



NUCLEAR ENERGY INSTITUTE

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August 7, 2009

Mr. Roy P. Zimmerman
Director
Office of Nuclear Security and Incident Response
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Updating the MC&A and security requirements for mixed oxide fuel

Project Number: 689

Dear Mr. Zimmerman,

The Nuclear Energy Institute (NEI)¹ is submitting the following information related to the U.S. Nuclear Regulatory Commission (NRC) efforts to update regulations regarding the Material Control & Accountability (MC&A) and security requirements for fuel-cycle facilities, especially those related to recycling spent nuclear fuel, fabricating mixed oxide fuel (MOX), and transportation of MOX. Second, the recently completed gap analysis SECY 09-0082 identifies risk informing Parts 73 and 74 as a high priority gap (Gap #8). Finally, we would like to provide some thoughts for your consideration as you proceed with these activities.

NEI appreciates the NRC's efforts to update these important regulations. A clear regulatory framework is needed to understand the requirements that a design must meet, which in turn affects both capital and operating cost estimates which inform the business case that needs to be understood as part of deployment decisions. To that end, industry would appreciate safeguards and security regulations regarding recycling facilities and transportation (primarily 10 CFR 73 and 10 CFR 74) to be updated by 2012. This is consistent with previous requests from NEI and letters from industry vendors to the NRC.

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

The timing is important, as the industry is moving forward with plans for the use of MOX fuel. The completion and operation of a recycling center may be years away, but the transportation and use of MOX fuel assemblies is planned to occur in the 2013-2014 time period. This is in support of demonstrating the technical, regulatory and economics of nuclear fuel recycling in the United States. Therefore, addressing the existing safeguards and security requirements associated with the transportation of fresh MOX fuel would be beneficial to industry if addressed on a more near-term timeframe than what is requested for recycling.

The NRC's gap analysis in SECY 09-0082 identifies risk informing Parts 73 and 74 as a high priority gap (Gap #8) that needs to be addressed and resolved in the technical basis. The staff also recognized that:

"The current quantity-based categorization scheme in the existing regulations may pose an undue regulatory burden in operating a reprocessing facility. Risk-informing 10 CFR 73, 'Physical Protection of Plants and Materials,' and 10 CFR 74, 'Material Control and Accounting of Special Nuclear Material,' is needed to prevent unintended consequences associated with a quantity-based material categorization scheme for potential materials resulting from a reprocessing operation."

These gaps are also consistent with industry reports to the U.S. Department of Energy (DOE) as part of the GNEP program. NEI generally supports and agrees with the staff assessment.

NEI believes the NRC should consider implementing a categorization scheme that considers additional factors in determining material attractiveness than currently exist in today's regulations. NEI believes, in the interest of efficiency and to support the potential near-term transportation of MOX fuel, the concepts of graded safeguards are sufficiently mature to take advantage of current rulemaking to begin incorporating these concepts now during ongoing rulemaking processes rather than delay and initiate subsequent rulemaking activity, which would be less efficient.

In SRM-2008-0059, the Commission stated that it "...continues to support not expanding MC&A requirements to americium and neptunium." In SECY 09-0082, dated May 28, 2009, the staff made the following comments:

"Additionally, applications that result in separate, pure streams of various transuranics, such as americium and neptunium, and others, as demonstrated in some uranium extraction (i.e., UREX+) reprocessing applications will require further evaluation. Currently, the NRC is devoting resources primarily toward establishing a regulatory framework for existing technology that can be used to reprocess and re-fabricate mixed-oxide fuel for recycling in light-water reactors."

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NEI requests that the NRC consider regulations which apply a graded safeguards approach to recycling facilities, fabrication and transport of MOX fuels within the 2012 timeframe. The NRC should work with the DOE on the "further evaluation" that is required, as described by the staff in the above quotation, for recycling facilities and transportation regulations that deal with other transuranic elements such as americium and neptunium. From NEI's perspective, addressing americium and neptunium is important, but the near-term issue is addressing the overall concept of material attractiveness in a graded approach to categorizing special nuclear materials.

As the NRC moves forward on these activities, it needs to consider the impact on all aspects of operations. This would include the waste streams as well as the product streams. The considerations should include the ability to have collocated but separate facilities which contain limited quantities of fissile material; i.e. laboratories, test loops, etc., which are distinct from the central processing facility and therefore be categorized differently and appropriately require a different level of safeguards and security. There should also be consideration for the wide range of facilities that would be impacted such as: independent spent fuel storage facility, recycling facilities, fabrication plant, research and test reactors, as well as production reactors. We understand there is also consideration for modification in the self-protecting criteria. As this criterion is considered, other aspects of material attractiveness should also be considered simultaneously as would be appropriate with many facilities such as research test reactors.

NEI appreciates the opportunity to bring these items to your attention and would be pleased to discuss them further in a public meeting before the end of September. Please provide a date which is most convenient to you for this meeting.

Sincerely,

A handwritten signature in black ink, appearing to read "Felix M. Killar, Jr.", written in a cursive style.

Felix M. Killar, Jr.

c: Mr. Michael F. Weber, Director Office of Nuclear Material Safety and Safeguards