UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

March 18, 2010

The Honorable Gregory B. Jaczko
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: STATUS OF STAFF RULEMAKING EFFORTS FOR DEPLETED URANIUM AND OTHER UNIQUE WASTE STREAMS

Dear Chairman Jaczko:

During the 570th meeting of the Advisory Committee on Reactor Safeguards, March 4-6, 2010, we discussed the Status of Rulemaking for Depleted Uranium (DU) and Other Unique Waste Streams. Our Subcommittee on Radiation Protection and Nuclear Materials also discussed this matter during its meeting on December 16, 2009. During these meetings, we had the benefit of the documents referenced and discussions with the NRC staff and several industry representatives.

RECOMMENDATION

The staff should continue their efforts to risk-inform the regulations for disposal of DU based on site-specific, realistic performance assessments with appropriate consideration of uncertainties.

DISCUSSION

In Order CLI-05-20, dated October 19, 2005, regarding DU, the Commission directed the staff to consider whether the quantities of DU in the waste streams from uranium enrichment facilities warrant amending 10 CFR Part 61.55(a)(6) or the waste classification tables of section 61.55(a).

The staff conducted technical analyses for a variety of site characteristics and concluded that near-surface disposal of large quantities of DU can be appropriate in some cases, but cannot be done at all sites. The staff recommended a limited rulemaking to revise 10 CFR Part 61 to require a licensee or applicant to conduct site-specific analyses that address the characteristics of the site and the proposed waste form prior to disposal of large quantities of DU.

In September 2009, the staff conducted workshops in Bethesda, Maryland, and Salt Lake City, Utah to inform the public about the rulemaking status and the issues regarding unique low-level waste streams, including DU. The staff plans to develop interim guidance for use until rulemaking is complete and to offer public demonstrations of the models that support their efforts to date. The staff plans to respond to requests for technical assistance from Agreement States.

The staff should continue their efforts to risk-inform the regulations for disposal of DU based on site-specific, realistic performance assessments with appropriate consideration of uncertainties. The staff should focus their guidance on primary factors of the risk analysis, which would

include the quantities, physical and chemical forms of disposed DU, waste packaging and disposal technology designed to contain the DU in the disposal site, site-specific properties (geology, hydrology, and geochemistry of soils and geologic units) that influence the mobilization and transport of radioactive materials, local climatic conditions (arid vs. humid), depth of disposal, and cover technologies used to inhibit water infiltration and human intrusion.

The standards by which applications will be reviewed should be clearly articulated. For example, staff expectations for the treatment of data including explicit quantification of uncertainties should be provided. The proximity of potentially exposed members of the public should not be prescribed; instead, it should be treated in a probabilistic and risk-informed fashion. Scenarios used to estimate dose to members of the public should be based on realistic assumptions and mechanisms regarding release and transport, the fate of the DU and decay products in the environment, and the realistic likelihood of intrusion. These scenarios should also cover a range of site-specific conditions. The doses to members of the public and intruders and their uncertainties should be estimated over a time frame to be determined on a case-by-case site-specific basis, rather than by defining a fixed period of performance (e.g., 10,000 years).

We commend the staff for their extensive efforts aimed at informing the public and developing analytical tools to evaluate various disposal scenarios for DU and other unique waste streams. We look forward to future interactions and discussions with the staff on this subject.

Sincerely,

/RA/

Said Abdel-Khalik
Chairman

References:

1. NRC Memorandum and Order, CLI-05-20 regarding Depleted Uranium, Docket No. 70-3103-ML, 10/19/2005 (ML052930035)

2. NRC Staff Requirements Memorandum, SECY-08-0147 Response to Commission Order CLI-05-20 regarding Depleted Uranium, 03/18/2009 (ML090770988)

3. Memorandum to NRC Commission, SECY-08-0147 Response to Commission Order CLI-05-20 regarding Depleted Uranium, 10/07/2008 (ML081820762)

4. Description of NRC staff screening model for Analysis of Depleted Uranium Disposal, 10/07/2008 (ML081820800)

5. NUREG-1573, A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities – Recommendations of NRC's Performance Assessment Working Group, 10/31/2000 (ML003770778)

6. NRC staff presentations at the Public Workshop on Unique Waste Streams including Depleted Uranium, 09/2009 (ML092540365)

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Letter to the Honorable Gregory B Jaczko, Chairman, NRC, from Said Abdel-Khalik, Chairman, ACRS, dated March 18, 2010

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