
**Backfit Evaluation for Final Rule:
Amendments to Material Control and Accounting
Regulations (10 CFR Part 74)**

U.S. Nuclear Regulatory Commission

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ABBREVIATIONS AND ACRONYMS

ADAMS	Agencywide Documents Access and Management System
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
FNMC	fundamental nuclear material control
FR	<i>Federal Register</i>
GAO	Government Accountability Office
GPO	general performance objective
IAEA	International Atomic Energy Agency
ICA	item control area
ISFSI	independent spent fuel storage installation
MBA	material balance area
MC&A	material control and accounting
NMMSS	Nuclear Materials Management & Safeguards System
NRC	U.S. Nuclear Regulatory Commission
OIG	Office of the Inspector General
ORNL	Oak Ridge National Laboratory
RIS	reporting identification symbol
SECY	Office of the Secretary of the Commission
SEID	standard error of the inventory difference
SM	source material
SNM	special nuclear material
SRM	staff requirements memorandum
SSNM	strategic special nuclear material

I. INTRODUCTION

I.1 Background

The U.S. Nuclear Regulatory Commission (NRC) is amending Title 10 of the *Code of Federal Regulations* (10 CFR), Part 74, “Material Control and Accounting of Special Nuclear Material.” This rulemaking was proposed as an option in a rulemaking plan provided for Commission approval in SECY-08-0059, “Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material,” dated April 25, 2008 (Agencywide Documents Access Management System (ADAMS) Accession No. ML080580307). In the staff requirements memorandum (SRM) for SECY-08-0059, dated February 5, 2009 (ADAMS Accession No. ML090360473), the Commission approved Option 4 and directed the NRC staff to revise and consolidate the current material control and accounting (MC&A) regulations for special nuclear material (SNM). Option 4 states, in pertinent part, as follows:

Option 4 – Rulemaking Limited To Revising And Consolidating Current MC&A Regulations In Part 74.

Under this option, MC&A requirements for SNM would be consolidated in Part 74. This would result in the relocation of the Nuclear Material Management and Safeguards System (NMMSS)-related reporting requirements for an independent spent fuel storage installation (ISFSI) that are currently located in Part 72 [“Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-level Radioactive Waste, and Reactor-related Greater than Class C Waste.”]. Similar requirements already exist in Subpart B of Part 74.

Conforming changes to Parts 72 and 74 would be made to reflect the relocation. This relocation would complete an effort to consolidate MC&A requirements that began in the 1980s. There are NMMSS reporting requirements that are located in Part 40 [“Domestic Licensing of Source Material”] that apply to source material [SM]. These requirements would not be moved as they are not applicable for SNM. There are also NMMSS reporting requirements in Part 150 that apply to Agreement State licensees. These requirements would not be relocated to Part 74.

Under this option, Part 74 would be revised to make it clear what requirements apply to different types of facilities. Although the Subpart B general provisions apply to almost all facilities that are authorized to possess and use SNM, some licensees and NRC staff have expressed confusion as to what requirements apply to a particular facility. The staff plans to revise Part 74 so that it is clear what provisions apply to various types of facilities.

In addition, the general provisions do not currently contain performance objectives for the MC&A program. The staff plans to include general performance objectives [GPOs] that would apply to nearly all licensees. Examples of possible performance objectives are the need to confirm the presence of SNM and to resolve indications of missing material. The staff is also considering the addition of some basic system capabilities such as an item

control system. These new performance objectives and system capabilities would apply to nearly all licensees that are authorized to possess and use SNM.

Some exemptions in the existing regulations would be deleted or modified. A couple of examples include the exemption for sealed sources and exemptions in the item control program. Part 74 would be revised to include definitions for some new terms and to clarify the definitions of some terms. Terms such as item, material balance area, receipt, reconciliation, and waste are some of the terms that would be added or clarified.

Part 74 would also be revised to add requirements to strengthen requirements related to tamper-indicating device programs. Other miscellaneous changes would also be made to Part 74 requirements for Categories I, II, and III facilities. Because it is hard to follow and understand some of the requirements, plain language revisions would also be made to Subparts C, D, and E.

On November 8, 2013, the NRC published in the *Federal Register* (FR) for public comment a proposed rule (78 FR 67225), in accordance with Commission direction, to revise and consolidate the MC&A requirements in order to update, clarify, and strengthen them. The proposed rule addressed MC&A programs, including administrative procedures and operations to track and control SNM and related information to deter and detect loss, theft, diversion, or unauthorized production of nuclear material. Some of the revisions add new requirements applicable to NRC licensees who are authorized to possess SNM in a quantity greater than 350 grams. In Section XV (Backfitting and Issue Finality) of the 2013 notice of proposed rulemaking, the NRC found that the backfitting provisions in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities" (§ 50.109), 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material" (§ 70.76), and 10 CFR Part 72 (§ 72.62), and issue finality provisions in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants" (multiple sections), did not apply. The basis for this determination was that MC&A provisions constitute information collection and reporting requirements of the type that are excluded from consideration under the NRC's backfitting and issue finality regulations. As stated in Section XV of the 2013 notice of proposed rulemaking, this position is reflected in past MC&A rulemakings as well (e.g., 56 FR 55991; October 31, 1991, 67 FR 78130; December 23, 2002, and 73 FR 32453; June 9, 2008).

During the public comment period, the NRC staff held two public meetings on the proposed rule on January 9, 2014 (ADAMS Accession No. ML14031A355), and February 5, 2014 (ADAMS Accession No. ML14041A032). The public comment period closed on March 10, 2014. The NRC also received numerous substantive comments, including comments that disagreed with the proposed rule's backfitting approach. Several of the commenters requested that the NRC conduct a "full backfitting analysis" of the proposed requirements and revise the regulatory analysis for the proposed rule. The NRC staff has revised its backfitting and issue finality discussion to reflect changes from the proposed rule, as well as in response to these comments. This evaluation is provided in the following sections. The revised discussion evaluates in detail the final rule provisions that would be imposed on entities that are the subject of backfitting or issue finality provisions, including MC&A activities relating to safeguards or security, in addition to information collection and reporting activities.

A compilation of all of the specific comments received and the NRC staff responses are provided separately (ADAMS Accession No. ML18061A050) and are summarized in the *Federal Register* notice for the final rule. The NRC staff's revised regulatory analysis, which addresses the effects of the rule changes, beyond backfitting considerations, is also provided separately (ADAMS Accession No. ML18061A055).

I.2 Existing requirements and bases for revisions

I.2.1 Organization and scope of NRC's MC&A regulations

The NRC's existing regulations in 10 CFR Part 74 specify requirements for control and accounting of SNM and some SM. These regulations are implemented (and organized) in a graded fashion.

- Subpart A, "General Provisions," contains general provisions including purpose, scope, definitions, and information collection requirements.
- Subpart B, "General Recordkeeping and Reporting Requirements," contains the NMMSS reporting requirements for most licensees and the requirement for all licensees to report in a timely manner the loss or theft or diversion, or attempted theft or diversion, of SNM, as well as any unauthorized production of enriched uranium. Also included in this subpart are the general requirements for record retention related to MC&A, a requirement for certain licensees to perform physical inventory, and a requirement for certain licensees to establish, maintain, and follow written MC&A procedures. The Subpart B requirements apply to most licensees authorized to possess one gram or more of SNM, except for those licensees that are subject to the reporting requirements in 10 CFR Part 72 (i.e., storage installations for spent nuclear fuel and radioactive waste, including ISFSIs and monitored retrievable storage installations [both hereafter referred to as storage installations]). Additional recordkeeping and reporting requirements apply to licensees with greater amounts of SNM that meet the criteria for Category I, II, or III quantities. The additional requirements for licensees possessing Category I, II, and III quantities of SNM are contained in the applicable Subparts E, D, and C of 10 CFR Part 74, respectively.
- Subpart C, "Special Nuclear Material of Low Strategic Significance," applies to licensees (generally operating fuel fabrication and uranium enrichment facilities) authorized to possess SNM of low strategic significance (hereafter referred to as Category III licensees) and provides the MC&A requirements, including GPOs, system capabilities, inventory, and recordkeeping.
- Subpart D, "Special Nuclear Material of Moderate Strategic Significance," applies to licensees authorized to possess SNM of moderate strategic significance (hereafter referred to as Category II licensees) and provides the MC&A requirements, including GPOs, system capabilities, inventory, and recordkeeping.
- Subpart E, "Formula Quantities of Strategic Special Nuclear Material," applies to licensees authorized to possess formula quantities of strategic SNM (SSNM) (hereafter referred to as Category I licensees) and provides the MC&A requirements, including GPOs, system capabilities, inventory, and recordkeeping.
- Subpart F, "Enforcement," primarily addresses inspections and violations.

As previously noted, existing 10 CFR Part 72 contains the MC&A requirements for storage installations and provides the requirements for NMMSS reporting, loss or theft reporting, physical inventory, records, and procedures. These 10 CFR Part 72 requirements also apply to licensees subject to 10 CFR Part 60, “Disposal of High-Level Radioactive Wastes in Geologic Repositories,” and 10 CFR Part 63, “Disposal of High-Level Radioactive Wastes in a Geologic Repository at Yucca Mountain, Nevada,” although no such geologic repositories are currently licensed.

The requirements in 10 CFR Part 40 apply to SM licensees and contain NMMSS reporting requirements for SNM. The requirements in 10 CFR Part 150, “Exemptions and Continued Regulatory Authority in Agreement States and in Offshore Waters under Section 274,” apply to Agreement State licensees and contains NMMSS reporting requirements for both SM and SNM. The requirements in 10 CFR Part 75, “Safeguards on Nuclear Material – Implementation of US/IAEA [International Atomic Energy Agency] Agreement,” establish a system of nuclear material accounting and nuclear material control to implement the agreement between the United States and the IAEA for the application of safeguards in the United States (referred to as the U.S./IAEA Safeguards Agreement). These requirements apply to any NRC or Agreement State licensee that is under IAEA safeguards.

Maintaining control and accounting of nuclear material¹ through an effective MC&A program helps ensure adequate protection in the secure use and management of nuclear material. An effective MC&A program requires complete records of inventory and material transfer. Accounting records are prepared for the activities involving an item of nuclear material—for example, a record of its quantity and location; a record of movement to a new location; a record of opening a container of nuclear material; a record adding the nuclear material to a chemical or physical process; or a record of shipment or disposal. The accuracy of the accounting records is confirmed by conducting periodic physical inventories. Records are updated following the physical inventory to reflect the actual status, including the quantity and location of nuclear material items. Other measures are implemented for monitoring items between inventory takings by use of random sampling and, where appropriate, a statistical quality control program monitors nuclear material during processing. An effective MC&A program deters and detects actions taken by an insider who intends to steal nuclear material or assist an outsider to do so. By ensuring the control of these materials, the MC&A program is an integral part of protection of public health and safety and promotes the common defense and security.

1.2.2 Why are the MC&A regulations being revised?

The NRC’s regulations for MC&A were first issued by the Atomic Energy Commission on February 2, 1956 (21 FR 764). These regulations, located at that time in § 70.51, required all licensees possessing SNM to “keep records, showing receipt, inventory and transfer” of SNM. The regulations have been revised over the years, in part, to incorporate the concept of graded safeguards based upon the strategic significance of the material and to reflect changes in facilities and technologies. The original rule structure consisted of the MC&A requirements interspersed among the safety and general licensing requirements of 10 CFR Part 70 and was revised in 1985 (50 FR 7575;

¹ “Nuclear material” or “material” used in this document means SNM or SM as defined in § 74.4, Definitions.

February 25, 1985). The 1985 rulemaking created 10 CFR Part 74 and moved the MC&A requirements applicable to Category III licensees out of 10 CFR Part 70, with the intention of 10 CFR Part 74 eventually containing all of the domestic MC&A regulatory requirements. These changes were made for a number of reasons: (1) to avoid confusion with the safety requirements in 10 CFR Part 70; (2) to allow the requirements to be presented in a more orderly manner; and (3) to be consistent with the use of 10 CFR Part 73, "Physical Protection of Plants and Materials," for physical protection requirements so that specific safeguards program requirements would be found in 10 CFR Parts 73 and 74, with the general licensing requirements for SNM retained in 10 CFR Part 70. Subsequent rulemakings moved the MC&A requirements applicable to Category I licensees (52 FR 10033; March 30, 1987) and Category II licensees (67 FR 78130; December 23, 2002) from 10 CFR Part 70 to 10 CFR Part 74.

Following the events of September 11, 2001, the Commission directed the NRC staff to undertake a comprehensive review of the NRC's safeguards and security programs. The NRC's safeguards and security programs for SNM include physical protection requirements, information security requirements, and MC&A requirements. Physical protection and MC&A programs complement each other in the safeguarding of nuclear materials from unauthorized use or diversion by providing for a variety of measures to promptly detect and deter sabotage, theft, or diversion attempts. The physical protection requirements are focused primarily against external threats, while the MC&A requirements are focused primarily against internal threats. The events of September 11, 2001, demonstrated external threats to facilities and led the NRC staff to prioritize its efforts to initially address existing physical protection requirements. However, the NRC staff also considered existing MC&A program requirements to determine whether any program enhancements were necessary. In addition, several independent reviews of NRC's oversight of SNM were conducted in the 2001-2005 timeframe.

In 2001-2002, the Office of the Inspector General (OIG) conducted an audit to determine whether the NRC adequately ensures its licensees control and account for SNM (OIG-03-A-15, "Audit of NRC's Regulatory Oversight of Special Nuclear Material," dated May 23, 2003, ADAMS Accession No. ML031550068). OIG found that "NRC's current [c. 2003] levels of oversight of licensees' MC&A activities do not provide adequate assurance that all licensees properly control and account for SNM." In response to this audit, the NRC engaged the Oak Ridge National Laboratory (ORNL) to perform a review of the NRC's MC&A program, including regulations, practices, and inspections. ORNL's review, conducted in 2003 and 2004, included recommendations in four principal topic areas, including regulations, licensing, inspection program, and safeguards management program.

In 2005, the U.S. Government Accountability Office (GAO) reviewed the effectiveness of the NRC's regulations and oversight of nuclear power plant performance in controlling and accounting for their spent fuel (GAO-05-339, "Nuclear Regulatory Commission: NRC Needs to Do More to Ensure that Power Plants are Effectively Controlling Spent Nuclear Fuel," dated April 12, 2005, ADAMS Accession No. ML051120124). GAO recommended that the NRC consider revising the MC&A regulations and updating inspection procedures for spent fuel pools at nuclear power reactors.

During this same time period, the NRC took several actions in response to the lessons learned from the MC&A inspections at commercial nuclear power reactors conducted after an event in 2000 where a power reactor licensee failed to adequately control and

account for the SNM contained in two spent fuel rods. During this effort, completed in 2007, the NRC inspected and evaluated 100 percent of the power reactor and wet storage sites. The NRC actions included revisions to inspection procedures and schedules for nuclear reactors to include MC&A in the baseline inspection program. Additionally, revisions were made to guidance for MC&A at power reactors.

These reviews highlighted several areas where significant enhancements and efficiencies could be made, particularly in the areas of regulations, guidance, and inspection programs. In 2005, the NRC staff used the review recommendations and the lessons learned described above to inform its recommendation to the Commission that the MC&A regulations be revised to clarify and strengthen the requirements and associated guidance documents. The Commission subsequently directed the NRC staff to develop a rulemaking plan to incorporate improvements to the MC&A regulatory program. In 2007, the NRC staff documented the technical basis (ADAMS Accession No. ML072130075) for developing the rulemaking plan to revise the MC&A regulations. As previously noted in Section I.1 of this document, the NRC staff developed the rulemaking plan (SECY-08-0059), and the Commission directed the NRC staff (SRM-SECY-08-0059) to proceed with rulemaking limited to revising and consolidating the existing MC&A regulations in 10 CFR Part 74 (i.e., Option 4).

I.3 Entities that are the subject of backfitting provisions

The final rule will affect nuclear reactors licensed under 10 CFR Part 50 or Part 52, materials licensees authorized to possess SNM in quantities greater than a critical mass under 10 CFR Part 70 Subpart H, and storage installations for spent nuclear fuel and radioactive waste licensed under 10 CFR Part 72. Entities licensed under those parts are the subject of backfitting provisions. Other licensees that are subject to 10 CFR Part 74, but not included under the backfitting sections of 10 CFR Parts 50, 70, and 72, are not the subject of backfitting provisions.

I.3.1 10 CFR Part 50 or 52 licensees

Nuclear power reactors licensed under 10 CFR Part 50 or Part 52 are the subject of backfitting and issue finality provisions in § 50.109 and in 10 CFR Part 52, respectively. The backfitting provisions in § 50.109 do not apply to non-power reactors licensed under 10 CFR Part 50; therefore, these facilities are not considered in this document. However, any additional cost at these facilities due to the requirements in the final rule is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

I.3.2 10 CFR Part 70 licensees

The facilities licensed under 10 CFR Part 70 and subject to the requirements of Subpart H are the subject of the backfitting provisions in § 70.76. These licensees include three facility types: (1) those authorized to possess or use a formula quantity of SSNM (Category I licensees); (2) those authorized to possess or use SNM of moderate strategic significance (Category II licensees); and (3) those authorized to possess or use SNM of low strategic significance (Category III licensees). Currently, there are no existing Category II licensees. Other 10 CFR Part 70 licensees are not subject to Subpart H, and, therefore, not the subject of the backfitting provisions in § 70.76. The cost at these facilities due to the requirements in the final rule is also evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

I.3.3 10 CFR Part 72 licensees

Storage installations for spent nuclear fuel and radioactive waste licensed under 10 CFR Part 72 are the subject of the backfitting provisions in § 72.76.

I.4 Backfit requirements

In accordance with the NRC's backfitting provisions in §§ 50.109, 70.76, and 72.62, and the issue finality provisions in 10 CFR Part 52, this document presents the NRC staff's evaluation of the amendments to the regulations for control and accounting of SNM. This evaluation examines each of the final rule provisions, whether any of these provisions constitute backfitting², and whether any such backfits are subject to an exception to the applicable backfit analysis requirements.

Backfitting is defined as the modification of, or addition to, systems, structures, or components of a facility; or to the procedures or organization required to operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previous NRC staff position.

The NRC must conduct a backfit analysis to justify backfitting unless a specified exception applies. The backfit analysis must demonstrate that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit, and that the direct and indirect costs of implementation for the facility are justified in view of this increased protection.

Two of the exceptions to the requirement to conduct a backfit analysis are related to actions necessary to ensure adequate protection or to actions that involve defining or redefining adequate protection. These adequate protection exceptions apply to some of the provisions in this final rule, as discussed in detail in Section III of this document. The provisions in the final rule that do not constitute backfitting are discussed in detail in Section II of this document.

² The discussion of backfitting in this document also applies to applicable violations of issue finality afforded under 10 CFR Part 52. For brevity, the term "backfitting" or "backfit" is used in this general sense.

II. FINAL RULE PROVISIONS THAT DO NOT CONSTITUTE BACKFITTING

This backfit evaluation examines the final rule provisions for affected licensees. The final rule provisions that do not constitute backfitting include those that fall into one or more of the following categories, as discussed in NUREG-1409, "Backfitting Guidelines" (ADAMS Accession No. ML032230247):

- Administrative matters
Revisions that make minor administrative changes, such as correction of typographic errors, correction of inconsistencies, relocating requirements from one section to another, and combining existing requirements into a single section.
- Information collection and reporting requirements
Revisions that either amend existing information collection and reporting requirements or impose new information collection and reporting requirements, which are not themselves considered to be backfits.
- Clarifications
Revisions that clarify existing requirements to assure consistent understanding and implementation of the NRC's original intent for these requirements. These revisions remove ambiguities that produce regulatory uncertainty without changing the underlying requirements stated in the associated sections.
- Permissive relaxations or voluntary alternatives
Revisions that permit, but do not require, relaxations or alternatives to existing requirements (i.e., licensees are free to either comply with existing requirements or adopt the relaxed requirements or a voluntary alternative as a binding requirement).

The NRC staff determined that many of the final rule provisions fall into one or more of these categories and, therefore, are not backfitting. In addition, there are final rule provisions that might otherwise constitute backfitting, but they do not affect any existing licensed entities (or applicants referencing previous approvals under 10 CFR Part 52), and therefore these provisions are not considered backfitting. A summary of these final rule provisions is provided in Table II-1 along with the relevant basis or bases for the NRC staff's determination that the provision does not constitute backfitting. Each of these provisions, along with related conforming changes in 10 CFR Parts 40, 60, 63, 70, 72, and 150, is discussed in detail following the table.

