

July 8, 1997  
140

SECY-97-

FOR: The Commissioners

FROM: L. Joseph Callan /s/  
Executive Director for Operations

SUBJECT: MEMORANDUM OF UNDERSTANDING AND INTERAGENCY  
AGREEMENT, BETWEEN THE U.S. DEPARTMENT OF ENERGY  
AND THE U.S. NUCLEAR REGULATORY COMMISSION, ON  
ALUMINUM-BASED RESEARCH REACTOR SPENT NUCLEAR FUEL

PURPOSE:

To transmit to the Commission, for review and approval, the attached draft Memorandum of Understanding (MOU), and the attached draft Interagency Agreement (IA), between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy (DOE).

BACKGROUND:

Consistent with the requirements of the Nuclear Waste Policy Act of 1982, as amended, DOE is responsible for the safe disposal of the nation's current and expected inventory of spent nuclear fuel (SNF) in a licensed geologic repository. This inventory includes commercially generated SNF (i.e., from domestic power reactors), as well as the non-commercial SNF within DOE's jurisdiction. The inventory of non-commercial SNF is expected to include a projected 60 metric tonnes ( $1.3 \times 10^5$  pounds) of aluminum-based SNF from both domestic and foreign research reactors. This SNF will be managed at the DOE Savannah River site in South Carolina pending development of strategies for repository disposal.

CONTACT: Richard A. Weller, NMSS/DWM  
(301) 415-7287

The aluminum-based SNF is significantly different from commercial SNF in design, structure, materials of construction, and enrichment. While the aluminum-based SNF constitutes only a small fraction (about one percent by volume) of the total inventory of SNF anticipated for repository disposal, it warrants special consideration because of its unique characteristics. In particular, about three-quarters of the aluminum-based SNF are in the form of highly enriched uranium, with a uranium-235 enrichment of at least 20 percent and as high as 93 percent of total uranium.

This enrichment poses potential issues with respect to waste package design and long-term criticality control in the repository environment. Further, the construction of SNF with aluminum (either as cladding or as a uranium-aluminum alloy fuel material) renders the fuel more susceptible to corrosion than commercial SNF.

To address the above issues, DOE established a program for the development of a technical strategy for the interim management and ultimate disposition of all aluminum-based research reactor SNF. In early 1996, DOE expressed interest in briefing staff on the elements of its technology development program, and in March 1996, NRC and DOE staffs met to discuss DOE's alternative concepts for the management, treatment, and ultimate disposition of the aluminum-based SNF. As part of its technology development program, DOE was particularly interested in seeking the assistance of staff in identifying potential issues related to the ultimate disposition of SNF in a geologic repository. Accordingly, subsequent to the March 1996 meeting, staff began working with DOE to develop an MOU that would establish the framework for NRC to provide technical assistance to DOE in regard to the technology development program. NRC and DOE staffs have also jointly developed an IA to implement the MOU. Both staffs met again in October 1996 to discuss the details of NRC's involvement in the technology development program.

DOE plans to develop as many as 18 technical reports, over an 18- to 24-month period, for submittal to NRC for review and comment. Staff would review and provide comments on these reports to assist DOE in identifying potential issues related to the ultimate disposition of the aluminum-based SNF in a geologic repository (e.g., DOE concepts for criticality control). Staff believes that the level of effort for this technical assistance will necessitate a total of approximately one full-time equivalent per year, divided between staff and contractor support, for roughly the two-year period of involvement. Anticipated support for the project will be obtained from the

Center for Nuclear Waste Regulatory Analyses.

This MOU is entered into under the broad umbrella of the January 15, 1997, NRC/DOE MOU on "Cooperation in Support of Significant Projects and Activities." The January 15, 1997, MOU established the following funding policy: "NRC generally will not participate in projects and activities pertaining to DOE's responsibilities unless Congress appropriates resources to NRC for such activities. Exceptions will be considered by NRC on a case-by-case basis and only if DOE reimburses NRC for its full agency cost."

In SECY-95-012, "Reimbursement for Work Performed for Other Agencies," the Commission established a policy of charging full Agency costs in performing work for others that is not a part of NRC's statutory mission and for which NRC receives no appropriations. Recovery of full costs requires charging the license fee rate in effect at the time the work is performed to recover direct salary, benefits, travel, and an appropriate share of Agency overhead costs. Full-cost recovery also requires charging for direct contractual support costs.

#### DISCUSSION:

The staff has provided, for the Commission's review, the attached draft MOU and draft IA. The MOU and IA result from DOE/NRC technical and general counsel staffs' joint efforts. Further, as appropriate, the MOU and IA incorporate the changes specified in the June 19, 1997, Staff Requirements Memorandum for SECY-97-096, the MOU and IA between DOE and the NRC on the closure of the high-level waste storage tanks at the Savannah River site.

The MOU establishes a basic framework for NRC to provide technical assistance to DOE in regard to DOE's aluminum-based SNF technology development program. The IA implements the MOU. Provision of NRC technical assistance to DOE for DOE's aluminum-based SNF technology development program is not included in NRC's FY 1997 or FY 1998 budgets. Therefore, the IA associated with this MOU provides for NRC to be reimbursed for its full costs. Should funds to support this project be appropriated to NRC in the future, then the terms of the IA will be reassessed.

#### COORDINATION:

This paper has been coordinated with the Office of the General Counsel, and it has no legal objection. The Office of the Chief Financial Officer has also reviewed the paper and concurs.

RECOMMENDATION:

It is recommended that the Commission approve the signing of the attached MOU and IA.

L. Joseph Callan  
Executive Director  
for Operations

Attachments:

1. MOU
2. IA

ATTACHMENT 1  
MOU

ATTACHMENT 2  
IA