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

MAR 08 1984

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MEMORANDUM FOR: Enrico F. Conti, Chief
Waste Management Branch
Division of Health, Siting and
Waste Management

FROM: Michael Tokar
Engineering Branch
Division of Waste Management

SUBJECT: EXTENDED FUEL BURNUP

Regarding your February 22, 1984 memorandum to Robert E. Browning concerning extended burnup, I feel a need to comment on your statement that "the NRC has already authorized three utilities, North Anna, Surry and Calvert Cliffs to load and use fuel intended for burnup to 45 GWd/MTU." It is true that some plants, including those you mention, have announced an intention to operate fuel beyond the traditional ~36-38 GWd/MTU level , but the NRC has not actually approved an extension to 45 GWd/MTU. While some fuel currently in operation (in Calvert Cliffs, for example) may be scheduled to accumulate 45 GWd/MTU batch average discharge burnup, NRR is currently reviewing vendor topical reports that are supposed to provide the technical support for such an extension. That review has not been completed, and the reports have not been approved. Therefore, authorization for 45 GWd/MTU has not, to my knowledge, been granted anywhere as yet. Since it usually takes three or more cycles of operation before 36-38 GWd/MTU burnup is achieved, and since in the Calvert Cliffs case the fuel is still only in the second cycle of operation, there should be sufficient time for NRR to complete its review before the fuel reaches the 36-38 GWd/MTU burnup range.

I had the lead responsibility for the extended burnup technical review while I was in the Core Performance Branch in NRR. At the time I left NRR, our position was that we believed extended burnup to be licensible and that there did not appear to be a particular burnup limit at which some catastrophic damage mechanism would occur. We believed that it was necessary to document the information with appropriate safety analyses to support that conclusion. It is my understanding that Battelle Northwest Laboratories is reviewing topical reports containing such information from each of the 5 fuel vendors (B&W, C-E, ENC, GE, & W), on extended burnup under a technical assistance program for NRR that ends this fiscal year.

I am enclosing for your information a copy of a paper I co-authored with Lester Rubenstein (the Assistant Director for Core and Plant Systems, NRR) that we presented at a special ANS meeting on extended burnup in Williamsburg, VA two

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years ago. The paper presented NRR's position on the licensibility of extended burnup fuel. I also initiated NRR's response to the PEPI petition for an Environmental Assessment on extended burnup. NRR information on that subject was provided to RES in February 1983 via a memorandum that I prepared from Roger Mattson to Frank Arsenault.

As you can see, I am reasonably familiar with the background and current status of extended burnup as a licensing issue in NRR. If I can be of assistance in providing you information on this subject, please let me know.

Michael Tokar

Michael Tokar
Engineering Branch
Division of Waste Management

Enclosure:
As stated

cc: R. E. Browning

Volume 2

Proceedings: The American Nuclear Society

Topical Meeting on

LWR EXTENDED BURNUP – FUEL PERFORMANCE AND UTILIZATION

Sponsored by

ANS Virginia Section
ANS Fuel Cycle & Waste Management Division
ANS Material Science & Technology Division
The U. S. Department of Energy

THE WILLIAMSBURG HOSPITALITY HOUSE
Williamsburg, Virginia

April 4-8, 1982