



Department of Energy
Washington, DC 20585

June 28, 1993

Mr. Robert M. Bernero
Director
Office of Nuclear Materials Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Bernero:

The Nuclear Regulatory Commission (NRC), the Nuclear Waste Technical Review Board, and the nuclear utilities have expressed concern over the many different designs of at-reactor storage technologies and have encouraged the Office of Civilian Radioactive Waste Management (OCRWM) to take steps to ensure compatibility at the interface between spent fuel storage systems at reactor sites and the Federal spent fuel management system. Specifically, there has been a desire by all parties to simplify the transfer of the spent fuel to the Department by reducing the necessity for repeated handling of individual spent fuel assemblies and to eliminate the need to return spent fuel in dry storage to reactor pools for transfer to transport packages prior to shipment to a Federal facility. The use of a single unit which would be loaded and sealed at the reactor and used for storage, transport, and disposal without ever being opened has been suggested as an efficient mechanism to address this concern.

OCRWM has initiated the development of a multi-purpose canister (MPC) system, the principal component of which is a canister accommodating multiple spent fuel assemblies arranged in a support structure or fuel basket within the canister. It would be loaded and sealed at the reactor, and combined with other components such as storage modules, transport casks, and disposal overpacks to provide for storage, transportation, and disposal of the spent fuel. Each combination of an MPC and its component systems would be licensed (or certified) by the NRC under the appropriate regulations for storage and transportation (i.e., 10 CFR Parts 72 and 71) and designed to be compatible with disposal (pursuant to 10 CFR Part 60). This Office plans to investigate the MPC as a high priority initiative and plans to reach a decision with regard to developing MPC certified designs and a prototype of such a system this fall so that MPC's could be fabricated and deployed by 1998.

We are in the process of identifying and reviewing the technical issues that might significantly affect the development of the concept. The economics, which include costs to the electric utility ratepayers, and institutional acceptability of the MPC concept is substantially enhanced as the number of

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spent nuclear fuel assemblies in each container is increased. An important technical issue that we have identified for the MPC is using burnup credit in criticality control. OCRWM has vigorously pursued this issue for several years; however, the focus of these activities has been directed to the certification of transportation casks with some attention paid to the application of burnup credit to spent fuel storage criticality control.

The introduction of the MPC concept has given us cause to reassess our approach to resolving the issue of burnup credit which requires consideration of both short-term and long-term phenomena. We believe all the short-term issues that affect transport and storage have been identified, well defined, and potentially resolved. The long-term issues, important to disposal, have not been pursued as thoroughly.

Our interactions with the transportation and storage staffs of the NRC have been productive, and we believe now is the time to initiate a more broadly based involvement with NRC technical staff to address the wider applicability of burnup credit as decisive resolution of the burnup credit issue could significantly affect the success of the MPC concept.

OCRWM has focused its efforts on resolving the burnup credit issue for transportation and has considered the approval of burnup credit for storage as a natural consequence of NRC's approval of burnup credit for transportation. Storage and transportation systems will be required for the startup of the Civilian Radioactive Waste Management System whereas the waste package for disposal will not be required until considerably later when waste emplacement begins. Therefore, the issue of burnup credit for disposal was treated as an issue to be addressed later. Introduction of the MPC concept requires the issue of burnup credit for disposal to be resolved on a schedule similar to that for storage and transportation.

I would like to meet with you at your earliest convenience to present the current development status of the MPC and to discuss the technical issues which must be resolved with emphasis on burnup credit. I would also like to discuss establishment of a process to assure interactions between our staffs at all levels on all issues related to the applicability of burnup credit for storage, transportation, and disposal. These technical exchanges should cross all regulatory areas and should include NRC reactor licensing staff since loading operations will be performed at 10 CFR Part 50 licensed facilities.

Our immediate objective is to discuss with NRC's staff the viability of the MPC concept and how it may enhance the management of spent nuclear fuel. As the effectiveness of the MPC relies heavily on the use of burnup credit for criticality control, attainment of our objective requires a broad-based evaluation of burnup credit technical issues by the appropriate NRC staff.

Although it is clearly our role and responsibility to design and develop the MPC, and yours to review and license, discussions between our two organizations could expedite the development process and improve the safety and efficiency of the MPC system. I will call you in a few days to schedule a meeting.

Sincerely,



Lake H. Barrett, Acting Director
Office of Civilian Radioactive
Waste Management

cc:

T. Murley, Nuclear Regulatory Commission
H. Thompson, Jr., Nuclear Regulatory Commission
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