

RULEMAKING ISSUE NOTATION VOTE

September 13, 2011

SECY-11-0126

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: PROPOSED RULE: AMENDMENTS TO MATERIAL CONTROL
AND ACCOUNTING REGULATIONS (RIN 3150-A-161)

PURPOSE:

To request Commission approval to publish a proposed rule, in the *Federal Register*, that would amend Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 40, 70, 72, 74, and 150, to revise and consolidate within 10 CFR Part 74 requirements for material control and accounting (MC&A) of special nuclear material (SNM). The proposed changes would primarily affect 10 CFR Part 70 licensees. Minor conforming changes would be made to 10 CFR Parts 40, 70, 72 and 150. These changes are intended to update, clarify and strengthen the MC&A requirements. This paper does not address any new commitments.

BACKGROUND:

In 1985, U.S. Nuclear Regulatory Commission (NRC) created 10 CFR Part 74 to separate the MC&A requirements in 10 CFR Part 70 from safety requirements for licensees authorized to possess SNM under Part 70. Since that time, most of the MC&A requirements have been moved to 10 CFR Part 74.

In 2003, the Office of the Inspector General (OIG) conducted an audit to determine whether the NRC adequately ensures that its licensees control and account for SNM. In its report (OIG-03-A-15), OIG recommended that the NRC document the basis used for risk informing its oversight of MC&A activities.

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In SECY-05-0143 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML050870212), dated August 5, 2005, the staff proposed a number of changes to the MC&A program. These changes were based, in part, on: (1) the above referenced OIG recommendation; (2) an evaluation of NRC's MC&A regulatory program by Oak Ridge National Laboratory; and (3) staff considerations regarding the need to provide MC&A regulations for new types of licensees and facilities (e.g., a mixed oxide fuel fabrication facility). In the Staff Requirements Memorandum (SRM) for SECY-05-0143 (ADAMS Accession No. ML053220618), the Commission directed staff to develop a rulemaking plan, including: (1) a broad overview of how MC&A is integrated with other regulatory activities; (2) identification of areas requiring policy decisions by the Commission; and (3) defining the relationship between MC&A and physical security.

SECY-08-0059 (ADAMS Accession No. ML080580307), dated April 25, 2008, described the rulemaking plan, which included six options for the Commission to consider. The SRM for SECY-08-0059 (ADAMS Accession No. ML090360473) directed the staff to proceed with Option 4, that was limited to revising and consolidating current MC&A requirements in 10 CFR Part 74, and revising existing guidance documents and issuing one new guidance document.

DISCUSSION:

The proposed changes to Part 74 are within the scope of Option 4 described in SECY-08-0059, and the reasons for making these changes are discussed in the *Federal Register* Notice for the proposed rule (Enclosure 1).

The proposed changes are summarized below. The majority of the changes would affect MC&A provisions in 10 CFR Part 74, with conforming changes in 10 CFR Parts 40, 70, 72 and 150. The proposed changes would be consistent with the NRC's strategic goal and strategic outcome for security, and would enhance the requirements for MC&A commensurate with risk. The preliminary proposed rule language was published in the *Federal Register* on May 16, 2011 (76 FR 28193), and thirteen comment letters were received and considered.

The organization of 10 CFR Part 74 into subparts A-F would remain unchanged. Fuel fabrication facilities supplying fuel to commercial power reactors, and uranium enrichment facilities (both of which are often referred to as Category III facilities) would remain subject to Subpart C, "Special Nuclear Material of Low Strategic Significance." Fuel fabrication facilities supplying fuel to the Navy reactors, and to research and test reactors (such fabrication facilities are often referred to as Category I facilities) would remain subject to Subpart E, "Formula Quantities of Strategic Special Nuclear Material."

Under this rulemaking, the scope of 10 CFR Part 74 would be expanded to include independent spent fuel storage installations (ISFSIs). The proposed MC&A reporting requirements for an ISFSI licensee under 10 CFR Part 72 would be essentially unchanged, except that the requirements would be located in 10 CFR Part 74.

This rulemaking would add defined terms to 10 CFR Part 74. Some of the proposed definitions (*accounting, custodian, material control and accounting*) are already commonly used by licensees in their MC&A programs. Other proposed definitions (*material balance area, item control area, and two-person rule*) would clarify and strengthen the MC&A requirements.

A reference to a category I quantity of SNM would be added to the definition of *formula quantity*, to make it consistent with the existing definitions in 10 CFR Parts 70 and 73. Similarly, references to a category II quantity of SNM and a category III quantity of SNM would be added to the definitions of *special nuclear material of moderate strategic significance* and *special nuclear material of low strategic significance*, respectively, to match the existing definitions of these terms in 10 CFR Parts 70 and 73.

The defined term, *effective kilograms of special nuclear material*, would be removed from 10 CFR Part 74. Quantities of SNM would instead be expressed in gram units to simplify the accounting requirements in 10 CFR Part 74 and provide consistency with the existing Part 74 definitions of the various types of SNM, all of which specify quantities in gram units. *Effective kilograms of special nuclear material* would remain as a defined term in 10 CFR Parts 40, 70, 75, 76, and 110, for implementation of the US/International Atomic Energy Agency Safeguards Agreement.

This rulemaking would add a new Appendix A to 10 CFR Part 74. The appendix, "Categories of Special Nuclear Material," would include a table showing the quantities for each category, the corresponding subpart in Part 74 for each category, and formulae to calculate the quantity of material for Category I, II, or III facilities. The table would be based on the materials and quantities that are currently in Appendix M to 10 CFR Part 110 "Categorization of Nuclear Material."

The existing general performance objectives (GPOs) that are applicable to licensees of Category I, II, and III facilities would be revised and expanded to provide a tiered approach which would make GPOs applicable to all SNM licensees. The GPOs describe informational activities to deter, detect, or aid in responding to any loss, theft, diversion or misuse of SNM. The tiered approach is as follows. Subpart A of 10 CFR Part 74 would include the GPOs that all SNM licensees would be required to achieve. Subparts C and E would include GPO requirements that are specific to Category III enrichment facilities and Category I facilities, respectively.

A new item control requirement in Subpart B would require all licensees authorized to hold SNM, regardless of quantity, to maintain current knowledge of each held item. The new requirement is consistent with current requirements to annually complete a physical inventory, and submit material status and nuclear material transaction reports, and would close a regulatory gap in the existing Subpart B MC&A requirements. Currently, 10 CFR Part 74 requires a licensee authorized to possess SNM in a quantity greater than 350 grams to conduct a physical inventory of all SNM in its possession. The proposed change would require a licensee authorized to possess SNM in any quantity to conduct a physical inventory of the material.

