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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 3, 1995

Mr. Charles E. Bradley, Jr.
Office of Uranium Programs
Office of Nuclear Energy
U.S. Department of Energy
NE-33, Germantown Bldg
Washington, DC 20585

Dear Mr. Bradley:

This is in response to the U.S. Department of Energy's (DOE's) recent request for recommendations on the potential uses for, and technologies that could facilitate the long-term management of, depleted uranium hexafluoride (DUF₆) stored at the Paducah, Kentucky, and Portsmouth, Ohio, gaseous diffusion plants and at the Oak Ridge Reservation in Tennessee (59 FR 56324, November 10, 1994). The U.S. Nuclear Regulatory Commission's interest in the disposition of DUF₆ at these facilities stems from our responsibilities under the Energy Policy Act of 1992 and the effect that the long-term management strategy(s) chosen by DOE for DUF₆ at DOE's facilities may have on the management of DUF₆ at facilities under the Commission's jurisdiction, that is, the U.S. Enrichment Corporation plants and the proposed Louisiana Energy Services, Claiborne Enrichment Center.

HRC staff has not developed recommendations on the potential uses for DOE's DUF₆. Although beneficial uses of the DUF₆ may be forthcoming in the future, HRC staff believes that, because of the current, excess world-wide inventory of DUF₆, DOE should assume that a significant portion of both DOE and commercial DUF₆ will require disposal as waste. Disposal of the DUF₆ will likely require conversion of the material to a more stable physiochemical form, such as U₃O₈. HRC staff has recommended in the past that U₃O₈, which is thermodynamically stable and relatively insoluble, is a likely form for disposal. Although DU₃O₈ could be disposed of in limited quantities in conventional near-surface disposal facilities, the very large quantities derived from a significant fraction of the nation's enrichment tailings indicate a need for a unique disposal facility. We have assumed that such a large quantity, in proper form, might well be disposed of in a mined cavity, perhaps an exhausted uranium mine, providing better containment for such a large quantity of depleted uranium.

The current storage methods employed at the Paducah, Portsmouth, and Oak Ridge facilities have demonstrated insignificant impacts from a health and safety standpoint for about fifty years. However, conversion of the DUF₆ to U₃O₈ could provide even safer intermediate storage for possible future use or eventual disposal.

Although we recognize that, currently, there is limited capacity for converting the DUF₆ to U₃O₈, and that a mined cavity for its disposal has yet

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to be developed, we believe that conversion of DUF_6 to U_3O_8 and placement of the material in a mined cavity, is one long-term management option that should be included in any evaluation of options by DOE for its DUF_6 .

If you have any questions concerning the staff's recommendation, please contact Michael F. Weber, of my staff, at (301) 415-7298.

Sincerely,

151 Robert F. Burnett for

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

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If you have any questions concerning the staff's recommendation, please contact Michael F. Weber, of my staff, at (301)-415-7298.

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
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