122 or 214.304 (sulfur dioxide), 35 IAC 216.121 (carbon monoxide) or 35 IAC 217.141 (nitrogen oxides) because the affected test cells are not by

definition a fuel combustion emission unit, as defined by 35 IAC 211.2470.

4. Operational and Production Limits and Work Practices

- a. Low sulfur distillate fuel oil, other low sulfur liquid fuels, such as ultra-low sulfur biodiesel, and natural gas shall be the only fuels fired in the affected test cells.
- b.
 - i. The annual fuel usage of the affected test cells shall not exceed 4,000,000 gallons or a limit as set by Condition 4(b)(ii), whichever is more stringent. For the purpose of these limits, natural gas shall be considered to be equivalent to liquid fuel at a ratio of 1.0 gallon of liquid fuel per 131 scf of natural gas.
 - ii. The Permittee shall submit to the Illinois EPA at least 15 days prior to the end of each calendar year a projection of the greatest fuel usage for the affected test cells in the next 12 months with a demonstration that NO_x emissions would not exceed 159.1 tons/year, with supporting information, including the following. The Permittee may submit an updated report at any time to address future operation.
 - A. The type of engine(s) that will be tested during the next 12 months;
 - B. A projection of the greatest quantity of expected fuel usage and type; and
 - C. An estimate of the annual NO_x emissions from the affected test cells with supporting calculations.
 - iii. Compliance with this annual limit and other annual limits in this permit shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (running 12 month total).
- c. At all times the Permittee shall, to the extent practicable maintain and operate the affected test cells in a manner consistent with good air pollution control practices for minimizing emissions. This provision does not require operation in a manner inconsistent with research and development activity. For example, the affected test Cell need not be operated at all times with engines equipped with diesel particulate filters.
- d. Within 180 days of initial startup of the first affected test cell, the Permittee shall permanently cease operation and decommission existing test cells MU 3 and MU 4.

5. Emission Limits

- a. Emissions from the affected test cells shall not exceed the following limits. Compliance with these limits shall be determined in accordance with Condition 9.

Pollutant	Limits	
	Tons/Month	Tons/Year
NO _x	47.7	159.1
CO	14.9	49.4
VOM	4.7	15.6
PM/PM ₁₀ /PM _{2.5}	1.7	5.7

- b. The total emissions of greenhouse gasses (GHGs), as carbon dioxide equivalents (CO₂e), from the affected test cells shall not exceed 14,000 tons/month and 46,000 tons/year. Compliance with these limits shall be determined using the methodology for the Mandatory Reporting Rule, 40 CFR Part 98, or other methodology formally developed by USEPA.
- c. This permit is issued based on negligible emissions of sulfur dioxide (SO₂) from the affected test cells. For this purpose, the SO₂ emissions of each cell shall not exceed 0.44 tons/year.
- d. This permit is issued based on negligible emissions of hazardous air pollutants (HAPs) from the affected test cells. For this purpose, total emissions of HAPs from the affected test cells shall not exceed 0.44 tons/year.

6. Testing Requirements

- a. Within 90 days of a written request from the Illinois EPA or such later date agreed to by the Illinois EPA, the Permittee shall have observations conducted for the opacity of the exhaust from the affected test cells. These opacity observations shall be conducted in accordance with USEPA Method 9.
- b. Reports shall be submitted to the Illinois EPA within 30 days after conducting the observations. These reports shall include the information specified in Condition 7(e).

7. Recordkeeping Requirements

The Permittee shall maintain the following records for the affected test cells:

- a. Records of the sulfur content of the fuel(s) used in the affected test cells, percent by weight and lb/gallon, with supporting documentation.
- b. A log or other records for the affected test cells identifying the engines that are tested, the type/class of engine (i.e., the

relevant standards that the engines are being designed to meet) and the actual fuel usage by the affected test cells, by type of fuel and engine type, e.g., Tier 2, 3 or 4 (gal/mo and gal/yr).

- c. The following record related to emissions of NO_x, CO, VOM, and PM/PM₁₀/PM_{2.5} of the affected test cells:
 - i. The emission factors used by the Permittee for each engine type to determine emissions from the test cells, with supporting documentation.
 - ii. Records of emissions from the test cells (tons/month and tons/year), based on the fuel usage and the applicable emission factors for each engine type tested, with supporting calculations.
- d. Records of all opacity observations that are performed. These records shall be retained for at least three years after the date subsequent observations are performed and shall include the following:
 - i. The date and time of observations.
 - ii. The individuals that performed the observations.
 - iii. The operating conditions at the time of observation.
 - iv. Raw data and the results.

8. Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of any deviation by the affected test cells with the permit requirements. These reports shall be submitted within 30 days of the deviation and shall describe the deviation, the probable cause of such deviation, the corrective actions taken, and any preventive measures taken.
- b. Opacity test reports shall be submitted to the Illinois EPA within 30 days after conducting the observations as specified in Condition 6. These reports shall include the information specified in Condition 7(d).