This rulemaking would revise the item control requirements in Subparts C and D to remove some currently exempted items. Specifically, the exemption for items existing 14 days or less in Category III and II facilities would be removed. Licensees now have the ability to track such items within their MC&A systems. The exemption for items below the stated detection level for Category III facilities would be removed, as would a similar exemption applicable to Category II facilities, for the same reasons.

A two-person rule would be added to strengthen the MC&A requirements by making the unauthorized diversion of material less likely. The two-person rule would also better ensure that correct procedures are used, that covered actions are completed correctly by qualified and authorized personnel, and that information about the actions is accurately documented. The rule would apply to licensees who are subject to the 10 CFR Part 74, Subpart C, D, or E requirements for tamper-safing, performing physical inventories, transferring SNM, or handling SNM that is not under an active control measure or monitoring or surveillance condition.

The existing references in 10 CFR Part 74 to a fundamental nuclear material control (FNMC) plan would be replaced with references to an MC&A plan. The staff's view is that FNMC is an outdated term and does not include "accounting." Licensees would not be required to change the names of their existing plans.

The exemption for an irradiated fuel reprocessing plant would be removed from 10 CFR Part 74, Subpart E (existing 10 CFR 74.51(a)). The licensee of any future such facility would likely hold quantities of strategic SNM that need to be subject to the highest level of MC&A safeguards and security requirements, to ensure that this material is adequately protected. Consistent with Option 4, if the NRC conducts a rulemaking for irradiated fuel reprocessing, MC&A requirements would be reviewed at that time to determine if any additional changes were necessary.

Many of the references to due dates and reporting frequencies would be changed to calendar days, to make 10 CFR Part 74 more uniform in this regard. Using calendar days avoids the existing uncertainty over whether weekends and holidays are counted in determining whether or not a licensee has taken timely action. Plain language changes would be made to clarify the requirements for shipper-receiver difference comparisons for all SNM receipts, by consistently referring to the standard error of the inventory difference. The requirements for material status reports would be re-organized for clarity.

SUPPORTING DOCUMENTS:

Enclosure 2, the Draft Regulatory Analysis, shows that the proposed rule would result in a total one-time cost to licensees of approximately \$660,000 followed by total annual costs of approximately \$1.1 million. The analysis estimates the total present value of these costs at \$8.2 million (using a 7-percent discount rate) and at \$9.8 million (using a 3-percent discount rate) over the 10 year analysis period. The rule would result in a one-time cost to the NRC of approximately \$259,000, followed by no annual costs.

Enclosure 3, the Draft Environmental Assessment, includes the finding that this rule, if adopted, would not have any significant environmental impacts, and therefore this rulemaking does not warrant the preparation of an environmental impact statement. As the proposed amendments primarily pertain to information collection and reporting requirements, adopting them would have no significant impact on the quality of the human environment.

The following guidance documents would be revised and updated on a coordinated schedule that parallels this proposed rulemaking. Draft versions of these documents would be released for public comment with the proposed rule. Final versions of these documents would be

released to the public with the final rule. A new guidance document for Category II facilities will be included with the guidance documents below:

- NUREG-1280, "Standard Format and Content Acceptance Criteria for the Material Control and Accounting (MC&A) Reform Amendment,"
- NUREG-1065, "Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Facilities,"
- NUREG/CR-5734, "Recommendations to the NRC on Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Enrichment Facilities,"
- NUREG/BR-0096, "Instructions and Guidance for Completing Physical Inventory Summary Report."

AGREEMENT STATE COMPATIBILITY ISSUES:

The proposed rule amends sections of the regulations that are currently classified as Compatibility Category "NRC," under the 1997 "Policy Statement on Adequacy and Compatibility of Agreement States Programs." The NRC program elements in this category are those that relate directly to areas of regulation reserved to the NRC by the Atomic Energy Act or provisions of 10 CFR, and cannot be relinquished to the Agreement States. There are thus no compatibility issues.

RESOURCES:

The resources for this rulemaking are in the Fuel Cycle Business Line. To complete and implement the rulemaking, 3.0 full-time equivalent (FTE) would be required.

In fiscal year (FY) 2012, 1.7 FTE have been proposed in the NRC's budget being considered by Congress and would be required for this activity as follows: FSME (1.0), NMSS (0.3), NRO (0.1), ADM (0.1), OGC (0.1), and OIS (0.1).

In FY 2013, 1.3 FTE are estimated for this activity as follows: FSME (0.5), NMSS (0.5), ADM (0.1), OGC (0.1), and OIS (0.1). These resources have been included in the agency's proposed FY 2013 budget.

RECOMMENDATIONS:

That the Commission:

1. Approve for publication, in the *Federal Register*, the proposed amendments to 10 CFR Parts 40, 70, 72, 74, and 150 (Enclosure 1).

2. Note:

- a. The proposed amendments will be published in the *Federal Register*, allowing 75 days for public comment.
- b. The Chief Counsel for Advocacy of the Small Business Administration will be informed of the certification and the reasons for it, as required by the Regulatory Flexibility Act, 5 U.S.C. 605(b).
- c. A draft Regulatory Analysis has been prepared for this rulemaking (Enclosure 2).
- d. A draft Environmental Assessment has been prepared for this rulemaking (Enclosure 3).
- e. Appropriate Congressional committees will be informed of this action.
- f. A press release will be issued by the Office of Public Affairs when the proposed rulemaking is filed with the Office of the Federal Register.

Office of Management and Budget (OMB) Paperwork Reduction Act review is required. A clearance package will be forwarded to OMB no later than the date the proposed rule is submitted to the Office of the Federal Register for publication.

COORDINATION:

The Office of the General Counsel has no legal objection to the proposed rulemaking. The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and has no objections. The rule suggests changes in information collection requirements that must be submitted to OMB no later than the date the proposed rule is forwarded to the *Federal Register* for publication.

/RA by Michael F. Weber for/

R. W. Borchardt
Executive Director
for Operations

Enclosures:

1. [Federal Register Notice](#)
2. Draft Regulatory Analysis
3. Draft Environmental Assessment

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 40, 70, 72, 74, and 150

RIN: 3150-AI61

[NRC-2009-0096]

Amendments to Material Control and Accounting Regulations

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations for material control and accounting (MC&A) of special nuclear material (SNM). The goal of this rulemaking is to revise and consolidate the MC&A requirements in order to update, clarify and strengthen the regulations. These regulations apply to NRC licensees who are authorized to hold SNM. The MC&A requirements also apply to certain licensees within the jurisdiction of the Agreement States who hold SNM in quantities less than a critical mass, and who submit material status reports to the NRC. The MC&A requirements for an independent spent fuel storage installation (ISFSI) would be consolidated with MC&A regulations applicable

to all other facilities authorized to hold SNM. The general MC&A provisions applicable to all SNM licensees would be revised to include performance objectives. Some current exemptions in the MC&A regulations would be removed or modified to strengthen the requirements, and defined terms would be added to clarify the regulations. A two-person rule would be added to strengthen certain MC&A requirements for tamper-safing, performing physical inventories, transferring SNM, or any handling of SNM that is not under an active control measure or monitoring or surveillance condition. Plain language revisions would also be made. Guidance documents would be updated as necessary to reflect these proposed changes.

