§ 1033.235 Emission testing required for certification.

This section describes the emission testing you must perform to show compliance with the emission standards in §1033.101.

(a) Select an emission-data locomotive (or engine) from each engine family for testing. It may be a low mileage locomotive, or a development engine (that is equivalent in design to the engines of the locomotives being certified), or another low hour engine. Use good engineering judgment to select the locomotive configuration that is most likely to exceed (or have emissions nearest to) an applicable emission standard or FEL. In making this selection, consider all factors expected to affect emission control performance and compliance with the standards, including emission levels of all exhaust constituents, especially NO\(_X\) and PM.

(b) Test your emission-data locomotives using the procedures and equipment specified in subpart F of this part.

(c) We may measure emissions from any of your emission-data locomotives or other locomotives from the engine family.

(1) We may decide to do the testing at your plant or any other facility. If we do this, you must deliver the locomotive to a test facility we designate. If we do the testing at your plant, you must schedule it as soon as possible and make available the instruments, personnel, and equipment we need.

(2) If we measure emissions from one of your locomotives, the results of that testing become the official emission results for the locomotive. Unless we later invalidate these data, we may decide not to consider your data in determining if your engine family meets applicable requirements.

(d) You may subdivide a group of locomotives that are identical under paragraph (b) or (c) of this section into different engine families if you show the expected emission characteristics are different during the useful life. This allowance also covers locomotives for which only calculated emission rates differ, such as locomotives with and without energy-saving design features. For the purposes of determining whether an engine family is a small engine family in §1033.405(a)(2), we will consider the number of locomotives that could have been classed together under paragraph (b) or (c) of this section, instead of the number of locomotives that are included in a subdivision allowed by this paragraph (d).

(e) In unusual circumstances, you may group locomotives that are not identical with respect to the things listed in paragraph (b) or (c) of this section in the same engine family if you show that their emission characteristics during the useful life will be similar.

(f) During the first six calendar years after a new tier of standards becomes applicable, remanufactured engines/locomotives may be included in the same engine family as freshly manufactured locomotives, provided the same engines and emission controls are used for locomotive models included in the engine family.

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that it is subject to production variability.
(d) You may ask to use carryover emission data from a previous model year instead of doing new tests if all the following are true:
(1) The engine family from the previous model year differs from the current engine family only with respect to model year, or other factors not related to emissions. You may include additional configurations subject to the provisions of §1033.225.
(2) The emission-data locomotive from the previous model year remains the appropriate emission-data locomotive under paragraph (b) of this section.
(3) The data show that the emission-data locomotive would meet all the requirements that apply to the engine family covered by the application for certification.
(e) You may ask to use emission data from a different engine family you have already certified instead of testing a locomotive in the second engine family if all the following are true:
(1) The same engine is used in both engine families.
(2) You demonstrate to us that the differences in the two families are sufficiently small that the locomotives in the untested family will meet the same applicable notch standards calculated from the test data.
(f) We may require you to test a second locomotive of the same or different configuration in addition to the locomotive tested under paragraph (b) of this section.
(g) If you use an alternate test procedure under 40 CFR 1065.10 and later testing shows that such testing does not produce results that are equivalent to the procedures specified in subpart F of this part, we may reject data you generated using the alternate procedure.
(h) The requirement to measure smoke emissions is waived for certification and production line testing, except where there is reason to believe your locomotives do not meet the applicable smoke standards.
(i) Measure CO₂ with each test. Measure CH₄ with each low-hour certification test using the procedures specified in 40 CFR part 1065 starting in the 2012 model year. Also measure N₂O with each low-hour certification test using the procedures specified in 40 CFR part 1065 for any engine family that depends on NOx aftertreatment to meet emission standards. Small manufacturers/renovaters may omit measurement of N₂O and CH₄. Use the same units and modal calculations as for your other results to report a single weighted value for CO₂, N₂O, and CH₄. Round the final values as follows:
(1) Round CO₂ to the nearest 1 g/bhp-hr.
(2) Round N₂O to the nearest 0.001 g/bhp-hr.
(3) Round CH₄ to the nearest 0.001g/bhp-hr.
(a) For purposes of certification, your engine family is considered in compliance with the applicable numerical emission standards in §1033.101 if all emission-data locomotives representing that family have test results showing official emission results and deteriorated emission levels at or below those standards.
(1) If you include your locomotive in the ABT program in subpart H of this part, your FELs are considered to be the applicable emission standards with which you must comply.
(2) If you do not include your remanufactured locomotive in the ABT program in subpart H of this part, but it was previously included in the ABT program in subpart H of this part, the previous FELs are considered to be the applicable emission standards with which you must comply.
(b) Your engine family is deemed not to comply if any emission-data locomotive representing that family has test results showing an official emission result or a deteriorated emission level for any pollutant that is above an applicable emission standard. Use the following steps to determine the deteriorated emission level for the test locomotive:
(1) Collect emission data using measurements with enough significant figures to calculate the cycle-weighted