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January 31, 2019

Ms. May Ma  
Office of Administration  
Mail Stop: TWFN-7-A60M  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

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COMMENT (8)  
PUBLICATION DATE: 12/21/2018  
CITATION # 83 FR 65759

**Subject:** Industry Comments on Draft Revision 3 NUREG/BR-0204, "Instructions for Completing NRC's Uniform Low Level Radioactive Waste Manifest" [83FR54620; Docket ID NRC-2018-0155]

**Reference No: 689**

Dear Ms. Ma:

The Nuclear Energy Institute<sup>1</sup> (NEI) is pleased to comment on Draft Revision 3 of NUREG/BR-0204, "Instructions for Completing NRC's Uniform Low Level Radioactive Waste Manifest," issued in the Federal Register on October 30, 2018, for comment by December 31, 2018. We appreciate the U.S. Nuclear Regulatory Commission (NRC) extending the comment to January 31, 2019, to allow for broader industry coordination and consideration of certain technical issues. We offer the following general comments and specific edits to the guidance and Forms 540, 541 and 542 for your consideration. In addition, as discussed at the conclusion of this letter, industry may need to supplement its comments on this revision of NUREG/BR-0204 at a future date based on discussions between NRC and Electric Power and Research Institute (EPRI) staff regarding the NRC staff's review of an EPRI report relevant to general comment number 1 below on Lower Limit of Detection values.

#### **General Comments:**

##### **1. Guidance on the Use of Lower Limit of Detection (LLD) Values**

We appreciate NRC staff efforts to address specific industry comments on the Manifest and Forms 540, 541 and 542 as discussed during various NRC meetings and industry forums in recent years. In particular, the technical difficulty in accurately detecting, measuring and reporting certain radionuclides

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<sup>1</sup> The Nuclear Energy Institute (NEI) is responsible for establishing unified policy on behalf of its members relating to matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect and engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations involved in the nuclear energy industry.

to ensure compliance, and the potential use of scaling factors for some radionuclides (e.g., Tc-99 and I-129) as an acceptable alternative approach to LLD values. To help address this issue in NUREG/BR-0204, we recommend the following changes to the guidance on pages 10–11, block 1 “Manifest Totals” on Form 541 as noted by *italics* below:

“In 10 CFR Part 20, Appendix G (I)(B)(4), NRC requires the reporting of the total radionuclide activity in the shipment. The reported total radionuclide activity should represent the best estimate of the total activity and should consider the *measured* activity, *the activity* based on *the* lower limit of detection (LLD) values or indirect methods, as applicable. In 10 CFR Part 20, Appendix G (I)(B)(5), the NRC requires separate manifest totals for tritium (H-3), carbon-14 (C-14), technetium (Tc-99), iodine-129 (I-129), U-233, U-235, and Pu, as well as U and thorium (Th) in source material. For H-3, C-14, Tc-99, and I-129, enter the totals in megabecquerels (MBq) in the appropriate boxes. If the radionuclides are known to be absent based on process knowledge *or lab analysis*, place a “NP” (Not Present) in the appropriate space. If the radionuclides are present in the waste in detectable quantities, report the total activity based on the measured activity. If the radionuclides could be present in the waste, and the measured activity is less than the LLD in any portion of the shipment, the shipper can use indirect methods to determine the activity to report. Indirect methods can be used to determine the activity of the radionuclides present at less than the LLD values if there is reasonable assurance that the indirect method can be correlated with actual measurements. Regulatory Issue Summary 2015-02, “Reporting of H-3, C-14, Tc-99, and I-129 on the Uniform Waste Manifest,” dated February 18, 2015, provides more information on the use of indirect methods to report the activity of H-3, C-14, Tc-99, and I-129. *Alternatively the shipper can enter on the manifest in parenthesis the activity for these radionuclides based on the laboratory reported value below the MDA and the amount of waste.*”

