

LOW-LEVEL RADIOACTIVE WASTE FORUM, INC.

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January 7, 2013

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Rulemakings and Adjudications Staff

Re: Docket ID NRC–2011–0012

Dear NRC Secretary:

On behalf of the Low-Level Radioactive Waste Forum's (LLW Forum) Part 61 Working Group (P61WG), please accept the attached comments on the U.S. Nuclear Regulatory Commission's (NRC's) November 2012 Preliminary Rule Language for Proposed Revisions to Low-Level Waste Disposal Requirements (10 CFR Part 61).

The LLW Forum's P61WG was formed in the summer of 2012. The purpose of the working group is to assist the states and compacts in providing comment and feedback to the NRC on the Part 61 rulemaking initiative. The working group is composed of six (6) members representing South Carolina, Texas, Utah, Washington, Illinois and Pennsylvania.

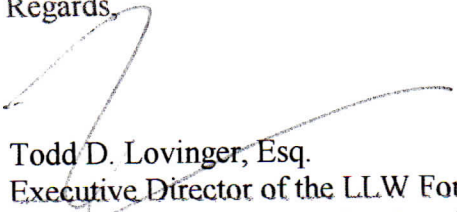
By letter dated July 30, 2012, the P61WG submitted initial comments to the NRC in advance of submittal of the technical basis document to the Commission in September 2012. Given the role of the sited states in regulating low-level radioactive waste disposal facilities, P61WG members relied heavily upon input from representatives of the four sited states of South Carolina, Texas, Utah and Washington in conducting its review of all elements of the Part 61 rulemaking initiative.

As a follow-up to our July 30 communication, the P61WG developed and submits the attached comments on the November 2012 preliminary rule language. In addition, please note that the sited states will be submitting additional comprehensive and technical comments individually.

On behalf of the P61WG, I want to thank the NRC staff for their continued assistance during our review of the rulemaking initiative and for the agency's consideration of the working groups' comments. We believe this is an important document that has potentially significant impacts on the disposal and management of low-level radioactive wastes and we sincerely appreciate the opportunity to provide the attached feedback and comments.

If you have questions or require additional information, please feel free to contact me at (202) 265-7990 or at LLWForumInc@aol.com.

Regards,



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Project Manager of the DSWG and P61WG

Enclosure

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Low-Level Radioactive Waste Forum

Part 61 Working Group

Draft Briefing Document and Comment Submittal on November 2012 Preliminary Rule Language
for Proposed Revisions to Low-Level Radioactive Waste Disposal Requirements (10 CFR Part 61)
[NRC-2011-0012]

List of Subjects

General Comments/Questions

- *What is the NRC's position regarding whether or not there will be a need to remediate existing and previously closed waste disposal facilities due to the proposed revised requirements for long-term site performance standards?*
- *After the effective date of revisions to Part 61, will states be given three years to adopt the new regulations?*
- *NRC needs to clarify if the current Part 61 Grandfather clause will still apply to existing sites.*
- *NRC still needs to address concerns about the difficulty in ensuring compliance objectives after 10,000 years and performance objectives out to peak dose, which could be in the hundreds of thousands of years or even longer.*
- *Timeframes for evaluating the disposal of large quantities of DU become purely speculative in nature as the uncertainty with future conditions and modeling parameters increases.*
- *The proposed rule does not call for a quantitative maximum dose limit for the public beyond 10,000 years, which may be important in light of the significant dose potential that will occur as daughter products in-grow in DU waste beyond 10,000 years.*
- *The revision should establish a timeframe and dose limit for the performance period.*
- *The document only contains the additions and is difficult to review without including the strikeouts.*
- *The Agreement States (specifically the sited states) should be allowed to collaborate with the NRC and determine an appropriate compatibility category for various elements of the revised Part 61. This would alleviate and/or minimize the potential for unintended consequences.*

II. Certification

An authorized representative of the waste generator, processor, or collector shall certify by signing and dating the shipment manifest that the transported materials are acceptable for disposal, properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the Commission. A collector who signs the certification is certifying that nothing has been done to the collected waste that would invalidate the waste generator's certification.

Response: The new wording adds clarity and helps address the Part 61 WG's (WG) concern about generators, processors, or collectors providing statements certifying approved waste

classification procedures. This is an important addition for sited states because much of the waste for disposal comes from generators/processors that the sited states do not regulate or have active control over the waste handling and classification decisions.

