



NUCLEAR ENERGY INSTITUTE

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August 1, 2002

Mr. M. Wayne Hodges, Deputy Director
Technical Review Directorate
Spent Fuel Project Office
Office of Nuclear Material Safety and
Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Hodges:

During a workshop held in 1999, representatives from the Spent Fuel Project Office (SFPO) and industry agreed that resolution of the "high-burnup spent fuel" issue should receive the highest priority, with the next highest priority being the "burnup credit" issue. Industry believes that very significant progress has been achieved on resolution of storing high-burnup fuels, through the issuance of ISG-11, Revision 2 (or ISG-15, Revision 1) on July 31, 2002. Work remains to be done on resolution of transporting high burnup fuel. The industry now believes that it is timely to focus additional resources on the "burnup credit" issue.

In 2000, the Office of NRC Research sponsored a PIRT Panel, the recommendations of which are documented in the February 20, 2001 letter from Ashok C. Thadani, Director, NRR, to William F. Kane, Director, NMSS.¹ NEI's understanding, based on Dr. C. Withee's presentation at the NEI Forum,² is that Revision 2 of ISG-8 is scheduled to be released in September 2002. This revision is expected to address four limitations that presently exist in ISG-8, Revision 1. The changes under consideration are:

- Establishing a range of cooling times
- Supporting initial enrichments up to 5 wt% U-235 without a loading offset

¹ Research Information Letter RIL-178 "Burnup Credit for Transport and Dry Cask Storage of PWR Spent Fuel"

² "Status of Burnup Credit", by Carl Withee, NRC, Spent Fuel Project Office, 15-16 May, Naples, Florida

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- Including burnable absorbers and control rod effects
- Allowing the use of YAEK-1937 as a source for selection of axial burnup profiles

We understand that, on the basis of presentations recently made at the IAEA Workshop on Burnup Credit³ and at the NEI Dry Storage Forum, the SFPO is leaning toward making the changes identified above.

Second, several limiting technical issues remain to be addressed. They are:

- Including the effects of fission products
- Allowing credit for burnup in excess of 40 GWd/MTU
- Providing for BWR (and possibly MOX) applications

Third and finally, several issues with practical implications with regard to the implementation of the technology will also need to be addressed:

- Allowing burnup to be verified without necessarily requiring measurements, i.e., reliance on reactor records, or on some verification step indicating that the burnup is within a pre-defined, accepted burnup envelope
- Providing for standard parameters and benchmark methodologies, and support for standard isotopic depletion codes.

Based on previous discussions among NRC, DOE, EPRI, much progress could be achieved in a relatively short time by getting access to data generated by COGEMA and IRSN in France, referred to as the French data. Preliminary discussions have been held first between COGEMA/IRSN and EPRI in October 2001, and second among COGEMA, DOE, EPRI, and ORNL in April 2002 during the IAEA workshop. Following the IAEA workshop, ORNL shared with EPRI and DOE a document⁴ that provided specific recommendations with regard to the value of the French data.

Access to the "French" data will require that sufficient resources (financial and manpower) be made available. We expect that funding at ~\$1M/year for several years would be needed to access the French data. Industry, through EPRI, is planning to provide resources for this endeavor. We understand that DOE plans to provide funding, and we encourage NRC to do the same.

³ "Research to Support Expansion of U.S. Regulatory Position on Burnup Credit for Transport and Dry Cask Storage", by Cecil Parks, Oak Ridge National Laboratory, 22-26 April, Madrid, Spain

⁴ "Recommendations on Acquisition of Experimental Data from French Burnup Credit Program" by C.V. Parks, B.L. Broadhead, and I.C. Gauld, Oak Ridge National Laboratory, June 28, 2000 transmitted by letter dated May 23, 2002, from C. Parks to W. Lake and A. Machiels.

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At this time, we urge that a small group of representatives from the NRC, ORNL, DOE, and EPRI put some additional definition on the recommendations made by ORNL, and define the expected progress to be achieved with access to the French data. EPRI plans to contact COGEMA and IRSN in the near future, and solicit a proposal from these organizations.

We are looking forward to hearing from you about the proposed approach, and stand ready to facilitate industry's participation.

Sincerely,

A handwritten signature in cursive script, appearing to read "Lynnette Hendricks", followed by a horizontal flourish.

Lynnette Hendricks

cc: Ashok Thadani, RES
William Magwood, DOE
Albert Machiels, EPRI