Table II-1 Summary of 10 CFR Part 74 changes that do not constitute backfitting

	Change	Location in 10 CFR Part 74	Reason(s) not backfitting
1	Revise the scope of 10 CFR Part 74 to consolidate requirements for 10 CFR Part 72 licensees.	§ 74.2	Administrative
2	Consolidate existing GPOs in § 74.3 of Subpart A.	§§ 74.3; 74.31(a)(1), (b), and (c); 74.33(a) and (b)(1); 74.41(a)(1), (b), and (c); 74.43(d)(5); 74.51(a)(1), (b), and (c)	Administrative; clarification; no affected licensed entities
3	Remove, add, and revise definitions.	§ 74.4	Administrative; clarification
4	Remove obsolete information for the NRC Headquarters Operations Center.	§ 74.11(b)	Reporting requirement
5	Update and reorganize the provision regarding material status reports.	§ 74.13	Reporting requirement
6	Add exception from performing the independent tests for foreign receipts.	§ 74.15(b)(2)	Voluntary relaxation
7	Reduce possession threshold value from 1 effective kilogram to 350 grams of SNM.	§§ 74.19(b), 74.31(a)(1), 74.33(a)	No affected licensed entities subject to 10 CFR Part 70, Subpart H
8	Clarify the possession threshold for Category II licensees.	§ 74.41(a)(1)	Clarification; no affected licensed entities
9	Clarify language of §§ 74.41(a)(1) and 74.51(a)(1)	§§ 74.41(a)(1) and 74.51(a)(1)	Clarification; no affected licensed entities
10	Update the list of excluded facilities.	§§ 74.31(a)(2), 74.41(a)(2), 74.51(a)(2)	Clarification; no affected licensed entities
11	Update references to the MC&A plan.	§§ 74.31(b) and (c); 74.33(b) and (c); 74.41(b) and (c); 74.43(b)(3); 74.51(b), (c), and (d); 74.57(c); 74.59(b)(2)	Administrative; no affected licensed entities
12	Replace the term “system” with “program.”	§§ 74.31(c) and (c)(8); 74.33(c) and (c)(8); 74.33(d)(1); 74.41(c); 74.43(b)(4), (b)(8), and (d)(5); 74.51(c); 74.57(d)(3); 74.59(b)(2), (c), (h)(3), and (h)(4)	Administrative; no affected licensed entities
13	Clarify references to the standard error of the inventory difference (SEID).	§§ 74.31(c)(4), 74.33(c)(3)(ii), 74.45(c)(4)	Clarification; administrative; no affected licensed entities
14	Update to calendar days.	§§ 74.31(c)(5); 74.33(c)(4)(i) and (ii); 74.51(d); 74.53(a)(3),(4) and (c)(1); 74.59(e)(7),(f)(1), and (h)(2)(ii)	Administrative; clarification; voluntary relaxation
15	Update reference to shipper-receiver difference “comparisons.”	§§ 74.31(c)(7), 74.33(c)(7), 74.43(b)(7)	Administrative; no affected licensed entities
16	Revise item control requirements for Category II licensees.	§ 74.43(b)(5) and (6)	No affected licensed entities
17	Add designation of material balance areas, item control areas, and custodians for Category II licensees.	§ 74.43(c)(9)	No affected licensed entities
18	Remove reference to irradiated fuel reprocessing plant.	§ 74.51(a)(1)	No affected licensed entities
19	Clarify provisions regarding tamper-safing procedures for Category II and I licensees.	§§ 74.43(c)(3), 74.59(f)(2)(i)	Clarification, no affected entities
20	Add a table on categorization of nuclear material as Appendix A to 10 CFR Part 74.	Appendix A to Part 74, Categories of Special Nuclear Material	Administrative

II.1 **Revise the scope of 10 CFR Part 74 to consolidate requirements for 10 CFR Part 72 licensees**

This change updates the scope of the MC&A regulations in 10 CFR Part 74 to include storage installations licensed under 10 CFR Part 72.

Final Rule Text. *In § 74.2, paragraph (a) is revised to read as follows:*

§ 74.2 Scope.

(a) The general reporting and recordkeeping requirements of subpart B of this part apply to each person licensed under parts 50, 52, 60, 63, 70, and 72 of this chapter who possesses special nuclear material in a quantity of one gram or more of contained uranium-235, uranium-233, or plutonium; or who transfers or receives a quantity of one gram or more of contained uranium-235, uranium-233, or plutonium.

Under the existing regulations, the MC&A requirements for storage installations are located in 10 CFR Part 72. Paragraph (a) of § 74.2 is amended in the final rule to bring within the scope of 10 CFR Part 74 the licensees who possess spent nuclear fuel or radioactive waste at a storage installation licensed under 10 CFR Part 72. The duplicate MC&A requirements in the existing 10 CFR Part 72 are consolidated in 10 CFR Part 74. The change is administrative in nature and does not impose any new requirements on any existing storage installation licensee. Therefore, the change in § 74.2 does not constitute backfitting.

Conforming changes related to the revised 10 CFR 74.2

Conforming changes are made to §§ 72.72 and 72.74. The requirement for recordkeeping in § 72.72(a) is relocated to existing § 74.19(a), which is not revised by the final rule. The requirement for physical inventory in § 72.72(b) is relocated to existing § 74.19(c), which is not revised by the final rule. The requirement for written MC&A procedures in § 72.72(c) is relocated to § 74.19(b) in the final rule. The requirement for recordkeeping in § 72.72(d) is relocated to § 74.19(e) in the final rule. The requirement to report loss of SNM in § 72.74 is relocated to § 74.11 in the final rule. With respect to the MC&A requirements for SNM, § 72.72 is revised to simply refer to Subparts A and B of 10 CFR Part 74. The requirement for submitting material status reports to NMMSS in § 72.76 is removed from 10 CFR Part 72 because it is duplicated in § 74.13. The requirement for submitting nuclear material transaction reports to NMMSS in § 72.78 is removed from 10 CFR Part 72, because it is duplicated in § 74.15.

Conforming changes are also made to §§ 40.64 and 150.17(b) to remove references therein to material status reports filed under 10 CFR Part 72. The material balance, inventory, and records requirements for stored material in § 72.72 are revised to refer to §§ 40.61 and 40.64, insofar as these MC&A requirements pertain to SM instead of SNM. Also, conforming changes are made to §§ 60.78 and 63.78 to remove the references to §§ 72.76 and 72.78, which are removed by the final rule, and replace with references to Subpart B of 10 CFR Part 74. These conforming changes are necessary to change references to the identical, relocated MC&A provisions for 10 CFR Part 72 licensees. They do not impose any new requirements on any existing licensees and, therefore, the conforming changes in 10 CFR Parts 40, 60, 63, 72, and 150 do not constitute backfitting.

II.2 Consolidate existing GPOs in 10 CFR 74.3 of Subpart A

The existing GPO provisions are set forth for Category III, II, and I licensees in §§ 74.31(a), 74.33(a), 74.41(a), and 74.51(a). Building on these existing GPOs, a new § 74.3 consolidates the GPOs and is now applicable to all licensees authorized to possess more than 350 grams of SNM, including nuclear reactors licensed under 10 CFR Part 50 or Part 52 and storage installations licensed under 10 CFR Part 72.

II.2.1 New 10 CFR 74.3

Final Rule Text. *In Subpart A, § 74.3 is added to read as follows:*

§ 74.3 General performance objectives.

In addition to any other requirements in this part, each licensee who is authorized to possess or use SNM in a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at a fixed site shall implement and maintain a material control and accounting program that enables the licensee to achieve the following general performance objectives in a timely manner:

- (a) Maintain accurate, current, and reliable information on, and confirm the quantities and locations of, SNM in its possession;
- (b) Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM;
- (c) Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SNM has occurred;
- (d) Provide information to aid in the investigation and recovery of missing SNM in the event of an actual loss, theft, diversion, or misuse; and
- (e) Control access to MC&A information to preclude loss, theft, diversion, or misuse of SNM.

These provisions in § 74.3 are intended to preclude loss, theft, diversion, or misuse of SNM and apply to all licensees authorized to possess or use greater than 350 grams of SNM. The § 74.3 GPOs replace the common elements of the existing GPOs for Category III, II, and I licensees in §§ 74.31(a), 74.33(a), 74.41(a), and 74.51(a). The GPOs that are unique to Category III uranium enrichment facility licensees, to Category II licensees, and to Category I licensees remain in the relevant sections (§§ 74.33(a), 74.41(a), and 74.51(a)) in the final rule, respectively, in addition to the GPOs in § 74.3.

*Non-Fuel Cycle Facility Licensees*³. The existing MC&A requirements for current non-fuel cycle facility licensees are limited to the applicable general recordkeeping and reporting requirements contained in Subpart B of 10 CFR Part 74. These licensees are not subject to the requirements in Subpart H of 10 CFR Part 70 or

³ The term “non-fuel cycle facility licensees” used in this document refers to those licensees authorized to possess SNM under 10 CFR Part 70, but who are not subject to Subpart H of 10 CFR Part 70 or the requirements in Subparts C, D, or E of 10 CFR Part 74, as well as those licensees authorized to possess SNM under other Parts of 10 CFR, such as nuclear reactors or storage installations. While all existing licensees subject to Subparts C, D, or E are involved in fuel cycle activities, other types of future facilities (e.g., those that use SNM for production of isotopes for medical use) may be subject to these subparts.

Subparts C, D, or E of 10 CFR Part 74, because of their possession limits, the type of material possessed (SNM in sealed sources), or other specific exclusions (e.g., for nuclear reactors licensed under 10 CFR Part 50, 10 CFR Part 72 licensees, or waste disposal operations). Existing Subpart B does not contain GPOs for these types of licensees. In the final rule, the introductory paragraph and paragraphs (a), (b), (c), and (d) in § 74.3 extend GPOs to the MC&A programs of non-fuel cycle facility licensees as discussed below [§ 74.3(e) is discussed in the next section of this document].

Existing § 74.19(b) in Subpart B requires all licensees authorized to possess SNM in a quantity exceeding one effective kilogram to establish, maintain, and follow written MC&A procedures that are sufficient to enable the control and accounting of the SNM possessed under the NRC license. This existing provision applies to non-fuel cycle facility licensees, such as power reactors. An important element of an effective MC&A program is establishing and maintaining written procedures to document how the applicable requirements of 10 CFR Part 74 are met. The GPOs in § 74.3 clarify the objectives of the written procedures required by existing § 74.19(b). By implementing the written procedures for controlling and accounting for SNM, a nuclear reactor licensee would achieve the GPOs in § 74.3.

As discussed in Section II.1 of this document, the final rule brings 10 CFR Part 72 storage licensees within the scope of 10 CFR Part 74. The requirement for written MC&A procedures in existing § 72.72(c) for storage installation licensees is relocated to § 74.19(b) in the final rule. Similar to the discussion above, the GPOs in § 74.3 clarify the written procedures for the control and accounting of SNM at storage installations in § 74.19(b) in the final rule. Thus, by implementing the written MC&A procedures, a storage installation licensee under 10 CFR Part 72 would achieve the GPOs in § 74.3. Therefore, the GPO provisions in § 74.3 only clarify the existing requirement in § 74.19(b) for 10 CFR Part 50 or Part 52 nuclear reactor licensees and 10 CFR Part 72 storage installation licensees.

Existing § 74.11(a) in Subpart B requires all licensees that possess one gram or more of SNM to report any loss or theft or unlawful diversion or attempted theft or unlawful diversion of SNM to NRC within 1 hour of discovery. To comply with this reporting requirement, a non-fuel cycle facility licensee must be able to maintain accurate, current, and reliable information and confirm the quantities of the SNM in its possession. A non-fuel cycle facility licensee must be able to detect and respond to indications of possible loss, theft, or diversion in a timely manner. A non-fuel cycle facility licensee must be able to provide information to assist in the investigation and recovery of an actual loss, theft, or diversion of SNM. Thus, the GPO provisions in § 74.3(a)-(d) provide clarification in the requirements and support the existing reporting requirement in § 74.11 for non-fuel cycle facility licensees.

For other non-fuel cycle facility licensees under 10 CFR Part 70 that are authorized to possess and use more than 350 grams but less than a Category III quantity of SNM, the GPO provisions in § 74.3 impose new requirements. However, these licensees are not subject to Subpart H of 10 CFR Part 70 (i.e., these licensees do not meet the applicability criteria in § 70.60) and, therefore, are not the subject of the backfitting provisions in § 70.76. The additional cost for these licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

Licensees possessing Category I, II, or III quantities of SNM. The common elements of the existing GPOs in Subparts C, D, and E of 10 CFR Part 74 are clarified and consolidated into § 74.3 and continue to support the existing requirements in those subparts. The changes, as detailed further in Table II-2, consolidate and relocate the existing GPO provisions in § 74.3. The consolidation and relocation of the existing GPOs into § 74.3 do not impose any new requirements on any existing licensees, as described below.

II.2.2 GPO comparison for Category I, II, and III licensees- 10 CFR 74.3(a) – (d)

The columns in the following table contain the elements in existing GPOs from §§ 74.51(a), 74.41(a), 74.33(a), and 74.31(a) that are clarified and consolidated into § 74.3(a), (b), (c), and (d).

Table II-2 Comparison of existing GPOs to 10 CFR 74.3(a) – (d)

<p align="center">Consolidated GPO regulation for all types of licensees, § 74.3 General Performance Objectives</p>			
<p>In addition to any other requirements in this part, each licensee who is authorized to possess or use SNM in a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at a fixed site shall implement and maintain a material control and accounting program that enables the licensee to achieve the following general performance objectives in a timely manner:</p>			
(a) Maintain accurate, current, and reliable information on, and confirm the quantities and locations of SNM in its possession;	(b) Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM;	(c) Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SNM has occurred;	(d) Provide information to aid in the investigation and recovery of missing SNM in the event of an actual loss, theft, diversion, or misuse; and
<p align="center">Existing regulation for a Category I licensee subject to § 74.51(a)</p>			
<p><i>[NOTE—existing GPO Nos. (2), (3), and (4) have been retained in the final rule at § 74.51(a)(1)(i), (ii), and (iii)]</i></p>			
(4) Ongoing confirmation of the presence of SSNM in assigned locations; and	(1) Prompt investigation of anomalies potentially indicative of SSNM losses; (2) Timely detection of the possible abrupt loss of five or more formula kilograms of SSNM from an individual unit process;	(3) Rapid determination of whether an actual loss of five or more formula kilograms occurred;	(5) Timely generation of information to aid in the recovery of SSNM in the event of an actual loss.
<p align="center">Existing regulation for a Category II licensee subject to § 74.41(a)</p>			
<p><i>[NOTE—existing GPO No. (3) has been retained in the final rule at § 74.41(a)(1)]</i></p>			
(1) Maintain accurate, current, and reliable information on, and confirm, the quantities and locations of SNM in the licensee's possession;	(2) Conduct investigations and resolve any anomalies indicating a possible loss of special nuclear material;	(3) Permit rapid determination of whether an actual loss of a significant quantity of SNM has occurred, with significant quantity being either: (i) More than one formula kilogram of strategic SNM; or (ii) 10,000 grams or more of uranium-235 contained in uranium enriched up to 20.00 percent.	(4) Generate information to aid in the investigation and recovery of missing SNM in the event of an actual loss.
<p align="center">Existing regulation for a Category III uranium enrichment licensee subject to § 74.33(a)</p>			
<p><i>[NOTE—existing GPO Nos. (1) – (9) that refer to SM or production of SNM have been retained in the final rule at § 74.33(a) and 74.33(c)(5)]</i></p>			
(1) Maintain accurate, current, and reliable information of and periodically confirm the quantities and locations of source material and special nuclear material in the licensee's possession;	(4) Resolve indications of missing uranium;		(7) Provide information to aid in the investigation of missing uranium;
<p align="center">Existing regulation for a Category III licensee subject to § 74.31(a)</p>			
(1) Confirm the presence of special nuclear material;	(2) Resolve indications of missing material; and		(3) Aid in the investigation and recovery of missing material.

As illustrated in Table II-2, the common elements in the existing GPO provisions for Category I, II, and III licensees are clarified and consolidated in § 74.3(a), (b), (c), and (d) and do not impose new requirements on any existing licensees. For example, the GPO in existing § 74.31(a)(1) for Category III licensees to “confirm the presence of SNM” requires these licensees to have in place an MC&A program that provides current, accurate, and reliable information about the quantity and location of the SNM in their possession. Therefore, the GPO in § 74.3(a) is not a substantive change to the applicable existing performance objective. Additionally, § 74.3 provides consistency in the language and a central location for the common GPOs for Category I, II, and III licensees.

The GPO provisions represent the fundamental principles of an effective MC&A program. The final rule consolidates these existing principles that are reflected in the existing MC&A programs and associated MC&A procedures used by existing licensees. Existing licensees would not be required to change their MC&A programs in response to the consolidated GPOs in § 74.3. The programmatic activities currently performed by licensees to meet the existing GPOs (for Category I, II, or III licensees) would likewise meet the consolidated GPOs in § 74.3. The GPOs also provide the high-level principles to be addressed in the MC&A programs of future applicants and licensees. The consolidation and relocation of the common elements in the existing GPOs into § 74.3(a), (b), (c), and (d) do not impose new requirements on any existing licensees and, therefore, do not constitute backfitting.

II.2.3 GPO regarding MC&A information – 10 CFR 74.3(e)

The GPO provision in § 74.3(e) requires the licensee to develop an MC&A program that enables the licensee to control access to MC&A information. The GPO provision in § 74.3(e) clarifies existing MC&A requirements as noted below. As such, existing licensees would not be required to perform any additional actions to meet this provision. Licensees are already required to limit access to their facilities and to safeguard their information as discussed below.

Existing § 74.19(d) [§ 74.19(e) in the final rule] requires licensees to maintain adequate safeguards against tampering with and loss of their records. Existing §§ 74.31(d) and 74.33(d)(3) require licensees to maintain adequate safeguards against tampering with and loss of records. Existing §§ 74.43(b)(4) and 74.59(c) require licensees to train and qualify their personnel to maintain a high level of safeguards awareness. Performance objectives related to recordkeeping are also described in the Fundamental Nuclear Material Control (FNMC) plans developed by 10 CFR Part 70 licensees subject to Subparts C, D, or E of 10 CFR Part 74. These FNMC plans (renamed MC&A plans in the final rule, as discussed in Section II.11 of this document) are required in license conditions⁴.

Requirements for physical protection and control of access to the facility where SNM is located are included in 10 CFR Part 73. Licensees under 10 CFR Part 70 that hold classified information (i.e., the existing Category I licensees and the Category III uranium

⁴ Existing § 70.32(c), in part, states that each license authorizing the possession and use of SM or SNM shall contain and is subject to a condition requiring the licensee to maintain and follow a program for control and accounting of SM and SNM, implemented by the FNMC plan required in §§ 74.31(b), 74.33(b), 74.41(b), or 74.51(c).

enrichment facility licensee) are required to meet the requirements in 10 CFR Part 95, "Facility Security Clearance and Safeguarding of National Security Information and Restricted Data," which provide for safeguarding and controlling access to classified information.

The requirements in 10 CFR Part 2, "Agency Rules of Practice and Procedures," § 2.390, "Public inspections, exemptions, requests for withholding," include information or records concerning a licensee's MC&A program for SNM not otherwise designated as Safeguards Information or classified as National Security Information or Restricted Data. Such information is considered commercial or financial information within the meaning of 10 CFR Part 9, "Public Records," § 9.17, "Agency records exempt from public disclosure," and is subject to disclosure only in accordance with the provisions of § 9.19, "Segregation of exempt information and deletion of identifying details."

As discussed in Section II.2.2 of this document, the GPO provisions represent the fundamental principles for an effective MC&A program. The final rule consolidates these existing principles that are reflected in the existing MC&A programs and associated MC&A procedures used by existing licensees. The GPO provision in § 74.3(e) to protect MC&A information clarifies existing MC&A and other regulations regarding protection of information. The activities that licensees currently perform to protect information in accordance with the existing requirements discussed above would likewise meet the GPO provision in § 74.3(e). The clarification in § 74.3(e) does not impose new requirements on any existing licensees and, therefore, does not constitute backfitting.

II.2.4 Changes related to the new 10 CFR 74.3

Revised 10 CFR 74.31(a)(1), (b), and (c)

Final Rule Text. *In § 74.31, paragraphs (a)(1), (b), and (c) are revised, in part, to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use SNM of low strategic significance (as defined in § 74.4 and shown in appendix A to this part) or a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at any site or contiguous sites subject to control by the licensee is subject to the performance objective requirements stated in § 74.3. ...

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and the requirements of paragraph (c) of this section will be met. ...

(c) *Program capabilities.* To achieve the § 74.3 performance objectives, the MC&A program must include the capabilities described in paragraphs (c)(1) through (10) of this section, and require the licensee to: ...

