

NOTATION VOTE

1999 NOV 21 AM 9:05

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: COMMISSIONER DICUS
SUBJECT: SECY-99-272 - AGREEMENT STATE COMPATIBILITY FOR
CRITICALITY REQUIREMENTS APPLICABLE TO LOW-
LEVEL WASTE DISPOSAL FACILITIES

Approved _____ Disapproved x ^{w/comments} Abstain _____

Not Participating _____

COMMENTS:

See attached comments.

Greta Joy Dicus
SIGNATURE

December 21, 1999
DATE

Entered on "AS" Yes x No _____

COMMENTS OF COMMISSIONER DICUS REGARDING SECY 99-272

SRM 98-010 directed staff to develop guidance on emplacement criticality safety which could be used by Agreement States for existing and proposed LLW disposal facilities and to investigate whether emplacement criticality requirements should be an item of compatibility, in accordance with the Commission's policy on adequacy and compatibility, and **based on realistic scenarios**. Additionally, **SRM 99-059** recommended that staff stay consistent with **SRM 98-010**, and further emphasized that a technical basis needed to include realistic scenarios, as well as **realistic** public health and safety issues **which demonstrate** emplacement criticality concerns.

Because 10 CFR Part 61.55 waste classification requirements are designated as Category B Compatibility, specifically applying to activities that have direct and significant transboundary implications, all Agreement States must adopt program elements essentially identical to those of the NRC. Since Part 61.55 encompasses Part 61.56 waste characteristics, which are minimum acceptance requirements for LLW containers and packages, and since 10 CFR Part 71 packaging and transportation requirements provide additional and complementary safety requirements, I believe that we have reasonable assurance that any new LLW site now or in the future would only accept waste with these characteristics. With respect to the aforementioned and as discussed below, I believe that staff did not provide a credible technical basis allowing for the development of realistic scenarios, where similar LLW disposal characteristics, configurations, or conditions would present a credible risk of a potential emplacement criticality event. Therefore, I do not approve changing the Compatibility designation from Category NRC to Category Health & Safety for 10 CFR Part 61.16(b)(2) or issuance of the related guidance document.

1. CHANGING THE COMPATIBILITY DESIGNATION FROM CATEGORY NRC TO CATEGORY HEALTH & SAFETY FOR 10 CFR PART 61.16(b)(2)

With respect to the precise ratios of SNM mass, enrichment, concentrations, and isotopics needed, and the necessary forms, conditions, and array configurations required, I believe that the technical basis and postulated scenarios presented in the FRN are not technically sound or realistic, especially with the additional level of safety controls that are already imposed on LLW disposal licensees as a result of 10 CFR Parts 61 and 71. Instead of using Part 61 and 71 characteristics and limits to further emphasize the defense-in-depth factored into ensuring emplacement criticality safety, staff challenged the safety profile and credibility of these specific regulatory requirements, and then essentially deferred to these same characteristics and safety limits (**mass, enrichment, moderation, concentration, and absorbing materials**) when modeling the criticality scenarios in the three proposed graded approaches.

Based on the demonstrated effectiveness of regulatory requirements the NRC currently has in place that pertain to Agreement State LLW regulation, including packaging and transportation requirements (Part 71 or DOT), I believe that realistic and technically sound scenarios have been adequately addressed and modeled, and that effective emplacement requirements already exist. For example, the requirements under 10 CFR Part 61.13(c) (**Technical Analysis**) are currently an Agreement State Health & Safety designation and states the following:

“Analysis of the protection of individuals during operations must include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The analysis must provide reasonable assurance that exposures will be controlled to meet the requirements of 10 CFR Part 20 of this chapter.”

Additionally, the LLW facility design, operating, monitoring, and stability requirements, as well as the material characteristic and labeling requirements identified in Parts 61.51 through 61.57 are designated Agreement State category Health & Safety, with Part 61.55 (**Waste Classification**) being a category B designation. The comprehensiveness and completeness of these requirements, complemented with the Packaging and Transportation requirements in 10 CFR Part 71, ensure adequate health and safety protection of the shipper, receiver, facility operator, the public, and the environment during LLW packaging, shipping, receipt, handling, storage, emplacement, and disposal. As identified in section 2.1.4 of the draft Emplacement Guidance, disposal of SNM in an Agreement State can still require an NRC license if the Commission determines that it should, based on “hazards or potential hazards thereof. This provision provides the Commission with the necessary flexibility, when necessary, to review an application and issue a license for any new LLW disposal facility.