DATES: Submit comments on the rule by (insert 75 days from date of publication in the *Federal Register (FR)*). Submit comments specific to the information collections aspects of this rule by (insert date 30 days from date of publication in the FR). The NRC will consider all comments received on or before this date. Comments received after the above dates will be considered if it is practical to do so.

ADDRESSES: Please include Docket ID NRC-2009-0096 in the subject line of your comments. Comments submitted in writing or in electronic form will be posted on the NRC Web site and on the Federal Rulemaking Web site, <http://www.regulations.gov>. Because your comments will not be edited to remove any identifying or contact information, the NRC cautions you against including any information in your submission that you do not want to be publicly disclosed. The NRC requests that any party soliciting or aggregating comments received from other persons for submission to the NRC inform those persons that the NRC will not edit their comments to remove any identifying or contact information and, therefore, they should not

include any information in their comments that they do not want publicly disclosed. You may submit comments by any one of the following methods:

- **Federal Rulemaking Web site:** Go to <http://www.regulations.gov> and search for documents filed under Docket ID NRC-2009-0096. Address questions about NRC dockets to Carol Gallagher; telephone: 301-492-3668; e-mail: Carol.Gallagher@nrc.gov.
- **Mail comments to:** Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.
- **E-mail comments to:** Rulemaking.Comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at 301-415-1677.
- **Hand deliver comments to:** 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. Federal workdays (telephone: 301-415-1677).
- **Fax comments to:** Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.

You can access publicly available documents related to this notice using the following methods:

- **NRC's Public Document Room (PDR):** The public may examine and have copied, for a fee, publicly available documents at the NRC's PDR, O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.
- **NRC's Agencywide Documents Access and Management System (ADAMS):** Publicly available documents created or received at the NRC are available online in the NRC Library at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can gain entry into ADAMS, which provides text and image files of the NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing

the documents located in ADAMS, contact the NRC's PDR reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The proposed rule package is available electronically under ADAMS Accession Number ML112101421.

- **Federal rulemaking Web site:** Public comments and supporting materials related to this notice can be found at <http://www.regulations.gov> by searching on Docket ID NRC-2009-0096.

FOR FURTHER INFORMATION CONTACT: Thomas Young, Office of Federal and State Materials and Environmental Management Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone: 301-415-5795, e-mail: Thomas.Young@nrc.gov.

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I. Introduction and Background

The NRC plans to amend Parts 40, 70, 72, 74, and 150 to Title 10 of the *Code of Federal Regulations* (10 CFR) to consolidate the MC&A provisions in 10 CFR Part 74.

Conforming changes would be made to 10 CFR Parts 40, 70, 72 and 150. The changes are intended to update, clarify, and strengthen MC&A requirements.

The existing 10 CFR Part 74 regulations are organized in a graded fashion. General MC&A reporting and recordkeeping requirements in Subpart B apply to all licensees authorized to hold SNM under 10 CFR Part 70. Licensees authorized to hold SNM of “low strategic significance” (defined in 10 CFR 74.4) are subject to the more rigorous MC&A requirements in Subpart C. Such licensees operate what are known as Category III facilities, which include licensed uranium enrichment facilities and the three fuel fabrication facilities supplying fresh fuel assemblies to commercial power reactors. Licensees authorized to hold SNM of “moderate strategic significance” (defined in 10 CFR 74.4) are subject to the MC&A requirements in Subpart D, and are authorized to operate Category II facilities (no such facilities now operate). The most rigorous MC&A requirements are in Subpart E, and apply to licensees authorized to hold a “formula quantity” (defined in 10 CFR 74.4) of strategic special nuclear material (SSNM). Such 10 CFR Part 70 licensees operate what are known as Category I facilities. Only two such facilities now operate, and they fabricate fuel for use by the U.S. Navy and in research and test reactors. One potential Category I facility may operate in the future as a mixed oxide fuel fabrication facility.

In 2008, the NRC developed an MC&A rulemaking plan (SECY-08-0059 Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material, ML080580307) and submitted it to the Commission for its consideration. The Commission in the Staff Requirements Memorandum (SRM) for SECY-08-0059 (ML090360473) authorized both specific and general changes to be made to 10 CFR Part 74 as summarized below.

- Relocate the Nuclear Materials Management and Safeguards System (NMMSS)-related reporting requirements for ISFSIs that are currently located in 10 CFR Part 72. These 10 CFR Part 72 requirements duplicate requirements in existing Subpart B of 10 CFR Part 74. In this regard, revisions are proposed to 10 CFR 72.72 and 72.74, and 10 CFR 72.76 and 72.78 would be deleted. Revisions would be made at 10 CFR 40.64 and 150.17(b) to remove references there to 10 CFR Part 72 material status reports.
- Revise 10 CFR Part 74 to make it clear what requirements apply to different types of facilities because although the Subpart B general provisions apply to almost all facilities that are authorized to possess and use SNM, some licensees have expressed confusion as to what requirements apply to a particular facility. To address this matter, the staff proposes to revise the 10 CFR Part 74 definitions of *formula quantity*, *special nuclear material of moderate strategic significance*, and *SNM of low strategic significance* by conforming them to the existing definitions in 10 CFR Parts 70 and 73, making clear that these classes of SNM are what is referred to, respectively, as Category I, II and III quantities of material. Licensees authorized to hold Category I material are subject to the 10 CFR Part 74 Subpart E requirements, while licensees authorized to hold Category II and III material are subject to the Subpart D and C requirements, respectively. To further clarify these divisions, the staff proposes to add Appendix A (“Categories of SNM”) to 10 CFR Part 74, as described below.