The GPO provisions in existing § 74.31(a)(1), (2), and (3) are consolidated in § 74.3 as summarized in Table II-2 and discussed above. Therefore, the provision in § 74.31(a)(1) is modified to simply refer to “the performance objective requirements stated in § 74.3.” The references in existing § 74.31(b) and (c) to the GPOs of “paragraph (a)” are changed to refer to the consolidated GPOs in “§ 74.3.” These reference changes are administrative in nature and do not impose new requirements on any existing licensees. Therefore, these conforming changes in § 74.31(a)(1), (b), and (c) do not constitute backfitting.

Revised 10 CFR 74.33(a) and (b)(1)

Final Rule Text. *Paragraph (a) of § 74.33 is revised to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(a) *General performance objectives.* Each licensee who is authorized to possess equipment capable of enriching uranium or operate an enrichment facility, and produce, possess, or use SNM of low strategic significance (as defined in § 74.4 and shown in appendix A to this part) or a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at any site or contiguous sites, subject to control by the licensee, is subject to the performance objective requirements stated in § 74.3 and to the following performance objectives:

- (1) Maintain accurate, current, and reliable information on, and confirm the quantities and locations of source material (SM) in its possession;
- (2) Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SM;
- (3) Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SM has occurred;
- (4) Provide information to aid in the investigation and recovery of missing SM in the event of an actual loss, theft, diversion, or misuse; and
- (5) Provide information to aid in the investigation of any unauthorized production of uranium, including unauthorized production of uranium enriched to 10 percent or more in uranium-235. (For centrifuge enrichment facilities, this requirement does not apply to each cascade during its start-up process, not to exceed the first 24 hours.)

With respect to SNM, the GPO provision is consolidated in § 74.3 as summarized in Table II-2 and discussed above. The final rule provision in § 74.33(a) refers to the consolidated GPOs in “§ 74.3.” The final rule provisions in § 74.33 (a)(1) through (4) use the same language as § 74.3(a), (b), (c), and (d), but apply only to SM, as further discussed below.

Existing § 74.33(a)(1), which requires licensees to maintain accurate, current, and reliable information for both SM and SNM, is restated in § 74.33(a)(1) in the final rule with respect to SM. The provision in § 74.3(a) contains the same requirements as they pertain to SNM. Existing § 74.33(a)(4), which requires resolving indications of missing uranium, is included in § 74.33(a)(2) and (3) in the final rule with respect to SM. The provisions in § 74.3(b) and (c) contain the same requirements as they pertain to SNM. Existing § 74.33(a)(7), which requires the licensees to provide information to aid in the recovery of missing uranium, is included in § 74.33(a)(4) in the final rule with respect to SM. The provision in § 74.3(b) contains the same requirement as it pertains to SNM.

Existing § 74.33(a)(2), (3), (5), (6), (8), and (9) pertain to the production of enriched uranium. Because these GPO provisions are unique to Category III uranium enrichment facilities, they remain in § 74.33(a) in the final rule and are not consolidated in § 74.3. In this regard, existing § 74.33(a)(2), (3), (5), and (6) are included in § 74.33(c)(5) in the final rule, which contains program capabilities required to provide high assurance of detecting and resolving any unauthorized production of enriched uranium. Existing § 74.33(a)(8) and (9) are consolidated in § 74.33(a)(5) in the final rule, which requires uranium enrichment facility licensees to provide information to aid in the investigation of any unauthorized production of enriched uranium. Table II-3 shows the cross references for the non-substantive changes to the existing GPO requirements.

Table II-3 GPOs for Category III uranium enrichment facility licensees

Existing GPO	Consolidated GPO or Program Capability
<p>§ 74.33(a)(1) Maintain accurate, current, and reliable information of and periodically confirm the quantities and locations of source material and special nuclear material in the licensee's possession;</p>	<p>§ 74.33(a)(1) for Source Material Maintain accurate, current, and reliable information on, and confirm the quantities and locations of, source material (SM) in its possession; § 74.3(a) for SNM Maintain accurate, current, and reliable information on, and confirm the quantities and locations of, SNM in its possession;</p>
<p>§ 74.33(a)(2) Protect against and detect production of uranium enriched to 10 percent or more in the isotope U-235;</p>	<p>§ 74.33(c)(5)(i) and (ii) (5) A detection program, independent of production, which provides high assurance of detecting and resolving: (i) Production of uranium enriched to 10 percent or more in uranium-235, to the extent that SNM of moderate strategic significance (as defined in § 74.4) could be produced within any 370 calendar day period; (ii) Production of uranium enriched to 20 percent or more in uranium-235; and</p>
<p>§ 74.33(a)(3) Protect against and detect unauthorized production of uranium of low strategic significance;</p>	<p>§ 74.33(c)(5)(iii) (5) A detection program, independent of production, which provides high assurance of detecting and resolving: (iii) Unauthorized production of uranium of low strategic significance (as defined in § 74.4);</p>
<p>§ 74.33(a)(4) Resolve indications of missing uranium;</p>	<p>§ 74.33(a)(2) and (3) for SM (2) Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SM; (3) Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SM has occurred; § 74.3(b) and (c) for SNM (b) Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM; (c) Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SNM has occurred;</p>
<p>§ 74.33(a)(5) Resolve indications of production of uranium enriched to 10 percent or more in the isotope U-235 (for centrifuge enrichment facilities, this requirement does not apply to each cascade during its start-up process, not to exceed the first 24 hours);</p>	<p>§ 74.33(c)(5)(i) and (ii) (5) A detection program, independent of production, which provides high assurance of detecting and resolving: (i) Production of uranium enriched to 10 percent or more in uranium-235, to the extent that SNM of moderate strategic significance (as defined in § 74.4) could be produced within any 370 calendar day period; (ii) Production of uranium enriched to 20 percent or more in uranium-235; and</p>
<p>§ 74.33(a)(6)</p>	<p>§ 74.33(c)(5)(iii)</p>

Existing GPO	Consolidated GPO or Program Capability
Resolve indications of unauthorized production of uranium of low strategic significance;	(5) A detection program, independent of production, which provides high assurance of detecting and resolving: (iii) Unauthorized production of uranium of low strategic significance (as defined in § 74.4);
<p>§ 74.33(a)(7) Provide information to aid in the investigation of missing uranium;</p>	<p>§ 74.33(a)(4) for SM Provide information to aid in the investigation and recovery of missing SM in the event of an actual loss, theft, diversion, or misuse; and § 74.3(d) for SNM Provide information to aid in the investigation and recovery of missing SNM in the event of an actual loss, theft, diversion, or misuse;</p>
<p>§ 74.33(a)(8) Provide information to aid in the investigation of the production of uranium enriched to 10 percent or more in the isotope U-235; and</p>	<p>§ 74.33(a)(5) Provide information to aid in the investigation of any unauthorized production of uranium, including unauthorized production of uranium enriched to 10 percent or more in uranium-235. (For centrifuge enrichment facilities, this requirement does not apply to each cascade during its start-up process, not to exceed the first 24 hours.)</p>
<p>§ 74.33(a)(9) Provide information to aid in the investigation of unauthorized production of uranium of low strategic significance.</p>	<p>§ 74.33(a)(5) Provide information to aid in the investigation of any unauthorized production of uranium, including unauthorized production of uranium enriched to 10 percent or more in uranium-235. (For centrifuge enrichment facilities, this requirement does not apply to each cascade during its start-up process, not to exceed the first 24 hours.)</p>

The provision in § 74.33(a) is revised to reference the consolidated GPOs in § 74.3 and to retain the provisions unique to Category III uranium enrichment facility licensees. Existing GPOs in § 74.33(a)(1) – (9) that refer to SM or production of SNM are retained in § 74.33(a) and (c)(5) in the final rule. Additionally, the phrase “(as defined in § 74.4)” is added following “SNM of moderate strategic significance” in § 74.33(c)(i) and “SNM of low strategic significance” in § 74.33(c)(ii) to clarify that these terms are defined in § 74.4. These changes are administrative in nature and do not impose new requirements on any existing licensees. The programmatic activities currently performed by licensees to meet the existing GPOs would likewise ensure licensees meet the consolidated GPOs in § 74.3. No additional action is required of any existing licensees to meet the consolidated GPOs in § 74.3. Therefore, the changes to § 74.33(a) do not constitute backfitting.

Final Rule Text. Paragraph (b)(1) of § 74.33 is revised to read as follows:

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(b) *Implementation.* Each applicant for a license who would, upon issuance of a license under any part of this chapter, be subject to the requirements of paragraph (a) of this section shall:

- (1) Submit for approval an MC&A plan describing how the performance objectives of §§ 74.3 and 74.33(a), the program capabilities of § 74.33(c), and the recordkeeping requirements of § 74.33(d) will be met; and ...

Paragraph (b)(1) of existing § 74.33 is revised to refer to the consolidated GPOs in § 74.3 and the GPOs unique to Category III uranium enrichment facility licensees in § 74.33(a) in the final rule. This change in paragraph (b)(1) is administrative in nature and does not impose new requirements on any existing licensees. Therefore, this change in § 74.33(b)(1) does not constitute backfitting.

Revised 10 CFR 74.41(a)(1), (b), and (c), and 74.43(d)(5)

Final Rule Text. In § 74.41, paragraph (a)(1), (b), and (c) are revised, in part, to read as follows:

§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use SNM of moderate strategic significance (as defined in § 74.4 and shown in appendix A of this part), or SSNM in a quantity of more than 1 kilogram but less than 5 kilograms in irradiated fuel reprocessing operations, at any site or contiguous sites subject to control by the licensee, is subject to:

- (i) The performance objective requirements stated in § 74.3; and
- (ii) The performance objective requirement to permit rapid determination of whether an actual loss of a significant quantity of SNM has occurred, with significant quantity being either more than one formula kilogram of SSNM, or 10,000 grams or more of uranium-235 contained in uranium enriched up to 20 percent. ...

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and paragraph (a) of this section will be achieved, and how the requirements of paragraph (c) of this section will be met. ...

(c) *Program capabilities.* To achieve the general performance objectives specified in § 74.3 and paragraph (a) of this section, ...

Final Rule Text. In § 74.43, paragraph (d)(5) is revised, in part, to read as follows:

§ 74.43 Internal controls, inventory, and records.

(d) Recordkeeping. The licensee shall: ...

(5) Establish records that will demonstrate that the performance objectives of § 74.3 and § 74.41(a)(1), the program capabilities of paragraphs (b) and (c) of this section, and § 74.45(b) and (c) have been met, and...

The GPO provisions in existing § 74.41(a)(1), (2), (3), and (4) are consolidated in § 74.3, as summarized in Table II-2 and discussed above. The references in existing § 74.41(b) and (c) to the GPOs in existing § 74.41(a) are changed to refer to the consolidated GPOs in § 74.3 and the GPO unique to Category II licensees in § 74.41(a) in the final rule. The reference in existing § 74.43(d)(5) to the GPOs in existing § 74.41(a)(1) through (4) is changed to refer to the consolidated GPOs in “§ 74.3 and § 74.41(a)(1).” The following table shows the cross references for the non-substantive changes to these existing GPO requirements.

Table II-4 GPOs for Category II licensees

Existing GPO	Consolidated GPO
§ 74.41(a)(1) , Maintain accurate, current, and reliable information on, and confirm the quantities and locations of SNM in the licensee's possession;	§ 74.3(a) , Maintain accurate, current, and reliable information on, and confirm the quantities and locations of SNM in its possession;
§ 74.41(a)(2) , Conduct investigations and resolve any anomalies indicating a possible loss of special nuclear material;	§ 74.3(b) , Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM;
§ 74.41(a)(3) , Permit rapid determination of whether an actual loss of a significant quantity of SNM has occurred, with significant quantity being either: (i) More than one formula kilogram of strategic SNM; or (ii) 10,000 grams or more of uranium-235 contained in uranium enriched up to 20.00 percent.	§ 74.3(c) , Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SNM has occurred; § 74.41(a)(1) , ...permit rapid determination of whether an actual loss of a significant quantity of SNM has occurred, with significant quantity being either more than one formula kilogram of SSNM, or 10,000 grams or more of uranium-235 contained in uranium enriched up to 20 percent.
§ 74.41(a)(4) , Generate information to aid in the investigation and recovery of missing SNM in the event of an actual loss.	§ 74.3(d) , Provide information to aid in the investigation and recovery of missing SNM in the event of an actual loss, theft, diversion, or misuse; and

These changes are administrative in nature and do not impose new requirements on any existing licensees. In addition, as there are no NRC licensees authorized to hold Category II amounts of material, the changes to these provisions do not impose new requirements on any existing licensees. Therefore, the changes to §§ 74.41(a)(1), (b), and (c), and 74.43(d)(5) do not constitute backfitting.

Revised 10 CFR 74.51(a)(1), (b), and (c)

Final Rule Text. Paragraph (a)(1) of § 74.51 is revised to read as follows:

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

- (a) *General performance objectives.* (1) Each licensee who is authorized to possess and use five or more formula kilograms of strategic special nuclear material (SSNM), as defined in § 74.4 and shown in appendix A to this part, at any site or contiguous sites subject to control by the licensee is subject to the performance objective requirements stated in § 74.3, and to the following performance objectives:
- (i) Ongoing confirmation of the presence of SSNM in assigned locations;
 - (ii) Timely detection of the possible abrupt loss of five or more formula kilograms of SSNM from an individual unit process; and
 - (iii) Rapid determination of whether an actual loss of five or more formula kilograms of SSNM occurred.

The GPO provisions in existing § 74.51 are consolidated in § 74.3(b) and (d) as summarized in Table II-2 and discussed above. Existing paragraphs (a)(4), (2), and (3) of § 74.51 are provisions unique to Category I licensees and are relocated to revised paragraphs (a)(1)(i), (ii), and (iii) in § 74.51 in the final rule. The following table shows the cross references for the changes to these existing GPO requirements.

Table II-5 GPOs for Category I licensees

Existing GPO	Consolidated GPO
§ 74.51(a)(1), Prompt investigation of anomalies potentially indicative of SSNM losses;	§ 74.3(b), Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM;
§ 74.51(a)(2), Timely detection of the possible abrupt loss of five or more formula kilograms of SSNM from an individual unit process;	§ 74.3(b), Detect, respond to, and resolve an anomaly indicating a possible loss, theft, diversion, or misuse of SNM; § 74.51(a)(1)(ii), Timely detection of the possible abrupt loss of five or more formula kilograms of SSNM from an individual unit process;
§ 74.51(a)(3), Rapid determination of whether an actual loss of five or more formula kilograms occurred;	§ 74.3(c), Permit rapid determination of whether an actual loss, theft, diversion, or misuse of SNM has occurred; § 74.51(a)(1)(iii), Rapid determination of whether an actual loss of five or more formula kilograms of SSNM occurred.
§ 74.51(a)(4), Ongoing confirmation of the presence of SSNM in assigned locations;	§ 74.3(a), Maintain accurate, current, and reliable information on, and confirm the quantities and locations of SNM in its possession; § 74.51(a)(1)(i), Ongoing confirmation of the presence of SSNM in assigned locations;
§ 74.51(a)(5), Timely generation of information to aid in the recovery of SSNM in the event of an actual loss.	§ 74.3(d), Provide information to aid in the investigation and recovery of missing SNM in the event of an actual loss, theft, diversion, or misuse; and

The provision in § 74.51(a) is changed to reference the consolidated GPOs in § 74.3, and retain the provisions unique to Category I licensees. This change is administrative in nature and does not impose new requirements on existing licensees. The programmatic activities currently performed by licensees to meet the existing GPOs would likewise ensure that licensees meet the consolidated GPOs in § 74.3. Therefore, the change in § 74.51(a)(1) does not constitute backfitting.

Final Rule Text. *In § 74.51, paragraphs (b) and (c) are revised, in part, to read as follows:*

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and paragraph (a) of this section will be achieved, and how the requirements of paragraph (c) of this section will be met. ...

(c) *Program capabilities.* To achieve the general performance objectives specified in § 74.3 and paragraph (a) of this section, the MC&A program must provide the capabilities described in §§ 74.53, 74.55, 74.57, and 74.59 and must incorporate checks and balances that are sufficient to detect falsification of data and reports that could conceal diversion of SNM or SSNM by: ...

Existing § 74.51(c), “Implementation dates,” is redesignated in the final rule as § 74.51(b), “Implementation” (see discussion in Section II.11 of this document). Existing

§ 74.51(b), “System capabilities,” is redesignated in the final rule as § 74.51(c), “Program capabilities” (see discussion in Section II.12 of this document). The reference in existing § 74.51(b) to the GPOs specified in existing § 74.51(a) is changed to refer to the consolidated GPOs in § 74.3 and the GPOs unique to Category I licensees in paragraph (a) of § 74.51 in the final rule. Similarly, the reference in existing § 74.51(c) to the “MC&A system” is changed in § 74.51(b) in the final rule to refer to GPOs in “§ 74.3 and paragraph (a)” of § 74.51. These changes are administrative in nature and do not impose new requirements on any existing licensees. Therefore, these changes to § 74.51(b) and (c) do not constitute backfitting. Additionally, the phrase “of SNM or SSNM” is added after “conceal diversion” in § 74.51(c) in the final rule to clarify the requirement regarding checks and balances. This change is a clarification of the requirement and does not impose new requirements on any existing licensees, as preventing diversion of SNM or SSNM is already an implicit capability of the licensee’s MC&A program. Therefore, this change does not constitute backfitting.

II.3 Remove, add, revise definitions

II.3.1 Remove definition

Final Rule Text. *In § 74.4: the definition, Effective kilograms of special nuclear material, is removed.*

The defined term “effective kilograms of special nuclear material,” and references to it in several 10 CFR Part 74 provisions, is removed and replaced by referencing gram units. For example, the final rule uses gram units in § 74.19(b) regarding the establishment of written material control and accounting procedures, and in §§ 74.31(a), 74.33(a), and 74.41(a) regarding GPOs. “Effective kilograms of special nuclear material” remains as a defined term in 10 CFR Parts 40, 70, 75, 76, and 110 to ensure the continued effective implementation of the U.S./IAEA Safeguards Agreement.

As described in Section II.7 of this document, the final rule reduces the possession threshold for the requirements in §§ 74.19(b), 74.31(a), and 74.33(a) from a quantity of SNM “exceeding one effective kilogram” to a quantity of SNM “greater than 350 grams.” Consequently, the final rule removes the definition of the term “effective kilogram of special nuclear material” from 10 CFR Part 74 since it is no longer used in any of the final rule provisions.

Removing the definition from 10 CFR Part 74 simplifies accounting requirements and provides consistency with the existing definitions of “formula quantity,” “special nuclear material of low strategic significance,” and “special nuclear material of moderate strategic significance,” which specify quantities in gram units. As discussed in Section II.20 of this document, the new Appendix A to 10 CFR Part 74 also uses gram units. The gram unit is the fundamental quantity from which the term, “effective kilogram of special nuclear material,” is derived. The term “effective kilogram” has been used by IAEA for many years to define equivalent quantities of plutonium, uranium-233, and uranium-235 with respect to safeguards significance. Expressing quantities of SNM as gram units instead of a derived unit clarifies the regulatory thresholds used in 10 CFR Part 74. Almost all of the existing NRC licensees who are affected by §§ 74.19(b), 74.31(a), and 74.33(a) possess significantly more than one effective kilogram of SNM, so the change in the threshold would have no effect on their existing programs. The reduction of the possession thresholds, as discussed in Section II.7 of

this document, and consequently the removal of the “effective kilogram of special nuclear material” definition, affects a limited number of existing licensees authorized to possess more than 350 grams but less than one effective kilogram of SNM. However, none of these licensees are subject to 10 CFR Part 70, Subpart H (i.e., these licensees do not meet the applicability criteria in § 70.60), and, therefore, are not the subject of the backfitting provisions in § 70.76. The additional cost for these licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.3.2 Add definitions

Final Rule Text. In § 74.4, the definitions *Accounting*, *Item control system*, *Item control area*, *Material balance area*, *Material control and accounting*, *material custodian*, and *Storage installation* are added in alphabetical order. The new definitions are as follows:

Accounting means a system that documents the quantities of special nuclear material (SNM) held on current inventory by the licensee, and includes tracking of receipts, shipments, and measured discards, and transfers of SNM.

Item control area (ICA) means a designated administrative area within the controlled access area, in which SNM is maintained in such a way that, at any time, a count of the items and the related material quantities can be obtained using the accounting system. Control of items moving into, out of, and within an ICA is by the identity of an item and its assigned material quantity.

Item control system means a system tracking the creation, identity, element and isotopic content, location, and disposition of all items, which enables the licensee to maintain current knowledge of each item.

