Staff Disposition of the Public Comments Received on Draft NUREG-2159, Revision 1

U.S. Nuclear Regulatory Commission

Office of Nuclear Material Safety and Safeguards

Division of Fuel Management

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Section I INTRODUCTION

This document presents the U.S. Nuclear Regulatory Commission's (NRC's) staff responses to written public comments received on the draft NUREG-2159, Revision 1, noticed in the *Federal Register* (86 FR 52926; September 23, 2021):

> NUREG-2159, Revision 1, "Acceptable Standard Format and Content for the Fundamental Nuclear Material Control Plan Required for Special Nuclear Material of Moderate Strategic Significance" (ADAMS Accession No. ML21263A119)

Section II OVERVIEW OF COMMENTERS

A 60-day comment period was originally provided in the notice of request for comments on the draft NUREG. The Nuclear Energy Institute (NEI) requested an extension of the public comment period. The NRC granted that request and extended the comment period for an additional 14 days, ending on December 3, 2021 (86 FR 61795, November 08, 2021).

The NRC received four comment submissions from individual commenters during the comment period. All of these submissions were from members of the nuclear industry representing different organizations. In summary, the submission from NEI (ADAMS Accession No. ML21337A083) incorporated the comments from Centrus/American Centrifuge Operating (Centrus) (ADAMS Accession No. ML21300A135) and Global Nuclear Fuel – Americas (GNF-A) (ADAMS Accession No. ML21347A942). The submission from X-Energy (ADAMS Accession No. ML21344A034) endorsed the NEI's consolidated comments.

Section III STAFF RESPONSES TO COMMENTS ON DRAFT NUREG-2159, REVISION 1

This section provides the NRC staff's responses to comments on the draft guidance document NUREG-2159, Revision 1.

Comment 1: Chapter 2 – Item 4 – "Incorporating Checks and Balances" section – The commenters stated that the proposed guidance far exceeds the requirements found in Subpart D, 10 CFR 74.41(c), as well as the similar requirements found in Subpart E for strategic special nuclear material (SSNM) and is not a credible concern. The commenters wanted to remove entirely the text of the subject section, then proposed a replacement paragraph. [NEI and Centrus]

Response 1: The NRC staff disagrees, in part, with the comment. The NRC staff's intention for the guidance in this section regarding the checks and balances requirement in 10 CFR 74.41(c) was to clarify guidelines for effective material control and accounting (MC&A) practices against insider threats. The performance-based approach in this section also provides examples of adequate controls without requiring a totally redundant protection system within MC&A and physical security systems. The section has been revised to add more general text regarding insider threat and collusion that is consistent with the language in 10 CFR 74.41(c), and to provide reference to other chapters of the document that provide recommendations for meeting the 10 CFR 74.41(c) requirement.

Comment 2: Section 3.3, "MC&A Organization" – The commenters stated that providing only two options to meet organizational independence appears to unnecessarily restrict organization

structures and independent reporting options and this could be particularly problematic as advanced reactors look to limit the number of onsite personnel. The commenters suggested to replace the wording with similar guidance in NUREG-1520, "Standard Review Plan for Fuel Cycle Facilities License Applications." [NEI and GNF-A]

Response 2: The NRC staff agrees with the comment. The section has been revised to add text to clarify the meaning of "organization independence" and provide guidance similar to that provided in NUREG-1520.

Comment 3: Section 3.5, "Material Control and Accounting Program Description" – The commenter stated that there should be an allowance for MC&A management to have other duties not specifically related to MC&A given the reduction in size and scope of SNM onsite for potential advanced reactors. [NEI]

Response 3: The NRC staff agrees with the comment. The first bullet text of Section 3.5 was modified to clarify that MC&A program management may have other unrelated responsibilities so long as they do not conflict with their MC&A role.

Comment 4: Section 5.1.3, "Contract Programs Audits and Reviews" – This section stated that all contractor or offsite laboratory assessment findings and recommendations should be documented and submitted to both the measurement control program manager and the overall MC&A manager within 30 days of completion of the review. The commenters stated that the 30-day arbitrary time frame is not specified in the regulations. [Centrus and NEI]

Response 4: The NRC staff agrees with the comment. The 30-day time frame for documentation and submittal of the assessment report is not a strict requirement and remains an observed practice for licensees. The section has been revised to provide the 30-day time frame as an example, not a requirement, and noted that the time frame selected by the licensee or applicant should be consistent with their quality assurance and corrective action program.

