

appropriate to consider when selecting the engine to test:

- (1) Maximum fueling rates.
- (2) Maximum in-use engine speed (governed or ungoverned, as applicable).
- (3) Highest sales volume.
- (c) We may select any engine configuration within the engine family for our testing.

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- (a) If you are testing an emission-data engine for certification, make sure you have built it to represent production engines.
- (b) Run the test engine, with all emission-control systems operating, long enough to stabilize emission levels. If you accumulate 50 hours of operation, you may consider emission levels stable without measurement.
- (c) Do not service the test engine before you stabilize emission levels, unless we approve other maintenance in advance. This prohibition does not apply to your recommended oil and filter changes for newly produced engines, or to idle-speed adjustments.
- (d) Select engine operation for accumulating operating hours on your test engines to represent normal in-use operation for the engine family.
- (e) If you need more than 50 hours to stabilize emission levels, record your reasons and the method you use to do this. Give us these records if we ask for them.

EFFECTIVE DATE NOTE: At 69 FR 39261, June 29, 2004, § 1065.405 is amended by revising paragraph (b), effective Aug. 30, 2004. For the convenience of the user, the revised text is set forth as follows:

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(b) Run the test engine, with all emission-control systems operating, long enough to stabilize emission levels.

- (1) For SI engines, if you accumulate 50 hours of operation, you may consider emission levels stable without measurement.
- (2) For CI engines, if you accumulate 125 hours of operation, you may consider emission levels stable without measurement.

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§ 1065.410 Service limits for stabilized test engines.

(a) After you stabilize the test engine's emission levels, you may do scheduled maintenance, other than during emission testing, as the standard-setting part specifies.

(b) You may not do any unscheduled maintenance to the test engine or its emission-control system or fuel system without our advance approval. Un-scheduled maintenance includes adjusting, repairing, removing, disassembling, cleaning, or replacing the test engine. We may approve routine maintenance that is not scheduled such as maintaining the proper oil level.

(1) We may approve other unscheduled maintenance if all of the following occur:

- (i) You determine that a part failure or system malfunction (or the associated repair) does not make the engine unrepresentative of production engines in the field and does not require anyone to access the combustion chamber.
- (ii) Something clearly malfunctions (such as persistent misfire, engine stall, overheating, fluid leakage, or loss of oil pressure) and needs maintenance or repair.
- (iii) You give us a chance to verify the extent of the malfunction before you do the maintenance.

(2) If we determine that a part's failure or a system's malfunction (or the associated repair) has made the engine unrepresentative of production engines, you may no longer use it as a test engine.

(3) You may not do unscheduled maintenance based on emission measurements from the test engine.

(4) Unless we approve otherwise in advance, you may not use equipment, instruments, or tools to identify bad engine components unless you specify they should be used for scheduled maintenance on production engines. In this case, if they are not generally available, you must also make them available at dealerships and other service outlets.

(c) If you do maintenance that might affect emissions, you must completely test the engine for emissions before and after the maintenance, unless we waive this requirement.

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(d) If your test engine has a major mechanical failure that requires you to take it apart, you may no longer use it as a test engine.

§ 1065.415 Durability demonstration.

If the standard-setting part requires durability testing, you must accumulate service in a way that represents how you expect the engine to operate in use. You may accumulate service hours using an accelerated schedule, such as through continuous operation.

(a) *Maintenance.* The following limits apply to the maintenance that we allow you to do on test engine:

(1) You may perform scheduled maintenance that you recommend to operators, but only if it is consistent with the standard-setting part's restrictions.

(2) You may perform additional maintenance only if we approve it in advance, as specified in § 1065.410(b).

(3) If your test engine has a major mechanical failure that requires you to take it apart, you may no longer use it as a test engine.

(b) *Emission measurements.* You must measure emissions following two main requirements:

(1) Perform emission tests to determine deterioration factors consistent with good engineering judgment. Evenly space any tests between the first and last test points throughout the durability period.

(2) Perform emission tests following the provisions of this part and the standard-setting part.

Subpart F—Running an Emission Test

§ 1065.501 Overview of the engine dynamometer test procedures.

(a) The engine dynamometer test procedure measures brake-specific emissions of hydrocarbons (total and nonmethane, as applicable), carbon monoxide, and oxides of nitrogen. To perform this test procedure, you first dilute exhaust emissions with ambient air and collect a continuous proportional sample for analysis, then analyze the composite samples (either in bags after the test or continuously during the test). The general test procedure consists of a test cycle made of

one or more segments (check the standard-setting part for specific cycles):

(1) Either a cold-start cycle (where you measure emissions) or a warm-up cycle (where you do not measure emissions).

(2) A hot-start transient test (some test cycles may omit engine starting from the "hot-start" cycle).

(3) A steady-state test.

(b) Measure power using the dynamometer's feedback signals for torque and speed. The power measurement produces a brake kilowatt-hour value that allows you to calculate brake-specific emissions (see Subpart G of this part).

(c) Prepare engines for testing consistent with § 1065.10(c)(1) and according to the following provisions:

(1) When you test an engine or operate it for service accumulation, use the complete engine with all emission-control devices installed and functioning.

(2) Install the fan for any air-cooled engine (if applicable).

(3) You may install accessories such as an oil cooler, alternators, and air compressors or simulate their loading if they are typical of in-use operation. Apply this loading during all testing operations, including mapping.

(4) You may install a production-type starter on the engine.

(5) Cool the engine in a way that will maintain its operating temperatures including the intake air, oil, water temperatures about the same as they would be during normal operation. You may use auxiliary fans if necessary. You may use rust inhibitors and lubrication additives, up to the levels that the additive manufacturer recommends. You may also use antifreeze mixtures and other coolants typical of those approved for use by the manufacturer.

(6) Use representative exhaust and air-intake systems. Make sure the exhaust restriction is 80 to 100 percent of the recommended maximum specified exhaust restriction and the air inlet restriction is between that of a clean filter and the maximum restriction specification. As the manufacturer, you are liable for emission compliance from the minimum in-use restrictions to the