Material balance area (MBA) means a designated area in which the control of SNM is such that the quantity of material being moved into, out of, and within the MBA is an assigned value based on measurements of both the element content and the isotopic content.

Material control and accounting (MC&A) means a program to control and account for certain types of nuclear material used at a licensed facility, including SNM and source material. The MC&A program serves to deter and detect any loss; theft; diversion; misuse; or unauthorized removal, production, or enrichment of nuclear material.

Material custodian means an individual authorized and qualified by the licensee who is responsible for controlling the movement of all SNM into, out of, and within a material balance area.

Storage installation means an independent spent fuel storage installation or monitored retrievable storage installation for spent fuel and radioactive waste, as defined under part 72 of this chapter.

The new terms “accounting” and “material control and accounting” are commonly used and accepted throughout the regulated community and are included to update and clarify

10 CFR Part 74. The new term “storage installation” is defined to clarify its use in the final rule. The addition of these terms in § 74.4 does not impose any new requirements and, therefore, does not constitute backfitting.

The new terms “material custodian,” “material balance area,” and “item control area” are also commonly used and accepted throughout the regulated community. The division of a facility into MBAs and ICAs forms the basis for accounting and control for nuclear material within a facility’s boundaries and enables localization of potential loss, theft, or diversion of nuclear material. The addition of these terms in § 74.4 does not impose new requirements on any existing licensees and, therefore, does not constitute backfitting. The new terms “custodian,” “material balance area,” and “item control area” are used in the final rule in §§ 74.31(c)(10), 74.33(c)(10), 74.43(c)(9), and 74.59(h)(5). The regulatory changes associated with these revised definitions in the final rule are further discussed in Section II.17 [§ 74.43(c)(9)] and Section III.2.4 [§§ 74.31(c)(10), 74.33(c)(10), and 74.59(h)(5)] of this document.

The requirements in existing §§ 74.33(c)(6) and 74.43(b)(5) use the undefined term, “item control program.” In the final rule, the term “system” replaces the term “program” to consistently clarify a capability that is within a licensee’s overall MC&A program. The addition of the term, “item control system,” in § 74.4 does not impose new requirements on any existing licensees and, therefore, does not constitute backfitting. The new term “item control system” is used in the final rule in §§ 74.19(d), 74.31(c)(6), 74.33(c)(6), and 74.43(b)(5). The regulatory changes associated with these revised definitions in the final rule are further discussed in Section II.16 [§ 74.43(b)(5)], Section III.2.1 [§ 74.19(d)], and Section III.2.2 [§§ 74.31(c)(6) and 74.33(c)(6)] of this document.

The addition of the new terms in § 74.4 adds clarity and consistency to the NRC’s MC&A regulations and does not impose new requirements on any existing licensees because, as discussed above, the terms are commonly used by licensees in implementing their MC&A plans, programs, and systems. Defining these terms in the NRC regulations clarifies the requirements and improves understanding of the regulations, as described in the paragraphs above. Therefore, the clarification through the addition of these terms in § 74.4 does not constitute backfitting.

II.3.3 *Revise definitions*

Final Rule Text. In § 74.4: the definitions of *Formula quantity*, *Special nuclear material of low strategic significance*, and *Special nuclear material of moderate strategic significance* are revised to read as follows:

Formula quantity means strategic special nuclear material in any combination in a quantity of 5,000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium). This class of material is also referred to as a Category I quantity of material as shown in appendix A to this part.

Special nuclear material of low strategic significance means:

(1)(i) Less than an amount of SNM of moderate strategic significance, but more than 15 grams of uranium-235 (contained in uranium enriched to 20 percent or more in uranium-235) or 15 grams of uranium-233 or 15 grams of plutonium or the

combination of 15 grams when computed by the equation, grams = grams contained U-235 + grams plutonium + grams U-233; or
(ii) Less than 10,000 grams but more than 1,000 grams of uranium-235 (contained in uranium enriched to 10 percent or more, but less than 20 percent in uranium-235); or
(iii) 10,000 grams or more of uranium-235 contained in uranium enriched above natural, but less than 10 percent in uranium-235.
(2) This class of material is also referred to as a Category III quantity of material as shown in appendix A to this part.

Special nuclear material of moderate strategic significance means:

(1)(i) Less than a formula quantity of SSNM but more than 1,000 grams of uranium-235 (contained in uranium enriched to 20 percent or more in uranium-235) or more than 500 grams of uranium-233 or plutonium or in a combined quantity of more than 1,000 grams when computed by the equation, grams = (grams contained U-235) + 2 (grams U-233 + grams plutonium); or
(ii) 10,000 grams or more of uranium-235 (contained in uranium enriched to 10 percent or more but less than 20 percent in uranium-235).
(2) This class of material is also referred to as a Category II quantity of material as shown in appendix A to this part.

The existing definition of “formula quantity” is revised in the final rule by adding a reference to a “Category I quantity of material,” thereby conforming this 10 CFR Part 74 definition to the existing 10 CFR Part 73 definition of the same term. The existing definition of “Special nuclear material of moderate strategic significance” is revised in the final rule by adding a reference to a “Category II quantity of material,” thereby conforming this 10 CFR Part 74 definition to the existing 10 CFR Part 73 definition of the same term. The existing definition of “Special nuclear material of low strategic significance” is revised in the final rule by adding a reference to a “Category III quantity of material,” thereby conforming this 10 CFR Part 74 definition to the existing 10 CFR Part 73 definition of the same term. Additionally, as discussed in Section II.20 of this document, a reference is added to the new Appendix A to 10 CFR Part 74 that shows the quantities and units for the categories of special nuclear material. These revised definitions in § 74.4 are administrative in nature, and the terms have the same meaning. The revisions, therefore, do not impose new requirements on any existing licensees. Therefore, the revision of these definitions in § 74.4 does not constitute backfitting.

Conforming changes related to the revised 10 CFR 74.4

In existing §§ 74.31(c)(6), 74.33(c)(6), and 74.43(b)(5), the term, “item control program” is revised in the final rule to refer to the “item control system” that is newly defined in § 74.4 and appears in §§ 74.19(d), 74.31(c)(6), 74.33(c)(6), and 74.43(b)(5) in the final rule. The term “system” replaces the term “program” to consistently describe a capability that is within the overall MC&A program. As discussed in Section II.20 of this document, Appendix A to 10 CFR Part 74 is added to provide the table format showing the existing definitions “Formula quantity,” “Special nuclear material of moderate strategic significance,” and “Special nuclear material of low strategic significance.” As stated above, these existing definitions are not changed except to include a statement to respectively refer to the quantity of material as a Category I, Category II, or Category III quantity of material, as shown in Appendix A. These conforming changes are necessary to change references to the new or revised terms in § 74.4 in the final rule. They do not

represent any additional or different requirements on any existing licensees and, therefore, do not constitute backfitting.

II.4 Remove obsolete information for the NRC Headquarters Operation Center

Final Rule Text. *In § 74.11, paragraph (b) is revised to read as follows:*

§ 74.11 Reports of loss or theft or attempted theft or unauthorized production of special nuclear material.

(b) Each licensee shall make the notifications required by paragraph (a) of this section to the NRC Headquarters Operations Center via any available telephone system to ensure that a report is received within 1 hour.

The change in the final rule removes the obsolete reference to the “Emergency Notification System” and to state that required licensee notifications be made to the NRC via “any available telephone system.” The change in paragraph (b) is a reporting requirement; furthermore, it does not impose a new requirement on any existing licensees. Therefore, the change to § 74.11 does not constitute backfitting.

Conforming changes related to the revised 10 CFR 74.11

The reporting requirement in existing § 72.74 (which is duplicative of § 74.11) about notifying the NRC within 1 hour of discovery of any loss of SNM is changed in the final rule to remove the obsolete reference to the “Emergency Notification System” and to state that the required notification be made to the NRC via “any available telephone system” to ensure that a report is received within 1 hour. This conforming change is necessary to remove the obsolete information in the equivalent reporting requirement in 10 CFR Part 72. A conforming change is also made to § 74.57(c)⁵ to reference “any available telephone system” when reporting unresolved MC&A alarms. This provides consistency in the provisions regarding reports to the NRC. The changes constitute reporting requirements and do not impose new requirements on any existing licensees. Therefore, these changes in §§ 72.74 and 74.57(c) do not constitute backfitting.

II.5 Update and reorganize the provision regarding material status reports

Final Rule Text. *Section 74.13 is revised to read as follows:*

§ 74.13 Material status reports.

(a) All licensees who possess or who had possessed in the previous reporting period one gram or more of irradiated or non-irradiated SNM are required to submit both a Material Balance Report and a Physical Inventory Listing Report of these materials to the NMMSS in accordance with the instructions in paragraph (b) of this section and according to the following schedule:

(1) Nuclear reactor licensees, authorized under part 50 or part 52 of this chapter shall submit both reports within 60 calendar days of the beginning of the physical inventory covered by the reports;

(2) Storage installation licensees, authorized under part 72 of this chapter shall submit both reports within 60 calendar days of the beginning of the physical inventory covered by the reports.

(3) Licensees subject to § 74.31 shall submit both reports within 60 calendar days of the beginning of the physical inventory covered by the reports;

(4) Licensees operating uranium enrichment facilities shall submit both reports

⁵ The final rule provision § 74.57(c) is discussed further in Section II.11 of this document.

within 60 calendar days of the beginning of the physical inventory providing a total plant material balance as described in § 74.33(c)(4)(i);

(5) Licensees subject to subpart D of this part shall submit both reports within 60 calendar days of the beginning of the physical inventory covered by the reports;

(6) Licensees subject to subpart E of this part shall submit both reports within 30 calendar days of the beginning of the physical inventory covered by the reports; and

(7) All other licensees who possess, or had possessed in the previous reporting period, one gram or more of irradiated or non-irradiated SNM shall submit both reports between January 1 and March 31 of each year.

(b) Each licensee shall prepare and submit the reports described in paragraph (a) of this section as follows:

(1) Reports must be submitted for each Reporting Identification Symbol (RIS) account, including all holding accounts, concerning SNM that the licensee has received, produced, possessed, transferred, consumed, disposed, or lost.

(2) Each licensee shall prepare and submit the reports described in this section as specified in the instructions in both NUREG/BR-0007 and NMMSS Report D-24, "Personal Computer Data Input for NRC Licensees."

(i) This prescribed computer-readable report replaces DOE/NRC Form 742, Material Balance Report, and DOE/NRC Form 742C, Physical Inventory Listing Report, which have been previously submitted in paper form.

(ii) Copies of these instructions may be obtained from the U.S. Nuclear Regulatory Commission, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, Washington, DC 20555-0001 or by e-mail to RidsNmssFcse.Resource@nrc.gov.

(c) The Commission may permit a licensee to submit the reports at other times for good cause. Such requests must be submitted in writing to Chief, Material Control and Accounting Branch, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The licensee must continue to report as required until such request is granted.

(d) Any licensee who is required to submit routine Material Status Reports under § 75.35 of this chapter (pertaining to implementation of the U.S./IAEA Safeguards Agreement) shall prepare and submit these reports only as provided in that section (instead of as provided in paragraphs (a) through (b) of this section).

(e) Each licensee subject to the requirements of this section shall resolve any discrepancies identified during the report review and reconciliation process within 30 calendar days of notification of a discrepancy identified by the NRC.

Existing paragraph (a) of § 74.13 is reorganized and re-designated into new paragraphs (a), (b), (c), and (e). Existing paragraph (b) is designated as new paragraph (d). New paragraph (a) contains numbered paragraphs (1) through (7) to identify the types of licensees required to submit material balance reports and physical inventory listing reports and retains the associated reporting schedules in existing paragraph (a). New paragraph (b) retains the reporting instructions in existing paragraph (a), and the references to the reporting guidance (NUREG/BR-0007, "Instructions for the Preparation and Distribution of Material Status Reports," and NMMSS Report D-24, "Personal Computer Data Input for NRC Licensees") referenced in existing paragraph (a). New paragraph (c) retains the provision in existing paragraph (a) which indicates that the reports may be submitted at other times for good cause with prior NRC approval. New paragraph (d) restates the existing paragraph (b) provision regarding reports required

“under § 75.35 of this chapter (pertaining to implementation of the U.S./IAEA Safeguards Agreement).” New paragraph (e) retains the requirement in existing paragraph (a) regarding the resolution of “any discrepancies identified during the report review.”

As discussed above, these changes to § 74.13 are revisions to reporting requirements that clarify the schedules and instructions for filing these reports. Therefore, the changes to § 74.13 do not constitute backfitting.

Conforming changes related to the revised 10 CFR 74.13

The material status report requirements for Agreement State licensees in existing § 150.17 are equivalent to those in existing § 74.13 and are changed to conform to § 74.13 in the final rule. Existing paragraph (a) is reorganized into new paragraphs (a)(1), (2), (3), and (4). New paragraph (a)(1) retains the reporting instructions in existing paragraph (a) and refers to the reporting guidance (NUREG/BR-0007 and NMMSS Report D-24) referenced in existing paragraph (a). New paragraph (a)(2) retains the provision in existing paragraph (a) that the reports may be submitted at other times for good cause with prior NRC approval. New paragraph (a)(3) is the same as existing § 74.13(b) and new § 74.13(d) and refers to the existing requirement in § 150.17a about “implementation of the U.S./IAEA Safeguards Agreement.” New paragraph (a)(4) is the same as the requirement in existing paragraph (a) about resolving “any discrepancy identified during the report review.” Existing paragraph (b) in § 150.17 is changed to remove the references to 10 CFR Part 72 in paragraphs (b)(1) and (2) that are relocated to 10 CFR Part 74 in this final rule. These changes are necessary to conform the equivalent reporting requirements in 10 CFR Part 150 to § 74.13. The changes only concern reporting requirements and do not impose new requirements on any existing licensees that are the subject of backfitting provisions. Therefore, the conforming changes to § 150.17 do not constitute backfitting.

II.6 Add exception from performing the independent tests for foreign receipts

Final Rule Text. *In § 74.15, paragraph (b)(2) is revised to read as follows:*

§ 74.15 Nuclear material transaction reports.

(b) Each licensee who receives 1 gram or more of contained uranium-235, uranium-233, or plutonium from a foreign source shall: ...

(2) Perform independent tests to assure the accurate identification and measurement of the material received, including its weight and enrichment; except that a licensee authorized under parts 50 or 52 of this chapter receiving unirradiated fuel rods or unirradiated fuel assemblies or a licensee authorized under part 70 of this chapter receiving SNM contained in a sealed source that will not be opened need not perform such tests; and ...

Existing § 74.15(b) pertains to each licensee who receives one gram or more of SNM from a foreign source and includes verification of the material upon receipt. Existing paragraph (b)(2) of § 74.15 requires that the receiver perform independent tests to ensure accurate identification and measurement of the material received. Paragraph (b)(2) is revised in the final rule to provide an exception from performing the independent tests for a licensee under 10 CFR Part 50 or 52 receiving fresh fuel and for a licensee under 10 CFR Part 70 receiving a sealed source that will not be opened. There is no safeguards concern for fresh fuel assemblies or encapsulated sources and independent tests are not required for such items received from domestic sources. It is not practical

to require verification measurements of such items upon receipt, as there are no nondestructive methods to complete such measurements. The change in § 74.15(b)(2) is a voluntary relaxation of the existing requirement and, therefore, does not constitute backfitting.

II.7 Reduce possession threshold value from 1 effective kilogram to 350 grams of SNM

This change reduces the possession thresholds in the following provisions: §§ 74.19(b), 74.31(a)(1), and 74.33(a).

II.7.1 Written procedures – 10 CFR 74.19(b)

Final Rule Text. *In § 74.19, paragraph (b) is revised to read as follows:*

§ 74.19 Recordkeeping, procedures, item controls, and physical inventories.

(b) Each licensee authorized to possess special nuclear material, at any one time, in a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall establish, maintain, and follow written material control and accounting procedures that are sufficient to enable the licensee to account for the SNM in its possession under the license. The licensee shall retain these procedures until the Commission terminates the license that authorizes possession of the special nuclear material and retain any superseded portion of the procedures for 3 years after the portion is superseded.

Existing § 74.19(b) applies to licensees authorized to possess SNM in a quantity greater than one effective kilogram and requires that the licensees have and follow written procedures for their MC&A program. Paragraph (b) is revised to reduce the possession threshold for the requirement from a quantity of SNM “exceeding one effective kilogram” to a quantity of SNM “greater than 350 grams.”

Under the existing regulation, a licensee authorized to possess greater than 350 grams but less than one effective kilogram of SNM is required by existing § 74.19(c) to perform an annual physical inventory, but not required to have written procedures for its MC&A program. An important element of an effective MC&A program is establishing and maintaining written procedures to document how the applicable requirements of 10 CFR Part 74 are met. Physical inventory is also an important element of an effective MC&A program, and written inventory procedures document the responsibilities, methodologies, and reporting requirements for confirming the presence of all SNM items. The change to this provision corrects an inconsistency between § 74.19(b) and (c) by establishing the same possession threshold of 350 grams for both requirements.

As previously discussed in Section II.3.1 of this document, this change affects only the very few existing NRC licensees who currently possess SNM in quantities between these two threshold levels. While this change is a new requirement for licensees authorized to possess more than 350 grams but less than one effective kilogram of SNM, these licensees are not subject to 10 CFR Part 70, Subpart H (i.e., these licensees do not meet the applicability criteria in § 70.60) and, therefore, are not the subject of the backfitting provisions in § 70.76. The additional cost for these licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.7.2 Category III licensees – 10 CFR 74.31(a)(1) and 74.33(a)

Final Rule Text. In § 74.31, paragraph (a)(1) is revised to read as follows:

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use SNM of low strategic significance (as defined in § 74.4 and shown in appendix A to this part) or a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at any site or contiguous sites subject to control by the licensee is subject to the performance objective requirements stated in § 74.3.

Final Rule Text. In § 74.33, paragraph (a) is revised, in part, to read as follows:

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(a) *General performance objectives.* Each licensee who is authorized to possess equipment capable of enriching uranium or operate an enrichment facility, and produce, possess, or use SNM of low strategic significance (as defined in § 74.4 and shown in appendix A to this part) or a quantity greater than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, at any site or contiguous sites, subject to control by the licensee, is subject to the performance objective requirements stated in § 74.3 and to the following performance objectives:

...

The changes reduce the possession threshold for 10 CFR Part 74 Subpart C requirements from a quantity of SNM “exceeding one effective kilogram” to a quantity of SNM “greater than 350 grams.” As discussed in Section II.3.1 of this document, the definition of “effective kilograms of special nuclear material” is removed from 10 CFR Part 74 to eliminate confusion caused by a conflict between the regulatory thresholds for the SNM categories (Category I, II, and III) and an effective kilogram of SNM. The changes correct the regulatory gap in the MC&A requirements for licensees whose possession limits are between one effective kilogram and 350 grams of SNM and correspond with the change in § 74.19(d) in the final rule. There are no existing licensees subject to Subpart C of 10 CFR Part 74 whose possession limits are between one effective kilogram and 350 grams of SNM. Thus, even though the scope of these provisions is changed to correct the noted discrepancy, these licensees are not subject to 10 CFR Part 70, Subpart H (i.e., these licensees do not meet the applicability criteria in § 70.60) and, therefore, are not the subject of the backfitting provisions in § 70.76. Therefore, the changes to reduce the possession thresholds to 350 grams in §§ 74.31(a)(1) and 74.33(a) do not constitute backfitting. The additional cost for these licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.8 Clarify possession threshold for Category II licensees

Final Rule Text. In § 74.41, paragraph (a)(1) is revised, in part, to read as follows:

§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use SNM of moderate strategic significance (as defined in § 74.4 and

shown in appendix A of this part), or SSNM in a quantity of more than 1 kilogram but less than 5 kilograms in irradiated fuel reprocessing operations, at any site or contiguous sites subject to control by the licensee, ...

In existing § 74.41(a) of Subpart D, the possession threshold quantity for SSNM that is stated as “exceeding one effective kilogram” for irradiated fuel reprocessing operations overlaps the possession threshold quantity in existing § 74.51(a) that is stated as “five or more formula kilograms of SSNM” for Subpart E. In the final rule, the overlap is eliminated by stating the possession threshold in § 74.41(a)(1) as “SSNM in a quantity of more than 1 kilogram but less than 5 kilograms.” This change clarifies which licensees are subject to the MC&A requirements of Subpart D. As there are no NRC licensees authorized to possess Category II quantities of SNM, these changes do not impose new requirements on any existing licensees. Therefore, the changes to § 74.41(a) do not constitute backfitting. The additional cost for licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.9 Clarify language of 10 CFR 74.41(a)(1) and 74.51(a)(1)

Final Rule Text. *In § 74.41, paragraph (a)(1) is revised, in part, to read as follows:*
§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use SNM of moderate strategic significance (as defined in § 74.4 and shown in appendix A of this part), or SSNM in a quantity of more than 1 kilogram but less than 5 kilograms in irradiated fuel reprocessing operations, at any site or contiguous sites subject to control by the licensee, ...