The FRN challenges the credibility of our current regulations and practices without providing a sound and sufficient technical basis. If our LLW disposal situation is truly as uncertain as described, than our HLW situation may present an even bigger question. Additionally, and from a public confidence standpoint, the FRN presents a level of uncertainty surrounding our LLW program that actually decreases the confidence that one should have and may raise questions as to how operator and public health and safety are being reasonably assured. In light of the recent Tokaimura criticality incident in Japan, we should be particularly careful of promulgating any unsubstantiated information or unrealistic scenarios that could lead the public to believe that the NRC or our Agreement States have not appropriately addressed criticality safety concerns, regardless of the type of operation. To add appropriate perspective, the scenarios presented for LLW emplacement criticality are as conservative as those used for fresh fuel assembly storage at our fuel-cycle facilities, where SNM mass, enrichments, forms, concentrations, and configurations present a higher criticality concern, due to greater probabilities and consequence potential. In evaluating operational risks and potential consequences, one must first develop an appropriate hazards analysis, which identifies and assesses the unmitigated operating conditions and the **credible** sequence of events necessary to cause the accident scenario. Subsequent to analyzing the unmitigated event, safety parameters and controls that prevent the sequence of events or mitigate the consequences if an accident should occur, are then factored into the evaluation. A consequence analysis is also provided so that on-site and off-site public health, safety, and environmental impacts can be reasonably assessed, and so that the licensee and off-site responders can adequately prepare for and respond to an event. No analysis of this type was addressed or provided with respect to LLW emplacement criticality.

2. EMPLACEMENT GUIDANCE FOR CRITICALITY SAFETY IN LOW-LEVEL WASTE DISPOSAL

As I previously stated, instead of using Part 61 and 71 characteristics and limits to further emphasize the defense-in-depth factored into ensuring emplacement criticality safety, staff challenged the safety profile and credibility of these specific regulatory requirements, and then deferred to specific characteristics and safety limits (**mass, enrichment, moderation,**

concentration, and absorbing materials) when modeling the criticality scenarios in the three proposed graded approaches. Additionally, the safety limits regarding unusual moderators and bulk chemicals are referenced in the Emplacement Guidance as specific guidance thresholds, specifically, that the guidance document does not apply to conditions exceeding these limits.

Even if a majority of the Commission decides to approve revising the Agreement State Compatibility status from Category NRC to Category Health & Safety for 10 CFR Part 61.16(b)(2), this guidance document should not be issued without the following changes.

- Remove all references addressing Post-Disposal, specifically, Section 3.2, "SNM Migration and Concentration" and Section 7.2, "LLW Emplacement Good Practices".
- Section 2, REGULATORY BACKGROUND section, 10 CFR Part 61. Identify all Agreement State Compatibility Parts and their applicability in ensuring operator and public health and safety in meeting Part 20 requirements (i.e., 10 CFR Parts 61.41 through 61.57).
- Section 6, GRADED APPROACH TO EMPLACEMENT GUIDANCE, first paragraph. Delete the second sentence. This being a guidance document and not a legally binding requirement, disposal facilities would not have to show and/or demonstrate compliance with the document's contents.
- Conduct a bounding analysis using all 10 CFR Part 61 and 71 characteristics and limits that are applicable to LLW disposal facilities and operations, so that modeling scenarios can be appropriately designed.

As I recommend disapproval to changing the compatibility designation of 10 CFR Part 61.16(b)(2) from category NRC to category Health & Safety for emplacement criticality safety requirements at existing and future Agreement State LLW disposal facilities, as well as the issuance of the Emplacement Guidance, " I want to reiterate my views regarding post-disposal criticality safety concerns at LLW disposal facilities. In SECY 98-239, "Post Disposal Criticality Research," I reluctantly approved staff's recommendation to halt further post-disposal criticality research at LLW disposal facilities. At that time, the Commission was faced with making some tough decisions in light of budget constraints and the Office of Research was facing a time of intense competition of resources. In my vote, I stated that I believe that additional research on post-disposal criticality should be delayed to accommodate higher priority work and I commended staff for its work to date. I continue to support further research in the area of post-disposal criticality safety (i.e., migration and reconcentration), specifically, under the conditions outlined in Section 7.2, "LLW Emplacement Good Practices" of the draft Emplacement Guidance.