## **Edits to Forms 540, 541 and 542:**

### **NRC Form 540**

#### **1. Page 9, Block 17**

Current practice is to enter only the shipping package weight and not the volume. For shipments to bulk facilities the volume needs to be entered in addition to the weight so the receiving facility can verify the quantity received to prove nothing was lost in transport. Therefore, please add the following sentence:  
*“When shipping to a bulk disposal facility, the shipping container volume and the weight shall be entered.”*

### **NRC Form 541**

#### **1. Page 11, Paragraph 1, Line 4**

Actual measurements for Tc-99 and I-129 are not available from commercial radiological laboratories. Any reported LLD value would grossly overestimate the trace quantities of these nuclides. Only certain

DOE R&D facilities can identify these nuclides in LLW and those results have been used to derive industry scaling factors. Therefore, we suggest that line 4 be changed to read: "*The shipper may report the activity of H-3 and/or C-14 based on the LLD value and the amount of waste. The use of scaling factors or the use of activation, migration and partitioning calculations may be used for Tc-99 and I-129.*"

**2. Page 12, Paragraph 2, Line 6 and Page 15, footnote 6 – same comment**

*Please reference the "2015 Branch Technical Position on Concentration Averaging and Encapsulation."*

**3. Page 17, Block 17, Line 6**

Add "*and should enter NA in this block.*"

**4. Page 18, Block 5**

Insert a new second sentence to read: "*This should be the facility where the radioactivity originated.*"

**NRC Form 542:**

**1. Page 19, Block 10**

Insert a new sentence to read: "*In addition, Compact Export Permit numbers, if applicable, shall be noted in this block.*"

**EPRI Report Relevant to LLDs and Scaling Factors for Tc-99 and I-129**

As you are aware, the EPRI submitted its report (No. 3002005564) entitled, "Development of Generic Scaling Factors for Technetium-99 and Iodine-129 in Low and Intermediate Level Waste" to the NRC last year for review and acceptance as a means to demonstrate compliance. The report can be freely downloaded [here](#). We understand that NRC staff is reviewing the report and plans to engage EPRI in the near term on its contents prior to making its acceptability determination. *As such, industry might find it necessary to supplement this comment letter at a future date once those discussions have concluded and we trust NRC is amenable to this fact.*

Specifically, the EPRI report provides a generic means for NRC licensees to demonstrate compliance with the requirement to report these two difficult to measure radionuclides. The EPRI guidance is a risk-informed methodology that provides scaling factors for two specific radioisotopes that industry and the staff have acknowledged lack a scientifically-credible method of measurement. The scaling factors were developed to provide a simple, efficient and cost-effective tool to address questions concerning potential non-conformances involving the measurement of radioactivity levels on shipments of radioactive waste as discussed in Regulatory Issue Summary (RIS) RIS-2015-02, "Reporting of H-3, C-14, Tc-99, and I-129 on the Uniform Waste Manifest." NRC review and acceptance of the EPRI report as a means to demonstrate

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compliance will facilitate a consistent industry approach in reporting difficult to detect radionuclides. Furthermore, wide-spread use of the EPRI report will save the NRC and industry resources by increasing the efficiency of licensee-specific review time and effort. If accepted, we assume that the final NUREG/BR would reference the EPRI report.

We trust NRC staff will find these comments useful as it proceeds to finalize NUREG/BR-0204 Revision 3. As stated above, it might be necessary for the industry to supplement this comment letter once the NRC-EPRI discussions on the relevant EPRI scaling factors report have concluded.

We would be pleased to answer any comments or questions you might have on the contents of this letter. I may be contacted at [jrs@nei.org](mailto:jrs@nei.org) or (202) 739-8098.

Sincerely,

A handwritten signature in black ink, appearing to read "Janet R. Schlueter". The signature is written in a cursive, flowing style.

Janet R. Schlueter

c: Mr. John Tappert, NMSS/DUWP, NRC