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Cindy Bladey, Office of Administration
OWFN-12-H08
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: **Comments on Concentration Averaging and Encapsulation Branch Technical Position; whether the NRC staff should formally document a position on contaminated material and contaminated trash**

Reference: **Docket No. NRC–2011–0022**

Dear Ms. Bladey:

Energy*Solutions* hereby provides comments regarding the *Branch Technical Position on Concentration Averaging and Encapsulation* (BTP) and, in particular, whether the U.S. Nuclear Regulatory Commission (NRC) staff should formally document a position on contaminated material and contaminated trash. Our detailed responses to the questions in the *Federal Register* notice are provided in the attachment.

Energy*Solutions* does not believe that there is any merit in the NRC updating or augmenting the BTP to further distinguish between contaminated materials and contaminated trash. We believe this clarification would not benefit, but more likely would burden, the licensees, and would provide no improvement to public or occupational health and safety. As such, we also see no need to issue any additional guidance documents on the topic.

Thank you for this opportunity to comment. Questions regarding these comments may be directed to me at (801) 649-2109 or dshrum@energysolutions.com.

Sincerely,

Dan Shrum
Mar 22 2016 9:24 AM
Cosign

Daniel B. Shrum
Senior Vice President
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COMMENTS ON THE BRANCH TECHNICAL POSITION ON CONCENTRATION AVERAGING AND ENCAPSULATION

As requested in the *Federal Register*, we are providing our comments to each of the ten questions the NRC has identified.

Question 1: Is additional guidance needed to clarify the distinction between contaminated trash and contaminated material?

No, additional guidance is not needed. While the guidance does not specifically distinguish between contaminated materials and contaminated trash, we believe that additional clarification would provide no increased value in terms of public or occupational health and safety. In those instances where there is uncertainty regarding the application of the guidance in the BTP, Energy*Solutions* recommends deferring to process knowledge.

We offer the following example that, while rare, illustrates the application of process knowledge when material exceeds the BTP Table 2 values.[1] Leveraging our process knowledge, we determine if the material can be blended with an item in accordance with BTP Table 1 limits.[2] While this is an accepted practice among processors, it is not specifically defined in the current version of the BTP.

Question 2: When filling out the Uniform Waste Manifest (UWM) (NRC Forms 540, 541, and 542), how is contaminated equipment (UWM code 33) currently distinguished from contaminated trash (UWM codes 39 and 40)?

The key to distinguishing between contaminated trash and contaminated material when there is uncertainty is process knowledge. The UWM code is sufficiently flexible to accommodate reliance on process knowledge. A generator can use either code 39 as compactable trash, code 40 as non-compactable trash, or may select code 59 and provide an explanation based on the information and records from process knowledge. The BTP use of the term contaminated material is broadly interpreted to be a universal term that includes the subsets of contaminated equipment and contaminated trash.

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[1] Table 2 – Recommended Activity Limits of Primary Gamma Emitters Potentially Requiring Piecemeal Consideration in Classification Determinations, *Concentration Averaging and Encapsulation Branch Technical Position*, Revision 1, Volume 1, February 2015 (hereinafter the "2015 BTP").

[2] Table 1 – Thresholds for Demonstrating Adequate Blending, 2015 BTP.

Code 39 is widely interpreted by both NRC and DOD customers to be paper, plastic, glass, wood, cloth, and those materials that compact or incinerate well (e.g., DAW). Code 40 is used for metals, non-incinerable items, dirt mixed with rubble, and other items that are not easily compacted or incinerated. In our experience, code 59 is used for components, e.g., tanks that are non-reusable, and anything else that doesn't readily fit into any of the other codes and may contain a combination of both compactible and non-compatible trash.

In addition, contaminated materials typically are durable items with significant radioactive surface contamination (fixed or non-fixed) other than contaminated trash. Contaminated material is not DAW, is not neutron activated, and has significant surface radioactivity. The BTP explicitly provides guidance for the classification of these materials.[3]

NRC Information Notice 86-20 uses the term "dry active waste." As discussed in the NRC's response to Comments 2 and 3 from the State of Utah,[4] the 2015 BTP uses the term "contaminated trash," which corresponds to waste streams 39 and 40 on the NRC Form 541, the Uniform Low-Level Radioactive Waste Manifest.

The existing UWM and accompanying codes are adequate to appropriately define waste streams shipped for disposal. As with the BTP, we do not see any need for revisions to the UWM.

Question 3: Should numerical constraints be developed to clarify the distinction between contaminated materials and contaminated trash? If so, what basis should be used to develop the numerical constraints? If not, what qualitative factors should be considered?

As previously stated in our answer to question 1, Energy*Solutions* does not support the promulgation of additional guidance, either quantitative or qualitative. We do not believe that incorporating numerical constraints to clarify the distinction between contaminated materials and contaminated trash is either necessary or useful. Energy*Solutions* believes the current guidance along with the application of process knowledge, if necessary, is sufficient for classification.

Question 4: If numerical values are developed, would activity or concentration constraints be preferable? Would an option to use either be feasible to implement?