- Include general performance objectives (GPOs) that would apply to all licensees authorized to hold SNM, rather than having such objectives apply only to licensees authorized to hold Category I, II and III quantities of material, as is the case under the existing MC&A requirements. Examples of GPOs stated in Option 4 of SECY-08-0059 include the need to confirm the presence of SNM and to resolve indications of missing material. The general performance objectives that would apply to all licensees authorized to hold SNM are stated in proposed 10 CFR 74.3. Performance objectives specific to enrichment facilities would be retained and are stated in proposed 10 CFR 74.33(a) requirements. Current performance objectives specific to Category I fuel fabrication facilities are retained in the proposed revisions to the existing 10 CFR 74.51(a) requirements.
- Add basic system capabilities such as item controls that would apply to all licensees that are authorized to possess and use SNM. Existing item control requirements in 10 CFR Part 74 Subparts C, D, and E would remain unchanged. Less rigorous item control requirements that would apply to all licensees authorized to hold SNM are stated in proposed 10 CFR 74.19(c)(1).
- Delete or modify some item control exemption provisions in 10 CFR 74.31(c)(6), 74.33(c)(6), and 74.43(b)(6).
- Include definitions for new terms and clarify the definitions of some terms. In this regard, the staff proposes to add defined terms for *accounting*, *custodian*, *item control area*, *item control system*, *material balance area*, *material control and accounting*, and *two-person rule*. The staff proposes to revise the defined terms for *formula quantity*, *SNM of moderate strategic significance*, and *SNM of low strategic significance*, as discussed above.

- Add requirements related to the two-person rule, to ensure that two qualified and authorized individuals are present for tamper-safing, performing physical inventories, transferring SNM, or handling any SNM that is not under an active control measure or monitoring or surveillance condition. Category I licensees are presently subject to checks and balances (reflecting the two-person rule concept) in their MC&A programs as required by 10 CFR 74.51(b)(1), 74.59(b)(1), and (h)(3). To strengthen the MC&A requirements for Category III and II facilities, a two-person rule would be added in proposed revisions to 10 CFR 74.31(c)(6), 74.33(c)(6), and 74.43(c)(9). For Category I facilities, the two-person rule is stated in proposed 10 CFR 74.59(h)(6).
- Strengthen requirements related to tamper-safing containers and vaults. A tamper-safing program is already part of the MC&A requirements for Category II and I facilities(10 CFR 74.43(c)(3) and 74.59(f)(2), respectively) and similar tamper-safing requirements would be made applicable to the Category III fuel fabrication and uranium enrichment facilities as set forth in proposed 10 CFR 74.31(c)(9) and 74.33(c)(9).

The Commission also approved other miscellaneous changes, including plain language revisions. Such changes and revisions are reflected in the proposed regulations, and include replacing the existing references to the fundamental nuclear material control (FNMC) plan with references to an MC&A plan. The staff's view is that FNMC is an outdated term and does not include "accounting." Thus, it does not fully describe the accounting aspects of an MC&A program. Another miscellaneous change is the proposed deletion from 10 CFR Part 74 of the defined term, *effective kilograms of special nuclear material*, in order to clarify the quantities of material that are referenced in 10 CFR Part 74. Quantities of SNM would be expressed in gram units to simplify the accounting requirements in 10 CFR Part 74 and provide consistency with

the existing Part 74 definitions of the various types of SNM, all of which specify quantities in gram units. The term would remain in 10 CFR Parts 40, 70, 75, 76, and 110, for the implementation of the US/International Atomic Energy Agency (IAEA) Safeguards Agreement.

Other proposed changes include revising 10 CFR 150.17(a) to conform with the proposed plain language revisions to 10 CFR 74.13. No substantive changes are being proposed in this regard and licensees holding SNM under a license from an Agreement State would continue to submit material status reports to the NRC via the NMMSS. References to due dates and reporting frequencies would be made more uniform by expressing most timeframes in terms of calendar days (e.g., 7, 30, 60, 65, 95, 185, or 370 calendar days). The interval for the number of months assigned to a licensee management assessment of the MC&A program would be retained (e.g., 12 months, 18 months, or 24 months). The retention period for records would be retained (e.g., 3 years). An Appendix A, "Categories of Special Nuclear Material," would be added to 10 CFR Part 74. The appendix would be based on existing Appendix M to 10 CFR Part 110, and would show the SNM quantity limits for Category I, Category II, and Category III facilities. The new appendix would also show the corresponding Subpart in 10 CFR Part 74 for each category, and the formulae to calculate any combination of SSNM within the quantity limits for a category. A conforming change would be made to replace the reference to 10 CFR 74.51(c) with 10 CFR 74.51(b) because the paragraph designation about implementation of an MC&A plan would then be consistent with the other cites listed in 10 CFR 70.32(c)(1)(i) and (iii) that refer to paragraph (b) in 10 CFR 74.31, 74.33, and 74.41.

SECY-09-0082 ("Update on Reprocessing Regulatory Framework – Summary of Gap Analysis," ML091520280), dated May 28, 2009, included the NRC staff's recommendation that the existing 10 CFR 74.51(a) exemption for an irradiated fuel reprocessing plant be removed as part of this rulemaking. Proposed 10 CFR 74.51(a)(2) reflects the removal of this exemption.

The NRC placed on www.regulations.gov a preliminary version of the proposed rule language to inform stakeholders of the status of the proposed rulemaking and invited stakeholders to provide informal comments by June 30, 2011. Thirteen comment letters were received by this date, and were considered. Public input at this stage helped to develop the proposed rule.

II. Discussion

To further describe this proposed rulemaking a series of questions and answers is set forth below.

A. *Whom would this action affect?*

All NRC licensees authorized to hold SNM would be affected by the proposed rule. For example, the proposed revisions to 10 CFR 74.19(c) would require all SNM licensees to establish, document, implement, and maintain an *item control system* (as newly defined in 10 CFR 74.4).

Agreement State licensees authorized to hold SNM are subject to 10 CFR 150.17. The proposed changes to 10 CFR 150.17 are plain language revisions and conform with the proposed changes to 10 CFR 74.13. These changes do not require any action by the Agreement State licensees.

B. *Why do the requirements need to be revised?*

Many of the current MC&A requirements were developed over 20 years ago and need to be updated to include commonly used terms and to include currently exempted items under the proposed item control system requirements. The requirements for licensees that do not fall

under Category I, II, or III need to be revised to add general performance objectives that would be implemented to deter, detect, or aid in responding to any loss, theft, diversion or misuse of SNM. The NRC's view is that all MC&A regulations governing SNM held by NRC licensees should be in 10 CFR Part 74 in order to provide a focal point and a complete framework/umbrella for controlling and accounting for all SNM under NRC oversight.

C. When would these actions become effective?

The NRC expects that the final rule would be published within 12 months of when this proposed rule is being published for comment. The revisions to the regulations would become effective after publication of the final rule.

