



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

January 25, 1999

Mr. Lake H. Barrett, Acting Director
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

SUBJECT: U.S. DEPARTMENT OF ENERGY PLANS FOR DISPOSAL OF SURPLUS
WEAPONS PLUTONIUM

Reference: Letter of December 10, 1998, from L. Barrett, DOE, to C. Paperiello, NRC

Dear Mr. Barrett:

I am writing in response to the referenced letter regarding U.S. Department of Energy (DOE) plans for disposition of a portion of the weapons-usable plutonium declared surplus to National defense needs. Specifically, you requested that the U.S. Nuclear Regulatory Commission (NRC) inform DOE of any potential legal or regulatory provisions that would prevent disposal of immobilized surplus plutonium waste forms and packages in a monitored geologic repository.

As you are aware, in 1995 NRC staff held a series of meetings with DOE's Office of Fissile Materials Disposition to discuss alternatives under consideration by DOE for disposition of surplus weapons plutonium. These discussions included the reactor and immobilization alternatives that would involve the ultimate disposal of materials (e.g., spent mixed oxide fuel, plutonium immobilized in glass) in a high-level waste repository. Since 1995, the staff has followed both the evolution and maturation of DOE's strategy for surplus weapons plutonium disposition, including the decision by DOE in 1997 to pursue disposition of some surplus plutonium by immobilization in glass or ceramic waste forms as envisioned in the "can-in-canister" concept.

The staff is not aware of any existing legal or regulatory provisions that would prevent disposal of immobilized plutonium waste forms in a high-level waste repository. The detailed technical evaluation of these waste forms, their packaging, and the principal issues related to these wastes (i.e., criticality, safeguards, and impact on repository performance) cannot be performed until DOE finalizes its waste package, engineered barrier, and repository designs and submits its pending license application for the planned high-level waste repository at Yucca Mountain, Nevada. The staff recognizes that the canisters with immobilized plutonium will constitute only a small fraction of both the total fissile material (including the fissile plutonium in commercial spent fuel) and radionuclide inventory in the repository and that likely potential impacts from these canisters are expected to be correspondingly small.

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L. Barrett

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January 25, 1999

Thus, the staff believes that, with adequate canister and package design features and appropriate measures to address the aforementioned principal issues related to these wastes, the immobilized plutonium waste forms can be acceptable for disposal in a high-level waste repository.

Please advise if you have any questions regarding this letter.

Sincerely,



Carl J. Paperiello, Director
Office of Nuclear Material Safety
and Safeguards

Thus, the staff believes that, with adequate canister and package design features and appropriate measures to address the aforementioned principal issues related to these wastes, the immobilized plutonium waste forms can be acceptable for disposal in a high-level waste repository.

Please advise if you have any questions regarding this letter.

Sincerely,

(Original signed by M. Virgilio for)

Carl J. Paperiello, Director
Office of Nuclear Material Safety
and Safeguards

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