

*E. How Did We Determine the Basis and Level of the Proposed Emission Limitations and Operating Limitations for New Sources?*

For new sources, the MACT floor is defined as the emission control that is achieved in practice by the best controlled similar source.

**1. MACT Floor for New Diffusion Flame Combustion Turbines**

To identify the MACT floor for new stationary combustion turbines located at major sources, we consulted the inventory database and oxidation catalyst vendor information. As mentioned earlier, oxidation catalyst emission control devices are currently installed on about 3 percent of stationary diffusion flame combustion turbines. This 3 percent represents about 200 stationary combustion turbines. We also considered whether the best controlled diffusion flame combustion turbine might be using good operating practices or a particular fuel that would reduce HAP emissions further and concluded, as we had previously in this preamble for existing sources, that we could not identify specific good operating practices that would reduce HAP emissions, and that fuel switching would not result in further HAP emissions reductions. We concluded, therefore, that the level of HAP emission control achieved by the use of oxidation catalyst emission control devices is the MACT floor for new stationary combustion turbines.

After establishing this basis for the MACT floor, we determined the level of performance based on the data available in the emissions database. The emissions database, which is a compilation of available HAP emission test reports, was created for the purpose of supporting rulemaking for the proposed rule. The majority of HAP emission test reports collected were conducted in California as part of the AB 2588 (Air Toxics "Hot Spots" Information Assessment Act of 1987) program. Complete copies of HAP emission test reports for stationary combustion turbines were gathered from all air districts in California and from other sources, such as the EPA Source Test Information Retrieval System (STIRS). Other States, including Washington, Texas, Pennsylvania, and New Jersey, and trade associations such as the Western States Petroleum Association (WSPA) and the Gas Research Institute (GRI) were also contacted for available HAP emission test reports.

We then examined the emission control efficiency achieved by an

oxidation catalyst emission control device on a stationary combustion turbine. We concluded that CO emission reductions are a good surrogate for HAP emissions reductions for oxidation catalyst emission control devices.

This conclusion that CO emission reductions are a good surrogate for HAP emissions reductions achieved through the use of oxidation catalyst emission control devices is also supported by data we have collected from the use of oxidation catalyst emission control devices on stationary reciprocating internal combustion engines (RICE). These data from stationary RICE also show a direct relationship between CO emission reductions and HAP emissions reductions. When oxidation catalyst emission control devices are used to reduce CO emissions, they will reduce HAP emissions.

The emissions database contains several emission test reports that measured HAP and CO emissions from stationary combustion turbines, but no emission test reports that measure the emission reduction efficiency of an oxidation catalyst emission control device (measuring CO and HAP emissions both before and after the control device). However, we obtained information from a catalyst vendor for two tests for one turbine. The results of those tests show that a CO reduction of 95 to 98 percent was achieved using an oxidation catalyst control system. We reviewed the test report for the data to assure that the turbine was operated correctly and that there was no turbine or control device malfunction; we found no discrepancy. In addition to emissions testing data, we reviewed design data from oxidation catalyst vendors for the systems installed in the U.S. The typical emission reduction for turbines that have been installed is 90 percent CO emission reduction, with a few systems that are designed to be 95 percent or greater.

We reviewed other factors such as operator training in addition to the control technology itself that could potentially result in better emission reduction, but we found no effect of those factors on the control efficiency. Based on the conclusions and data, we believe that 95 percent represents the level of control that can be achieved by the best controlled similar source. As a result, we concluded that the level of performance associated with the MACT floor (*i.e.*, use of an oxidation catalyst emission control device) is an emission reduction efficiency of 95 percent or more for CO. The MACT floor for new stationary diffusion flame combustion turbines is, therefore, a CO emission reduction efficiency of 95 percent or

more, using an oxidation catalyst control system.

**2. MACT for New Diffusion Flame Combustion Turbines**

We were unable to identify any beyond-the-floor regulatory alternatives for new stationary combustion turbines. We know of no emission control technology currently available which can reduce HAP emissions to levels lower than that achieved through the use of oxidation catalyst emission control devices. Similarly, we know of no work practice that could further reduce HAP emissions. In addition, fuel switching will not result in further reductions of HAP emissions. We concluded, therefore, that MACT for new diffusion flame stationary combustion turbines is equivalent to the MACT floor. It should be noted that the majority of new combustion turbines are expected to be lean premix combustion turbines based on the significantly reduced emissions of NO<sub>x</sub>, CO, and formaldehyde. We estimate that less than 5 percent of new combustion turbines will be diffusion flame. Diesel-fired combustion turbines cannot be operated in the lean premix mode, and these turbines would have to install an oxidation catalyst system.

**3. MACT Floor for New Lean Premix Combustion Turbines**

To determine the MACT floor for new stationary lean premix combustion turbines, we based our analysis on the same emissions data for formaldehyde that we used for the existing MACT floor. The MACT floor for existing lean premix combustion turbines is based on the performance of the best performing lean premix combustion turbine; this same level of performance can, therefore, be used to determine the MACT floor for new lean premix combustion turbines. As discussed previously in the existing source MACT, we believe that 43 ppbvd formaldehyde represents the best performing turbine. The MACT floor for new lean premix combustion turbines is, therefore, an emission limit of 43 ppbvd formaldehyde.

**4. MACT for New Lean Premix Combustion Turbines**

To determine MACT for new stationary lean premix combustion turbines, we evaluated regulatory alternatives more stringent than the MACT floor. As with existing lean premix combustion turbines, we considered the use of an oxidation catalyst control system. However, although catalyst vendors have indicated that some existing lean