

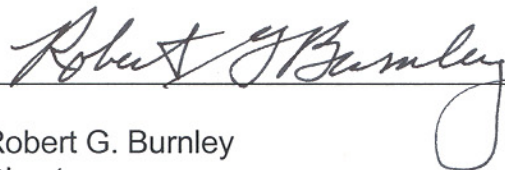
COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD

AIR QUALITY PROGRAM POLICIES AND PROCEDURES

TITLE: CONTROL TECHNOLOGY REQUIREMENTS FOR EMISSIONS OF
NO_x FROM ELECTRIC GENERATING COMBINED CYCLE
TURBINES

NUMBER: AQP-14

EFFECTIVE DATE: DECEMBER 1, 2002

APPROVED: 
Robert G. Burnley
Director

PURPOSE

The purpose of this policy is to establish the emission limits for nitrogen oxides (NO_x) from electric generating combined cycle turbines subject to the new source review program that reflect the use of best available control technology (BACT).

BACKGROUND

Virginia, like many other states, is experiencing growth in new power plant permit applications or proposals for planned facilities. These new plants cumulatively can emit very large quantities of NO_x and jeopardize the goals of the Commonwealth's State Implementation Plan (SIP) for the attainment and maintenance of the ozone National Ambient Air Quality Standard (NAAQS). The NO_x SIP Call issued by the U. S. Environmental Protection Agency mandates reduced NO_x emissions to help eliminate the ozone transport problem. The new 8-hr ozone NAAQS is likely to create additional ozone nonattainment areas and the need for additional emissions reductions. It has become increasingly important to carefully manage the growth of new emissions and changes in air quality.

The control technologies being used in this industry to control NO_x emissions include combustion controls and post-combustion controls. Over the past few years, the use of these control technologies has become almost routine for electric generating combined cycle turbines, and the controlled NO_x emission rates have been continuously improving.

RATIONALE

Virginia has recently received numerous permit applications to construct new electric generating power plants. Many of these plants will use combined cycle turbines. Since the emission units are similar, and since they are all contained in a limited geographic area (Virginia), it can reasonably be expected that case-by-case BACT determinations for all these sources will yield similar results. Virginia has already issued permits with the same NO_x BACT limits as those set forth in this policy. The BACT limits in those permits were based on review of the case-by-case BACT analyses. Thus, the BACT determination in this policy has already been established for similar permitting cases in Virginia.

Since implementation of the Board's new source permitting program is decentralized, a guideline articulating expected BACT results not only will expedite permit processing, but will also aid in fostering consistency in permitting practices throughout the state. This policy will help sources in planning, as it will inform them as to what is generally considered to be BACT. This policy preserves the concept of case-by-case BACT and allows sources to justify and request a different BACT for their turbines.

Several other states have begun establishing BACT by policy, either explicitly or implicitly through their permitting practices. For instance, the California Air Resources Board's "Guidance for Power Plant Siting and Best Available Control Technology" (September 1999) contains very detailed, specific BACT limits for turbines emitting criteria pollutants. The control technology is readily available, and permits have been issued by other states at even lower emission limits than those set forth in this policy.

GENERAL REFERENCES

Regulations for the Control and Abatement of Air Pollution (9 VAC 5-10 through 9 VAC 5-80) (hereinafter the regulations), specifically: Article 4 (9 VAC 5-50-240 et seq.) of 9 VAC 5 Chapter 50 and Articles 6 (9 VAC 5-80-1100 et seq.) and 8 (9 VAC 5-80-1700 et seq.) of 9 VAC 5 Chapter 80

LOCATION OF REFERENCED DOCUMENTS

The regulations are available for viewing at any regional office of the department and copies are available upon request from the central office of the department. A nominal fee may be required.

REVISION

None.

CONTACT

The following individuals may be contacted about any questions or decisions regarding this policy:

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DEFINITIONS

As used in this document, all terms not defined herein shall have the meaning given them in the regulations, unless otherwise required by context.

“Electric generating combined cycle turbine” means an internal combustion engine with an air compressor, a burner, and a power turbine that, through a balance of mechanical energy, creates electricity. Unlike a simple cycle turbine, a combined cycle turbine does not emit hot exhaust gases directly into the atmosphere but instead ducts them through a waste heat boiler to generate steam. This steam is then used to drive a steam turbine generator to make additional electricity.

“Ppmdv” means parts per million, as measured in dry volume.

STATEMENT OF POLICY

The limits that reflect BACT for emissions of NO_x from electric generating combined cycle turbines subject to the new source review program shall be as follows:

- 2.5 ppmdv or less @ 15% O₂ for short term averaging, while combusting natural gas.
- 6 ppmdv or less @ 15% O₂ for short term averaging, while combusting distillate oil.

In addition to the short term averaging limit, the Department may include additional long term averaging limits as appropriate to protect air quality.

The determination of BACT is a dynamic process due to the rapidly changing technology for this industry. Therefore, nothing in this policy shall be construed to prevent the Department from making a BACT determination and issuing a permit that would require the use of more or less restrictive emissions limits than those specified herein. BACT is a case-by-case determination based on the technical and economic feasibility of control alternatives, and, in rare cases, a different BACT limit may be established. In such cases, the Department may issue a permit with an alternative BACT determination. The supporting documentation for such permits shall contain convincing justification to support the alternative BACT determination, particularly when unusual circumstances specific to a facility make it appropriate to establish a BACT limit less restrictive than that indicated by this policy. If the permit applicant fails to provide convincing justification that

such unusual circumstances exist, that applicant must install control technology that achieves the emission limit set forth in this policy.

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