Final Rule Text. *In § 74.51, paragraph (a)(1) is revised, in part, to read as follows:*
§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(a) *General performance objectives.* (1) Each licensee who is authorized to possess and use five or more formula kilograms of strategic special nuclear material (SSNM), as defined in § 74.4 and shown in appendix A to this part, at any site or contiguous sites subject to control by the licensee ...

The changes to §§ 74.41 and 74.51 in the final rule include inserting the phrase “or contiguous sites subject to control by the licensee” into each paragraph (a)(1). These changes clarify the language and conform the provisions to the existing language in Subpart C, thereby providing consistency in the provision language for Category I, II, and III licensees. These changes are clarifications and do not impose new requirements on any existing licensees. Thus, these changes to §§ 74.41(a)(1) and 74.51(a)(1) do not constitute backfitting.

II.10 Update list of excluded facilities

This change updates the excluded facilities in the following provisions: §§ 74.31(a)(2), 74.41(a)(2), and 74.51(a)(2).

Final Rule Text. *In § 74.31, paragraph (a)(2) is revised to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(a) *General performance objectives.* ...

(2) Nuclear reactor facilities licensed under part 50 or 52 of this chapter, storage installations licensed under part 72 of this chapter, and operations involving waste disposal are not subject to the requirements of subpart C of this part.

Final Rule Text. *In § 74.41, paragraph (a)(2) is revised to read as follows:*

§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(a) *General performance objectives.* ...

(2) Nuclear reactor facilities licensed under part 50 or 52 of this chapter; storage installations licensed under part 72 of this chapter; licensees using reactor irradiated fuels involved in research, development, and evaluation programs in facilities other than irradiated fuel reprocessing plants, and operations involving waste disposal, are not subject to the requirements of subpart D of this part.

Final Rule Text. *In § 74.51, paragraph (a)(2) is revised to read as follows:*

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(a) *General performance objectives.* ...

(2) Nuclear reactor facilities licensed under part 50 or 52 of this chapter, storage installations licensed under part 72 of this chapter; and any licensee operations involving waste disposal, are not subject to the requirements of subpart E of this part.

The existing paragraph (a) of § 74.31 excludes “a production or utilization facility licensed pursuant to Part 50 or 70 of this chapter” from the MC&A requirements in § 74.31. The existing (a) paragraphs of §§ 74.41 and 74.51 exclude “a nuclear reactor licensed pursuant to Part 50 of this chapter” from the MC&A requirements in those sections. In the final rule, §§ 74.31, 74.41, and 74.51 are updated to new (a)(1) and (a)(2) paragraphs. The new (a)(1) paragraphs of these provisions refer to the consolidated GPOs, as discussed in Section II.2 of this document. The new (a)(2) paragraphs are updated to refer to “Nuclear reactor facilities licensed under part 50 or 52” to reflect the fact that nuclear power reactors may also now be licensed under 10 CFR Part 52. In § 74.31(a)(2), the reference to 10 CFR Part 70 is removed in the final rule to clarify the exclusion that is provided for a nuclear reactor licensed under 10 CFR Part 50 or Part 52. The provision in § 74.41(a)(2) retains the types of facilities that are listed in existing § 74.41(a) to continue the exclusion for these facilities from the requirements of Subpart D. In § 74.51(a)(2), the existing exclusion for an irradiated fuel reprocessing plant is removed in the final rule, as discussed in Section II.18 of this document. The exclusion for sealed sources in existing §§ 74.31(a) and 74.41(a) is relocated to the “Notes” section of Appendix A to 10 CFR Part 74, as discussed in Section II.20 of this document. The reference to “storage installations licensed under part 72 of this chapter,” is added to the (a)(2) paragraphs of §§ 74.31, 74.41, and 74.51 in the final rule to clarify that such facilities are not subject to Subpart C, D, or E requirements. This clarifies the requirements and provides consistency in the provisions in §§ 74.31(a)(2), 74.41(a)(2), and 74.51(a)(2). The changes in §§ 74.31(a)(2), 74.41(a)(2), and 74.51(a)(2) clarify the list of excluded facilities in those provisions and

do not impose new requirements on any existing licensees. Therefore, the changes in §§ 74.31(a)(2), 74.41(a)(2), and 74.51(a)(2) do not constitute backfitting.

II.11 Update references to the MC&A plan

This change updates references to the MC&A plan in the following provisions: §§ 74.31(b); 74.33(b); 74.41(b); 74.43(b)(3); 74.51(b) and (d); 74.57(c); and 74.59(b)(2).

Final Rule Text. *In § 74.31, paragraphs (b) are revised, in part, to read as follows:*
§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section, shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and the requirements of paragraph (c) of this section will be met. The MC&A plan shall be implemented when a license is issued or modified to authorize the activities being addressed in paragraph (a) of this section, or by the date specified in a license condition.

Final Rule Text. *In § 74.33, paragraphs (b) and (c) are revised, in part, to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(b) *Implementation.* Each applicant for a license who would, upon issuance of a license under any part of this chapter, be subject to the requirements of paragraph (a) of this section shall:

(1) Submit for approval an MC&A plan describing how the performance objectives of §§ 74.3 and 74.33(a), the program capabilities of § 74.33(c), and the recordkeeping requirements of § 74.33(d) will be met; and

(2) Implement the NRC-approved MC&A plan submitted under paragraph (b)(1) of this section prior to:

(i) The cumulative receipt of 5,000 grams of uranium-235 contained in any combination of natural, depleted, or enriched uranium; or

(ii) The NRC's issuance of a license to test or operate the enrichment facility, whichever occurs first.

Final Rule Text. *In § 74.41, paragraphs (b) and (c) are revised, in part, to read as follows:*

§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and paragraph (a) of this section will be achieved, and how the requirements of paragraph (c) of this section will be met. The MC&A plan shall be implemented when a license is issued or modified to authorize the activities being addressed in paragraph (a) of this section, or by the date specified in a license condition.

Final Rule Text. In § 74.43, paragraph (b)(3) is revised to read as follows:

§ 74.43 Internal controls, inventory, and records.

(b) Internal controls. ...

(3) The licensee shall provide for the adequate review, approval, and use of written MC&A procedures that are identified in the approved MC&A plan as being critical to the effectiveness of the described program.

Final Rule Text. In § 74.51, paragraphs (b) and (d) are revised, in part, to read as follows:

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(b) *Implementation.* Each applicant for a license, and each licensee that, upon application for modification of its license, would become newly subject to paragraph (a) of this section shall submit for approval an MC&A plan describing how the performance objectives of § 74.3 and paragraph (a) of this section will be achieved, and how the requirements of paragraph (c) of this section will be met. The MC&A plan shall be implemented when a license is issued or modified to authorize the activities being addressed in paragraph (a) of this section, or by the date specified in a license condition.

(d) *Inventories.* Notwithstanding § 74.59(f)(1), licensees shall perform at least 3 physical inventories at intervals not to exceed 65 calendar days after implementation of the NRC approved MC&A plan and shall continue to perform such inventories at intervals not to exceed 65 calendar days until performance acceptable to the NRC has been demonstrated and the Commission has issued formal approval to perform physical inventories at intervals not to exceed 185 calendar days. Licensees who have prior experience with process monitoring and/or can demonstrate acceptable performance against all MC&A plan commitments may request authorization to perform inventories at intervals not to exceed 185 calendar days at an earlier date.

Final Rule Text. In § 74.57, paragraph (c) is revised, in part, to read as follows:

§ 74.57 Alarm resolution.

(c) Each licensee shall notify the NRC Headquarters Operations Center via any telephone system of any MC&A alarm that remains unresolved beyond the time period specified for its resolution in the licensee's MC&A plan.: ...

Final Rule Text. In § 74.59, paragraph (b)(2) is revised to read as follows:

§ 74.59 Quality assurance and accounting requirements.

(b) *Management structure.* The licensee shall: ...

(2) Provide for the adequate review, approval, and use of those material control and accounting procedures that are identified in the approved MC&A plan as being critical to the effectiveness of the described program.

The existing references in §§ 74.31(b); 74.33(b); 74.41(b); 74.43(b)(3); 74.51(b) and (d); 74.57(c); and 74.59(b)(2) to a “fundamental nuclear material control (FNMC)” plan are changed to refer to a “MC&A” plan. The term “FNMC” is an outdated term because it does not explicitly refer to material “accounting.” Thus, it does not fully describe the accounting aspects of the MC&A program. There is no substantive effect from the administrative changes to replace “FNMC” plan with “MC&A” plan. Additionally, existing

§ 74.41(b)(1) and (2) is consolidated into § 74.41(b) in the final rule, and the title is changed from “Implementation schedule” to “Implementation.” Existing § 74.51(c) is redesignated as § 74.51(b) in the final rule. The sub-section’s title is changed from “Implementation schedule” to “Implementation” to provide consistency throughout Subparts C, D, and E of 10 CFR Part 74.

The term used to describe the plan in the final rule does not require licensees to rename their existing plans. These changes are administrative in nature and do not impose new requirements on any existing licensees. Therefore, the changes to §§ 74.31(b) and (c); 74.33(b); 74.41(b); 74.43(b)(3); 74.51(b) and (d); 74.57(c); and 74.59(b)(2) do not constitute backfitting.

Conforming changes related to the revised 10 CFR 74.51

In § 70.32(c)(1)(i) and (iii), the reference to the MC&A program implemented under existing § 74.51(c) is revised in the final rule to refer to § 74.51(b) and reflect the consistent organization for Subparts C, D, and E of 10 CFR Part 74. These changes are necessary to conform references in § 70.32 to the revised rule structure in § 74.51 in the final rule. These conforming changes do not represent any additional or different requirements on any existing licensees and, therefore, do not constitute backfitting.

II.12 Replace the term “system” with “program”

This change updates the following provisions with respect to the MC&A program or the capabilities of the program: §§ 74.31(c) and 74.31(c)(8); 74.33(c) and 74.33(c)(8); 74.33(d)(1); 74.41(c); 74.43(b)(4), (b)(8), and (d)(5); 74.51(c); 74.57(d)(3); and 74.59(b)(2), (c), (h)(3), and (h)(4).

Final Rule Text. *In § 74.31, paragraph (c) and (c)(8) is revised to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) *Program capabilities.* To achieve the § 74.3 performance objectives, the MC&A program must include the capabilities described in paragraphs (c)(1) through (10) of this section, and require the licensee to: ...

(8) Independently assess the effectiveness of the MC&A program at least every 24 months, and document management’s action on prior assessment recommendations.

Final Rule Text. *In § 74.33, paragraph (c), (c)(8), and (d)(1) is revised to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) *Program capabilities.* To achieve the general performance objectives stated and referenced in paragraph (a) of this section, the MC&A program must include the capabilities described in paragraphs (c)(1) through (10) of this section. ...

(8) An assessment program that:
(i) Independently assesses the effectiveness of the MC&A program at least every 24 months;
(ii) Documents the results of the above assessment;

- (iii) Documents management's findings on whether the MC&A program is currently effective; and
- (iv) Documents any actions taken on recommendations from prior assessments;

(d) *Recordkeeping.* (1) Each licensee shall establish records that will demonstrate that the performance objectives stated and referenced in paragraph (a) of this section and the program capabilities of paragraph (c) of this section have been met and maintain these records in an auditable form, available for inspection, for at least 3 years, unless a longer retention time is required by part 75 of this chapter.

Final Rule Text. *In § 74.41, paragraph (c) is revised to read as follows:*

§ 74.41 Nuclear material control and accounting for special nuclear material of moderate strategic significance.

(c) *Program capabilities.* To achieve the general performance objectives specified in § 74.3 and paragraph (a) of this section, the MC&A program must include the capabilities described in §§ 74.43 and 74.45, and ...

Final Rule Text. *In § 74.43, paragraphs (b)(4), (b)(8), and (d)(5) are revised, in part, to read as follows:*

§ 74.43 Internal controls, inventory, and records.

(b) Internal controls. ...

(4) The licensee shall assure that personnel who work in key positions where mistakes could degrade the effectiveness of the MC&A program are trained ...

(8) Perform independent assessments of the total MC&A program, at intervals not to exceed 18 months, that assess the performance of the program, review its effectiveness, and ...

(d) Recordkeeping. The licensee shall: ...

(5) Establish records that will demonstrate that the performance objectives of § 74.3 and § 74.41(a)(1), the program capabilities of paragraphs (b) and (c) of this section, and ...

Final Rule Text. *In § 74.51, paragraph (c) is revised to read as follows:*

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(c) *Program capabilities.* To achieve the general performance objectives specified in § 74.3 and paragraph (a) of this section, the MC&A program must provide the capabilities described in §§ 74.53, 74.55, 74.57 and 74.59 and must incorporate checks and balances that are sufficient to detect falsification of data and reports that could conceal diversion of SNM or SSNM by:

(1) An individual, including an employee in any position; or

(2) Collusion between an individual with MC&A responsibilities and another individual who has responsibility or control within both the physical protection and the MC&A programs.

Final Rule Text. *In § 74.57, paragraph (d)(3) is revised to read as follows:*

§ 74.57 Alarm resolution.

(d) If a material loss has occurred, the licensee shall determine the amount of SSNM lost and take corrective action to: ...

(3) Modify the MC&A program, if appropriate, to prevent similar future occurrences.

Final Rule Text. In § 74.59, paragraphs (b)(2), (c), (h)(3), and (h)(4) are revised, in part, to read as follows:

§ 74.59 Quality assurance and accounting requirements.

(b) *Management structure.* The licensee shall:

(2) Provide for the adequate review, approval, and use of those material control and accounting procedures that are identified in the approved MC&A plan as being critical to the effectiveness of the described program.

(c) *Personnel qualification and training.* The licensee shall assure that personnel that work in key positions where mistakes could degrade the effectiveness of the material control and accounting program are trained ...

(h) *Internal control.* The licensee shall: ...

(3) Incorporate checks and balances in the MC&A program sufficient to control the rate of human errors in material control and accounting information.

(4) Perform independent assessments at least every 12 months that assess the performance of the MC&A program, review its effectiveness, and ...

In the titles of the (c) paragraphs of §§ 74.31, 74.33, 74.41, and 74.51; in the (c)(8) paragraphs of §§ 74.31 and 74.33; in § 74.43(b)(4) and (b)(8); in § 74.57(d)(3); and in § 74.59(b)(2), (c), (h)(3), and (h)(4), the term “system” is replaced in the final rule with the term “program” to consistently describe the over-arching, comprehensive set of capabilities a licensee uses to control and track SNM. A conforming change is made in §§ 74.33(d)(1) and 74.43(d)(5), where the existing reference to “system features and capabilities” or “system capabilities” is replaced by “program capabilities.” The existing paragraph (b) in § 74.51 concerning capabilities is redesignated in the final rule as paragraph (c). Additionally, the existing § 74.51(b)(1) and (2), that refers to “an individual or collusion between individuals” is redesignated in the final rule as § 74.51(c)(1) and (2). In § 74.51(c)(2), the term “systems” is changed to “programs” in the final rule.

The changes in terminology and rule structure discussed above are administrative in nature and do not impose any new requirements on existing licensees. Using “program” avoids confusion with a “system” that may be a part of the overall MC&A program. Therefore, these changes to §§ 74.31(c); 74.33(c); 74.33(d); 74.41(c); 74.43(b); 74.43(d); 74.51(c); 74.57(d); and 74.59(b)(2),(c), and (h) do not constitute backfitting.

II.13 Clarify references to the standard error of the inventory difference (SEID)

This change updates the following provisions: §§ 74.31(c)(4), 74.33(c)(3)(ii), and 74.45(c)(4).

Final Rule Text. In § 74.31, paragraph (c)(4) is revised to read as follows:

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) *Program capabilities.* ...

(4) In each inventory period, control total material control and accounting measurement uncertainty so that twice its standard error of the inventory difference (SEID) is less than the greater of 9,000 grams of uranium-235 or 0.25 percent of the active inventory, and assure that any measurement performed under contract is controlled so that the licensee can satisfy this requirement;

Final Rule Text. *In § 74.33, paragraph (c)(3)(ii) is revised to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) *Program capabilities.* ...

(3) A measurement control program that ensures that: ...

(ii) All MC&A measurement systems are controlled so that twice the standard error of the inventory difference (SEID), based on all measurement error contributions, is less than the greater of 5,000 grams of uranium-235 or 0.25 percent of the uranium-235 of the active inventory for each total plant material balance; and

Final Rule Text. *In § 74.45, paragraph (c)(4) is revised to read as follows:*

§ 74.45 Measurements and measurement control.

(c) *Program capabilities.* ...

(4) Establish and maintain a measurement control program so that for each inventory period the standard error of the inventory difference (SEID) is less than 0.125 percent of the active inventory, and assure that any MC&A measurements performed under contract are controlled so that the licensee can satisfy this requirement.

In existing § 74.31(c)(4), the term “standard error” is replaced with “standard error of the inventory difference (SEID)” in § 74.31(c)(4) in the final rule. In existing § 74.33(c)(3)(ii), “(SEID)” is added after “standard error of inventory difference” in § 74.33(c)(3)(ii) in the final rule. In existing § 74.45(c)(4), “standard error of inventory difference” is inserted in front of its SEID acronym in § 74.45(c)(4) in the final rule. These changes clarify the provision language and conform the provisions with the format used in the SEID definition in existing § 74.4. The changes to §§ 74.31(c)(4), 74.33(c)(3)(ii), and 74.45(c)(4) are administrative in nature and do not impose any new requirements on any existing licensees. In addition, as there are no existing NRC licensees authorized to possess Category II amounts of material, the change in § 74.45(c)(4) does not impose new requirements on any existing licensees. Therefore, these changes to §§ 74.31(c)(4), 74.33(c)(3)(ii), and 74.45(c)(4) do not constitute backfitting.

II.14 Update to calendar days

This change updates the following provisions: §§ 74.31(c)(5); 74.33(c)(4)(i) and(ii); 74.51(d); 74.53(a)(3),(a)(4) and (c)(1); and 74.59(e)(7), (f)(1), and (h)(2)(ii).

II.14.1 Inventories for Category III licensees 10 CFR 74.31(c)(5), 74.33(c)(4)(i) and (ii)

Final Rule Text. *In § 74.31, paragraph (c)(5) is revised to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) Program capabilities. ...

(5) Unless otherwise required to satisfy part 75 of this chapter, perform a physical inventory at least every 12 months and, within 60 calendar days after the start of the inventory, reconcile and adjust the book inventory to the results of the physical inventory, and resolve, or report an inability to resolve, any inventory difference that is rejected by a statistical test that has a 90-percent power of detecting a discrepancy of a quantity of uranium-235 established by the NRC on a site-specific basis;

Final Rule Text. *In § 74.33, paragraphs (c)(4)(i) and (ii) are revised to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) Program capabilities. ...

(4) A physical inventory program that provides for:

(i) Performing, unless otherwise required to satisfy part 75 of this chapter, a dynamic (nonshutdown) physical inventory of in-process (e.g., in the enrichment equipment) uranium and uranium-235 at least every 65 calendar days, and performing a static physical inventory of all other uranium and total uranium-235 contained in natural, depleted, and enriched uranium located outside of the enrichment processing equipment at least every 370 calendar days, with static physical inventories being conducted in conjunction with a dynamic physical inventory of in-process uranium and uranium-235 so as to provide a total plant material balance at least every 370 calendar days; and

(ii) Reconciling and adjusting the book inventory to the results of the static physical inventory and resolving, or reporting an inability to resolve, any inventory difference that is rejected by a statistical test that has a 90-percent power of detecting a discrepancy of a quantity of uranium-235, established by the NRC on a site-specific basis, within 60 calendar days after the start of each static physical inventory;

Paragraph (c)(5) of § 74.31 is clarified by replacing “60 days” with “60 calendar days” in the final rule to provide an equivalent number of “calendar days” Similarly, paragraph (c)(4)(i) of § 74.33 is clarified by replacing “65 days” with “65 calendar days” in the final rule. Paragraph (c)(4)(ii) of § 74.33 is changed by replacing “60 days” with “60 calendar days” in the final rule. These changes provide an equivalent number of “calendar days” and avoid confusion about counting weekends and holidays to determine whether a licensee has taken timely action. The changes are administrative in nature and do not impose new requirements on any existing licensees. Therefore, the changes to §§ 74.31(c)(5) and 74.33(c)(4)(i) and (ii) do not constitute backfitting.

