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**Subject:**staff draft regulatory text for nonroad diesel engines

Jed, Kevin and Rick,

during our discussion on Feb. 28, we had indicated we would provide EMA with draft regulatory text for a number of the 2nd tier type issues related to the nonroad diesel rule. Attached is a staff draft of some regulatory language related to the following topics we discussed on the 28th, specifically:

- Definition of engine gross power
- Emission warranty period
- Engine installation instruction requirements
- Engine family definition for mechanical/electronic fuel systems
- DF's for PM trap equipped engines
- Labeling requirements for stationary source engines
- Defect Reporting Requirements
- AECD reporting in certification application

We would be happy to talk through this material during our meeting next Friday. I will try to have a draft Agenda for next Friday out by the end of today, but certainly by COB Monday. At this point the topics will be the same as those we discussed on 2/28, and I'll add to the list all of the items Jed added on the 28th.

Best Regards,  
Bill Charmley

**EPA staff draft of selected issues**  
**March 14, 2003**

**§1039.120 What emission-related warranty requirements apply to me?**

(a) General requirements. You must warrant to the ultimate purchaser and each subsequent purchaser that the new nonroad engine, including all parts of its emission-control system, meets two conditions:

(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part.

(2) It is free from defects in materials and workmanship that may keep it from meeting these requirements.

(b) Warranty period. Your emission-related warranty must be valid for at least as long as the minimum warranty periods listed in this paragraph (b) in hours of operation and years, whichever comes first. You may offer an emission-related warranty more generous than we require. The emission-related warranty for the engine may not be shorter than any published warranty you offer for the engine. If you provide a longer warranty (with or without charge) for any components covered paragraph (c) of this section, you must also extend the emission-related warranty to the same degree. If an engine has no hour meter, we base the warranty periods in this paragraph (b) only on the engine's age (in years). The minimum warranty periods are shown in the following table:

If your engine is certified as . . .	And its rated power is . . .	And its rated speed is . . .	Then its warranty period is . . .
Variable speed or constant speed	Less than 19 kW	Any speed	1,500 hours or five years, whichever comes first
Constant speed	At least 19 kW, but less than 37 kW	3,000 rpm or higher	1,500 hours or two years, whichever comes first
Constant speed	At least 19 kW, but less than 37 kW	Less than 3,000 rpm	3,000 hours or five years, whichever comes first
Variable speed	At least 19 kW, but less than 37 kW	Any speed	3,000 hours or five years, whichever comes first
Variable speed or constant speed	37kW or higher	Any speed	3,000 hours or five years, whichever comes first

(c) Components covered. The emission-related warranty covers all components whose failure would increase an engine's emissions. This includes components listed in 40 CFR 1068, Appendix I and components from any other system you develop to control emissions. The emission-related warranty covers these components even if another company produces and delivers the component. Your emission-related warranty does not cover components whose failure would not increase an engine's emissions.

(d) [Reserved]

(e) Limited applicability. You may deny warranty claims under this section if the operator caused the problem, as described in 40 CFR 1068.115.

(f) Aftermarket parts. As noted 40 CFR 1068.101, it is a violation of the Act to manufacture an engine part if one of its main effects is to reduce the effectiveness of the engine's emission controls. If you make an aftermarket part,

you may—but do not have to—certify that using the part will still allow engines to meet emission standards, as described in 40 CFR 85.2114.

**§1039.130 What installation instructions must I give to equipment manufacturers?**

- (a) If you sell an engine for someone else to install in a piece of nonroad equipment, give the buyer of the engine written instructions for installing it consistent with the requirements of this part. Include all information necessary to ensure that an engine installed this way will be in its certified configuration.
- (b) Make sure these instructions have the following information:
  - (1) Include the heading: “Emission-related installation instructions”.
  - (2) State: “Failing to follow these instructions when installing a certified engine in a piece of nonroad equipment violates federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.”.
  - (3) Describe any limits on the range of applications needed to ensure that the engine operates consistently with your application for certification. For example, if your engines are certified only for constant-speed operation, tell equipment manufacturers not to install the engines in variable-speed applications.
  - (4) Describe any other instructions to make sure the installed engine will operate according to design specifications in your application for certification. This may include, for example, instructions for installing aftertreatment devices when installing the engines.
  - (5) State: “If you install the engine in a way that makes the engine’s emission control information label hard to read during normal engine maintenance, you must place a duplicate label on the vehicle, as described in 40 CFR 1068.105.”.
- (c) You do not need installation instructions for engines you install in your own equipment.

