§ 1039.515  What are the test procedures related to not-to-exceed standards?

(a) General provisions. The provisions in 40 CFR 86.1370–2007 apply for determining whether an engine meets the not-to-exceed emission standards in §1039.101(e). Interpret references to vehicles and vehicle operation to mean equipment and equipment operation.

(b) Special PM zone. For engines certified to a PM standard or FEL above 0.07 g/kW-hr, a modified NTE control area applies for PM emissions only. The speeds and loads to be excluded are determined based on speeds B and C, determined according to the provisions of 40 CFR 86.1360–2007(c). One of the following provisions applies:

(1) If the C speed is below 2400 rpm, exclude the speed and load points to the right of or below the line formed by connecting the following two points on a plot of speed-vs.-power:
   (i) 30% of maximum power at the B speed; however, use the power value corresponding to the engine operation at 30% of maximum torque at the B speed if this is greater than 30% of maximum power at the B speed.
   (ii) 70% of maximum power at 100% speed.

(2) If the C speed is at or above 2400 rpm, exclude the speed and load points to the right of the line formed by connecting the two points in paragraphs (b)(2)(i) and (ii) of this section (the 30% and 50% torque/power points) and below the line formed by connecting the two points in paragraphs (b)(2)(i) and (iii) of this section (the 50% and 70% torque/power points). The 30%, 50%, and 70% torque/power points are defined as follows:
   (i) 30% of maximum power at the B speed; however, use the power value corresponding to the engine operation at 30% of maximum torque at the B speed if this is greater than 30% of maximum power at the B speed.
   (ii) 50% of maximum power at 2400 rpm.
   (iii) 70% of maximum power at 100% speed.

§ 1039.520  What testing must I perform to establish deterioration factors?

Sections 1039.240 and 1039.245 describe the method for testing that must be performed to establish deterioration factors for an engine family.

§ 1039.525  How do I adjust emission levels to account for infrequently regenerating aftertreatment devices?

This section describes how to adjust emission results from engines using aftertreatment technology with infrequent regeneration events. For this section, “regeneration” means an intended event during which emission levels change while the system restores aftertreatment performance. For example, exhaust gas temperatures may increase temporarily to remove sulfur from adsorbers or to oxidize accumulated particulate matter in a trap. For this section, “infrequent” refers to regeneration events that are expected to occur on average less than once over the applicable transient duty cycle or ramped-modal cycle, or on average less than once per typical mode in a discrete-mode test.

(a) Developing adjustment factors. Develop an upward adjustment factor and a downward adjustment factor for each
pollutant based on measured emission data and observed regeneration frequency. Adjustment factors should generally apply to an entire engine family, but you may develop separate adjustment factors for different engine configurations within an engine family. If you use adjustment factors for certification, you must identify the frequency factor, $F$, from paragraph (b) of this section in your application for certification and use the adjustment factors in all testing for that engine family. You may use carryover or carry-across data to establish adjustment factors for an engine family, as described in §1039.235(d), consistent with good engineering judgment. All adjustment factors for regeneration are additive. Determine adjustment factors separately for different test segments. For example, determine separate adjustment factors for hot-start and cold-start test segments and for different modes of a discrete-mode steady-state test. You may use either of the following different approaches for engines that use aftertreatment with infrequent regeneration events:

1. If regeneration does not occur during a test segment, add an upward adjustment factor to the measured emission rate. Determine the upward adjustment factor (UAF) using the following equation:

$$UAF = EF_A \times EF_L$$

2. If regeneration occurs or starts to occur during a test segment, subtract a downward adjustment factor from the measured emission rate. Determine the downward adjustment factor (DAF) using the following equation:

$$DAF = EF_H \times EF_A$$

(c) Applying adjustment factors. Apply adjustment factors based on whether regeneration occurs during the test run. You must be able to identify regeneration in a way that is readily apparent during all testing.

1. If regeneration does not occur during a test segment, add an upward adjustment factor to the measured emission rate. Determine the upward adjustment factor (UAF) using the following equation:

$$UAF = EF_A - EF_L$$

2. If regeneration occurs or starts to occur during a test segment, subtract a downward adjustment factor from the measured emission rate. Determine the downward adjustment factor (DAF) using the following equation:

$$DAF = EF_H - EF_A$$

(d) Sample calculation. If $EF_L$ is 0.10 g/kW-hr, $EF_H$ is 0.50 g/kW-hr, and $F$ is 0.1 (the regeneration occurs once for each ten tests), then:

$$EF_A = (0.1)(0.5 \text{ g/kW-hr}) + (1.0 - 0.1)(0.1 \text{ g/kW-hr}) = 0.14 \text{ g/kW-hr}.$$  
$$UAF = 0.14 \text{ g/kW-hr} - 0.10 \text{ g/kW-hr} = 0.04 \text{ g/kW-hr}.$$  
$$DAF = 0.50 \text{ g/kW-hr} - 0.14 \text{ g/kW-hr} = 0.36 \text{ g/kW-hr}.$$  

EFFECTIVE DATE NOTE: At 77 FR 34147, June 8, 2012, §1039.525 was amended by revising the introductory text, effective August 7, 2012. For the convenience of the user, the revised text is set forth as follows:

§ 1039.525 How do I adjust emission levels to account for infrequently regenerating aftertreatment devices?