D. What are the changes to the general performance objectives?

General performance objectives (GPOs) currently apply only to licensees that are subject to the MC&A requirements in Subparts C, D, or E of 10 CFR Part 74. Proposed 10 CFR 74.3 in Subpart A sets forth GPOs that would be applicable to all NRC licensees authorized to hold SNM. The proposed 10 CFR 74.3 provisions are based on the existing GPOs and are meant to capture all elements that a general MC&A program should address. The 10 CFR 74.3 GPOs describe activities to deter, detect, or aid in responding to any loss, theft, diversion or misuse of SNM. The existing GPO provisions in 10 CFR 74.31, 74.33, 74.41, and 74.51 would be revised to refer to 10 CFR 74.3, but GPOs that are unique to uranium enrichment facilities and Category I fuel fabrication facilities would be retained in 10 CFR 74.33 and 74.51.

E. Are sealed sources included in the general performance requirements for Category II and III facilities?

Yes. The current exclusion for sealed sources in the 10 CFR 74.31 and 74.41 GPO provisions would be relocated to Appendix A (Note 1) to clarify that the sealed sources would not be considered for determining whether a facility is a Category III facility or a Category II facility. The change would be consistent with the current requirements, which were intended to exclude sealed sources from the material quantity calculations used to determine whether a facility is a Category III facility subject to Subpart C requirements, or a Category II facility subject to the Subpart D requirements of 10 CFR Part 74. However, sealed sources would be within the scope of the proposed 10 CFR 74.3 GPOs. Sealed sources would continue to be subject to a licensee's MC&A program.

F. Why would newly defined terms be added to 10 CFR 74.4?

Certain terms are commonly used by licensees in their internal procedures implementing their MC&A systems, plans and programs, including *accounting, custodian, material control and accounting*. Defining these terms in NRC regulations would clarify the requirements and improve understanding of the regulations. Section 74.4 would provide the specific meaning for these terms that appear in the MC&A requirements. Other newly defined terms (*material balance area, item control area, and two-person rule*) and their related requirements are deemed necessary to strengthen the MC&A requirements, by making any diversion or misuses of SNM less likely, and would be expected to aid in the investigation and recovery of any SNM that is lost.

G. Why would the term "effective kilograms of special nuclear material" be removed from 10 CFR Part 74?

Doing so would allow quantities of SNM specified in 10 CFR Part 74 to be expressed in gram units which would simplify the accounting requirements and provide 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. References to one effective kilogram in the GPO provisions of 10 CFR 74.31, 74.33, and 74.41 would be revised to instead reference gram units of material. The new Appendix A would also use gram units. The term would remain in 10 CFR Parts 40, 70, 75, 76, and 110, for the implementation of the US/IAEA Safeguards Agreement.

H. Why would Appendix A to 10 CFR Part 74 be added?

Appendix A would be added to clarify the definitions and quantities and units of various categories of SNM. Similar information is provided in existing Appendix M to 10 CFR Part 110 and would be appended to 10 CFR Part 74 as well for the convenience of licensees, NRC staff, and members of the public. Appendix A would clarify the elements, isotopic composition, and quantities of material that Category I, Category II, and Category III facilities are authorized to hold. Notes would be 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 that spent nuclear fuel is reduced one category level while the radiation exposure exceeds 1 Sievert (Sv) per hour (100 rads per hour) at 1 meter, unshielded. Formulae are included to calculate a quantity of material for Category I, Category II or Category III.

Why would references to the MC&A “system” be changed to the MC&A “program,” and why would “MC&A plan” replace “FNMC plan?”

Portions of existing 10 CFR Part 74 that refer to the MC&A “system” (e.g., 10 CFR 74.31(c), 74.33(a), and 74.51(a)) would be revised to instead refer to the MC&A “program.” The term “program” better describes the over-arching, comprehensive set of methods licensees use to control and track SNM, and using “program” avoids confusion with the required material measurement systems (e.g., 10 CFR 74.31(c)(2), 74.33(c)(3), and 74.59(d)) that are part of the overall MC&A program. Similarly, existing references to the overall “system” capabilities would be changed to “program” capabilities. The existing requirements referring to an item control program (e.g., 10 CFR 74.31(c)(6), 74.33(c)(6) and 74.43(b)(5)) would be revised to instead refer to an item control system.

Replacing the existing references to the FNMC plan with references to an MC&A plan is necessary in the NRC staff’s view because FNMC is an outdated term and does not include “accounting.” Thus, it does not fully describe the accounting aspects of the MC&A program, and is not consistent with the general title of Part 74 (“Material Control and Accounting of Special Nuclear Material”). The term MC&A plan is not intended to be an exact name that licensees are required to use and licensees will not be required to change the names of their existing plans.

I. *What would change in the reporting requirements to NMMSS, including those that ISFSIs are subject to?*

The proposed addition of numbered subsections to 10 CFR 74.13(a) would make these reporting requirements easier to read and understand. The plain language revisions make no substantive changes to the existing requirements.

The NMMSS reporting requirements for an ISFSI currently in § 72.76 for material status reports and in § 72.78 for nuclear material transaction reports are duplicated in §§ 74.13 and

74.15, respectively. Proposed 10 CFR 74.2 would include existing ISFSIs within the scope of 10 CFR Part 74. Accordingly, §§ 72.76 and 72.78 would be removed from 10 CFR Part 72. The requirements in § 72.72 for storage of source material (SM) and SNM would be revised to direct a licensee to refer to §§ 40.61 and 40.64 for SM and to Subparts A and B in 10 CFR Part 74 for SNM.

J. Why would a two-person rule be added?

The two-person rule would be added to strengthen the MC&A requirements by making the unauthorized diversion of material less likely. The two-person rule would also better ensure that correct procedures are used, that covered actions are completed correctly by qualified and authorized personnel and that information about the actions is accurately documented. A licensee subject to Subpart C, D, or E would be required to have two qualified and authorized individuals involved for tamper-safing, performing physical inventories, transferring SNM, or handling any SNM that is not under an active control measure or monitoring or surveillance condition.

K. Why would requirements be added to designate material balance areas (MBAs), item control areas (ICAs), and custodians for these areas?

The MC&A requirements would be strengthened by specifically defining the terms for MBA and ICA and custodians and by consistently requiring licensees under Subparts C, D, and E to designate MBAs and ICAs and custodians for these areas. The terms are widely used in the regulated community and 10 CFR Part 74 would be clarified by setting forth the specific meaning for the terms in 10 CFR 74.4. A licensee would be required to designate MBAs and

ICAs and assign custodial responsibilities for these areas to provide internal controls to deter or detect any diversion or misuse of SNM at the licensee's facility.

L. Why would calendar days be inserted into 10 CFR Part 74?

To clarify 10 CFR Part 74, references to due dates and reporting frequencies would be made more uniform by expressing most timeframes in calendar days. Using calendar days avoids the existing uncertainty over whether weekends and holidays are counted in determining whether or not a licensee has taken timely action. The proposed clarifications are intended to make Part 74 more internally consistent with existing 10 CFR 74.33(c)(4), which requires that annual static physical inventories be taken "at least every 370 calendar days." Existing Part 74 provisions referencing six-month intervals would be changed to "185 calendar days."

