ENERGY*SOLUTIONS*

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Michael Lesar, Chief
Rulemaking and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Comments on Potential Rulemaking for Safe Disposal of Unique Waste Streams Including Significant Quantities of Depleted Uranium – 74 FR 30175

Dear Mr. Lesar:

Energy*Solutions* is submitting these comments in response to the subject notice. Our comments are contained in the attachment. In general, we are supportive of not only the proposed rulemaking to require a performance assessment for a site disposing of significant quantities of depleted uranium, but also the NRC's approach in this matter. The workshop process was very helpful in clarifying some of the major issues, for example, how, if at all, to define unique waste streams other than depleted uranium.

We appreciate the opportunity afforded us to participate in the workshops held in Maryland and Utah and we applaud the Staff on the professional manner in which the workshops were conducted. The comments provided herein do not differ in substance from the comments we provided verbally during the workshops. In addition to documenting our position on several of the questions posed in the Federal Register notice, we have proposed specific regulatory language to implement our views.

Finally, there is one overarching comment that deserves emphasis, which is that the NRC should carefully balance the choice of what changes are made in its regulations *vis a vis* what changes should be incorporated in guidance. We believe that minimal changes to regulations are necessary to affect the desired outcome.

Thank you again for this opportunity to comment. Questions regarding these comments may be directed to me at (301) 957-3770 or temagette@energysolutions.com.

Sincerely,

Thomas E. Magette, P.E.
Senior Vice President
Nuclear Regulatory Strategy

SUNSI Review Complete
Template=ADM-013

E-RIDS=ADM-03
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Comments on Potential Rulemaking

Safe Disposal of Unique Waste Streams including Significant Quantities of Depleted Uranium

1. Requirement to Perform a Site-Specific Assessment – Energy*Solutions* supports the concept of a limited rulemaking to specify a requirement for a site-specific analysis and associated technical requirements for the disposal of significant quantities of depleted uranium as directed by the Commission in *Staff Requirements—SECY-08-0147—Response to Commission Order CLI-05-20 Regarding Depleted Uranium*. We believe the changes to the regulations to accomplish this direction are minimal and should include only:

a. Inclusion of the new requirement to prepare a site-specific performance assessment
b. Modification of 10 CFR 61 Subpart C to specify an intruder dose and a compliance period using updated dose methodology

We provide specific language below to implement these changes, as well as to address other issues raised either in the Federal Register notice or during the workshops. In our specific comments below, we also distinguish between items that should be addressed in regulations and those that are more appropriately addressed in guidance.

2. Period of Performance – The period of performance for the site-specific analysis should be addressed in NRC regulations. NRC regulations should establish a period of compliance in order to assure consistency in the assessment of compliance by all parties. Energy*Solutions* proposes the adoption of a compliance period of performance of 10,000 years. This is consistent with both existing NRC Guidance (e.g., NUREG-1573[1]) and federal regulations (40 CFR 191). In addition, recognizing that the peak dose may occur after this period, we recommend that the rule require a qualitative analysis if the peak occurs beyond 10,000 years for input into the analysis. This also is consistent with existing guidance as found in NUREG-1573 and NUREG-1854[2].

3. Intruder Dose – 10 CFR 61.42 currently requires "...protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste;" however, the regulations are silent on the specific dose standard to apply. A dose objective would assure consistency in the assessment of compliance by all parties. We recommend the inclusion of a dose standard for an intruder of 500 mrem/yr. This would formalize as a regulatory requirement the dose standard that currently is stated in guidance.

We would note that 500 mrem was the standard proposed in Part 61 in 1981 (46 FR 38081, July 24, 1981). The Statement of Considerations for the final rule identifies no objection to this dose standard. It apparently was removed at the request of EPA because of their concern regarding how one would monitor or demonstrate compliance with the standard, but not because EPA disagreed with the proposed dose (47 FR 57446, 57449, December 27, 1982).

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[1] *A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities*, U.S. Nuclear Regulatory Commission, NUREG-1573, October 2000.

[2] *NRC Staff Guidance for Activities Related to U.S. Department of Energy Waste Determinations*, U.S. Nuclear Regulatory Commission, NUREG-1854, August 2007.