This section describes how to adjust emission results from engines using aftertreatment technology with infrequent regeneration events. For this section, “regeneration” means an intended event during which emission levels change while the system restores aftertreatment performance. For example, exhaust gas temperatures may increase temporarily to remove sulfur from adsorbers or to oxidize accumulated particulate matter in a trap. For this section, “infrequent” refers to regeneration events that are expected to occur on average less than once over the applicable transient duty cycle or ramped-modal cycle, or on average less than once per typical mode in a discrete-mode test. If your engine family includes engines with one or more AECDs for emergency
equipment applications approved under §1039.115(g)(4), do not consider additional re-
generations resulting from those AECDs when calculating emission factors or fre-
quencies under this section.

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Subpart G—Special Compliance
Provisions

§ 1039.601 What compliance provisions
apply to these engines?

Engine and equipment manufactur-
ers, as well as owners, operators, and
rebidders of engines subject to the re-
quirements of this part, and all other
persons, must observe the provisions of
this part, the requirements and prohi-
bitions in 40 CFR part 1068, and the
provisions of the Act.

§ 1039.605 What provisions apply to en-
gines certified under the motor-ve-
hicle program?

(a) General provisions. If you are an
engine manufacturer, this section al-
lows you to introduce new nonroad en-
gines into commerce if they are al-
ready certified to the requirements
that apply to compression-ignition en-
gines under 40 CFR parts 85 and 86 for
the appropriate model year. If you
comply with all the provisions of this
section, we consider the certificate
issued under 40 CFR part 86 for each en-
gine to also be a valid certificate of con-
formity under this part 1039 for its
model year. If we make a deter-
mation that these engines do not
conform to the regulations during their
useful life, we may require you to re-
call them under 40 CFR part 86 or 40
CFR 1068.505.

(b) Equipment-manufacturer provisions.
If you are not an engine manufacturer,
you may produce nonroad equipment
using motor-vehicle engines under this
section as long as you meet all the re-
quirements and conditions specified in
paragraph (d) of this section. You must
also add the fuel-inlet label we specify
in §1039.135(e). If you modify the
motor-vehicle engine in any of the
ways described in paragraph (d)(2) of
this section, we will consider you a
manufacturer of a new nonroad engine.
Such engine modifications prevent you
from using the provisions of this sec-
tion.

(c) Liability. Engines for which you
meet the requirements of this section
are exempt from all the requirements
and prohibitions of this part, except for
those specified in this section. Engines
exempted under this section must meet
all the applicable requirements from 40
CFR parts 85 and 86. This applies to en-
GINE manufacturers, equipment manu-
facturers who use these engines, and
all other persons as if these engines
were used in a motor vehicle. The pro-
hibited acts of 40 CFR 1068.101(a)(1)
apply to these new engines and equip-
ment; however, we consider the certifi-
cate issued under 40 CFR part 86 for
each engine to also be a valid certifi-
cate of conformity under this part 1039
for its model year. If we make a deter-
mation that these engines do not
conform to the regulations during their
useful life, we may require you to re-
call them under 40 CFR part 86 or 40
CFR 1068.505.

(d) Specific requirements. If you are an
engine manufacturer or equipment
manufacturer and meet all the fol-
lowing criteria and requirements re-
garding your new nonroad engine, the
engine is eligible for an exemption
under this section:

(1) Your engine must be covered by a
valid certificate of conformity issued
under 40 CFR part 86.

(2) You must not make any changes
to the certified engine that could rea-
sonably be expected to increase its ex-
haust emissions for any pollutant, or
its evaporative emissions if it is sub-
ject to evaporative-emission standards.
For example, if you make any of the
following changes to one of these en-
gines, you do not qualify for this ex-
emption:

(i) Change any fuel system par-

eters from the certified configuration.

(ii) Change, remove, or fail to pro-

perly install any other component, ele-

ment of design, or calibration specified

in the engine manufacturer’s applica-
tion for certification. This includes af-
ter treatment devices and all related
components.

(iii) Modify or design the engine cool-
ing system so that temperatures or
heat rejection rates are outside the