M. Will the implementation guidance documents be updated for the MC&A program?

The following guidance documents are being revised and updated in conjunction with the rulemaking effort. In addition, a guidance document for Category II facilities (SNM of Moderate Strategic Significance) would be updated and issued with the existing guidance documents below. All revised NUREG guidance documents will be available for public comment in parallel with the scheduled publication of the proposed rule.

- i. NUREG-1280, "Standard Format and Content Acceptance Criteria for the MC&A Reform Amendment,"
- ii. NUREG-1065, "Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Facilities,"
- iii. NUREG/CR-5734, "Recommendations to the NRC on Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for

Low-Enriched Uranium Enrichment Facilities,”

- iv. NUREG/BR-0096, “Instructions and Guidance for Completing Physical Inventory Summary Report.”

N. Would there be changes for item controls or physical inventories?

Subpart B in 10 CFR Part 74 would be revised to include a new requirement in 10 CFR 74.19(c) stating that each licensee who is authorized to possess, at any one time and site location, any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof must establish, document, implement, and maintain an item control system as defined in 10 CFR 74.4.

Existing 10 CFR 74.19(c) requires a licensee authorized to possess SNM in a quantity greater than 350 grams of contained uranium-235 or uranium-233 or plutonium or any combination thereof to conduct a physical inventory of all SNM it in its possession at intervals not to exceed 12 months. Proposed 10 CFR 74.19(c) would require a licensee authorized to possess any quantity of contained uranium-235 or uranium-233 or plutonium or any combination thereof to conduct a physical inventory of all SNM in its possession under the license at intervals not to exceed 370 calendar days. Currently a licensee possessing greater than 1 gram of SNM is required to submit to NMMSS annual material status reports under 10 CFR 74.13 and nuclear material transaction reports under 10 CFR 74.15. To prepare accurate reports to NMMSS, a licensee would rely on the physical inventory that would account for any quantity of SNM.

Some of the current exemption provisions for item controls would be removed. Specifically, the exemption provisions in 10 CFR 74.31(c)(6), 74.33(c)(6)(ii) and 74.43(b)(6) for items existing 14 days or less in Category III and II facilities would be removed. The 14-day

exemption was put in the current regulations at a time when most Category III licensees did not have computer inventory controls and instead relied on manual ledger entries. In other words, the current regulation aligned the risk with what the licensees could do in a production environment.

However, over the last several years, licensees have implemented business systems that track SNM containing items through the use of bar codes and entries to computer systems. This has had the secondary benefit of giving these licensees the ability to track individual items and total inventory in near real time. Licensees have demonstrated this ability numerous times during inspections by NRC staff.

Current requirements in 10 CFR Part 74 recognize the importance of conducting timely inventories and reporting the results by requiring the reporting of shipments and receipts of a gram or more of material in 10 days (see 10 CFR 74.15) and through the reporting of lost, stolen, or diverted SNM of a gram or more within one hour (10 CFR 74.11).

NRC inspections have identified cases where there were “near-misses” associated with current exemptions. Removal of the exemptions from the item control requirements would align this particular regulation with other requirements in 10 CFR Part 74 to better ensure common defense and security is maintained through accurate SNM item bearing inventories. These proposed regulatory changes would not be expected to impact licensees significantly since they already have in-house systems that track such items in near real time.

Additionally, for Category III facilities, the exemption provisions (in 10 CFR 74.31(c)(6), and 74.33(c)(6)(ii)) for individual items containing less than 500 grams of uranium-235, up to a total of 50 kilograms of uranium-235, would be removed. For a Category II facility, the exemption (in 10 CFR 74.43(b)(6)) for individual items 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 percent or more but less than 20 percent in the uranium-235 isotope, would be removed. These exemptions were identified for removal in SECY-08-0059. Item control requirements that exclude kilogram amounts of material are not consistent with protection of the common defense and security.

O. Why would an exception be added to 10 CFR 74.15(b)(2)?

The exception from performing independent tests when receiving unirradiated fuel rods or unirradiated fuel assemblies would be included to clarify the requirement for licenses under 10 CFR Parts 50 or 52. Similarly the requirement would be clarified for a licensee under 10 CFR Part 70 receiving SNM contained in a sealed source that will not be opened. The NRC inspection program had indicated that typically a licensee will verify the contents of such shipments by reviewing the shipping papers and visual inspection of the material because independent testing, e.g., destructive testing or sampling has been impractical for determining the contents of the shipment being received.

P. What should I consider as I prepare my comments to the NRC?

When submitting your comments, remember to:

- i. Identify the rulemaking (RIN 3150-A161); ([NRC-2009-0096]).
- ii. Explain why you agree or disagree; suggest alternatives and substitute language.
- iii. Describe any assumptions and include technical information or data that you used.
- iv. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.
- v. Provide specific examples to illustrate your concerns, and suggest alternatives.

- vi. Explain your views as clearly as possible.
- vii. Make sure to submit your comments by the comment period deadline identified.
- viii. The NRC is particularly interested in your comments concerning the issues in Section II about item controls, two-person rule, designating MBAs, ICAs and custodial responsibilities for these areas. Section V of this document contains a request for comment on the compatibility designations for the proposed rule; Section VI contains a request for comments on the use of plain language; Section VIII contains a request for comments on the draft environmental assessment; Section IX contains a request for comments on the information collection requirements; Section X contains a request for comments on the draft regulatory analysis; and Section XI contains a request for comments on the impact of the proposed rule on small businesses.

III. Discussion of Proposed Amendments by Section

Section 40.64 Reports.

Paragraph (b)(1) would be revised to remove the reference to 10 CFR Part 72.

Section 70.32 Conditions of licenses.

Paragraphs (c)(1)(i) and (iii) would be revised to replace the reference to § 74.51(c) with § 74.51(b). These sections were revised to provide consistent organization for Subparts C, D, and E in 10 CFR Part 74 and a conforming change would be completed in 10 CFR 70.32(c)(1)(i) and (iii).

Section 72.72 Material control and accounting requirements for source material and special nuclear material.

The title of the section would be revised from “Material balance, inventory, and records requirements for stored materials” to “Material control and accounting requirements for source material and special nuclear material.” Paragraph (a) would be revised to only reference requirements for source material, and would reference § 40.61 and § 40.64 in this regard. The remainder of existing § 72.72 (a), (b), (c), and (d) would be removed because these requirements are duplicated in 10 CFR Part 74. As discussed above, the § 74.2 scoping provisions would be revised to include ISFSIs.