**§1039.205 What must I include in my application?**

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- (b) Explain how the emission-control systems operate. Describe in detail all the system components for controlling exhaust emissions, including auxiliary emission control devices (AECDs) and all fuel-system components you will install on any production or test engine. For this paragraph (b), treat as separate AECDs any devices that modulate or activate differently from each other. Include all the following:
  - (1) Give a general overview of the engine, the emission-control strategies, and all AECDs.
  - (2) Describe each AECD’s general purpose and function.
  - (3) Identify the parameters that each AECD senses (by measuring values) or estimates (by calculating values or determining them empirically). Include equipment-based parameters and state whether you simulate them during testing with the applicable procedures.
  - (4) Describe the purpose for sensing or estimating each parameter.
  - (5) Identify the location of each sensor the AECD uses.

- (6) Identify the threshold values for the sensed or estimated parameters that activate the AECD.
- (7) Describe the parameters that the AECD modulates (controls) in response to any sensed or estimated parameters, including the range of modulation for each parameter, the relationship between the sensed or estimated parameters and the controlled parameters (with graphs and tables as necessary), and how the modulation achieves the AECD's stated purpose.
- (8) Describe each AECD's specific calibration details. This may be in the form of data tables, graphical representations, or some other description.
- (9) Describe the hierarchy among the AECDs when multiple AECDs sense or modulate the same parameter. Describe whether the strategies interact in a comparative or additive manner and identify which AECD takes precedence in responding, if applicable.
- (10) Explain the extent to which the AECD is included in the applicable test procedures specified in subpart F of this part.
- (11) Do the following additional things for AECDs designed to protect engines or equipment:
  - (i) Identify the engine and/or equipment design limits that make protection necessary and describe any damage that would occur without the AECD.
  - (ii) Describe how each sensed or estimated parameter relates to the protected components' design limits or those operating conditions that cause the need for protection.
  - (iii) Describe the relationship between the design limits/parameters being protected and the parameters sensed or calculated as surrogates for those design limits/parameters , if applicable.
  - (iv) Describe how the modulation by the AECD prevents engines and/or equipment from exceeding design limits.
  - (v) Explain why it is necessary to estimate parameters instead of sensing them and describe how the AECD calculates the estimated value, if applicable.
  - (vi) Describe how you calibrate the AECD modulation to activate only during conditions related to the stated need to protect components and only as needed to sufficiently protect those components.

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**§1039.230 How do I select engine families?**

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- (b) Group engines in the same engine family if they are the same in all of the following aspects: \* \* \*
  - (9) Method of control for engine operation other than governing, (i.e., mechanical or electronic).

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**§1039.240 How do I demonstrate that my engine family complies with exhaust emission standards?**

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- (c) To compare emission levels from the test engine with the applicable emission standards, apply deterioration factors (to four significant figures) to the measured emission levels for each pollutant. Section 1039.245 specifies how to test your engine to develop deterioration factors that represent the deterioration expected in emissions over your engines' full useful life. Your deterioration factors must be consistent with emission increases observed from

any in-use testing with similar engines. Small-volume engine manufacturers may use assigned deterioration factors that we establish. Apply the deterioration factors as follows:

(1) If you use aftertreatment technology (other than particulate traps) to control emissions of a pollutant, the deterioration factor for that pollutant is the ratio of exhaust emissions at the end of useful life to exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by multiplying the measured emissions by the deterioration factor. If the factor is less than one, use one.

(2) If you use particulate traps or if you use no aftertreatment technology to control emissions of a pollutant, the deterioration factor for that pollutant is the difference between exhaust emissions at the end of useful life and exhaust emissions at the low-hour test point. Adjust the official emission results for each tested engine at the selected test point by adding the factor to the measured emissions. If the factor is less than zero, use zero.

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**§1039.801 What definitions apply to this part?**

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Brake power means the usable power output of the engine, not including power required to operate fuel pumps, oil pumps, or coolant pumps.

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## PART 1068— GENERAL COMPLIANCE PROVISIONS FOR NONROAD PROGRAMS

### **§1068.301 Does this subpart apply to me?**

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(b) In general, engines that you import must be covered by a certificate of conformity unless they were built before emission standards started to apply. This subpart describes the limited cases where we allow importation of exempt or excluded engines.