Comment 5: Section 5.2, "Replicate Sampling" – This section stated that the fundamental nuclear material control (FNMC) plan should describe the replicate sampling program, which must include the following, as appropriate. The commenters stated that the sentence is a recommendation with an embedded requirement "must" and then a caveat "as applicable" is applied. [Centrus and NEI]

Response 5: The NRC staff agrees with the comment. The subject sentence has been revised to remove "must."

Comment 6: Section 6.2.2 discusses the process for estimating the standard error of the inventory difference (SEID). The commenters stated that invoking two additional verifications for such a highly specialized function is an extreme burden on the licensee with no clear regulatory basis or safety benefit, and the SEID does not directly affect the accounting records. The commenters also suggested that, although provided elsewhere, the formula for SEID should be provided in this section. [Centrus and NEI]

Response 6: The NRC staff agrees, in part, with the comment. The SEID is an important parameter for assessing the quality of the accounting information. The SEID value is used as an indicator for investigation and reporting, as given in 10 CFR 74.43(c)(8)(iii). Independent verification of this calculation should be part of the MC&A program. The subject paragraph has

been revised to provide a more generic description of this verification. The formula for SEID calculations is provided in Section 6.2.2.

Comment 7: Section 6.3, "Bias Corrections" – This section discusses measurement bias and bias corrections should be considered if the effect of a single significant bias or the net sum of all significant biases is unusually large. The commenters suggested to reword or remove the terms "unusually large" and asked for a basis as to what is meant by "unusually large." [Centrus and NEI]

Response 7: The NRC staff agrees with the comment. Bias is sufficiently discussed in the section, and the referenced paragraph is redundant. The section has been revised to remove the redundant text.

Comment 8: Section 6.3, "Bias Corrections" – This section discusses measurement bias and bias corrections. The commenters stated that the bias correction is intended to correct the inventory difference (ID) and its impact on the SEID should also be propagated, resulting in an adjustment to the SEID. The commenters suggested to reword the statement "the bias is greater than 0.01 percent relative" and asked for a basis as this appears to be a new criterion being introduced. [Centrus and NEI]

Response 8: The NRC staff agrees with the comment. The section has been revised to remove "the bias is greater than 0.01 percent relative" in the second bullet, and to consolidate the first bullet into the previous paragraph.

Comment 9: Section 6.4, "Commitments and Acceptance Criteria" - The commenters stated that this section cites "10 CFR 74.43(c)(8)(iii)" instead of 10 CFR 74.43(c)(8)(i). [Centrus and NEI]

Response 9: The NRC staff confirms that the cited regulation of 10 CFR 74.43(c)(8)(iii) is correct for the threshold values. No change was made to the guidance section as a result of this comment.

Comment 10: Section 7.5, "Conducting Physical Inventories" - This section, in part, refers to the dynamic inventories for uranium enrichment facilities to be performed on a frequency not to exceed 3 calendar months. The commenters stated that there is no direct regulatory basis for the 3 months stated, and suggested rewording to remove the 3 months. [Centrus and NEI]

Response 10: The NRC staff agrees, in part, with the comment. The 3-month dynamic inventory frequency is suggested in order to conveniently coincide with the 9-month static inventory frequency for uranium enrichment facilities. This suggested frequency is more tolerant than the bimonthly (65 days) regulatory frequency for dynamic inventories at Category III enrichment facilities. This section has been revised to provide the 3-month frequency as an example of an acceptable time frame for the dynamic inventory of in-process materials.

Comment 11: Section 7.6, "Inventory Reconciliation, Inventory Difference Limits, and Response Actions" – This section provides warning ID levels. The commenters stated that it is unclear what the regulatory or technical basis is for these suggested warning ID levels, and suggested changing or removing the 10-kilogram versus 9-kilogram value. [Centrus and NEI]

Response 11: The NRC staff agrees, in part, with the comment. The section has been revised to clarify that the warning-level ID provides a performance-based approach for response actions

with respect to physical inventories. The suggested warning level ID has been simplified by removing the 10-kilogram value. The suggesed significant ID problem level has been removed because it is redundant, having been previously stated at the beginning of the section.