III. Control and Tracking

5. Conduct a quality assurance program to assure compliance with the land disposal facility's criteria for waste acceptance that has been developed in accordance with § 61.58 of this chapter (the program shall include management evaluation of audits);

Response: This is an important addition for sited states because much of the waste for disposal comes from generators/processors that they do not regulate, nor have active control over the decisions regarding waste handling and classification. The State of Utah also pointed out that the proposed wording has redacted reference to § 61.57 (waste labeling), § 61.55 (waste classification), and § 61.56 (waste form characteristics) which are important for waste label and waste form characteristics and must be kept in the rule.

§ 61.2 Definitions.

Compliance period is the time during which compliance with the performance objectives specified in § 61.41, § 61.42, and § 61.44 must be demonstrated. This period ends 10,000 years after closure of the disposal facility.

Response: This partially addresses the WG's comment about 20,000 years by lowering it to 10,000 years. However the 10,000 year compliance is still overly conservative for some waste sites because the waste will have decayed to a fraction of a percent of its original concentration in 1000 years.

Performance period is the time after the compliance period for disposal facilities during which the performance objectives specified in §§ 61.41(b) and 61.42(b) must be met.

Response: This definition does not provide the minimum time required for the performance period. The State of Utah felt it did set a minimum because the timeframe is something > 10,000 yrs. and that the maximum time was not defined – which leaves flexibility to work out to peak dose.

§ 61.7 Concepts.

(a) *The disposal facility.* (1) Part 61 is intended to apply to land disposal of radioactive waste and not to other methods such as sea or extraterrestrial disposal. Part 61 contains procedural requirements and performance objectives applicable to any method of land disposal. It contains specific technical requirements for near-surface disposal of radioactive waste, a subset of land disposal, which involves disposal in the uppermost portion of the earth, approximately 30 meters. Near-surface disposal includes disposal in engineered facilities that may be built totally or partially above-grade provided that such facilities have protective earthen covers. Near-surface disposal does not include disposal facilities that are partially or fully above-grade with no protective earthen cover, which are referred to as "above-ground disposal." Burial deeper than 30 meters may also be satisfactory. Technical requirements for alternative methods may be added in the future. Alternative methods of disposal may be approved on a case-by-case basis as needed under § 61.6.

Response: Allows states the flexibility to determine if alternative disposal methods are appropriate at their sites.

(2) Near-surface disposal of radioactive waste takes place at a near-surface disposal facility, which includes all of the land and buildings necessary to carry out the disposal. The disposal site is that portion of the facility used for disposal of waste and consists of disposal units and a buffer zone. A disposal unit is a discrete portion of the disposal site into which waste is placed for disposal. A buffer zone is a portion of the disposal site that is controlled by the licensee and that lies under the site and between the boundary of the disposal site and any disposal unit. It provides controlled space to establish monitoring locations, which are intended to provide an early warning of radionuclide movement. An early warning allows a licensee to perform any mitigation that might be necessary. In choosing a disposal site, site characteristics should be considered in terms of the indefinite future, take into account the radiological characteristics of the waste, and be evaluated for at least a 500-year timeframe.

Response: Why has the NRC decided to keep the 500-year timeframe for site selection, when the compliance period is 10,000 years? The State of Utah also pointed out that the proposed wording includes a redaction, in that the "buffer zone" used to mandate that it be large enough to "... take mitigative measures if needed" and the redaction could potentially jeopardize public health and safety and be incongruent with any approved PA or II analysis.

(c) Technical analyses. (1) Demonstrating compliance with the performance objectives requires assessments of the site-specific factors including engineering design, operational practices, site characteristics, and radioactive waste acceptable for disposal. Technical analyses assess the impact of site-specific factors on the performance of the disposal facility and the site environment both during the operational period, as in the analysis for protection of individuals during operations and, importantly for disposal of radioactive waste, over the long term, as in the analyses for protection of the general population from releases of radioactivity, protection of inadvertent intruders, and stability of the disposal site after closure.

Response: NRC should specifically define what "over the long term" timeframe means.

