Environmental Protection Agency

§ 1045.305 How must I prepare and test my production-line engines?

This section describes how to prepare and test production-line engines. You must assemble the test engine in a way that represents the assembly procedures for other engines in the engine family. You must ask us to approve any deviations from your normal assembly procedures for other production engines in the engine family.

(a) Test procedures. Test your production-line engines using the applicable testing procedures in subpart F of this part to show you meet the duty-cycle emission standards in subpart B of this part. The not-to-exceed standards apply for this testing, but you need not do additional testing to show that production-line engines meet the not-to-exceed standards.

(b) Modifying a test engine. Once an engine is selected for testing (see §1045.310), you may adjust, repair, prepare, or modify it or check its emissions only if one of the following is true:

(1) You document the need for doing so in your procedures for assembling and inspecting all your production engines and make the action routine for all the engines in the engine family.

(2) This subpart otherwise specifically allows your action.

(3) We approve your action in advance.

(c) Engine malfunction. If an engine malfunction prevents further emission testing, ask us to approve your decision to either repair the engine or delete it from the test sequence.

(d) Setting adjustable parameters. Before any test, we may require you to adjust any adjustable parameter to any setting within its physically adjustable range.

(1) We may require you to adjust idle speed outside the physically adjustable range as needed, but only until the engine has stabilized emission levels (see paragraph (e) of this section). We may ask you for information needed to establish an alternate minimum idle speed.

(2) We may specify adjustments within the physically adjustable range by considering their effect on emission levels. We may also consider how likely it is that someone will make such an adjustment with in-use engines.

(e) Stabilizing emission levels. You may operate the engine to stabilize the emission levels before you test production-line engines. Using good engineering judgment, operate your engines in
§ 1045.310 How must I select engines for production-line testing?

(a) Test engines from each engine family as described in this section based on test periods, as follows:

(1) For engine families with projected U.S.-directed production volume of at least 1,600, the test periods are consecutive quarters (3 months). However, if your annual production period is less than 12 months long, you may take the following alternative approach to define quarterly test periods:

(i) If your annual production period is 120 days or less, the whole model year constitutes a single test period.

(ii) If your annual production period is 121 to 210 days, divide the annual production period evenly into two test periods.

(iii) If your annual production period is 211 to 300 days, divide the annual production period evenly into three test periods.

(iv) If your annual production period is 301 days or longer, divide the annual production period evenly into four test periods.

(2) For engine families with projected U.S.-directed production volume below 1,600, the whole model year constitutes a single test period.

(b) Early in each test period, randomly select and test an engine from the end of the assembly line for each engine family.

(1) In the first test period for newly certified engines, randomly select and test one more engine. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(2) In later test periods of the same model year, combine the new test result with all previous testing in the model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section.

(3) In the first test period for engine families relying on previously submitted test data, combine the new test result with the last test result from the previous model year. Then, calculate the required sample size for the model year as described in paragraph (c) of this section. Use the last test result from the previous model year only for this first calculation. For all subsequent calculations, use only results from the current model year.

(c) Calculate the required sample size for each engine family. Separately calculate this figure for HC+NO\textsubscript{X} and CO. The required sample size is the greater of these calculated values. Use the following equation:

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N = \left[ \frac{(t_{0.05} \cdot \sigma)}{(x - \text{STD})} \right]^2 + 1
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