Comment 12: Section 7.7, "Commitments and Acceptance Criteria" – This section discusses a threshold of the SEID for evaluating an ID and refers to a 90-percent (or better) probability of detecting a discrepancy equal to or greater than 0.4 percent of the active inventory for the inventory period in question. The commenters stated that this is unnecessary and the basis for 0.4 percent is unclear, then suggested to remove the text.

Response 12: The NRC staff agrees with the comment. The section has been revised to remove the 16th bullet in Section 7.7.

Comment 13: Section 8.2, "General Description" – This section provides examples of items that may be exempt from item control program coverage. The commenters suggested that the list of exempted items should expand to include laboratory samples and reference standards. [Centrus and NEI]

Response 13: The NRC staff disagrees with the comment. The regulations in 10 CFR 74.43(b)(6) clearly define items that are exempt from the item control program, including licensee-identified items containing less than 200 grams of plutonium or uranium-233 or 300 grams or more of uranium-235. Laboratory samples and reference standards are not specified in the regulations, but may be exempt if they meet the other criteria. No change was made to the guidance section as a result of this comment.

Comment 14: Section 9.5, "Commitments and Acceptance Criteria" – This section refers to 3 working days after receipt for inspecting each shipping container for loss or damage to the container or the tamper-indicating devices (TID), and within 24 hours for confirming the integrity of the container and the presence of all SNM items. The commenters stated that the 3 working days and the 24 hours requirements are not in the regulations and appear to be overly restrictive and depending on the type of package and the number of items in the package in some cases may not be achievable. The commenters suggested to reword this section to be more consistent with 10 CFR 74.15(a) which requires updated information to be generated within 10 days. [Centrus, GNF-A, and NEI]

Response 14: The NRC staff disagrees, in part, with the comment. The 3-day and 24-hour time frames are common practices for resolving anomalies when conducting shipper–receiver difference comparisons and support the regulatory requirements stipulated in the four general performance objectives of 10 CFR 74.41(a), particularly to maintain accurate, current, and reliable information on the SNM in the licensee's possession. These time frames are also consistent with guidance for examination of shipping containers at Category III fuel cycle facilities. The suggested times for examination of received shipments for container integrity are necessarily less than the 10-day reporting requirement in 10 CFR 74.15(a), which is for completion and submittal of the Nuclear Material Transaction Report for the shipment. The section was revised to clarify that the integrity of the shipping container should be inspected within 3 working days, and that if the container integrity may be compromised, further confirmation of receipt of all material should occur within 24 hours.

Comment 15: Section 14.1, "Description of Records" – This section prescribes that the FNMC Plan should identify records, forms, procedures, etc., that show compliance with 10 CFR 74.43(d). The commenter stated that while the list of records may be applicable to many

applicants, depending upon the structure, plan, applicant goal, etc., it is not clear that the list should be a necessity for all. The commenter suggested to revise to add the word “may” in the sentence. [NEI]

Response 15: The NRC staff agrees with the comment. The leading sentence to the list has been revised to use the word “may” as suggested.

Comment 16: Section 16, “References” – The commenters stated that the reference section lists NUREG/BR-0096 with an incorrect issuance date. [Centrus and NEI]

Response 16: The NRC staff confirms that the listed date for NUREG/BR-0096 is correct. While multiple versions of this document are in NRC’s public ADAMS, the October 1992 version is the most recent version now linked from the NRC public web site “Document Collections” page for NUREG-series publications. No change was made to the references section as a result of this comment.

Comment 17: Section 16, “References” – The commenter stated that the references for NUREG/BR-0006 and NUREG/BR-0007 do not list dates. [NEI]

Response 17: The NRC staff does not list any revision and issuance date for both NUREG/BR-0006 and NUREG/BR-0007, as these guidance documents are updated as needed and thus the date of the most current versions will change. In addition, the regulations in 10 CFR 74.13 and 74.15 do not refer to any specific revision and issuance date for these NUREGs. The most current versions are linked from the NRC public web site “Document Collections” page for NUREG-series publications. No change was made to the references section as a result of this comment.