(5) Waste with significant concentrations and quantities of long-lived radionuclides may require special processing, design, or site conditions for disposal. Demonstrating protection of the general population from releases of radioactivity and inadvertent intruders for the disposal of this waste requires an assessment of long-term impacts. Performance period analyses are used to evaluate the suitability of this waste for disposal on a case-by-case basis. In general, for disposal facilities with limited quantities of long-lived waste, performance period analyses are not necessary to demonstrate protection of the general population from releases of radioactivity and protection of inadvertent intruders. However, there may be site-specific conditions that require licensees to assess disposal facilities beyond the compliance period even when long-lived waste is limited. These conditions should be evaluated on a case-by-case basis to determine whether analyses beyond the compliance period would be required.

Response: Needs further clarity; NRC should specifically state what timeframe is acceptable for the long lived waste. Is it out to peak dose? The State of Utah pointed out that this could be

very complicated in that "long-lived waste" in § 61.2 has a 3-part test in the definition including: 1) a minimum half-life (> 3,000 years), 2) long-lived parents with short-lived progeny, and 3) short-lived parents with long lived progeny. The State of Utah recommended that "limited quantities" must be defined somewhere in the rule and Exemption from PA and II analysis should not be guaranteed de facto.

(f) The licensing process. (1) During the preoperational phase, the potential applicant goes through a process of disposal site selection by selecting a region of interest, examining a number of possible disposal sites within the area of interest, and narrowing the choice to the proposed site. Through a detailed investigation of the disposal site characteristics the potential applicant obtains data on which to base an analysis of the disposal site's suitability. Along with these data and analyses, the applicant submits other more general information to the Commission in the form of an application for a license for land disposal. The Commission's review of the application is in accordance with administrative procedures established by rule and may involve participation by affected State governments or Indian tribes. While the proposed disposal site must be owned by a State or the Federal government before the Commission will issue a license, it may be privately owned during the preoperational phase if suitable arrangements have been made with a State or the Federal government to take ownership in fee of the land before the license is issued.

(2) During the operational phase, the licensee carries out disposal activities in accordance with the requirements of these regulations and any conditions on the license. Periodically, the authority to conduct the above ground operations and dispose of waste will be subject to a license renewal, at which time the operating history will be reviewed and a decision made to permit or deny continued operation. When disposal operations are to cease, the licensee applies for an amendment to the site license to permit site closure. After final review of the licensee's site closure and stabilization plan, the Commission may approve the final activities necessary to prepare the disposal site so that ongoing active maintenance of the site is not required during the period of institutional control.

(3) During the period when the final site closure and stabilization activities are being carried out, the licensee is in a disposal site closure phase. Following that, for a period of five years, the licensee must remain at the disposal site for a period of post-closure observation and maintenance to assure that the disposal site is stable and ready for institutional control. The Commission may approve shorter or require longer periods if conditions warrant. At the end of this period, the licensee applies for a license transfer to the disposal site owner.

Response: This provides more clarity for the specified time period of post-closure observation and maintenance, but it still maintains/allows for a shorter or longer periods depending on conditions. It would be prudent to eliminate the shorter time period and require at least a five year or more observation period for LLRW site operators.

(g) Implementation of dose methodology. The dose methodology used to demonstrate compliance with the performance objectives of this part shall be consistent with the dose methodology specified in the standards for radiation protection set forth in Part 20 of this chapter. After the effective date of these regulations, applicants and licenses may use updated factors, which have been issued by consensus scientific organizations and incorporated by the U.S. Environmental Protection Agency into Federal radiation guidance. Additionally, applicants and licensees may use the most current scientific models and methodologies (e.g., those accepted by the International Commission on Radiological Protection) appropriate for site-specific circumstances to calculate the dose. The weighting factors used in the calculation of the dose must be consistent with the methodology used to perform the calculation.

Response: This supports the WG's recommendation to allow dose methodologies to be based on the best available science. The State of Utah suggested that the new dose methodology must receive prior Commission approval, on a case-by-case basis. That way, each license will clearly specify the alternate dose methodology authorized, thus making the way clear for later enforcement of dose and activity limits at specific monitoring points around a disposal site (Points of Compliance).

§ 61.12 Specific technical information.

(i) A description of the kind, amount, and specifications of the radioactive material proposed to be received, possessed, and disposed of at the land disposal facility, including the criteria for acceptance of waste for disposal.

This is an important addition for sited states because much of the waste for disposal comes from generators/processors that they do not regulate, nor have active control over the decisions regarding waste handling and classification.

