

## **Appendix B-5**

### **Proposed Amendments to the Tier 4 Off-Road Compression-Ignition Engines Test Procedures**

### **California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-D**

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APPENDIX B-5

State of California

AIR RESOURCES BOARD

California Exhaust Emission Standards and Test Procedures for New 2011 and  
Later Tier 4 Off-Road Compression-Ignition Engines

PART I-D

Adopted: October 20, 2005

Amended: October 25, 2012

Amended: [Insert Date of Amendment]

**NOTE:** The source for this document is Part 1039 of the “California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-D” (Part I-D), as last amended October 25, 2012. This document is incorporated by reference in Title 13, California Code of Regulations, Section 2421(a)(4)(B). The proposed modifications to this document are principally incorporated from 40 Code of Federal Regulations (CFR) part 1039, Subpart G - Special Compliance Provisions, last amended October 25, 2016, revised to conform to CARB’s legal conventions and authority. All language is printed in a style to indicate changes from the existing provisions. All existing language is indicated by plain type. All additions to language are indicated by underlined text and deletions are indicated by ~~strikeout~~. California provisions that replace specific federal provisions are denoted by the words “DELETE” for the federal language and “REPLACE WITH” or “ADD” for the California language. Only those portions containing the suggested modifications from the existing provisions are included. All other portions remain unchanged and are indicated by the symbol “\* \* \* \* \*” for reference. If there is any conflict between the provisions of this document and the California Health and Safety Code, Division 26, or Title 13 of the California Code of Regulations (CCR), the Health and Safety Code and Title 13 apply.

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### CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR NEW 2011 AND LATER TIER 4 OFF-ROAD COMPRESSION-IGNITION ENGINES, Part I-D

#### PART 1039 – CONTROL OF EMISSIONS FROM NEW AND IN-USE OFF-ROAD COMPRESSION-IGNITION ENGINES

SOURCE: California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-D, last amended October 25, 2012, unless otherwise noted.

##### Subpart A – Overview and Applicability

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##### Subpart G – Special Compliance Provisions

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##### § 1039.660 What special provisions apply to Independent Commercial Importers?

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##### ADD:

##### § 1039.699 Emission standards and certification requirements for 2024 model year and later auxiliary power units for on-road tractors.

(a) This section specifies the emission standards and certification requirements for 2024 and subsequent model year auxiliary power units (APU) installed on tractors subject to GHG exhaust emission standards specified in title 17, CCR § 95663(a)(2)(B).

(b) You may apply for an Executive Order under this section if you manufacture APUs, or if you install emission control hardware to meet the PM standard in this section.

(c) Exhaust emissions may not exceed a PM standard of 0.02 g/kW-hr, nor exceed the applicable NMHC, NOx, and CO standards in 13 CCR § 2423, when tested using the steady-state test procedures described in subpart F of these test procedures for the duty cycles specified in § 1039.505(b)(1) of these test procedures. Your APUs must meet the exhaust emission standards of this section over the engine's useful life as specified in title 13 CCR § 2421(a)(61). These emission standards also apply for testing with production and in-use APUs.

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(d) The APU is deemed to have a valid Executive Order under this section if the engine manufacturer certifies the engine under title 13 CCR § 2423 with a PM family emission limit of 0.02 g/kW-hr or less.

(e) The APU may draw power from the installed engine to regenerate a particulate filter, but you must not make any other changes to the certified engine that could reasonably be expected to increase its emissions of any pollutant.

(f) §§ 1039.115, 1039.120, 1039.125, and 1039.130 of these test procedures apply for APUs as written. You must exercise due diligence in ensuring that your system will not adversely affect safety or otherwise violate the prohibition of § 1039.115(f) in these test procedures.

(g) All your APUs are considered to be part of a single emission family; however, you may subdivide your APUs into multiple emission families if you show the expected emission characteristics are different during the useful life. An emission family is analogous to an engine family as described in §1039.230 of these test procedures for the purpose of grouping APU models.

(h) Testing requirements apply for certification as follows:

(1) Select an emission-data APU representing a worst-case condition for PM emissions. Measure emissions from the test engine with the APU installed according to your specifications.

(2) We may require you to provide an engineering analysis showing that the performance of your emission controls will not deteriorate during the useful life with proper maintenance. If we determine that your emission controls are likely to deteriorate during the useful life, we may require you to develop and apply deterioration factors consistent with good engineering judgment.