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### **§1068.310 What are the exclusions for imported engines?**

Engines or equipment that are not subject to our emission standards are not subject to the restrictions on imports in §1068.301(b). If you show us that your engines qualify under one of the paragraphs of this section, we will approve your request to import such excluded engines. You must have our approval to import an engine under paragraph (a) of this section. You may, but are not required to request our approval to import the engines under paragraph (b) or (c) of this section. The following engines are excluded:

\* \* \* \* \*

(b) Stationary engines. The definition of nonroad engine in 40 CFR 1068.30 does not include certain engines used in stationary applications. Such engines are not subject to the restrictions on imports in §1068.301(b), but only if they are properly labeled according to §1068.320. Section 1068.101 restricts the use of stationary engines for non-stationary purposes.

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### **§1068.320 How must I label an imported engine with an exclusion or a permanent exemption?**

(a) For engines imported under §1068.310(a) or (b) or §1068.315 (a), you must place a permanent label or tag on each engine. If no specific label requirements from the standard-setting part or from subpart C of this part apply, you must meet the following requirements:

- (1) Attach the label or tag in one piece so no one can remove it without destroying or defacing it.
- (2) Make sure it is durable and readable for the engine's entire life.
- (3) Secure it to a part of the engine needed for normal operation and not normally requiring replacement.
- (4) Write it in block letters in English.
- (5) Make it readily visible to the average person after the engine is installed in the equipment.

(b) On the engine label or tag, do the following:

- (1) Include the heading "Emission Control Information".
- (2) Include your full corporate name and trademark.

- (3) State the engine displacement (in liters) and rated power. If the engine's rated power is not established, state the approximate power rating accurately enough to allow a determination of which standards would otherwise apply.
- (4) State: "THIS ENGINE IS EXEMPT FROM THE REQUIREMENTS OF [identify the part referenced in 40 CFR 1068.1(a) that would otherwise apply], AS PROVIDED IN [identify the paragraph authorizing the exemption (for example, "40 CFR 1068.315(a)")]. INSTALLING THIS ENGINE IN ANY DIFFERENT APPLICATION MAY BE A VIOLATION OF FEDERAL LAW SUBJECT TO CIVIL PENALTY."
- (c) Get us to approve alternate label language if it is more accurate for your engine.

### **§1068.501 How do I report engine defects?**

(a) General provisions. As an engine manufacturer, you must investigate in certain circumstances whether emission-related components are defective and send us reports as specified by this section.

(1) The term emission-related component includes those components listed in Appendix I of this part. For the purposes of this section, complete engines shall also be considered an emissions-related component. It also includes factory settings of emission-related parameters and specifications listed in Appendix II of this part.

(2) For the purposes of this section, defects do not include damage to emission-related components (or maladjustment of parameters) caused by owners improperly maintaining or abusing their engine.

(3) You must track the information specified in paragraph (b)(1) of this section. You are not required to collect additional information other than that specified in paragraph (b)(1) of this section before reaching the threshold for an investigation specified in paragraph (e) of this section.

(4) You may ask us to allow you to use alternate methods for tracking, investigating, reporting, and correcting emission-related defects. In your request, explain and demonstrate why you believe your alternate system will be at least as effective in tracking, identifying, investigating, evaluating, reporting, and correcting potential and actual emissions-related defects as the requirements in this section.

(5) If we determine that emission-related defects result in a substantial number of properly maintained and used engines not conforming to the regulations of this chapter during their useful life, we may order you to conduct a recall of your engines (see §1068.505).

(6) Send the defect reports and status reports required by this section to the Designated Officer.

(b) Investigation of possible defects. If the number of engines that possibly have a defect, as defined by paragraph (b)(1) of this section, exceed the thresholds specified in paragraph (e) of this section, you must conduct an investigation to determine if an emission-related component is actually defective.

(1) You must track warranty claims, parts shipments, and the other information specified in paragraph (b)(1)(iii) of this section. You must classify an engine as possibly having a defective component if any of the following is true:

(i) A warranty claim is submitted for the component, whether this is under your emission-related warranty or any other warranty.

(ii) You ship a replacement component other than for normally scheduled maintenance during the useful life of the engine.

