

August 20, 1991

MEMORANDUM

Subject: Kamine Development Corporation's (KDC) Request for a Prevention of Significant Deterioration (PSD) Innovative Control Technology Waiver

From: Ed Lillis, Chief
Permits Program Branch (MD-15)

To: Kenneth Eng, Chief
Air Compliance Branch (2AWM-AC)

This is in response to a request from Clara Poffenberger, Office of Air Quality Planning and Standards, Stationary Source Compliance Division to review the PSD innovative control technology waiver (ICT) requested by KDC. The review focused on three issues: whether an ICT waiver is applicable for the proposed control technology, whether an ICT waiver should be granted to each of three KDC projects, and comments on the draft ICT waiver.

The KDC is proposing to construct the following cogeneration projects in the State of New York:

Syracuse Cogeneration Project (KDC No. 105)
Beaver Falls Cogeneration Project (KDC No. 106)
South Corning Cogeneration Project (KDC No. 108)

All three of these facilities will be of similar design and a Siemens V64.3 gas fired turbine will be installed at each facility.

The KDC has requested an ICT waiver that would allow oxides of nitrogen (NOx) emissions from the gas fired turbines to be controlled by dry low Nox combustion technology instead of using selective catalytic reduction (SCR). The goal of the proposed dry low NOx combustion technology is to achieve a NOx emission limit of 9 parts per million (ppm). For the majority of turbines, a 9 ppm NOx emission limit can only be achieved by using SCR. The one exception is the Siemens V84.2 model turbine which can be purchased with a guaranteed NOx emission limit of 9 ppm by using dry low NOx control technology. San Diego Gas and Electric has an option with Siemens for a V84.2 model turbine that will comply with a 9 ppm NOx emission limit. However, the turbine has not been installed. Therefore, this type of control technology has not been demonstrated on either the V84.2 or V64.3 model.

As you know, an ICT waiver determination is made on a case- by-case basis. In order for a technology to qualify for an ICT waiver it must meet both the provisions of 40 Code of Federal Regulations (CFR) 52.21(b)(19) and Agency policy or, where appropriate, the applicable State Implementation Plan definition.

"Innovative control technology" is defined as any system of air pollution control that has not been adequately demonstrated in practice, but would have a substantial likelihood of achieving greater continuous emissions reduction than any control system in current practice or of achieving at least comparable reductions at lower cost in terms of energy, economics, or nonair quality environmental impacts. Thus, the control technology proposed by KDC qualifies for an ICT waiver because the dry low NO_x emission control technology has not been demonstrated and, if successful, will achieve comparable emission reductions to that of SCR at a lower cost in terms of economics.

The request for an ICT waiver for each of the three KDC projects is unique. In the past, only a limited number of ICT waivers for a specific control technology have been approved and these waivers were applicable to only the facility demonstrating the control technology. Unless each turbine is to be permitted at approximately the same time it is not clear that each of the projects should be given the waiver. The rationale for this determination is that once a waiver for a source has been approved the subsequent applications are no longer "innovative."

There are unique characteristics about this particular situation however that may warrant granting an ICT waiver for the additional two projects. These characteristics are: KDC owns all three projects and all of the projects will be permitted by the same agency; the use of the same control technology at all three projects should reduce the amount of time required to demonstrate the technology, and most importantly the projects are proposed to be constructed at approximately the same time. Consequently, approval of an ICT waiver for the remaining two projects is possible provided that each additional project is constructed on a schedule coinciding with the construction and testing of the first permitted project.

The following are specific comments on the draft ICT waiver for KDC. The duration of the waiver should be definite. As written, the waiver may last from 2 to 4 years. Unless there are source specific conditions we are not aware of, it is recommended that the waiver be granted for 2 years. The rationale is that the various technologies (e.g., optimum pilot fuel flow, steam injection into the combustor, water or steam injection into the pilot flame, and combinations of the above) that comprise the dry low NO_x control technology have already been identified by Siemens. In addition, KDC will have three sites at which the various technologies can be tested. Therefore it should not require 4 years to test these various technologies or any combination thereof. It is also recommended that KDC be required to provide a detailed test program describing when, where and which technologies will be tested. Based on its experience with the V84.2 model, Siemens should already have an idea of which and in what order it wants to test the above mentioned technologies. In addition, the KDC should submit written periodic reports (e.g. at least an annual report) outlining the progress made to achieve the 9 ppm NO_x emission limit. Furthermore, it is recommended that the number and duration of allowable NO_x emission excursions above 25 ppm be specified.

Lastly, we recommend that the KDC should be specifically required to design the heat recovery steam generator (HRSG) such that it can be readily retrofitted in the event that the ICT does not meet the permitted emission limit. This requirement would drastically reduce the time and cost of retrofitting the turbines if the dry low NOx control technology proved unsatisfactory. The additional capital cost of designing and purchasing a HRSG with additional space should be minimal, especially when compared to retrofit costs. Also, the additional space may provide a small increase in the efficiency of the cogeneration facility without the SCR installed.

If you have any questions, please do not hesitate to contact Larry Elmore at FTS 629-5433.

cc: Clara Poffenberger, SSCD