§ 61.13 Technical analyses

(a) A performance assessment that demonstrates that there is reasonable assurance that the exposure to humans from the release of radioactivity will meet the performance objective set forth in § 61.41(a). A performance assessment shall:

(1) Consider only features, events, and processes that might affect demonstrating compliance with § 61.41(a). The features, events, and processes considered must represent a range of phenomena with both beneficial and adverse effects on performance, and must consider the specific technical information required in § 61.12(a) through (i). A technical basis for either inclusion or exclusion of specific features, events, and processes must be provided. Specific features, events, and processes must be evaluated in detail if their omission would significantly affect meeting the performance objective specified in § 61.41(a).

(2) Consider the likelihood of disruptive or other unlikely features, events, or processes for comparison with the limits set forth in § 61.41(a).

(3) Provide a technical basis for either inclusion or exclusion of degradation, deterioration, or alteration processes (e.g., of the engineered barriers, waste form, site characteristics) and interactions between the disposal facility and site characteristics that might affect the facility's ability to meet the performance objective in § 61.41(a).

(4) Provide a technical basis for models used in the performance assessment such as comparisons made with outputs of detailed process-level models or empirical observations (e.g., laboratory testing, field investigations, and natural analogs).

(5) Evaluate pathways including air, soil, groundwater, surface water, plant uptake, and exhumation by burrowing animals.

(6) Account for uncertainties and variabilities in the projected behavior of the disposal system (e.g., disposal facility, natural system, and environment).

(7) Consider alternative conceptual models of features and processes that are consistent with available data and current scientific understanding, and evaluate the effects that alternative conceptual models have on the understanding of the performance of the disposal facility.

(8) Identify and differentiate between the roles performed by the natural disposal site characteristics and design features of the disposal facility in limiting releases of radioactivity to the general population.

Response: These requirements may be difficult to comply with when the longer timeframe for the performance period (more than 10,000 years) is evaluated. Timeframes approaching millions of years could be possible for evaluating disposal of DU and would be speculative when considering the uncertainty of future conditions, and the increase of uncertainty with modeling parameters. The State of Utah pointed out that there is a redaction at existing § 61.13(a), where the applicant is to clearly distinguish between the waste isolation roles provided by the engineered embankment and the local site characteristics and believes this information is vital to a licensing decision, and needs to be restored in the proposed rule.

(b) Analyses of the protection of inadvertent intruders that demonstrate there is reasonable assurance the waste acceptance criteria developed in accordance with § 61.58 will be met, adequate barriers to inadvertent intrusion will be provided, and any inadvertent intruder will not be exposed to doses that exceed the limits set forth in § 61.42(a) as demonstrated in an intruder assessment. An intruder assessment shall:

Response: § 61.42 does not establish a dose limit for the inadvertent intruder during the performance period.

(1) Assume that an inadvertent intruder occupies the disposal site at any time during the compliance period after the period of institutional controls ends, and engages in normal activities including agriculture, dwelling construction, resource exploration or exploration (e.g. well drilling), or other reasonably foreseeable pursuits that unknowingly expose the intruder to radiation from the waste.

(2) Identify adequate barriers to inadvertent intrusion that inhibit contact with the waste or limit exposure to radiation from the waste, and provide a basis for the time period over which barriers are effective.

(3) Account for uncertainties and variabilities.

(e) Analyses that assess how the disposal facility and site characteristics limit the potential long-term radiological impacts, consistent with available data and current scientific understanding. The analyses shall only be required for land disposal facilities with long-lived waste that contains alpha-emitting radionuclides with average concentrations exceeding 10 nCi/g or radionuclides with average concentrations exceeding one tenth of the values listed in Table 1 of § 61.55, or if necessitated by site-specific factors including engineering design, operational practices, and site characteristics. The analyses must identify and describe the features of the design and site characteristics that will demonstrate that the performance objectives set forth in §§ 61.41(b) and 61.42(b) will be met.

Response: This answers several concerns of the WG related to the need to make a distinction between unique waste streams such as depleted uranium and routine commercial waste streams in order to account for the differences in toxicity of the two (physical and chemical form and radiological properties). The WG concerns included:

- The long period of performance assessment is only appropriate for large quantities of depleted uranium but not for routine LLRW streams which contain mostly short-lived radionuclides.*
- It burdens the entire LLRW waste classification system and resulting disposal facility performance assessment requirements with a long period of compliance and performance when most facilities will not receive significant quantities of waste.*

- *For non-DU LLRW, this extended period of compliance is unnecessary since the waste will have decayed to a fraction of a percent of its original concentration and no longer presents an unacceptable hazard. Only facilities that receive significant quantities of DU should have a long period of compliance and performance.*

§ 61.42 Protection of inadvertent intruders.