New paragraph (b) would reference MC&A requirements for SNM in 10 CFR Part 74.

Section 72.74 Reports of accidental criticality.

The title of this section would be revised from “Reports of accidental criticality or loss of special nuclear material” to “Reports of accidental criticality.” Paragraph (a) would be revised to remove the requirement that any loss of SNM be reported within 1 hour of discovery. ISFSIs would be subject to 10 CFR 74.11(a) with regard to any loss of SNM that must be reported within 1 hour of discovery. Section 72.74 would retain its reporting requirement for accidental criticality.

Paragraph (b) would be revised to state that required one-hour notifications be made to the NRC Headquarters Operations Center via any available telephone system. The outdated reference to the Emergency Notification System would be removed.

Section 72.76 Material status reports.

This section would be removed and reserved and in this regard § 72.9 would be changed.

Section 72.78 Nuclear material transaction reports.

This section would be removed and reserved and in this regard § 72.9 would be changed.

Section 74.2, Scope.

The last sentence of paragraph (a) would be revised to bring licensees who possess spent nuclear fuel at ISFSIs within the scope of the MC&A reporting and recordkeeping requirements in 10 CFR Part 74.

Section 74.3, General performance objectives.

This section would be added to require all licensees who are authorized to hold SNM to implement and maintain a MC&A program that achieves the general performance objectives listed in paragraphs (a) through (e).

Section 74.4, Definitions.

This section would be revised to remove the definition, *Effective kilograms of special nuclear material*. This section would be revised to add definitions for the following terms: *Accounting, Custodian, Item control area, Item control system, Material balance area, Material control and accounting*, and *Two-person rule*. The definitions of the following terms would be revised to conform with the existing definitions of these terms in 10 CFR Parts 70 and 73, and to refer to Appendix A of this part: *Formula quantity, SNM of low strategic significance*, and *SNM of moderate strategic significance*.

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

Paragraph (b) would be revised to state that required licensee notifications be made to the NRC Headquarters Operations Center via any available telephone system within 1 hour of the event, and an outdated reference to the Emergency Notification System would be removed.

Section 74.13, Material status reports.

As discussed further below, plain language revisions would be made to paragraph (a) by specifying eight numbered requirements, and new paragraphs (b), (c), and (e) would be added.

Existing paragraph (b) would be designated as paragraph (d).

Paragraph (a) (1) through (8) would specify deadlines by which various sets of licensees would be required to submit their material balance reports and physical inventory listing reports.

Paragraph (b) would include the reporting instructions that are in existing § 74.13(a), and would include references to the reporting forms (NUREG/BR-0007 and NMMSS Report D-24, “Personal Computer Data Input for NRC Licensees”) referenced in existing § 74.13(a).

Paragraph (c) would retain the provision in existing § 74.13(a) that the reports may be submitted at other times for good cause with prior NRC approval.

As indicated above, paragraph (d) restates the existing § 74.13(b) provision regarding reports required under section 75.35 of this chapter (pertaining to implementation of the US/IAEA Safeguards Agreement).

Paragraph (e) would retain the requirement in existing § 74.13(a) regarding the resolution of any discrepancies identified during the report review.

Section 74.15, Nuclear material transaction reports.

Paragraph (b)(2) would be revised by adding an exception that independent testing is not required for receipt of unirradiated fuel rods, unirradiated fuel assemblies, or sealed sources containing SNM that will not be opened.

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

This section’s title would be revised to reference written MC&A procedures, item controls, and physical inventories.

Paragraph (b) would be revised to replace “one effective kilogram” with “a quantity of 350 grams or more of contained uranium-235, uranium-233, or plutonium, or any combination thereof.” For plain language reasons, the other existing requirements in paragraph (b) about

written MC&A procedures, retention of the procedures and superseded portions of the procedures, would be redesignated in new paragraphs (b)(1), (2), and (3).

Paragraph (c) would be revised to replace “350 grams” with “any quantity” of SNM, and would be further divided into three paragraphs. Paragraph (c)(1) would be added to make item control system requirements applicable to all holders of SNM. Paragraph (c)(2) retains the requirement for conducting a periodic physical inventory of SNM at intervals not to exceed 370 calendar days. Paragraph (c)(3) retains the requirement to keep records of the physical inventories performed.

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

The general performance objectives applicable to Category III facilities would be set forth in proposed § 74.3 as discussed above. Revised § 74.31(a)(1) would incorporate the § 74.3 performance objectives by reference, thereby replacing the performance objectives set forth in existing § 74.31(a)(1)-(3). Proposed paragraph (a)(2) would retain elements of the exemption in existing § 74.31(a) applicable to production or utilization facilities, and any licensee operations involving waste disposal. Proposed paragraph (a)(2) would add an exemption for ISFSIs, thereby making it consistent with existing § 74.51(a).

Paragraph (b) would be revised by replacing the reference to “a fundamental nuclear material control (FNMC) plan” with a reference to “a MC&A plan.” The plan would need to achieve the general performance objectives in § 74.3, and meet the program capability requirements set forth in revised § 74.31(c) as discussed below.

The introductory language of paragraph (c) would be revised to state that the MC&A plan must: include the capabilities described in paragraphs (c)(1) through (11); and achieve the performance objectives in § 74.3. Paragraph (c)’s title would be changed from “System

capabilities” to “Program capabilities.” Existing paragraphs (c)(1) – (3) would remain unchanged. Paragraph (c)(4) would be clarified to state the standard error as the standard error of the inventory difference (SEID). The paragraph (c)(5) physical inventory timing provisions would be clarified by changing “60 days” to “60 calendar days.” Paragraph (c)(6) would be revised by referencing the item control system defined in § 74.4. The 14-day provision in the first sentence of the existing requirement would be removed. The reference to detecting “unauthorized removals of substantial quantities of material from items” in the second sentence would be changed to require detecting the removal of “any quantity of material.” In the third sentence, the existing exemption from the detection requirements for “items individually containing less than 500 grams of uranium-235 up to a total of 50 kilograms of uranium-235” would be removed. The wording of paragraph (c)(7) would be revised to state as follows: “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 10 CFR 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.” Paragraph (c)(8) would be revised by referencing the MC&A “program” rather than the MC&A “system.”

Paragraphs (c)(9), (10), and (11) would be added to require that the MC&A program include, respectively: tamper-safing procedures; use of the two-person rule; and the designation of material balance areas, item control areas, and custodians responsible for these areas.