A dose standard of 500 mrem/yr is also used as part of the license termination rule dose standard for intruders (10 CFR 20.1403).

We also recommend that the NRC further revise Subpart C, specifically Section 61.41, to update the annual dose methodology to the newer methodology of ICRP 26 and 30 used in 10 CFR Part 20. This is consistent with the approach taken in more recent NRC guidance, including NUREG-1573 and NUREG-1854.

4. Definition of Significant Quantity – The subject Federal Register notice sought input on how the NRC should define a "significant quantity" of depleted uranium. Energy*Solutions* does not believe it is necessary to define "significant quantity." This topic was the subject of much discussion in both workshops and, as several participants observed, there is little if anything to be gained by attempting to define a limit below which no site-specific assessment is necessary. The quantity of uranium that the NRC relied upon in developing the tables in Part 61.55 was approximately 60 tons. SECY-08-0147 refers to a lower limit of 1-10 tons below which no site-specific assessment would be required. Either of these limits, or any other the Commission is likely to adopt, would easily be exceeded at a facility that is disposing of depleted uranium from an enrichment or deconversion facility.

The language we provide below regarding the requirement to prepare a site-specific assessment is in our view sufficient to address how this issue should be addressed in the regulations, which is to say that the requirement should include no threshold.

5. Identification of Scenarios – NRC regulations in Part 61 already contain requirements regarding compliance with the performance objectives in Subpart C. 10 CFR 61.13, *Technical Analyses*, and Subpart C, *Performance Objectives*, specify pathways to be analyzed, require identification of disposal site characteristics and design features, and require the analysis of inadvertent intrusion, routine operations, likely accidents, and long-term stability of the disposal site. Details regarding how to select potential exposure scenarios are addressed in NRC guidance, e.g., NUREG-1573. Energy*Solutions* recommends that the NRC continue to follow this approach.

NRC should permit disposal site operators to justify site-specific assumptions and exposure scenarios based on reasonably foreseeable circumstances to evaluate the critical group that could reasonably encounter material that may be released from the disposal cell after the institutional control period. This could include residential use, farming, resident farming, or some other reasonable use consistent with the current environment of the specific site. For example, a site would not be expected or required to consider a groundwater pathway if the groundwater was not useable for irrigation or human consumption. In addition, the assumptions for the analyses would not need to project changes in society, the biosphere, human biology, or increases or decreases of human knowledge or technology except for foreseeable changes to the geology, hydrology, and climate based upon cautious, but reasonable assumptions of the changes in these factors that could affect the disposal site. The actual details for preparing performance assessments should be addressed in NRC guidance, which can be updated periodically as necessary.

6. Performance Assessment Update Frequency – Energy*Solutions* recommends that the NRC include a requirement that the site-specific performance assessment be updated at a frequency not to exceed once every 5 years. Updates may be more frequent as necessitated to demonstrate compliance with changes at the site not previously analyzed, but in the event that is not the case, the 5-year minimum would apply.

7. Definition of Unique Waste Streams – The subject Federal Register notice sought input on whether the NRC should define "unique waste streams." Energy*Solutions* recommends that the NRC not attempt to define unique waste streams. We believe that any attempt to define unique waste streams would be elusive and thus merely serve to divert attention and resources from more important activities. Over the course of four days of workshops, no proposed definition was offered that garnered even mild support from panelists or members of the public. More importantly, there is no need to define other unique waste streams. A sufficiently broad requirement for the preparation of a site-specific performance assessment will capture the suitability of a given site for the disposal of radioactive waste containing any isotopes whether or not they are addressed in the tables in 10 CFR 61.55(a).

8. Guidance vs. Regulations – Regulations provide for certainty, consistency, and enforceability. Guidance, while not directly enforceable, provides direction to disposal site operators and has the advantage of being easier to change over time. It is Energy*Solutions* view that fundamental objectives should be included in regulations and details addressed in guidance. This allows the NRC to provide acceptable methods for implementation to the industry as guidance and enables disposal site operators to defend other ways to satisfy the fundamental objectives. As is the case with regulations, development of guidance should provide for the opportunity for public comments on drafts before it is issued for use.