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[3] Section 3.1.4, "Radiological Characterization," 2015 BTP, p.17.

[4] Section 3.3, "Input from Agreement States and LLW Forum," 2015 BTP Volume 2, *Response to Stakeholder Comments and Technical Basis*.

As previously stated in questions 1 and 3, additional guidance is not needed and the current version of the BTP provides sufficient guidance and constraint. Energy*Solutions* recommends the NRC not attempt to develop numerical values that distinguish the difference between contaminated material and contaminated trash.

Question 5: What challenges, if any, do you foresee with implementing numerical thresholds for distinguishing between contaminated trash and contaminated materials? How could these challenges be ameliorated?

The primary challenge would be determining what the numerical thresholds for distinguishing between contaminated trash and contaminated materials should be and ensuring that they do not create inconsistencies with the 2015 BTP. It is not clear that doing so can be easily accomplished; rather, it is reasonable to assume that doing so would require a significant investment of resources. The effort to revise the BTP lasted over a period of years. There is no justification for initiating a process to augment the 2015 BTP that could be lengthy and require significant government and licensee resources when there is no clear benefit.

Once again Energy*Solutions*, recommends that NRC not update the current version of the guidance, and believes that additional numerical constraints would be unnecessarily burdensome. Additionally, as previously mentioned, guidance limits are currently contained in Tables 1 (Thresholds for Demonstrating Adequate Blending) and 2 (Recommended Activity Limits of Primary Gamma Emitters Potentially Requiring Piecemeal Consideration in Classification Determinations), and current practices in place support the as low as reasonably achievable (ALARA) principle while still reasonably treating the waste.

Question 6: Would an emphasis on using process knowledge be sufficient to avoid the unintended consequence of causing licensees to characterize individual pieces of trash that have radionuclide concentrations significantly less than the class limit?

Yes, as we have stated in previous answers, we believe that process knowledge is not only sufficient to accomplish this objective, but its application is supported by existing NRC guidance. The NRC specifically refers to the acceptability of relying on process knowledge (as opposed to depending upon specific limits and/or requirements) in NUREG-1757[5] and NUREG-1575.[6]

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[5] *Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensees*, U.S. NRC, NUREG-1757, Vol 1 Rev 2, September 2006.

[6] *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*, NUREG-1575, Rev 1, August 2000.

Question 7: The NRC understands that items referred to as "high rad trash" are placed in containers of contaminated trash and averaged. The NRC also understands that this practice reduces worker exposure as compared to evaluating each item of trash. Please provide examples of "high rad trash," estimated annual volume, areas of the facilities where this waste is generated, and typical contact does rates (if available).

Energy*Solutions* does not typically receive containers for disposal that match the description in the question. Such containers make up a very low percentage of our annual waste received.[7] When such shipments are received, "high rad trash" items are clearly defined and communicated by the generator.

Question 8: When classifying contaminated trash, is the same sample data (e.g. scaling factors) for determining the radionuclide content of "normal" contaminated trash used for classifying the "high rad trash"?

Energy*Solutions* defers to the generators to describe the methods they use for developing and applying scaling factors.

Question 9: What process currently is used to determine whether items of "high rad trash" can be disposed of with lower activity contaminated trash or whether items are treated as contaminated materials and averaged with the constraints described for contaminated materials in the 1995 CA BTP?

The proportion of "high rad trash" does not necessarily drive waste classification. If waste must be sorted, then the sorted volumes will be classified as required by the BTP and Part 61. As a processor, Energy*Solutions* typically relies on dose rates to determine classification. As to the mixing or blending of waste for disposal, the guidance in the BTP is adequate for determining classification. Sections 3.3 (Discrete Items) and 3.4 (Classification of Mixtures of Different Waste Types) of the 2015 BTP provide adequate guidance for classifying items that are dissimilar or are of different activity levels.

For ALARA purposes, a generator may combine high-activity and low-activity rad waste for operational efficiency. We defer to the generators to describe the processes that they use.

Question 10: Is clarification needed for the term "component" in the definition of contaminated materials used in the 1995 and 2015 CA BTP?

No, Energy*Solutions* does not believe that clarification of the term "component" is necessary. The term generally is used in the BTP in one of two ways: to refer to a "large

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[7] We refer the staff to the comment letter provided by EPRI (letter from Lisa Edwards to Cindy Bladey dated March 4, 2016) that addresses sources and dose rates associated with these waste streams.

component," or in a more general sense in reference to a "component," which is generally understood to be a metal object with surface radioactivity. In the case of a large component, it is clear that the reference is to the term "major radioactive component," which already is defined in 10 CFR 50.2.[8] As to the more general application of the term, we find that the references are sufficiently clear as used in the industry.

We also do not believe that, should the NRC choose to define the term, a guidance document is the appropriate vehicle for providing the definition. If a more precise definition is needed, it should be incorporated by rule into 10 CFR 61.2, not a guidance document.

[8] "Major radioactive components means, for a nuclear power reactor facility, the reactor vessel and internals, steam generators, pressurizers, large bore reactor coolant system piping, and other large components that are radioactive to a comparable degree," 10 CFR 50.2.