9. Compliance Procedures

- a. Compliance with Conditions 5(a) shall be determined using emissions data collected during testing of engines in the affected test cells or appropriate emission factors for the type and class of engine and the amount of fuel used during testing. In the absence of more accurate emission factors, the following default emission factors may be used for the various classes of engines that are tested.

Pollutant	Emission Factors for Liquid Fuel (Lbs/1000 Gallons)*		
	Tier 2 Engine	Tier 3 Engine	Tier 4 Engine
NO _x	231.4	231.4	54.9
CO	24.7	24.7	24.7
VOM	8.5	8.5	7.8
PM/PM ₁₀ /PM _{2.5}	8.3	4.0	1.2

* These are the emission factors provided in the application for engine testing for purposes of USEPA's current emission standards.

Pollutant	Emission Factors for Gas (Lbs/million scf)		
	Tier 2 Engine	Tier 3 Engine	Tier 4 Engine
NO _x	1773.1	1773.1	420.7
CO	189.3	189.3	189.3
VOM	65.1	65.1	59.8
PM/PM ₁₀ /PM _{2.5}	63.6	30.7	9.2

10. Other Requirements

This permit does not relieve the Permittee of the responsibility to comply with all Local, State and Federal Regulations which are part of the applicable Illinois State Implementation Plan, as well as all other applicable Federal, State and Local requirements. In particular, this permit does not excuse the Permittee from the obligation to undertake further actions at the source as may be needed to eliminate air pollution, including physical and/or operational changes at the source to prevent violations of ambient air quality standards.

11. The Permittee is allowed to operate the affected test cells under this construction permit until final action is taken on a revision to or renewal of its Clean Air Act Permit Program (CAAPP) permit that addresses the affected test cells. This condition supersedes standard Condition 6.

If you have any questions on this, please call Manish Patel at 217/785-1705.

Edwin C. Bakowski, P.E.
 Manager, Permit Section
 Division of Air Pollution Control

Date Signed: _____

ECB:MNP:

cc: FOS - Region 1, Illinois EPA
 CAAPP Permit File - 95120282, Illinois EPA
 Lotus Notes

Attachment 1

Evaluation of Net Change in Emissions of NO_x
For Purposes of Nonattainment New Source Review (NA NSR) And
Prevention of Significant Deterioration (PSD)

Table 1
Net Changes in NO_x Emissions Over Five-year Contemporaneous Period (Tons/Year)

Scenario/Project	Previous Permit No.	Change in Emissions	
		NA NSR	PSD
Increase from Current Project (Test Cell MU 6 & 7)	-	159.1	159.1
Contemporaneous Increases			
Modified Test Cell R&D 5	12050050	9.1	9.1
Test Cells 7 & 8 & Revamped Test Cell 3	09120034	111.9	111.9
R&D and Production Test Cell Platform	07120050	32.0	32.0
Alternator, Turbo & Misc. Parts Painting	09120033	---	---
Burn Off Oven	11060020	1.0	1.0
Subtotal		313.1	313.1
Contemporaneous Decreases			
Shut down of Test Cells MU 3 & 4 (See Table 2)	-	- 273.2	- 333.7
Net Change		39.9	- 20.6
Significant Emission Level for NO _x		40	40

Table 2
NO_x Emissions Decreases from Required Shut down of Test Cells MU 3 and MU 4
Past Actual NO_x Emissions from the Durability Cells (Tons/Year)¹

Test Cell	NO _x Emissions Decrease (Tons/Year)	
	NA NSR	PSD
MU 3	153.9 ²	153.9 ²
MU 4	119.3 ³	179.8 ⁴
Total	273.2	333.7

¹ The shut down of these test cells will also be accompanied by decreases in emissions of other pollutants. Under NA NSR, the decreases in emissions of CO, VOM, PM, and PM₁₀/PM_{2.5} are projected at 13.7, 4.5, 4.8, and 3.3 tons/year, respectively, considering representative operation. Under PSD, the decreases are projected at 21.4, 5.5, 5.8, and 3.9 tons/year, respectively, considering highest 24-months in ten-year look-back period.

² For both NA NSR and PSD, the decrease is the average annual actual NO_x emissions for the period of July 2010 to June 2012, i.e., the two-year period immediately preceding the submission of the permit application.

³ For NA NSR, the decrease is the average annual actual NO_x emissions for two-year period ending on July 2007, which is considered more representative of normal operation than the two-year period immediately preceding the submission of the permit application.

⁴ For PSD, the decrease is the average annual actual NO_x emissions for the 24-month period ending on February 2005, which is the highest 24-month average from the ten-year look-back period.