UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 8, 1999

David J. Modeen, Director, Engineering
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, N.W., Suite 400
Washington, DC 20006-3708

Reference: March 31, 1999, letter to David Modeen from Gary Holahan

Dear Mr. Modeen:

At the October 7, 1999, meeting regarding oxidation of fuel cladding, the Nuclear Energy Institute (NEI) representatives presented to the staff some recent research results regarding cladding performance. NEI offered the position that the 17 percent oxidation limit contained in 10 CFR 50.46 was unclear and that the underlying purpose of the regulation could be satisfied with various interpretations of this regulation. In the course of a meeting, you asked my staff for a clear statement of our position on how the NRC expects the industry to interpret the 17 percent limit on oxidation in view of these research results.

We have reviewed our position provided in my March 31, 1999, letter to you on this subject, in light of the information discussed at the meeting. Our position is that the 17 percent refers to the "total" oxidation of the cladding, thus encompassing accident and pre-accident oxidation. Although the research results presented by NEI reflect a possible basis for considering changes to the regulations, those results do not change the regulatory requirement for licensees to ensure that total cladding oxidation does not exceed 17 percent.

As discussed on pages 1096 and 1097 of the Opinion of the Commission, CLI-73-39, 6 AEC 1085, dated December 28, 1973, the Commission adopted a regulatory limit on oxidation consistent with a Westinghouse approach which places a limit on the amount of oxidized material in the clad. The Commission stated that this approach was equivalent to an approach recommended by Combustion Engineering which would have placed a limit only on the remaining unoxidized material in the clad. The Combustion Engineering approach implicitly accounts for pre-accident oxidation since it is only concerned with the remaining unoxidized material (i.e., imposing a limit on the unoxidized material effectively imposes a limit on all the oxidized material regardless of how or when the oxidation took place). Therefore, since the Commission equated these two approaches, and since the Combustion Engineering approach accounts for pre-accident oxidation, the Commission also intended to include pre-accident oxidation in the limit it adopted. As a consequence the words of the regulation refer to "total" oxidation.

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We are prepared to discuss the above with you further as necessary. If I can be of further assistance, please feel free to contact me at 301-415-2884.

Sincerely,

/s/

Gary M. Holahan, Director
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

Project No. 689

cc: See next page

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