We have identified herein those changes to requirements necessary and sufficient to assess the adequacy of a site for the disposal of depleted uranium:

- The basic requirement for the preparation of a performance assessment that demonstrates compliance with the performance objectives of Subpart C
- Designation of compliance periods, dose standards, and a reasonableness standard for scenarios and assumptions to be used in performance assessments

Any additional details for achieving compliance, particularly those that are site-specific, should be addressed in guidance. The subject Federal Register notice addressed a number of issues for consideration in this rulemaking, e.g., geochemical parameters, impacts of radon gas releases, and details of performance assessments. These and any other issues apart from the ones listed above should be addressed in NRC guidance.

9. Classification of Depleted Uranium – Although not the subject of this limited rulemaking, Energy*Solutions* agrees with the determination by the Commission that depleted uranium is and should remain Class A waste. We do not believe any change in waste classification is warranted and recommend that the Commission not take any action in this or subsequent rulemakings to change the classification of depleted uranium.

10. Implementation – It is important that site operators have sufficient time to respond to the new regulations; particularly given that they will directly affect ongoing activities and that the preparation of a rigorous performance assessment is a nontrivial endeavor. Energy*Solutions* proposes that the effective date of the new regulation be 12 months following publication in the Federal Register. The 12-month time period should be requirement for the submittal of the performance assessment and would not include NRC review and approval.

11. Proposed Language to Revise Regulations – Energy*Solutions* proposes the following specific modifications to NRC regulations to implement the direction of the Commission (proposed new language shown in underline and deletions in ~~strikethrough~~).

Performance Assessment. In order to implement the basic requirement to prepare a site-specific performance assessment, we propose that a new paragraph 10 CFR 61.55(a)(9) be added to read:

> *Performance Assessment.* Prior to the disposal of waste containing isotopes not listed above in Table 1 or Table 2, a site-specific performance assessment shall be prepared and submitted for Commission approval to demonstrate that the performance objectives of Subpart C of this part will be met. The performance assessment shall:
>
> *(i)* Address isotopic content of all waste disposed, including but not limited to the isotopes listed above in Table 1 and Table 2.
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> *(ii)* Be updated for Commission approval at least once in every five-year period unless the disposal site operator justifies an alternative period.
>
> *(iii)* Address the analyses listed in § 61.13 and be performed for a compliance period of 10,000 years using reasonably foreseeable assumptions and scenarios. If the peak dose occurs after 10,000 years, a qualitative analysis shall be prepared up to the time of the peak dose for consideration in the site's environmental evaluation.

The beauty of this approach is that it links the preparation of a performance assessment to waste classification by imposing the new requirement only in the event of disposal of wastes not listed in Tables 1 and 2. Thus it specifically addresses the intent of the limited rulemaking to consider the disposal of significant quantities of depleted uranium and other unique waste streams that may not have been contemplated in the development of existing regulations. It also obviates any need to specifically define a unique waste stream. Furthermore, it permits disposal site operators to limit the waste they accept and avoid the burden of the new requirement.

A more global and technically elegant approach would be to add virtually the same language (minus the opening clause referencing isotopes not listed in Tables 1 and 2) to 10 CFR 61.13, *Technical Analyses*, as a new § 61.13(e). This would have the net effect of requiring all persons desiring a license under Part 61 to prepare a performance assessment. Although this goes beyond the scope of the limited rulemaking, it would go far towards the larger objective articulated by the Commission in the SRM of risk informing Part 61.

Intruder Dose. In order to implement the proposed requirement that an intruder dose be specified in regulation, we propose that 10 CFR 61.42 be modified to read:

> Design, operation, and closure of the land disposal facility must ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed. The annual dose to an intruder must not exceed 500 millirems total effective dose equivalent for a compliance period of 10,000 years.

Dose Methodology Update. In order to update Subpart C to incorporate more current dose calculation methodology, we propose that 10 CFR 61.41 be modified to read:

> Concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems total effective dose equivalent for a compliance period of 10,000 years to ~~25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of~~ any member of the public. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.