(a) Design, operation, and closure of the land disposal facility must ensure protection of any inadvertent intruder into the disposal site who occupies the site or contacts the waste at any time after active institutional controls over the disposal site are removed. The annual dose must not exceed 5 milliSieverts (500 millirems) to any inadvertent intruder within the compliance period. Compliance with this paragraph must be demonstrated through analyses that meet the requirements specified in § 61.13(b).

Response: This clarifies the long-standing question to the NRC by stating that the annual dose must not exceed 5 milliSieverts (500 millirems) to any inadvertent intruder within the compliance period. However, it does not specify an exposure limit to the inadvertent intruder within the performance period. The State of Utah pointed out that it does not specify an exposure limit to the inadvertent intruder within the performance period, in that the dose is to conform to ALARA principles, which are highly subjective.

§ 61.58 Waste acceptance.

(a) Waste acceptance criteria. Each applicant shall provide, for approval by the Commission, criteria for the acceptance of waste for disposal that provide reasonable assurance of compliance with the performance objectives of Subpart C of this part. Waste acceptance criteria shall specify, at a minimum, the following:

(1) Allowable activities and concentrations of specific radionuclides. Allowable activities and concentrations shall be developed from the technical analyses required by either § 61.13 for any land disposal facility or the waste classification requirements set forth in § 61.55 for a near-surface disposal facility.

(2) Acceptable waste form characteristics and container specifications. The characteristics and specifications shall meet the minimum requirements for waste characteristics set forth in § 61.56(a) for all waste, and the requirements in § 61.56(b) for waste that requires stability to demonstrate compliance with the performance objectives of Subpart C of this part.

(3) Restrictions or prohibitions on waste, materials, or containers that might affect the facility's ability to meet the performance objectives in Subpart C of this part.

(b) Waste characterization. Each applicant shall provide, for Commission approval, acceptable methods for characterizing the waste for acceptance. The methods shall identify the characterization parameters and acceptable uncertainty in the characterization data. The following information, at a minimum, shall be required to characterize waste:

(1) Physical and chemical characteristics;

(2) Volume, including the waste and any stabilization or absorbent media;

(3) Weight of the container and contents;

(4) Identities, activities, and concentrations;

(5) Characterization date;

- (6) Generating source; and
(7) Any other information needed to support the technical analyses set forth in § 61.13.
(c) Waste certification. Each applicant shall provide, for Commission approval, a program to certify that waste meets the acceptance criteria prior to receipt at the disposal facility. The certification program shall:
(1) Designate authority to certify and receive waste for disposal at the disposal facility.
(2) Specify documentation required for waste characterization, shipment (including the requirements set forth in Appendix G of 10 CFR part 20), and certification.
(3) Identify records, reports, tests, and inspections that are necessary to maintain to demonstrate compliance with the requirements in § 61.80.
(4) Provide approaches for managing waste that has been certified as meeting the waste acceptance criteria in a manner that maintains its certification status.

Response: This is an important addition for sited states because much of the waste for disposal comes from generators/processors that they do not regulate, nor have active control over the decisions regarding waste handling and classification. It will help sited states verify the waste classification and homogeneity and place more of the burden on generators. The State of Utah expressed concerns with:

- 1) At proposed § 61.58(a)(3) – NRC makes reference to Subpart C, which includes 4 important rule citations: §§ 61.40 thru 61.44. At § 61.43, are found the requirements for protecting disposal site workers during operations. However, no changes are proposed there by NRC. Instead, the existing citation will continue to require disposal licensees to protect workers in accordance with current 10 CFR 20. Consequently, disposal site workers will not be afforded the improved dose methodologies and modern conversion factors, that are now to be provided to waste generators in packaging their LLRW. Hence, only waste generators will benefit from this improved technology, and protection of disposal site workers appears to be a lower priority for the Commission.*
- 2) At proposed § 61.58(c) – the lead sentence should be modified to require **prior** Commission and/or disposal site regulatory agency approval, **before shipment for land disposal**. To wait to determine compliance until after arrival at the disposal site is a waste of generator time and resources. Such postponement or delay, also creates a crisis for both the disposal site operator, and his/her regulator that is avoidable.*