

PETITION BY THE U.S. DEPARTMENT OF ENERGY FOR AN NRC RULE-
MAKING TO EXEMPT CANISTERS OF VITRIFIED HIGH-LEVEL WASTE
FROM THE REQUIREMENTS OF 10 CFR 71.63(b)

Docket No. _____

1.0 INTRODUCTION

Title 10 of the Code of Federal Regulations, Part 71 - Packaging and Transportation of Radioactive Material (10 CFR Part 71) - specifies special requirements for plutonium shipments. 10 CFR 71.63(b) requires that plutonium in excess of 20 curies per package must be packaged in a separate inner container placed within outer packaging that meets the requirements of Subparts E and F for packaging of material in normal form. In addition, if the entire package is subjected to the tests specified in Parts 71.71 and 71.73, the inner container must meet certain containment requirements for normal and hypothetical accident conditions. However, 10 CFR 71.63(b) exempts solid plutonium in the following forms from these requirements:

- (1) Reactor fuel elements
- (2) Metal or metal alloy, and
- (3) Other plutonium bearing solids that the Commission determines should be exempt from the requirements of this section [i.e. 10 CFR 71.63(b)].

High-Level Waste, generally existing in the form of liquid or sludge, will be solidified (vitrified) in the form of borosilicate glass contained in stainless steel canisters and transported to a geologic repository for disposal. These canisters will contain quantities of plutonium which are in excess of the 20 curie threshold limit, so that 10 CFR 71.63(b) requirements are applicable to the shipment of these HLW canisters. The Department of Energy (DOE) considers that the canisters containing vitrified HLW have containment properties at least comparable to those of reactor fuel elements; therefore, they should be exempted from the requirements of 10 CFR 71.63(b), analogous to the exemption provided for reactor fuel elements. Through this petition for rulemaking (PRM), DOE seeks such an exemption for HLW canisters and to document such an exemption in the form of an amended 10 CFR, Part 71.63(b).

This petition includes the information to be provided for a PRM in accordance with the requirements of 10 CFR 2.802 (c). The proposed amendments to the current regulation, 10 CFR Part 71, are included in Section 2, the grounds for and DOE's interest in the action requested are described in Section 3, and a discussion of the specific issues involved, supporting arguments, and relevant information are provided in the attached Technical Justification document.

2.0 PROPOSED AMENDMENT TO 10 CFR 71.63(b)

The following specific amendment to 10 CFR 71.63(b) is proposed.

Revise the last sentence of 10 CFR 71.63(b) as follows:

"Solid plutonium in the following forms is exempt from the requirements of this paragraph:

- (1) Reactor fuel elements;
- (2) Metal or metal alloy
- (3) Canisters containing vitrified high-level waste; and
- (4) Other plutonium bearing solids that the Commission determines should be exempt from the requirements of this section."

3.0 PETITIONER'S GROUNDS FOR AND INTEREST IN THE PETITION

This section describes the DOE's grounds for and interest in the action requested.

The DOE will be the licensee for a geologic repository developed pursuant to the Nuclear Waste Policy Act, as amended, for the disposal of spent nuclear fuel and high level waste.

Most of the HLW has been produced as a result of defense-related atomic energy activities; the remainder is HLW from the West Valley Demonstration Project resulting from commercial reprocessing. According to current plans, HLW in the form of canisters containing borosilicate glass will be shipped directly to the geologic repository in casks certified by the Nuclear Regulatory Commission. As such, these casks will be subject to the requirements of 10 CFR Part 71. Specifically, 10 CFR 71.63(b) requires that "plutonium in excess of 20 curies per package must be packaged in a separate inner container placed within outer packaging that meets the requirements of Subparts E and F." However, solid plutonium in the following forms is exempt from the requirements of Part 71.63(b):

- (1) Reactor fuel elements;
- (2) Metal or metal alloy; and
- (3) Other plutonium bearing solids that the Commission determines should be exempt from the requirements of this section.

As described in detail in the attached Technical Justification document, a separate inner container is unnecessary for the HLW because of the high degree of confinement provided by the stainless steel waste canister and the nonrespirability of the solid, plutonium-bearing waste form. An exemption has been provided for reactor fuel elements from the double containment requirement. It is DOE's position that the HLW canisters containing the vitrified waste are at least as good as reactor fuel elements in terms of physical integrity of the waste form and containment of its plutonium contents. Imposition of Part 71.63(b)

requirements on the HLW canisters would provide no significant increases in overall safety of the transportation package, and would result in increased program cost and complexity.

Through this petition for rulemaking, DOE is seeking an exemption for canisters containing vitrified high-level waste from the requirements of 10 CFR 71.63(b), analogous to that provided for reactor fuel elements. DOE requests that such an exemption be formally documented in an amended Part 71 by specifically including vitrified HLW canisters in the list of solid plutonium forms that are exempted from the requirements of Part 71.63(b).

4.0 SUPPORTING INFORMATION

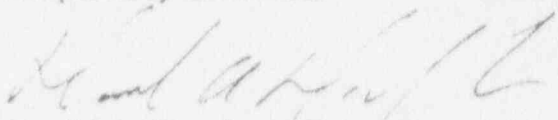
A discussion of the specific issues involved in the petition, supporting arguments, and other relevant information is given in the attached Technical Justification.

5.0 CONCLUSION

Because the proposed HLW form provides a comparable level of protection of public health and safety as does spent fuel contained in an NRC-certified cask, the requirement of a separate inner container for HLW represents an unduly burdensome rule. Exemption from the double containment requirement is needed in order for the DOE to efficiently carry out its mission to dispose of HLW in a deep geologic repository (in accordance with the Nuclear Waste Policy Act, as amended). Based on the confinement capability of the canister and the experimentally demonstrated nondispersibility of the waste form, it has been shown that the vitrified HLW canisters are comparable as a waste form to Reactor Fuel Elements, which are exempted from the requirements of 10 CFR 71.63(b). Accordingly, the vitrified HLW canisters qualify for exemption from the requirements of 10 CFR 71.63(b).

Based on the information presented, DOE petitions the Commission to amend 10 CFR Part 71 to include canisters containing vitrified HLW canisters in the exempted list of solid forms of plutonium, in accordance with the proposed amendment presented in Section 2.

Respectfully Submitted,


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Dated 11/30/93