II.14.2 Inventories for Category I licensees – 10 CFR 74.51(d)

Final Rule Text. In § 74.51, paragraph (d) is revised to read as follows:

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(d) *Inventories.* Notwithstanding § 74.59(f)(1), licensees shall perform at least 3 physical inventories at intervals not to exceed 65 calendar days after implementation of the NRC approved MC&A plan and shall continue to perform such inventories at intervals not to exceed 65 calendar days until performance acceptable to the NRC has been demonstrated and the Commission has issued formal approval to perform physical inventories at intervals not to exceed 185 calendar days. Licensees who have prior experience with process monitoring and/or can demonstrate acceptable performance against all MC&A plan commitments may request authorization to perform inventories at intervals not to exceed 185 calendar days at an earlier date.

The existing requirement in § 74.51(d) states that a new licensee shall initially perform bimonthly inventories until such time as the Commission formally approves the performance of semiannual inventories. The provision in § 74.51(d) is revised in the final rule to replace the term “bimonthly” with “intervals not to exceed 65 calendar days” and the term “semiannual” with “intervals not to exceed 185 calendar days.” This change is a voluntary relaxation of the existing requirements, as the clarification and change to calendar days slightly adjusts and extends the recurrence intervals for the inventories. This change does not affect existing Category I licensees, as the two such NRC-licensed facilities have been in operation for many years and successfully conducted their initial physical inventories and received approval for semiannual inventories several decades ago. Therefore, this change to § 74.51(d) does not constitute backfitting.

II.14.3 Process monitoring for Category I licensees – 10 CFR 74.53(a)(3), (a)(4), and (c)(1)

Final Rule Text. In § 74.53, paragraphs (a)(3), (a)(4), and (c)(1) are revised to read as follows:

§ 74.53 Process monitoring.

(a) Licensees subject to § 74.51 shall monitor internal transfers, storage, and processing of SSNM. The process monitoring must achieve the detection capabilities described in paragraph (b) of this section for all SSNM except: ...

(3) SSNM with an estimated measurement standard deviation greater than 5 percent that is either input or output material associated with a unit that processes less than five formula kilograms over a period of 95 calendar days; and

(4) SSNM involved in research and development operations that process less than five formula kilograms during a period of 7 calendar days.

(c) For research and development operations, exempt from the requirements of paragraph (b) of this section, the licensee shall:

(1) Perform material balance tests on a lot or a batch basis, as appropriate, or at intervals not to exceed 30 calendar days, whichever is sooner, and investigate any difference greater than 200 grams of plutonium or uranium-233 or 300 grams of uranium-235 that exceeds three times the estimated standard error of the inventory difference estimator;

The existing provision in § 74.53(a)(3) defines the monitoring interval as “a consecutive three-month period.” The change in paragraph (a)(3) revises this interval from a

consecutive 3-month period to a 95 calendar day interval in the final rule. This change is a voluntary relaxation of the existing requirements, as the clarification and change to calendar days slightly extends the amount of time for the required process monitoring. The phrase “any seven-consecutive-day period” in existing § 74.53(a)(4) is changed in the final rule to “a period of 7 calendar days.” In existing § 74.53(c)(1), “monthly” is clarified in the final rule to state that material balance tests are to be performed “at intervals not to exceed 30 calendar days.” Using calendar days provides a consistent metric for recurrence and removes an existing uncertainty as to whether “monthly” recurrence requires tests on the same day of consecutive months. The changes to paragraphs (a)(3), (a)(4), and (c)(1) of § 74.53 are administrative in nature and do not impose new requirements on any existing licensees. Therefore, the changes to § 74.53(a)(3), (a)(4), and (c)(1) do not constitute backfitting.

II.14.4 Quality assurance requirements for Category I licensees– 10 CFR 74.59(e)(7), (f)(1), and (h)(2)(ii)

Final Rule Text. *In § 74.59, paragraphs (e)(7), (f)(1), and (h)(2)(ii) are revised to read as follows:*

§ 74.59 Quality assurance and accounting requirements.

(e) Measurement control. ...

(7) Investigate and take corrective action, as appropriate, to identify and reduce associated measurement biases when, for like material types (i.e., measured by the same measurement system), the net cumulative shipper-receiver differences accumulated over a period not more than 185 calendar days exceed the greater of one formula kilogram or 0.1 percent of the total amount received.

(f) Physical inventory. The licensee shall:

(1) Except as required by part 75 of this chapter, perform a physical inventory at least every 185 calendar days and within 45 calendar days after the start of the ending inventory:

(h) Internal control. The licensee shall: ...

(2) Establish a scrap control program that assures that: ...

(ii) Any scrap measured with a standard deviation greater than 5 percent of the measured amount is recovered so that the results are segregated by inventory period and recovered within 185 calendar days of the end of the inventory period in which the scrap was generated except where it can be demonstrated that the scrap measurement uncertainty will not cause noncompliance with § 74.59(e)(5).

Generally, the changes to paragraphs (e)(7), (f)(1), and (h)(2)(ii) of § 74.59 revise the existing six-month periods and day-intervals by stating these timing requirements in terms of calendar days. Specifically, in paragraph (e)(7), the phrase “over a six-month period” is revised to “a period not more than 185 calendar days” in the final rule. In paragraph (f)(1), the phrase “every six calendar months and within 45 days” is revised to “every 185 calendar days and within 45 calendar days” in the final rule. In paragraph (h)(2)(ii), the phrase “within six months” is revised to “within 185 calendar days” in the final rule.

Other than the clarification from “45 days” to “45 calendar days,” the changes to these § 74.59 provisions in the final rule are voluntary relaxations of the existing requirements, in that they slightly adjust and extend the recurrence interval. No additional requirements are imposed on existing licensees. Therefore, these changes to § 74.59(e)(7), (f)(1), and (h)(2)(ii) do not constitute backfitting.

II.15 Update reference to shipper-receiver difference “comparisons”

This change updates the following provisions: §§ 74.31(c)(7), 74.33(c)(7), and 74.43(b)(7).

Final Rule Text. *In § 74.31, paragraph (c)(7) is revised to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) Program capabilities. ...

(7) Conduct and document shipper-receiver difference comparisons for all SNM receipts on a total shipment basis, and on an individual batch basis when required by part 75 of this chapter, and ensure that any shipper-receiver difference that is statistically significant and exceeds twice the estimated standard deviation of the difference estimator and 500 grams of uranium-235 is investigated and resolved;

Final Rule Text. *In § 74.33, paragraph (c)(7) is revised to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) Program capabilities. ...

(7) A system for conducting and documenting shipper-receiver difference comparisons for all source material and SNM receipts on a total shipment basis, and on an individual batch basis when required by part 75 of this chapter, to ensure that any shipper-receiver difference that is statistically significant and exceeds twice the estimated standard deviation of the difference estimator and 500 grams of uranium-235 is investigated and resolved;

Final Rule Text. *In § 74.43, paragraph (b)(7) is revised to read as follows:*

§ 74.43 Internal controls, inventory, and records.

(b) Internal controls. ...

(7) Conduct and document shipper-receiver difference comparisons for all SNM receipts, both on an individual batch basis and a total shipment basis, and ensure that any shipper-receiver difference that is statistically significant and exceeds twice the estimated standard deviation of the difference estimator and 200 grams of plutonium or uranium-233 or 300 grams of uranium-235 is investigated and resolved; and

In the (c)(7) paragraphs of §§ 74.31 and 74.33 and in paragraph (b)(7) of § 74.43, the reference to “shipper/receiver differences” or “shipper-receiver differences” is changed to refer to “shipper-receiver difference comparisons” in the final rule. These changes are administrative in nature and do not impose new requirements on any existing licensees. Furthermore, in §§ 74.31(c)(7) and 74.33(c)(7), the provision language is clarified and

conforms with § 74.43 in the final rule. This language clarifies when shipper-receiver comparisons are conducted and documented and clarifies the criteria of a “statistically significant” difference, while preserving the graded approach between Category III and Category II licensees. This clarification does not impose new requirements on any existing licensees. In addition, as there are no NRC licensees authorized to possess Category II amounts of material, the change in § 74.43(b)(7) does not impose new requirements on any existing licensees. Therefore, the changes to §§ 74.31(c)(7), 74.33(c)(7), and 74.43(b)(7) do not constitute backfitting.

II.16 Revise item control provisions for Category II licensees

This change updates the following provisions: § 74.43(b)(5) and (6).

Final Rule Text. *In § 74.43, paragraphs (b)(5) and (6) are revised to read as follows:*

§ 74.43 Internal controls, inventory, and records.

(b) Internal controls. ...

(5) The licensee shall establish, document, implement, and maintain an item control system as defined in § 74.4. The system must ensure that items (as defined in § 74.4) are stored and handled, or subsequently measured, in a manner such that unauthorized removals of individual items, or 200 grams or more of plutonium or uranium-233, or 300 grams or more of uranium-235 from one or more items, will be detected.

(6) Exempted from the requirements of paragraph (b)(5) of this section are:

(i) Solutions with a concentration of less than 5 grams per liter of plutonium or uranium-233 or uranium-235 or a combined concentration thereof less than 5 grams per liter;

(ii) Laboratory samples and reference standards maintained in the laboratory material management system and containing uranium enriched to less than 20 percent in uranium-235;

(iii) Items existing less than 3 calendar days and containing less than 75 grams of plutonium or uranium-233 or 100 grams of uranium-235; or

(iv) Items of waste destined for burial or incineration;

The existing term *item* is defined in § 74.4 as follows: “*Item* means any discrete quantity or container of special nuclear material or source material, not undergoing processing, having an unique identity and also having an assigned element and isotope.” This definition remains unchanged in the final rule. Existing § 74.43(b)(5) refers to an “item control program,” a term that is not defined in existing 10 CFR Part 74. The provision in § 74.43(b)(5) is revised in the final rule to refer to the term “item control system” that is newly defined in § 74.4⁶ in the final rule. Furthermore, the existing § 74.43(b)(5) states the requirement to detect the “unauthorized removal of 200 grams or more of plutonium or uranium-233 or 300 grams or more of uranium-235, as one or more whole items and/or as SNM removed from containers.” In the final rule, § 74.43(b)(5) requires Category II licensees to detect the “unauthorized removals of individual items, or 200 grams or more of plutonium or uranium-233, or 300 grams or more of uranium-235 from

⁶ The term “item control system” is a newly defined term in § 74.4, “Definitions,” of the final rule. See Section II.3.2 of this document for discussion of this term.

one or more items.” The change is necessary to clarify the MC&A provision and conform with the wording in §§ 74.31(c)(6) and 74.33(c)(6) [discussed in Section III.2.2 of this document], while preserving the graded approach for the Category II and III licensees.

Existing § 74.43(b)(6) provides several thresholds for items that are exempt from the item control requirement in § 74.43(b)(5). Under the existing regulation, “items that exist for less than 14 calendar days and licensee-identified items each containing less than 200 grams of plutonium or uranium-233 or 300 grams or more of uranium-235 up to a cumulative total of one formula kilogram of strategic SNM or 17 kilograms of uranium-235 contained in uranium enriched to 10.00 percent or more but less than 20.00 percent in the uranium-235 isotope” are exempt from the item control requirement. This exemption provision is revised in the final rule to reduce these thresholds. In response to comments on the proposed rule, the NRC staff revised the list of items that continue to be exempted from the item control requirements as reflected in the final rule text above. The changes to § 74.43(b)(6) clarify and strengthen the existing item control requirements and conform with the wording in §§ 74.31(c)(6) and 74.33(c)(6), which are discussed further in Section III.2.2 of this document. The revised thresholds enable a Category II licensee to maintain current knowledge of the SNM items in its possession.

While these changes are new requirements, there are no existing Category II licensees that are currently subject to the MC&A requirements in Subpart D of 10 CFR Part 74. These changes do not impose new requirements on any existing licensees. Therefore, the changes to § 74.43(b)(5) and (6) do not constitute backfitting. The additional cost for licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.17 Add designation of material balance areas, item control areas, and custodians for Category II licensees

Final Rule Text. *In § 74.43, paragraph (c) is revised, in part, by adding a new provision (9) to read as follows:*

§ 74.43 Internal controls, inventory, and records.

(c) Inventory control and physical inventories. The licensee shall: ...

(9) Designate one or more material balance areas, or a combination of one or more material balance area(s) and one or more item control areas, and assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SNM possessed under license.

The final rule adds new provisions to require all Category I, II, and III licensees to designate MBAs or ICAs and assign custodial responsibility for the control of the material in such areas. The final rule provisions regarding MBAs, ICAs, and custodians for Category III and I licensees [§§ 74.31(c)(10), 74.33(c)(10), and 74.59(h)(5)] are discussed further in Section III of this document. The existing requirements in § 74.43 for Category II licensees reference internal control areas with respect to inventory control and physical inventories. The new paragraph (c)(9) in § 74.43 clarifies the existing internal control requirements and conforms with the wording in §§ 74.31(c)(10), 74.33(c)(10), and 74.59(h)(5) in the final rule, which are discussed further in Section III of this document. As there are no existing Category II licensees, this change does not impose new requirements on any existing licensees. Therefore, the new provision in

§ 74.43(c)(9) does not constitute backfitting. The additional cost for these licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.18 Remove reference to irradiated fuel reprocessing plant

Final Rule Text. *In § 74.51, paragraph (a)(2) is revised to read as follows:*

§ 74.51 Nuclear material control and accounting for strategic special nuclear material.

(a) *General performance objectives. ...*

(2) Nuclear reactor facilities licensed under part 50 or 52 of this chapter, storage installations licensed under part 72 of this chapter; and any licensee operations involving waste disposal, are not subject to the requirements of subpart E of this part.

As discussed in Section II.10 of this document, existing § 74.51(a) is revised into new § 74.51(a)(1) and § 74.51(a)(2) in the final rule. The provision in § 74.51(a)(1), which states the performance objectives for Subpart E, is discussed in Section II.2.4 of this document. In addition to the changes discussed in Section II.10 of this document, § 74.51(a)(2) is further revised by removing the existing exclusion for an irradiated fuel reprocessing plant. As there are no such plants licensed by the NRC, this change does not constitute backfitting. Note that the removal of this exclusion is in accordance with the NRC staff's recommendation in its regulatory framework gap analysis for irradiated fuel reprocessing documented in SECY-09-0082, "Update on Reprocessing Framework – Summary of Gap Analysis," dated May 28, 2009 (ADAMS Accession No. ML091520243). The additional cost for affected licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.19 Clarify provisions regarding tamper-safing procedures for Category II and I licensees

This change updates the tamper-safing provisions in §§ 74.43(c)(3) and 74.59(f)(2)(i).

II.19.1 Category II licensees – 10 CFR 74.43(c)(3)

Category II licensees are required in existing § 74.43(c)(3) to maintain and follow procedures for the use of tamper-safing. The existing provision states as follows:

§ 74.43 Internal controls, inventory, and records.

(c) Inventory control and physical inventories. The licensee shall: ...

(3) Maintain and follow procedures for tamper-safing of containers or vaults containing SNM, if tamper-safe seals are to be used for assuring the validity of prior measurements, which include control of access to, and distribution of, unused seals and to records showing the date and time of seal application;

The final rule removes two phrases, "of containers or vaults containing SNM" and "showing the date and time of seal application," from existing § 74.43(c)(3).

Final Rule Text. *In § 74.43, paragraph (c)(3) is revised to read as follows:*

§ 74.43 Internal controls, inventory, and records.

(c) Inventory control and physical inventories. The licensee shall: ...

(3) If tamper-safe seals are to be used, maintain and follow procedures for tamper-safing (as defined in § 74.4), which include control of access to, and distribution of, unused seals and records;

These changes clarify the existing requirement and conform the wording with the tamper-safing requirements in the final rule provisions in § 74.51(f)(2)(i) [discussed in Section II.19.2 of this document] and in §§ 74.31(c)(9) and 74.33(c)(9) [discussed in Section III.2.3 of this document]. As there are no NRC licensees authorized to possess Category II amounts of material, the changes to this provision do not impose new requirements on any existing licensees. Therefore, these changes to § 74.43(c)(3) do not constitute backfitting. The additional cost for affected licensees to meet this requirement is evaluated in the regulatory analysis for the final rule (ADAMS Accession No. ML18061A055).

II.19.2 Category I licensees – 10 CFR 74.59(f)(2)(i)

Final Rule Text. In § 74.59, paragraph (f)(2)(i) is revised to read as follows:

§ 74.59 Quality assurance and accounting requirements.

(f) *Physical inventory.* The licensee shall: ...

(2) Implement policies, practices, and procedures designed to ensure the quality of physical inventories. These must include:

(i) Development of procedures for tamper-safing of containers or vaults containing SSNM not in process that include adequate controls to assure the validity of assigned SSNM values and that include control of access to, and distribution of, unused seals and records;

Existing § 74.59(f)(2)(i) is revised by adding at its end the phrase “and that include control of access to, and distribution of, unused seals and records.” The added text clarifies the existing requirement for “adequate controls,” which include measures for controlling access to and distribution of unused seals and records. Only tamper-indicating devices which are controlled and accounted for are used to ensure the validity of assigned SNM and SSNM values. This change clarifies the existing requirement and conforms the wording with the tamper-safing requirements in the final rule provisions in § 74.43(c)(3) [discussed in Section II.19.1 of this document] and in §§ 74.31(c)(9) and 74.33(c)(9) [discussed in Section III.2.3 of this document]. The clarification does not impose any new requirements on any existing licensees. Therefore, the clarification in § 74.59(f)(2)(i) does not constitute backfitting.

II.20 Add a table on categorization of nuclear material as Appendix A to 10 CFR Part 74

Final Rule Text. *Appendix A to 10 CFR Part 74 is added to read as follows:*

Appendix A to Part 74 -- Categories of Special Nuclear Material.

Material	Form	Category I (Subpart E)	Category II (Subpart D)	Category III (Subpart C)
Plutonium	Unirradiated	2,000 grams or more	Less than 2,000 grams, but more than 500 grams	500 grams or less, but more than 15 grams
Uranium-233	Unirradiated	2,000 grams or more	Less than 2,000 grams, but more than 500 grams	500 grams or less, but more than 15 grams
Uranium-235	Unirradiated uranium enriched to 20% or more in isotope U-235	5,000 grams or more	Less than 5,000 grams, but more than 1,000 grams	1,000 grams or less, but more than 15 grams
	Unirradiated uranium enriched to 10%, but less than 20%, in isotope U-235		10,000 grams or more	Less than 10,000 grams, but more than 1,000 grams
	Unirradiated uranium enriched above 0.711%, but less than 10%, in isotope U-235			10,000 grams or more

Notes:

1. The quantities in the table are applied on a facility-wide basis and are the total quantities at the facility except for sealed sources. Sealed sources as defined in § 74.4 are excluded from the quantities in the table.
2. The formulae to calculate the quantity of SSNM for different categories are as follows:
 - Category I, 5,000 grams or more of SSNM
 - grams = grams contained U-235 + 2.5 (grams U-233 + grams Pu)
 - Category II, less than 5,000 grams but more than 1,000 grams of SSNM
 - grams = grams contained U-235 + 2 (grams U-233 + grams Pu)
 - Category III, 1,000 grams or less but more than 15 grams of SSNM
 - grams = grams contained U-235 + grams U-233 + grams Pu.
3. Irradiated fuel, which by virtue of its original fissile material content is included as Category I or II before irradiation, is reduced one category level (e.g., from Category I to Category II), during the period of time that the radiation level from the fuel exceeds 1 gray per hour (100 rad per hour) at 1 meter, unshielded.

Appendix A to 10 CFR Part 74 is added to provide a table format showing the SNM quantities corresponding with the existing definitions *Formula quantity* (Category I), *Special nuclear material of moderate strategic significance* (Category II), and *Special nuclear material of low strategic significance* (Category III). Appendix A clarifies the elements, isotopic composition, and quantities of material that Category I, Category II, and Category III licensees are authorized to possess. Notes are included to clarify that sealed sources are excluded from the quantity limits that are used to determine the category of a facility. An additional note is included to clarify that spent nuclear fuel is reduced one category level during the period of time that the radiation exposure exceeds 1 gray per hour (100 rads per hour) at 1 meter, unshielded. Formulas are included to calculate a quantity of SSNM in order to determine if the quantity is Category I, Category II, or Category III. Similar information is already provided in existing Appendix M to 10 CFR Part 110 and is appended to 10 CFR Part 74 for the convenience of licensees, the NRC staff, and members of the public. This change is administrative in nature and does not impose new requirements on any existing licensees. Therefore, the addition of Appendix A to 10 CFR Part 74 in the final rule does not constitute backfitting.

III. EXCEPTIONS TO BACKFIT ANALYSIS REQUIREMENTS

III.1 Why are certain MC&A provisions needed now for adequate protection?