- (iii) You receive any other information indicating the component may be defective, such as information from dealers or hot line complaints.
  - (2) Your investigation must be prompt, thorough, consider all relevant information, follow scientific and engineering principles, and be designed to obtain all the information specified in paragraph (d) of this section.
  - (3) Your investigation only needs to consider defects that occur within the useful life period, or within five years after the end of the model year, whichever is longer.
  - (4) You must continue your investigation until you are able to obtain all the information specified for a defect report in paragraph (d) of this section. Send us an updated defect report anytime you have significant additional information.
  - (5) If a component believed to be defective is used in additional engine families or model years, you must investigate whether the component or part is defective when used in these additional engine families or model years, and include these results as part of your defect report.
  - (6) If your initial investigation concludes that the number of engines with a defect is fewer than the thresholds specified in paragraph (f) of this section, but other information becomes available that may show that the number of engines with a defect exceeds these thresholds, then you must resume your investigation. If you resume an investigation, you must include the information from the earlier investigation to determine whether to send a defect report.
- (c) Reporting defects. You must send us a defect report in either of the following cases:
- (1) Your investigation shows that the number of engines with a defect exceeds the thresholds specified in paragraph (f) of this section. Send the defect report within 15 days after the date you identify this number of defective engines.
  - (2) You know a defective emission-related component exists in a number of engines that exceeds the thresholds specified in paragraph (f) of this section, regardless of how you obtain this information. Send the defect report within 15 days after you learn that the number of defects exceeds one of these thresholds.
- (d) Contents of a defect report. Include the following information in a defect report:
- (1) Your corporate name and a person to contact regarding this defect.
  - (2) A description of the defect, including a summary of any engineering analyses and associated data, if available.
  - (3) A description of the engines that may have the defect, including engine families, models, and range of production dates. Note that you must address all model years for the engines, not just the model year for which you triggered the reporting requirement.
  - (4) An estimate of the number and percentage of each class or category of affected engines that have or may have the defect, and an explanation of how you determined this number.
  - (5) An estimate of the defect's impact on emissions, with an explanation of how you calculated this estimate and a summary of any emission data demonstrating the impact of the defect, if available.
  - (6) A description of your plan for addressing the defect or an explanation of your reasons for not believing the defects must be remedied.
- (e) Thresholds for conducting a defect investigation. Unless the standard-setting part specifies otherwise, you must begin a defect investigation based on the following threshold values:
- (1) For engine with rated power under 560 kW:
    - (i) When the component is a catalytic converter (or other aftertreatment device), if the number of engines

in an engine family that may have the defect exceeds 2 percent of the total number of engines in the engine family or 2,000 engines, whichever is less.

(ii) When the emission-related component is anything but a catalytic converter (or other aftertreatment device), if the number of engines in an engine family that may have the defect exceeds 4 percent of the total number of engines in the engine family or 4,000 engines, whichever is less.

(2) For engine with rated power greater than or equal to 560 kW, if the number of engines in an engine family that may have the defect exceeds 1 percent of the total number of engines in the engine family or 5 engines, whichever is greater.

(f) Thresholds for filing a defect report. You must send a defect report based on the following threshold values:

(1) For engine with rated power under 560 kW:

(i) When the component is a catalytic converter (or other aftertreatment device), if the number of engines in an engine family that has the defect exceeds 0.125 percent of the total number of engines in the engine family or 125 engines, whichever is less.

(ii) When the emission-related component is anything but a catalytic converter (or other aftertreatment device), if the number of engines in an engine family that has the defect exceeds 0.250 percent of the total number of engines in the engine family or 250 engines, whichever is less.

(2) For engine with rated power greater than or equal to 560 kW, if the number of engines in an engine family that has the defect exceeds 0.5 percent of the total number of engines in the engine family or 2 engines, whichever is greater.

(g) How to count defects. In most cases, you may track defects separately for each model year and engine family. For families with annual U.S.-directed production volumes under 5,000 engines, you may apply the percentage thresholds in paragraphs (e) and (f) of this section on the basis of multiple model years, for engines using the same emission-related components. To determine whether you exceed the investigation threshold in paragraph (e) of this section, count defects that you correct before they reach the ultimate purchaser. Do not count these corrected defects to determine whether you exceed the reporting threshold in paragraph (f) of this section.

(h) Status reports. You must send us a mid-year or end-of-year status report if you concluded an investigation during the previous six months without filing a defect report or if you have an unresolved investigation at the end of the six-month period. Include the information specified in paragraph (c) of this section, or explain why the information is not relevant. Send these status reports no later than June 30 and December 31 of each year.

(i) Future production. If you identify a design or manufacturing defect that prevents engines from meeting the requirements of this part, you must correct the defect as soon as possible for any future production for engines in every family affected by the defect. This applies without regard to whether you are required to conduct a defect investigation or submit a defect report under this section.