

Certificate" (EIAPP). We anticipate that engines that receive an EPA certificate of conformity will also be eligible for an Engine International Air Pollution Prevention Certificate, since the near-term emission limits are the same as the Annex VI NO_x limits.

Note that EIAPPs will not be issued until the Annex goes into force and can be issued only by the flag-state Administration. Prior to entry into force of the Annex, and to encourage vessel owners to purchase MARPOL Annex VI compliant engines, we have developed a voluntary certification program. Under this program, the engine manufacturer can apply for and obtain a Statement of Voluntary Compliance to the MARPOL Annex VI NO_x limits.³⁴ It is anticipated that ship owners will be able to exchange this Statement of Voluntary Compliance for an EIAPP after the Annex enters into force. If a shipowner does not have a valid Statement of Voluntary Compliance for an engine, it may be necessary to recertify the engine to obtain an EIAPP after the Annex enters into force. Finally, note that obtaining an EIAPP in this way requires a Statement of Voluntary Compliance from EPA. A shipowner with a Statement of Voluntary Compliance issued by another Administration or by a classification society will have to apply for EPA certification to obtain an EIAPP.

4. What Are the Roles of the Engine Manufacturer and Ship Owner After the Engine Is Installed?

Unlike the provisions of MARPOL Annex VI, the Clean Air Act makes the engine manufacturer responsible for in-use compliance of properly maintained engines. Manufacturers must demonstrate that their engines can meet emission standards through the engine's "useful life" (as described below, the useful life generally refers to the first rebuild cycle). Manufacturers are responsible for correcting failures that occur during that period. The ship owner must ensure that all proper maintenance is performed during the entire "service life" of the engine (service life is the period during which the engine is in service, including the periods after it has been rebuilt). Under both Annex VI and the regulations adopted in this final rule for Category 3 engines, the ship owner is also responsible for compliance with the recordkeeping provisions contained in the NO_x Technical Code. EPA and Coast Guard will work together to develop

procedures to verify onboard performance of Annex VI requirements, as Coast Guard has general authority to carry out such procedures on vessels.

While this final rule does not require operators or owners of Category 1 or Category 2 engines to comply with the recordkeeping provisions contained in the NO_x Technical Code, we believe operators will generally choose to comply with these Annex VI recordkeeping requirements anyway, for three reasons. Most importantly, once Annex VI is ratified, compliance with these recordkeeping provisions will be required for U.S. ships that go overseas. Also, full compliance with the maintenance logging requirements under Annex VI would be a simple way to show that an operator is not tampering with the engine. Finally, manufacturers often condition warranty coverage to some degree on proper maintenance of the engine. Thus, having the Annex VI log would facilitate warranty claims.

B. Other Certification and Compliance Issues

1. How Are Engine Families Defined?

Engine grouping for the purpose of certification is accomplished through the application of an "engine family" definition. Engines expected to have similar emission characteristics throughout their useful life are classified in the same engine family. As a default, we are defining engine families consistent with Annex VI. However, to provide for administrative flexibility, we may separate engines normally grouped together or combine engines normally grouped separately, based upon a manufacturer's request, substantiated with an evaluation of emission characteristics over the engine's useful life. It is worth noting that we are not adopting the Annex VI definition of "engine groups". Under Annex VI, manufacturers can choose to certify their engines under a more narrowly defined engine group than an engine family. Annex VI allows more in-use adjustment of these engine group-certified engines.

2. Which Engines Are Selected for Testing?

Manufacturers must select the highest-emitting engine (i.e., "worst-case" engine) in a family for certification testing. This is consistent with the NTC requirements. In making that determination, the manufacturer must use good engineering judgment (considering, for example, all engine configurations and power ratings within the engine family and the range of

installation options allowed). By requiring the worst-case engine to be tested, we are assured that all engines within the engine family are complying with emission standards for the smallest number of test engines. If manufacturers believe that the engine family is grouped too broadly, they may request separating engines with dissimilar calibrations (based on an evaluation of emission characteristics over the engine's useful life) into separate engine families.

For these large marine engines, conventional emission testing on a dynamometer becomes more difficult. Often the engine mock-ups that are used for the development of these engines use a single block for many years, while the power assemblies are changed out. For Category 3 engines, certification tests may be performed on these engine mock-ups, as long as their configuration is the same as that of the production engines. In addition, manufacturers may conduct single-cylinder tests, since this should give the same brake-specific emission results as a full engine test, as long as each cylinder in an engine is equivalent in all material respects.

Manufacturers must allow EPA to perform confirmatory testing using their certification engines. In other rules, we have required manufacturers to provide us with actual engines for our confirmatory testing program. However, this would be impractical for Category 3 engines because of their size and cost. Thus, confirmatory testing of Category 3 engines would most likely require the manufacturer to test a specific engine model according to our specifications. For example, we might require that an engine be retested in our presence or tested with specific settings for adjustable parameters.

3. How Does EPA Treat Adjustable Parameters?

Diesel engines are often designed with adjustable components. For example, it is common to be able to adjust the fuel injection timing of an engine. EPA has historically required that these important adjustable parameters be physically limited to the range over which an engine would comply with the standards. Thus, while an uncontrolled diesel engine would typically have a broad (or even unlimited) range of adjustability, EPA-certified engines have a very narrow range of adjustability. Typically, this narrow range is enforced through physical stops on the adjustable parts. In some cases, manufacturers seal a component after final assembly to prevent any adjustment in use. Disabling physical stops, breaking seals, or otherwise adjusting an engine outside

³⁴ Information on how to obtain a Statement of Voluntary Compliance can be found on our Web site <http://www.epa.gov/otaq/marine.htm>.