The chief objective of the NRC's overall MC&A program is to verify that SNM processed, handled, or stored by NRC-regulated facilities is used as intended for peaceful purposes and has not been stolen or diverted to unauthorized users. The MC&A regulations are designed to ensure that the information collected by the licensee about SNM is accurate, authentic, and sufficiently detailed to enable a licensee to (1) maintain current knowledge of its SNM and (2) manage its program for securing and protecting SNM. The MC&A program, together with physical protection of facilities and information security requirements, make up the primary elements of the NRC's SNM safeguards program. The MC&A component of the larger safeguards program helps provide reasonable assurance that SNM within a licensed facility is not stolen, misused, or otherwise diverted from the facility. As discussed in Section I of this document and consistent with the commitments made in response to the comprehensive review of the NRC's safeguards and security programs, the Commission directed efforts to revise and consolidate the MC&A requirements in 10 CFR Part 74. The final rule seeks to improve the clarity and consistency of the requirements for all types of licensees authorized to possess and use SNM under 10 CFR Parts 50, 52, 70, and 72.

The NRC staff also identified specific provisions of the final rule that, while they constitute backfitting, are necessary to ensure adequate protection of the health and safety of the public and are in accord with the common defense and security. The final rule provisions that constitute backfitting are as follows: (1) a new provision requiring an item control system that is applicable to nuclear reactor facilities licensed under 10 CFR Part 50 or 52, and to storage installations licensed under 10 CFR Part 72; (2) revised provisions regarding item control of SNM at Category III facilities; (3) new provisions regarding the use of tamper-safing procedures at Category III facilities; and (4) new provisions for designating MBAs, ICAs, and material custodians having responsibility for the SNM possessed under license at Category I and III facilities. These new or revised provisions are necessary extensions and clarifications of existing requirements for the control and accounting of nuclear material at licensed facilities. As discussed below, these provisions clarify and enhance the existing MC&A regulations to ensure adequate protection of the health and safety of the public and are in accord with the common defense and security.

Although these specific provisions have been identified as backfits that are necessary to ensure adequate protection of the health and safety of the public and are in accord with the common defense and security, the NRC staff does not have a current and immediate security or safeguards concern because of activities being undertaken by licensees as part of their existing MC&A programs. However, as the Commission noted in SRM-SECY-99-063 (ADAMS Accession No. ML003752062), "voluntary industry initiatives will not be used in lieu of regulatory action where a question of adequate protection of public health and safety exists. Voluntary industry initiatives are approved as an appropriate substitute for NRC regulatory action where the action to be taken is needed to meet existing requirements or for cases where substantial increase in overall protection can be achieved with costs of implementation justifying the increased protection." As such, the NRC will not rely on current licensee practices in lieu of regulations where necessary for adequate protection. Further, as discussed in the regulatory analysis, licensees

would generally have cost-effective means of implementing the revised requirements as extensions of their existing programs. In the following cases, backfitting considerations arise from the differences between existing and revised rule language, not current licensee actions in need of significant modification. Indeed, as reflected in the regulatory analysis, a significant portion of the implementation cost for the rule concerns reviewing existing programs to confirm consistency with new requirements, as opposed to the implementation of new requirements.

III.2 Provisions of the final rule necessary for adequate protection

This section presents the evaluation of the final rule provisions that the NRC staff identified as backfitting, but fall under the adequate protection exception to conducting the backfit analysis that would otherwise be required under the applicable backfit regulations.

Table III-1 Summary of 10 CFR Part 74 changes that constitute backfitting

	Change	Location in 10 CFR Part 74
1	Add new item control system requirement for a licensee under 10 CFR Part 50, 52, or 72.	§ 74.19(d)
2	Revise item control provisions for Category III licensees.	§§ 74.31(c)(6), 74.33(c)(6)
3	Add use of procedures for tamper-safing for Category III licensees.	§§ 74.31(c)(9), 74.33(c)(9)
4	Add designation of MBAs, ICAs, and material custodians for Category III and I licensees.	§§ 74.31(c)(10), 74.33(c)(10), 74.59(h)(5)

For each provision in Table III-1, a discussion is provided below on how the requirement is necessary to ensure that the applicable licensees maintain adequate protection of the health and safety of the public and are in accord with the common defense and security.

III.2.1 *Add new item control system requirement for a licensee under 10 CFR Part 50, 52, or 72 – 10 CFR 74.19(d)*

The material control and accounting process is designed to use control and monitoring measures to prevent and detect a loss of SNM when it occurs or soon thereafter. Additionally, statistical and accounting measures are used to maintain knowledge of the quantities and locations of SNM present in a facility. One such measure used by existing Category I and III licensees is an item control system. As previously discussed in Section II of this document, the term “item control system” is a newly defined term that is added to § 74.4, “Definitions,” in the final rule. The term is defined as follows: “*Item control system* means a system tracking the creation, identity, element and isotopic content, location, and disposition of all items, which enables the licensee to maintain current knowledge of each item.” As discussed in Section II.2 of this document, the final rule extends GPO provisions, including the GPO to maintain current knowledge of SNM, in § 74.3 to the MC&A programs of non-fuel cycle facility licensees, including nuclear reactor facilities licensed under 10 CFR Part 50 or 52 and storage installations licensed under 10 CFR Part 72. In support of these GPOs, the final rule, in § 74.19(d), extends the requirement to establish an item control system, as defined in § 74.4, to include

nuclear reactor facilities licensed under 10 CFR Part 50 or 52 and storage installations licensed under 10 CFR Part 72.

Final Rule Text. *In § 74.19, existing paragraph (d) is redesignated as (e) and new paragraph (d) is added to read as follows:*

§ 74.19 Recordkeeping, procedures, item controls, and physical inventories.

(d) Nuclear reactor facilities licensed under part 50 or 52 of this chapter and storage installations licensed under part 72 of this chapter shall establish, document, implement, and maintain an item control system as defined in § 74.4.

Under existing regulations, nuclear reactor facilities licensed under 10 CFR Part 50 or 52 and storage installations licensed under 10 CFR Part 72 do not have a requirement to implement an item control system. Nuclear reactor licensees are subject only to the applicable general recordkeeping and reporting requirements in Subpart B of 10 CFR Part 74. As discussed in Section II.1 of this document, equivalent requirements for storage installation licensees currently located in 10 CFR Part 72 are relocated into 10 CFR Part 74 in the final rule. Control and accounting for SNM at nuclear reactor facilities and storage installations are considerably less complex than at other facilities, such as Category III fuel fabrication facilities where processing occurs, because the material is usually maintained in the form of readily identifiable fuel assemblies.

The existing Subpart B requirements applicable to nuclear reactor and storage installation licensees include the following:

- reports of loss or theft of SNM – § 74.11;
- material status reports regarding physical inventory results – § 74.13;
- nuclear material transaction reports for transfers of SNM – § 74.15;
- records of receipt, inventory, acquisition, transfer and disposal of all SNM – § 74.19(a);
- written MC&A procedures for accounting of SNM – § 74.19(b); and
- annual physical inventory of all SNM – § 74.19(c).

In the early 2000s, the NRC found that, despite being subject to these general recordkeeping and reporting requirements in Subpart B, nuclear reactor licensees lost control of fuel fragments that had become separated from damaged fuel bundles, such that the location and existence of these fragments could not be determined. Two licensees were unable to recover the lost items. Another licensee eventually found the items that had been missing for decades because the items were misplaced and ultimately absent from the MC&A records. In these cases, the licensee did not maintain current knowledge of SNM items. For most nuclear reactor licensees inspected after such problems were first discovered, the NRC found issues in three general areas: (1) failure to keep and maintain records; (2) failure to establish and follow procedures adequate to control and account for SNM; and (3) failure to conduct physical inventory of all SNM at least every 12 months. These issues regarding the inadequate control and accounting of SNM are of concern because the increased potential both for unplanned occupational radiation exposure and the risk to the common defense and security of the United States through the potential theft or diversion of SNM because it is not properly controlled.

To address concerns that had been identified with the control of fuel fragments at nuclear power plants, the American National Standards Institute (ANSI) N15 Committee of the Institute of Nuclear Materials Management, comprised of both NRC and industry representatives, revised the standard ANSI N15.8-2009, "Material Control Systems-Special Nuclear Material Control and Accounting Systems for Nuclear Power Plants." This 2009 revision provides additional guidance on the control and accounting of (1) fuel rods that are separate from their parent assemblies and (2) pieces of irradiated material that are separate as a result of fuel damage. In June 2013, the NRC published Regulatory Guide 5.29, "Nuclear Material Control Systems for Nuclear Power Plants" (Revision 2), which endorses the use of ANSI N15.8-2009 by nuclear power plants. Many nuclear reactor licensees are using this revised ANSI standard; however, compliance with it is not mandatory, and the guidelines in the standard are broader in scope than what is necessary for compliance with the current recordkeeping and reporting requirements. Furthermore, this revised ANSI standard does not address all of the aspects of item control that would be covered by the new provisions in § 74.19(d), nor was it written to apply to storage installations. For this reason, the staff has developed Revision 3 to Regulatory Guide 5.29 to address the aspects of item control in the final rule that are not covered by ANSI N15.8-2009.

Specifically, the new provision in § 74.19(d) provides for timely monitoring of the SNM items, rather than only an annual physical inventory, by requiring the licensee to have a system that tracks the creation or receipt, identity, element and isotopic content, location, and disposition of all items. This enables the licensee to maintain current knowledge of each item, which is consistent with the GPOs in § 74.3. As part of the item control system, a licensee periodically verifies the item records against the actual item status, thereby providing reasonable assurance of the SNM contents stated in the records and that unauthorized removal of SNM has not occurred.

Maintaining adequate SNM records, through the implementation of an item control system, is necessary to ensure that licensed material is properly accounted for in a manner that provides continuity of control through the total fuel cycle. The new provision in § 74.19(d) provides consistency in Subparts B, C, and D, for the control of SNM located at a nuclear reactor, storage installation, fuel fabrication facility, or an enrichment facility. Subparts C and D of 10 CFR Part 74 require licensees possessing, handling, processing, and storing SNM to maintain current knowledge of SNM items by establishing an item control system under existing §§ 74.31(c)(6) and 74.43(b)(5). The new paragraph (d) in § 74.19 extends the requirement to maintain current knowledge of the items by requiring the nuclear reactor and storage installation licensees to establish an item control system for their SNM items.

Under the new requirement in § 74.19(d), nuclear reactor and storage installation licensees would achieve a more complete and comprehensive inventory of the SNM possessed under the NRC licenses. The licensee, through the item control system, would be able to promptly locate and confirm the existence of any specific item or group of items upon demand, thus protecting against unauthorized and unrecorded removal of items. By requiring a system to track the creation or receipt, identity, element and isotopic content, location, and disposition of SNM items at a nuclear reactor facility or storage installation, the risk that any SNM will be lost or diverted is minimized. The item control system requirement in § 74.19(d)—in conjunction with the existing requirements to maintain records [§ 74.19(a)], establish and maintain MC&A procedures [§ 74.19(b)], and conduct annual physical inventory [§ 74.19(c)]—provides reasonable assurance that

SNM items are present in assigned locations and are properly controlled and that potential loss, theft, or diversion of SNM would be detected.

The existing requirements in Subpart B of 10 CFR Part 74 do not explicitly require that nuclear reactor licensees under 10 CFR Part 50 or 52 and storage installation licensees under 10 CFR Part 72 implement an item control system. Existing Subpart B provisions are limited to general recordkeeping and reporting requirements. The final rule, in § 74.3, extends GPO provisions to the MC&A programs of non-fuel cycle facility licensees, such as nuclear reactor and storage installation licensees. These GPO provisions include the requirement to maintain current knowledge (timely, accurate, and reliable information on the quantities and locations) of the SNM possessed under the NRC licenses. In support of the § 74.3 GPOs, the final rule, in § 74.19(d), extends the requirement to establish an item control system to include nuclear reactor and storage installation licensees. The ability to detect possible loss, theft, or diversion of SNM is intrinsically connected to the current knowledge of the SNM. An item control system provides the means by which potential loss, theft, or diversion can be recognized and evaluated. As discussed above, this requirement in § 74.19(d), in conjunction with the existing Subpart B requirements, provides reasonable assurance that nuclear reactor and storage installation licensees are protecting against unauthorized and unrecorded removal of items.

As noted above, the NRC staff does not have a current and immediate security or safeguards concern because of activities being undertaken by many nuclear power plant licensees as part of their existing MC&A programs. The NRC will not rely on current licensee practices in lieu of regulations where necessary for adequate protection. Further, as discussed in the regulatory analysis, licensees would generally have cost-effective means of implementing the revised requirements as extensions of their existing programs. Accordingly, the staff does not anticipate that formalizing these approaches as an item control system would require significant or different additional effort to control and account for material, as discussed in the regulatory analysis.

III.2.2 Revise item control provisions for Category III licensees – 10 CFR 74.31(c)(6) and 74.33(c)(6)

Category III licensees are required to maintain current knowledge of the SNM in their possession. Consequently, Category III licensees utilize an item control system to monitor the status of SNM items in their facilities. As discussed in Section III.2.1 of this document, the intent of the item control system requirement is to enable the licensee to detect and protect against unauthorized or unrecorded removal of SNM. The existing definition for the term *item* in § 74.4 is: “*Item* means any discrete quantity or container of special nuclear material or source material, not undergoing processing, having a unique identity and also having an assigned element and isotope.” Consistent with this definition, Category III licensees are not required to include material in process that is not designated as “items” in the item control system. Furthermore, the existing item control provisions for Category III licensees include specific thresholds for items that are exempted from the requirement to maintain current knowledge of items. The final rule revises these exemptions for Category III licensees by reducing the thresholds for the items that may be exempted from the item control requirement.

Given the nature of their processes, the existing Category III fuel fabrication facility licensees possess SNM inventories consisting of various types of items. For example,

typical items may include uranium hexafluoride cylinders, various containers of uranium-bearing powder or pellets, individual fuel rods or containers of fuel rods, completed fuel assemblies, and containers of uranium-bearing waste. The existing § 74.31(c)(6), applicable to Category III fuel fabrication facility licensees, states as follows:

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) *System capabilities.* To meet the general performance objectives of paragraph (a) of this section, the material control and accounting system must include the capabilities described in paragraph (c)(1) through (8) of this section. The licensee shall: ...

(6) Maintain current knowledge of items when the sum of the time of existence of an item, the time to make a record of the item, and the time necessary to locate the item exceeds 14 days. Store and handle, or subsequently measure, items in a manner so that unauthorized removals of substantial quantities of material from items will be detected. Exempted are items individually containing less than 500 grams of U-235 up to a total of 50 kilograms of U-235, solutions with a concentration of less than 5 grams of U-235 per liter, and items of waste destined for burial or incineration.

Item control requirements for Category III uranium enrichment facility licensees are similar to those for Category III fuel fabrication facility licensees. Category III uranium enrichment facility licensees are required to maintain current knowledge of the SM and SNM items in their possession. The existing item control provision in § 74.33(c)(6) for uranium enrichment facility licensees contains item control requirements and exemptions similar to those in § 74.31(c)(6) as discussed above. The existing § 74.33(c)(6) states as follows:

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) *System features and capabilities.* To meet the general performance objectives of paragraph (a) of this section, the Material Control and Accounting (MC&A) system must include the features and capabilities described in paragraphs (c)(1) through (8) of this section. The licensee shall establish, document, and maintain: ...

(6) An item control program that ensures that:

(i) Current knowledge is maintained of items with respect to identity, uranium and U-235 content, and stored location; and

(ii) Items are stored and handled, or subsequently measured, in a manner so that unauthorized removal of 500 grams or more of U-235, as individual items or as uranium contained in items, will be detected. Exempted from the requirements of paragraph (c)(6) (i) and (ii) of this section are licensed-identified [sic] items each containing less than 500 grams U-235 up to a cumulative total of 50 kilograms of U-235 and items that exist for less than 14 calendar days.

As indicated in the NRC staff's 2008 rulemaking plan, the item control exemptions contained in these regulations are dated, and need to be deleted or modified. The existing exemption could allow up to 500 grams of uranium-235 for an individual item, up to a total of 50 kilograms of uranium-235, to exist uncontrolled and untracked and thus

not adequately accounted. Therefore, to maintain accurate MC&A records of the SNM in its possession, a facility that possesses many small items that could, in total, contain large amounts of SNM would need to include these individual items in its item control system. An item control system is intended to ensure knowledge of the current status of such items' identity, element and isotope content, and stored location. For items subject to this provision, the item control system provides the capability to locate promptly and confirm the presence of any specific item or group of items upon demand. This provides reasonable assurance that the SNM contents stated in the licensee's MC&A records are accurate and comprehensive and that unauthorized removal of SNM would be detected.

Furthermore, the NRC staff's comprehensive review of the NRC's overall MC&A program, as discussed in Section I.2.2 of this document highlighted concerns regarding the 14-day exemption for item control in existing §§ 74.31(c)(6) and 74.33(c)(6) for Category III licensees. But as noted in the staff's 2008 rulemaking plan as endorsed by the Commission, if several containers of SNM that exist less than 14 days are lost or stolen, under the existing regulations the licensee would lack current MC&A information about the identity and quantity of these containers because they are exempted from the item control system. This is a significant potential vulnerability. Such discrepancies must still be detectable in the inventory process required by §§ 74.31(c)(5) and 74.33(c)(4) even where exemptions from the item control system apply. For example, if a licensee were to become aware of a large quantity of unaccounted for material during its annual inventory process that nevertheless fell within these item control exemption values, the NRC would have significant concerns about the licensee's program and its compliance with current control, accounting, and reporting requirements.

Based upon these concerns the NRC staff proposed removing these item control exemptions in the proposed rule text entirely (78 FR 67225; November 8, 2013). The proposed rule text retained the existing exemption for items in solution with a concentration of less than 5 grams per liter of uranium-235, and the existing exemption for items of waste destined for burial or incineration. The NRC received several comments on this proposed revision. Commenters suggested that a shorter time frame for licensees to update item information be used rather than eliminating the 14-day exemption outright. In response to these comments, the NRC staff revised the provisions §§ 74.31(c)(6) and 74.33(c)(6) in the final rule as follows:

Final Rule Text. *In § 74.31, paragraph (c)(6) is revised to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) *Program capabilities.* To achieve the § 74.3 performance objectives, the MC&A program must include the capabilities described in paragraphs (c)(1) through (10) of this section, and require the licensee to: ...

(6) Establish, document, implement, and maintain an item control system as defined in § 74.4. Store and handle or subsequently measure items (as defined in § 74.4) in a manner such that unauthorized removals of individual items or 500 grams or more of uranium-235 from one or more items will be detected. Exempted from this requirement are:

(i) Solutions with a concentration of less than 5 grams per liter of plutonium or uranium-233 or uranium-235 or a combined concentration thereof less than 5 grams per liter;

(ii) Laboratory samples and reference standards maintained in the laboratory

material management system and containing uranium enriched to less than 10 percent in uranium-235;

(iii) Items existing less than 3 calendar days and containing less than 100 grams of uranium-235; or

(iv) Items of waste destined for burial or incineration;

Final Rule Text. *In § 74.33, paragraph (c)(6) is revised, in part, to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) *Program capabilities.* To achieve the general performance objectives stated and referenced in paragraph (a) of this section, the MC&A program must include the capabilities described in paragraphs (c)(1) through (10) of this section. The licensee shall establish, document, implement and maintain: ...

(6) An item control system (as defined in § 74.4). The system must ensure that items (as defined in § 74.4) are stored and handled or subsequently measured in a manner such that unauthorized removals of individual items or 500 grams or more of uranium-235 from one or more items will be detected. Exempted from this requirement are:

(i) Solutions with a concentration of less than 5 grams per liter of plutonium or uranium-233 or uranium-235 or a combined concentration thereof less than 5 grams per liter;

(ii) Laboratory samples and reference standards maintained in the laboratory material management system and containing uranium enriched to less than 10 percent in uranium-235;

(iii) Items existing less than 3 calendar days and containing less than 100 grams of uranium-235; or

(iv) Items of waste destined for burial or incineration;

The wording in existing § 74.31(c)(6) regarding detection of “unauthorized removals of substantial quantities of material from items” is changed in the final rule to “unauthorized removal of individual items or 500 grams of uranium-235 from one or more items.” Similarly, the equivalent statement in existing § 74.33(c)(6) regarding detection of “unauthorized removal of 500 grams or more of uranium-235, as individual items or as uranium contained in items” is changed in the final rule to “unauthorized removal of individual items or 500 grams of uranium-235 from one or more items.” These changes align requirements for all Category III licensees, and clarify the MC&A requirements and provide a uniform detection threshold level, while preserving the graded approach between Category III and Category II licensees [discussed in Section II.16 of this document]. Removing the exemption for “items individually containing less than 500 grams of uranium-235 up to a total of 50 kilograms of uranium-235” is necessary to ensure the licensee maintains current knowledge of items containing smaller amounts of SNM that, in aggregate, could total large amounts of SNM. This provides reasonable assurance that the SNM contents stated in the MC&A records are accurate and comprehensive and that unauthorized removal of SNM would be detected.