(3) Collect emission data and round to the nearest 0.01 g/kW-hr for comparing to the standard. Calculate full-life emissions as described in § 1039.240(d) of these test procedures if you need to apply a deterioration factor.

(4) You may ask to use emission data from a previous production period instead of doing new tests as described in § 1039.235(d).

(5) Additional testing provisions apply as described in § 1039.235(c), (e), and (f).

(i) Your APU Executive Order is valid for any engine certified under 13 CCR § 2423, as long as the engine has been certified to a family PM emission limit of 0.02 g/kW-hr or less and has a maximum engine power rating no more than 10 percent greater than the maximum engine power of the engine used for certification testing under this section.

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(j) The following provisions apply for determining whether your APU complies with the requirements of this section:

(1) For purposes of certification, your emission family is considered in compliance with the emission standards of this section if all emission-data APUs representing that family have test results showing compliance with the standards.

(2) Your engine family is deemed not to comply if any emission-data APU representing that family for certification has test results showing a full-life emission level above the PM standard.

(k) At the time of manufacture, affix a permanent and legible label identifying each APU. This applies even if the engine manufacturer certifies a compliant engine as described in paragraph (d) of this section. The label must meet the specifications described in 13 CCR § 2424 and in § 1039.135 of these test procedures. Additionally, the label must:

(1) Include the heading "EMISSION CONTROL INFORMATION".

(2) Include your full corporate name and trademark.

(3) State: "THIS APU ENGINE COMPLIES WITH 13 CCR § 2423(n)."

(l) [Reserved]

(m) See §§ 1039.201, 1039.210, 1039.220, 1039.225, 1039.250, and 1039.255 of these test procedures for general requirements related to obtaining an Executive Order. Include the following information in your application for certification, unless we ask you to include less information:

(1) Describe the emission family's specifications and other basic parameters of the APU's design and emission controls. List each distinguishable configuration in the emission family. For each APU configuration, list the maximum engine power for which the APU is designed to operate.

(2) Explain how the emission control system operates. Identify the part number of each component you describe.

(3) Describe the engines you selected for testing and the reasons for selecting them.

(4) Describe the test equipment and procedures that you used. Also describe any special or alternate test procedures you used.

(5) Describe how you operated the emission-data APU before testing, including any operation to break in the APU or otherwise stabilize emission levels. Describe any scheduled maintenance you performed.

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(6) List the specifications of the test fuel to show that it falls within the required ranges we specify in the California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-E, adopted on October 25, 2012.

(7) Include the maintenance and warranty instructions you will provide (see §§ 1039.120 and 1039.125 of these test procedures).

(8) Describe your emission control information label.

(9) Identify the emission family's deterioration factors and describe how you developed them, or summarize your analysis describing why you don't expect performance of emission controls to deteriorate. Present any emission test data you used for this to the Executive Officer.

(10) State that you operated your emission-data APU as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part.

(11) Present emission data for PM.

(12) Report all test results, including those from invalid tests, whether or not they were conducted according to the test procedures of subpart F of this part. We may ask you to send other information to confirm that your tests were valid under the requirements of this part and the California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Part I-E, adopted October 25, 2012.

(13) Describe any adjustable operating parameters as described in § 1039.205(s) of these test procedures.

(14) Unconditionally certify that all the APUs in the emission family comply with the requirements of this part and 13 CCR §§ 2420-2427.

(15) Provide additional information if requested by the Executive Officer to evaluate your application.

(16) Name an agent for service located in California. Service on this agent constitutes service on you or any of your officers or employees for any action by CARB related to the requirements of this part.

(n) If a tractor manufacturer installs an APU from you that is not properly certified and labeled, you are presumed to have caused the violation (see § 1068.101(c) of the California Exhaust Emission Standards and Test Procedures for New 2011 and Later

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Tier 4 Off-Road Compression-Ignition Engines, Part I-F, last amended October 25, 2012).

Subpart H – Averaging, Banking, and Trading for Certification

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Subpart I – Definitions and Other Reference Information

§ 1039.801 What definitions apply to this part?

ADD (In Alphabetical Order):

*Auxiliary power unit* means a device installed on a vehicle that uses an engine to provide power for purposes other than to (directly or indirectly) propel the vehicle.

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