

of the certified range is considered tampering with the emission controls, and is a violation of section 203(a) of the Clean Air Act.

For marine engines, broad adjustability allows engines to be adjusted for maximum efficiency when used in a particular application. This practice simplifies marine diesel engine production, since the same basic engine can be used in many applications. While we recognize the need for this practice, we are also concerned that the engine meet the proposed emission limits throughout the range of adjustment. Therefore, the Agency has established provisions for Category 2 engines to allow manufacturers to specify in their applications for certification the range of adjustment for these components across which the engine is certified to comply with the applicable emission standards, and demonstrate compliance only across that range. We will also allow such adjustments for Category 3 engines. Practically, this requirement means that a manufacturer would specify different fuel injection timing calibrations for different conditions. These different calibrations would be designed to account for differences in fuel quality, which can be very significant for Category 3 engines. Operators would then be prohibited by the anti-tampering provisions from adjusting engines to a calibration different from the calibration specified by the manufacturer. The operators have to maintain records onboard the vessel demonstrating compliance, and must submit these records to EPA upon request. NTC also allows engines to be adjusted in use, and requires the engine manufacturer to include a description of the allowable adjustments in the Technical File for the engine.

4. How Must Engines Be Labeled?

Each new engine must have a permanent emission label on the engine block or on some other part of the engine that is not normally replaced during maintenance or rebuild. This label must include specific emission-related information such as engine family name, model year, and basic maintenance specifications. The inclusion of this information on the label is in addition to the recordkeeping requirements specified in the NO_x Technical Code.

5. How Does EPA Ensure Durable Emission Controls?

To achieve the full benefit of the emission standards, we need to ensure that manufacturers design and build their engines with durable emission

controls. It is also necessary to encourage the proper maintenance and repair of engines throughout their lifetime. The goal is for engines to maintain good emission performance throughout their in-use operation. Therefore, we believe it is necessary to adopt measures to address concerns about possible in-use emission performance degradation. The durability provisions described in the following sections are intended to help ensure that engines are still meeting applicable standards when operated in use. Most of these provisions are carried over from our program for smaller marine diesel engines.

The most fundamental issue related to durability is the concept of useful life. The Clean Air Act specifies that useful life is the period during which an engine is required to meet the emission standards. For Category 3 marine engines subject to our standards, the useful life is the period during which an engine is expected to be properly functioning with respect to reliability and fuel consumption without being rebuilt. For engines that are rebuilt completely at one time, the useful life would be the expected period between original manufacture and the first engine rebuild. For engines that are maintained by replacing individual power assemblies, the useful life would be the expected period between original manufacture and the point at which the last power assembly is replaced. We expect that this period will vary to some degree among engine models. Manufacturers must therefore specify the useful life for their engines at the time of certification. The specified useful life is subject to EPA approval and may not be less than 3 years or 10,000 hours of operation (based on total engine operation, not just operation in or near U.S. waters). This specification does not limit in-use operation. Rather it gives the manufacturer direction for addressing emission deterioration by defining the period during which the manufacturer must demonstrate to EPA that the engine will meet the standards. The useful life period may also not be less than any mechanical warranty that the manufacturer offers for the engine.

These minimum useful life values are lower than the minimum values for Category 2 engines due to the effect of using residual fuel, which generally has much higher sulfur levels than distillate fuels. The high sulfur levels create a more corrosive environment within the combustion chamber, which decreases durability. The period of years (three years) is also affected by the higher usage rate in terms of hours per year.

6. What Are the Manufacturer's Responsibilities for the Emission Warranty and Defect Reporting?

Tied to the useful life is the minimum period for the emission warranty required under section 207(a) of the Clean Air Act. We believe it is important to ensure that the engine manufacturer has designed and built the engine to ensure that it will comply with the emission standards throughout its useful life, as long as it is properly maintained. We therefore specify that the period for the emission warranty is equal to the useful life period (*e.g.*, 10,000 hours or 3 years). The engine manufacturer is responsible for any emission-related repairs to any properly maintained and properly used engine that fails to meet the standard in use during the warranty period. Engine operators are responsible to repair any engines that fail to meet the standards because of improper maintenance during the service life of the engine.

We are also adopting defect-reporting requirements. These provisions require Category 3 engine manufacturers to report to us whenever a specific emission-related defect occurs in two or more engines (or two or more cylinders within the same engine). We generally expect manufacturers to identify defects as part of their normal warranty process. The manufacturer must, however, report all defects, without regard to how they were identified. Note that the defect reporting requirements do not expressly require the manufacturer to collect new information. However if their practice for safety and production defects is to collect new information or conduct investigations, then they must do so with respect to emission-related defects under this regulation. Manufacturers must also track and report information they obtain through normal business practice.

7. What Are Deterioration Factors?

To further ensure that the emission standards are met in use, we require manufacturers to apply a deterioration factor (DF) to engines to evaluate emission-control performance throughout the useful life. The emissions from new engines are mathematically adjusted using the DF to account for potential deterioration in emissions due to aging of emission-control technologies or devices. The resulting emission level is intended to represent the expected emissions at the end of the useful life period for a properly maintained engine. We believe the effectiveness of some emission-control technologies, such as aftertreatment, sophisticated fuel-