The final rule provisions in §§ 74.31(c)(6) and 74.33(c)(6) revise the thresholds for exempted items rather than eliminating them. The final rule provisions in §§ 74.31(c)(6)(i) and 74.33(c)(6)(i) retain the existing exemption for items in solution with a concentration of less than 5 grams per liter of uranium-235. The final rule provisions in

§§ 74.31(c)(6)(iv) and 74.33(c)(6)(iv) retain the existing exemption for items of waste destined for burial or incineration. The new provisions in §§ 74.31(c)(6)(ii) and 74.33(c)(6)(ii) in the final rule exempt laboratory samples and reference standards enriched to less than 10 percent in uranium-235 from the item control requirement. Category III licensees possess and use a number of laboratory samples and reference standards in their daily operations. These laboratory samples and reference standards are generally controlled and tracked for quality assurance purposes. The NRC staff, therefore, finds it appropriate to allow these types of items to be exempted from the item control requirement.

Rather than eliminate the 14-day exemption, the new provisions in §§ 74.31(c)(6)(iii) and 74.33(c)(6)(iii) reduce the time period to 3 calendar days and apply this exemption to items containing less than 100 grams uranium-235. This is consistent with general MC&A practices, for which the suggested time frame for resolution of MC&A anomalies is 72 hours, or 3 days. This is also consistent with guidance for Category III licensees that suggest shipping container identification and integrity of tamper-indicating devices be verified within 3 days of receipt. The 100-gram threshold value for an item existing less than 3 days represents a realistic estimation for operating loss due to sampling or measurement uncertainty and is a more reasonable value than zero. Limiting this 3-day exemption to items containing less than 100 grams minimizes the potential for large quantities of SNM to be uncontrolled and untracked while still providing licensees with flexibility for smaller and short-lived SNM items. Consistent with the definition of *item* as previously discussed, material in process continues to be exempt from the item control requirement.

In summary, these final rule changes revise the existing exemptions to the item control provisions for Category III licensees. These exemptions currently permit up to 50 kilograms of SNM to be inadequately accounted for or controlled. The final rule strengthens the MC&A requirements for Category III licensees by clarifying the item control provisions and reducing the quantity and time period thresholds for the items exempt from the item control requirement. These revisions to the item control provisions for Category III licensees, in §§ 74.31(c)(6) and 74.33(c)(6), are necessary to ensure that these licensees provide adequate protection of the health and safety of the public and are in accord with the common defense and security. These revisions ensure that licensees achieve a complete and comprehensive inventory of the SNM in their possession, including the comprehensive and timely detection of, and protection against, unauthorized and unrecorded removals of SNM. The revisions still provide flexibility for smaller and short-lived items that do not present the same strategic risk as the potentially larger quantities of material and longer-lived items that can currently be exempted.

III.2.3 Add use of procedures for tamper-safing for Category III licensees – 10 CFR 74.31(c)(9) and 74.33(c)(9)

NRC regulations in 10 CFR Parts 73 and 74 require licensees to consider specific security procedures and to implement them to ensure that they achieve an acceptable level of protection of SNM at all times. The use of tamper-safing devices on containers or storage areas is one such level of protection used to secure the integrity of SNM in transit or stored onsite. Existing regulations in 10 CFR Part 73 require licensees that handle SSNM to use tamper-safing devices when shipping (§ 73.26) or storing such material (§ 73.46). Category III licensees are required to use tamper-safing devices for

SNM in transit, in accordance with § 73.67⁷. Existing regulations in 10 CFR Part 74 for Category I and Category II licensees require these licensees to develop procedures for the use of tamper-safing devices (§§ 74.59(f)(2)(i) and 74.43(c)(3), respectively).

Existing item control requirements in §§ 74.31(c)(6) and 74.33(c)(6) require Category III licensees to maintain current knowledge of SNM and to store and handle SNM items in a manner so that unauthorized removal of SNM will be detected. While these MC&A regulations in Subpart C of 10 CFR Part 74 do not specifically refer to “tamper-safing,” the existing Category III licensees have found it advantageous to use tamper-safing devices for MC&A purposes. Tamper-safing is a common and routine practice at Category III facilities, as licensees have recognized its effectiveness and efficiency benefits in meeting, among others, MC&A requirements. For example, existing Category III licensees have chosen to implement tamper-safing procedures to protect the integrity of previous measurements of material prior to being shipped offsite or stored onsite for a prolonged period of time. Additionally, existing Category III licensees use tamper-safing devices as the basis for ensuring the values of prior measurements, in lieu of remeasurement, for subsequent inventories. In support of the item control and physical inventory requirements, the use of tamper-safing devices has been the material control measure preferred by existing licensees over alternative measures such as material surveillance (e.g., two-person rule or closed-circuit television cameras), increased item monitoring activities, or 100 percent remeasurement of items during the physical inventory. Existing Category III licensees have incorporated these uses of tamper-safing devices into their FNMC (MC&A) plans, which have been reviewed and approved by the NRC. Current use of tamper-safing devices for MC&A purposes by existing Category III licensees provides for ease of item control, ease of inventory taking, and aids in the timely detection of the loss or diversion of nuclear material.

As discussed in Section III.2.2 of this document, the existing item control regulations in §§ 74.31(c)(6) and 74.33(c)(6) require that Category III licensees maintain current knowledge of the SNM items in their possession. This provides reasonable assurance that the licensee can detect and protect against unauthorized or unrecorded removals of SNM. In support of this item control requirement, existing Category III licensees use tamper-safing devices to protect the integrity of measurement data for material in items. This is consistent with § 74.4, where the existing definition of *tamper-safing* is as follows: “the use of devices on containers or vaults in a manner and at a time that ensures a clear indication of any violation of the integrity of previously made measurements of special nuclear material within the container or vault.” A tamper-indicating seal is a device used to detect unauthorized removal of material. The objective of tamper-safing is to provide assurance that no tampering or entry occurred after the tamper-indicating seal was applied. Thus, in the context of MC&A, the function of tamper-indicating seals is to ensure that a container or vault is properly closed and secured against unauthorized or unrecorded removals of SNM and has not been reopened outside of authorized and documented actions. This enables the licensees to maintain current knowledge of the SNM items in their possession.

Existing Category III licensees also use tamper-safing devices in support of the physical inventory requirements in existing §§ 74.31(c)(5) and 74.33(c)(4). If the contents of

⁷ Existing § 73.67(g)(1)(iii) states, in part, that each licensee who transports or who delivers to a carrier for transport SNM of low strategic significance shall transport the material in a tamper indicating sealed container.

items is established through prior measurements and those items are sealed with tamper-safing devices, the SNM quantity in those items may be based on those measured values for inventory purposes. Otherwise, the items would need to be remeasured during each physical inventory. The principal purpose of conducting a physical inventory is to confirm that nuclear materials are present in their recorded locations. Such physical inventories also serve the purposes of confirming the accuracy and reliability of the facility's accounting records, detecting any unmeasured material losses, and detecting any diversion or theft of nuclear materials that could go undetected without a defined physical inventory program. In addition, physical inventories serve as the most reliable method for detecting protracted material losses.

As an extension of the existing item control and physical inventory requirements, and in conjunction with the existing requirement in § 74.19(b) to establish, maintain and follow written MC&A procedures, the NRC staff has added new provisions for Category III licensees in §§ 74.31(c)(9) and 74.33(c)(9) to establish and maintain procedures for tamper-safing when used for MC&A purposes.

Final Rule Text. *In § 74.31, paragraph (c) is revised by adding a new provision (9) to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) Program capabilities. ...

(9) If tamper-safe seals are to be used, maintain and follow procedures for tamper-safing (as defined in § 74.4), which include control of access to, and distribution of, unused seals and records;

Final Rule Text. *In § 74.33, paragraph (c) is revised by adding a new provision (9) to read as follows:*

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) Program capabilities. ...

(9) Procedures for tamper-safing (as defined in § 74.4), which include control of access to, and distribution of, unused seals and records, if tamper-safe seals are to be used;

These new provisions require Category III licensees to maintain and follow procedures for the use and control of tamper-safing devices for MC&A purposes, such as those described above. These tamper-safing procedures may include topics such as: (1) the control of access to tamper-indicating seals; (2) the unique identification of each seal; (3) records of the date, time, and person who applied each seal to a container or vault; and (4) other pertinent records of all such seals. Tamper-safing devices are applied to items to ensure that the previously measured and recorded SNM content values can be used to maintain current knowledge of items and confirm the accuracy and reliability of the accounting records during physical inventory. Proper use of tamper-safing devices, as implemented through procedures, enables the licensee to validate that the content of a container or item is the same as when the device was applied. This allows for ease of item control, ease of inventory taking, timely detection of the loss or diversion of nuclear material and serves as evidence that the tamper-safed item has not been compromised.

These provisions do not prescribe the extent of the use of tamper-safing, nor do they specify which containers or vaults at a facility must be subject to tamper-safing. These provisions allow licensees the flexibility to utilize tamper-safing within a performance-based MC&A program. The tamper-safing procedures required by these provisions, and their implementation at a Category III facility, are part of the licensee's MC&A plan subject to NRC oversight.

Existing Category III licensees have chosen to implement tamper-safing procedures to meet existing regulations to protect the integrity of the SNM content of items in transit, in accordance with § 73.67. In support of existing item control [§§ 74.31(c)(6) and 74.33(c)(6)] and physical inventory [§§ 74.31(c)(5) and 74.33(c)(4)] requirements, existing Category III licensees use tamper-safing to maintain current knowledge and protect the integrity of previously measured items on hand during the physical inventory. These practices ensure the accuracy of the MC&A information used in the accounting records. An effective MC&A program is essential to detecting and resolving an actual or potential loss, theft, diversion, or misuse of licensed material. An important element of an effective MC&A program is establishing and maintaining procedures to document how the applicable requirements of 10 CFR Part 74 are met. These new provisions in §§ 74.31(c)(9) and 74.33(c)(9) strengthen the existing item control and inventory requirements that help deter and detect unauthorized and unrecorded removals of SNM by requiring Category III licensees that utilize tamper-safing devices for MC&A purposes to maintain and follow procedures for the use and control of those tamper-safing devices. Protecting the integrity of the SNM content of items through the use of tamper-safing devices is an effective means to maintain current knowledge of items and ensures that this material is properly accounted for and controlled. Effective tamper-safing requires attention and precision in applying and checking tamper-indicating devices, and controlling access to and distribution of unused seals. The requirement for tamper-safing procedures helps to ensure that the tamper-safing is implemented effectively and is used as intended at the facility.

This change provides reasonable assurance that Category III licensees achieve a complete and comprehensive inventory of the SNM in their possession and enables more comprehensive and timely detection of, and protection against, unauthorized and unrecorded removals of SNM. Thus, the new provisions for the acceptable use of tamper-safing procedures for Category III licensees, in §§ 74.31(c)(9) and 74.33(c)(9), are necessary to ensure that these licensees maintain adequate protection of the health and safety of the public and are in accord with the common defense and security. As noted above, the NRC staff does not have a current and immediate security or safeguards concern because of tamper-safing procedures that are being implemented by licensees. But the NRC will not rely on current licensee practices in lieu of regulations where necessary for adequate protection. Further, as discussed in the regulatory analysis, licensees would generally have cost-effective means of implementing the revised requirements as extensions of their existing programs. Accordingly, the staff does not anticipate that requiring tamper-safing procedures (when tamper-safing is used) would require significant or different additional effort, as discussed in the regulatory analysis.

III.2.4 Add designation of material balance areas, item control areas, and material custodians for Category III and I licensees – 10 CFR 74.31(c)(10), 74.33(c)(10), and 74.59(h)(5)

NRC regulations in 10 CFR Part 74 require licensees to maintain an MC&A program that tracks and verifies SNM that is on site. The MC&A regulations provide reasonable assurance that the information collected by the licensee about SNM is accurate and sufficiently detailed to enable a licensee to: (1) maintain current knowledge of its SNM and (2) manage its program for securing and protecting SNM. The central strength of material accounting is the power to detect anomalies and, conversely, to provide assurance that nuclear materials are properly accounted for and controlled. The division of a facility into MBAs or ICAs, or a combination of both, forms the basis for nuclear material accounting and control for SNM within a facility's boundaries and enables localization of potential loss⁸ or theft of SNM. The final rule adds new provisions to require Category I, II, and III licensees to designate MBAs or ICAs, or a combination of both, and assign custodial responsibility for such areas. The final rule provision regarding MBAs, ICAs, and material custodians for Category II licensees [(§ 74.43(c)(9)] is discussed in Section II.17 of this document. As discussed in Section II.3.2 of this document, the terms *material balance area*, *item control area*, and *material custodian* are newly defined in the final rule. These terms are commonly used and accepted in the regulated community, and are included in the final rule to enhance clarity and consistency in this update to 10 CFR Part 74.

Category III licensees – 10 CFR 74.31(c)(10) and 74.33(c)(10)

The existing requirements in 10 CFR Part 74 do not explicitly require Category III licensees to designate MBAs, ICAs, and material custodians. However, the existing Category III licensees have established MBAs and ICAs and designated material custodians to monitor and control the nuclear material moving into, out of, and within these areas. These practices support the existing requirements for these licensees to maintain current knowledge of the SNM in their possession. The existing Category III licensees have specified MBAs, ICAs, and material custodian designations in their FNMC (MC&A) plans, which have been reviewed and approved by the NRC. The final rule provisions for Category III licensees (§§ 74.31 and 74.33) are similarly worded, as shown below.

Final Rule Text. *In § 74.31, paragraph (c) is revised by adding a new provision (10) to read as follows:*

§ 74.31 Nuclear material control and accounting for special nuclear material of low strategic significance.

(c) Program capabilities. ...

(10) Designate one or more material balance areas, or a combination of one or more material balance area(s) and one or more item control areas, and assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SNM possessed under license.

For Category III uranium enrichment facility licensees, the final rule provision § 74.33(c)(10) includes a reference to SM in addition to SNM, because the MC&A requirements for these licensees apply to both SM and SNM possessed under license.

⁸ A loss might be the result of diversion, hidden inventory (e.g., material holdup in pipes or process equipment), unmeasured discards, recording error, or some other unidentified loss mechanisms.

Final Rule Text. In § 74.33, paragraph (c) is revised by adding a new provision (10) to read as follows:

§ 74.33 Nuclear material control and accounting for uranium enrichment facilities authorized to produce special nuclear material of low strategic significance.

(c) *Program capabilities.* ...

(10) One or more material balance areas, or a combination of one or more material balance area(s) and one or more item control areas, and shall assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SM and SNM possessed under license.

As indicated in the above revision, the new provisions in §§ 74.31(c)(10) and 74.33(c)(10) require designation of MBAs or ICAs, or a combination of both, and material custodians who are responsible for monitoring these areas. These new provisions for Category III licensees provide for the internal controls to deter and detect diversion or misuse of nuclear material at these facilities and minimize the occurrence, and facilitate the resolution, of MC&A anomalies. These provisions also conform with the wording in §§ 74.43(c)(9) [discussed in Section II.17 of this document] and 74.59(h)(5) in Subparts D and E of the final rule, respectively.

Category I licensees – 10 CFR 74.59(h)(5)

Category I licensees have developed and follow FNMC (MC&A) plans as a condition of their NRC licenses. These plans include designation of MBAs and ICAs and designated material custodian because the existing requirements in Subpart E require Category I licensees to assign custodial responsibility for the SSNM in their possession. The existing § 74.59(h)(5) states as follows:

§ 74.59 Quality assurance and accounting requirements.

(h) *Internal control.* The licensee shall: ...

(5) Assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SSNM possessed under license.

As discussed above, the final rule makes consistent the provisions for Category I, II, and III licensees to designate MBAs or ICAs, or a combination of both, and material custodians responsible for such areas.

Final Rule Text. In § 74.59, paragraph (h)(5) is revised to read as follows:

§ 74.59 Quality assurance and accounting requirements.

(h) *Internal control.* The licensee shall: ...

(5) Designate one or more material balance areas, or a combination of one or more material balance area(s) and one or more item control areas, and assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SNM possessed under license.

The revised provision in § 74.59(h)(5) clarifies the existing requirement and conforms with the wording in §§ 74.31(c)(10), 74.33(c)(10), and 74.43(c)(9) in Subparts C and D of the final rule.

While the existing MC&A regulations do not specifically require the designation of MBAs, ICAs, and material custodians, a Category I, II, or III licensee is required to: (1) maintain current knowledge of its SNM and (2) manage its program for securing and protecting SNM. All of the existing Category I and III licensees have chosen to establish MBAs and ICAs and designated material custodians to monitor and control the nuclear material moving into, out of, and within these areas. These current practices facilitate the monitoring of nuclear material locations and movements, and enable localization of theft or losses that might be the result of diversion, hidden inventory (e.g., material holdup in pipes or process equipment), unmeasured discards, recording error, or some other unidentified loss mechanisms. Designating MBAs, ICAs, and material custodians provides the internal controls to deter and detect diversion or misuse of nuclear material at Category I, II, or III facilities and minimizes the occurrence of MC&A anomalies and facilitates their resolution. MBAs and ICAs are important foundations for controlling and accounting of all SNM within a facility. The addition of the new provisions for the designation of MBAs, ICAs, and material custodians strengthens and provides consistency in the MC&A regulations to provide reasonable assurance that the nuclear material is properly accounted for and controlled at Category I, II, and III facilities. This ensures comprehensive detection of and protection against unauthorized and unrecorded removals of SNM. Thus, the new provisions for the designation of MBAs, ICAs, and material custodians in §§ 74.31(c)(10), 74.33(c)(10), and 74.59(h)(5), are necessary to ensure that these licensees maintain adequate protection of the health and safety of the public and are in accord with the common defense and security.

As noted above, the NRC staff does not have a current and immediate security or safeguards concern because licensees with a Category III or higher amount of material have already designated MBAs, ICAs, and material custodians, as appropriate. The NRC will not rely on current licensee practices in lieu of regulations where necessary for adequate protection. Further, as discussed in the regulatory analysis, licensees would generally have cost-effective means of implementing the revised requirements as an extension of their existing programs. Accordingly, the staff does not anticipate that requiring MBAs, ICAs, or material custodians would require significant or different additional effort, as discussed in the regulatory analysis.

IV. OVERALL CONCLUSION

The final rule contains changes to the MC&A regulations to clarify and strengthen the requirements. As discussed in Section II of this document, many of the final rule provisions do not constitute backfitting because they do not impose new requirements, do not fall within the categories of changes considered backfitting, or do not affect any existing licensed entities. Furthermore, the final rule also contains provisions that constitute backfitting. Specifically, as discussed in Section III of this document, the NRC staff identified four changes within the final rule that constitute backfitting: (1) a new provision requiring an item control system that is applicable to nuclear reactor facilities licensed under 10 CFR Part 50 or Part 52 and to storage installations licensed under 10 CFR Part 72; (2) revised provisions regarding item control of SNM at facilities subject to 10 CFR Part 74 Subpart C; (3) new provisions regarding the use of tamper-safing procedures at facilities subject to 10 CFR Part 74 Subpart C and (4) new provisions for designating material balance areas, item control areas and material custodians having responsibility for the SNM possessed under license at facilities subject to 10 CFR Part 74 Subparts C and E. These new or revised provisions are necessary extensions and clarifications of existing requirements for the control and accounting of nuclear material at licensed facilities, exemplified by current licensee programs that comport with the new requirements.

As discussed in Section III of this document, the provisions that constitute backfitting clarify and enhance the existing MC&A regulations and promote an effective MC&A program, ensuring that nuclear materials are properly accounted for and controlled at licensed facilities. If there is an MC&A discrepancy at a facility that possesses nuclear material, that discrepancy can only be resolved if there are accurate records of nuclear material quantities and locations. By ensuring the accounting and control of these materials, an effective MC&A program aids in the protection of public health and safety and promotes the common defense and security. As discussed in Section III of this document, the NRC staff finds the provisions of the final rule that constitute backfitting are necessary to ensure licensees maintain adequate protection of the public health and safety and are in accord with the common defense and security. Therefore, a backfit analysis is not needed to justify imposing these requirements. On the basis of the evaluation provided in this document, the NRC staff finds that the final rule constitutes an acceptable instance of backfitting and violation of issue finality and recommends that the Commission issue the final rule.

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