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

The general performance objectives applicable to Category III uranium enrichment facilities would be set forth in proposed § 74.3 as discussed above, and revised § 74.33(a) would reflect this. The general performance objectives stated in existing paragraphs (a)(1) – (9) would be replaced by new paragraphs (a)(1) – (4), which would only reference source material. These general performance objectives would parallel those set forth in proposed § 74.3, which would apply only to SNM. New paragraph (a)(5) retains elements of existing paragraph (a)(8), and retains the exemption for centrifuge enrichment facilities stated in existing (a)(5).

Paragraph (b) would be revised by replacing the reference to “a fundamental nuclear material control (FNMC) plan” with a reference to “a MC&A plan.” The plan would need to achieve the general performance objectives in § 74.3, the performance objectives in paragraph (a) as discussed above, and meet the program capability requirements set forth in revised § 74.33(c) as discussed below.

The introductory language of paragraph (c) would be revised to state that the MC&A plan must: include the capabilities described in paragraphs (c)(1) through (11); and achieve the performance objectives (as referenced above). Paragraph (c)’s title would be changed from “System features and capabilities” to “Program capabilities.” Existing paragraphs (c)(1) – (2) would remain unchanged. Paragraph (c)(3)(ii) would be clarified to include the acronym SEID in a parenthetical. Paragraph (c)(4)(i) would be clarified by changing “65 days” to “65 calendar days.” Paragraph (c)(4)(ii) would be clarified by changing “60 days” to “60 calendar days.” Paragraph (c)(5) would be revised by adding “resolving” at the end of the introductory sentence to read, “A detection program, independent of production, that provides high assurance of detecting and resolving.” Paragraph (c)(6) would be revised by deleting its existing (i)-(ii) subsections. Paragraph (c)(6) would instead reference the item control system defined in § 74.4. The requirement to have such an item control system replaces the existing

§ 74.33(c)(6)(i) requirement. The reference to detecting the “unauthorized removal of 500 grams or more of uranium-235” in existing § 74.33(c)(6)(ii) would be changed to require detecting the removal of “any quantity of uranium-235.” The existing exemption in § 74.33(c)(6)(ii) from the detection requirements for items containing “less than 500 grams of uranium-235 up to a cumulative total of 50 kilograms of uranium-235,” and for items that “exist for less than 14 calendar days,” would be removed. This exemption would be replaced with a provision exempting items in solution with a concentration of less than 5 grams per liter, and waste items destined for burial or incineration (the proposed wording here tracks the portion of the § 74.31(c)(6) exemption that is being retained).

Paragraph (c)(7) would be clarified to state the requirements to conduct and document shipper-receiver difference comparisons for all SM and SNM receipts on a total shipment basis and on an individual batch basis when required by 10 CFR Part 75 of this chapter, and that any shipper-receiver difference that is statistically significant and exceeds twice the estimated standard deviation of the difference and 500 grams of uranium-235 must be investigated and resolved. Paragraph (c)(8) would be revised by referencing the MC&A “program” rather than the MC&A “system.”

Paragraphs (c)(9), (10), and (11) would be added to require that the MC&A program include, respectively: tamper-safing procedures; use of the two-person rule; and the designation of MBAs, ICAs, and custodians responsible for these areas.

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

The general performance objectives applicable to Category II facilities would be set forth in proposed § 74.3 as discussed above. Revised § 74.41(a)(1) would incorporate the § 74.3 performance objectives by reference, thereby replacing the performance objectives set forth in

existing § 74.41(a)(1)-(4). Proposed paragraph (a)(2) would retain elements of the exemption in existing § 74.41(a) applicable to production or utilization facilities, licensees using reactor irradiated fuels for research purposes, and any licensee operations involving waste disposal. Paragraph (b) would be revised by replacing the reference to “a fundamental nuclear material control (FNMC) plan” with a reference to “a MC&A plan.” The plan would need to achieve the general performance objectives in § 74.3, meet the program capability requirements set forth in § 74.41(c), and the requirements of §§ 74.43 and 74.45 as discussed below. Paragraph (b)’s title would be changed from “Implementation schedule” to “Implementation,” and the existing (b)(1)-(2) subsections would be consolidated into a single section consistent with the format used in existing § 74.31(b).

Paragraph (c) would be revised by changing its title from “System capabilities” to “Program capabilities.” The reference in existing § 74.41(c) to the “MC&A system” would be changed to the “MC&A plan,” which must achieve the performance objectives in § 74.3, and include the capabilities described in §§ 74.43 and 74.45. The existing § 74.41(c)(1)-(2) checks and balances requirements remain the same.

Section 74.43 Internal controls, inventory, and records.

Paragraph (b)(3) would be revised to replace the title, “FNMC plan” with “MC&A plan.” Paragraph (b)(5) would be revised by replacing the term “item control program” with “item control system” as newly defined in § 74.4. The current paragraphs (b)(5)(i) and (b)(5)(ii) would be consolidated into proposed paragraph (b)(5). The current detection requirement in paragraph (b)(5)(ii) would be revised to require the detection of “unauthorized removals of individual items or any quantity of material (as defined in § 74.4) from items,” replacing the existing reference to 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

(IAEA) requirements, but is no longer appropriate for MC&A purposes regarding facilities in the United States. The staff proposes to simply replace the term with units of grams or kilograms. The NUREG guidance documents listed below would be updated. A previously un-issued guidance document for a Category II facility would be updated and included with the guidance documents listed below.

1. NUREG-1280, Rev. 1 (1995), "Standard Format and Content Acceptance Criteria for the Material Control and Accounting (MC&A) Reform Amendment,"
2. NUREG-1065, Rev. 2 (1995), "Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Facilities,"
3. NUREG/CR-5734 (1991), "Recommendations to the NRC on Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Enrichment Facilities,"
4. NUREG/BR-0096(1992), "Instructions and Guidance for Completing Physical Inventory Summary Report."

Licensees with Category I, II, or III facilities would need to revise the MC&A program to address new requirements, including new performance objectives. In this regard, it is anticipated that many of the licensees that would be affected by this rulemaking would need to follow the license change process of 10 CFR 70.32(c), and determine whether a license amendment application needs to be submitted as part of making revisions to the MC&A program. Section 70.32(c)(iii) states that the licensee shall make no change that would decrease the effectiveness of the MC&A program. The changes in this rulemaking are intended to consolidate MC&A requirements in 10 CFR Part 74 and to clarify, revise, modify, and strengthen the existing requirements. Licensees who determine that no revisions to the MC&A program are needed would not be required to resubmit their MC&A plans for approval as a condition of continuing operations.

The NRC has estimated the benefits and costs of this option, as described in Sections 3 and 4 of this regulatory analysis, and has pursued Option 2 for the reasons discussed in Section 5.

3. Estimation and Evaluation of Values and Impacts

This section describes the analysis that the NRC conducted to identify and evaluate the benefits (values) and costs (impacts) of the two regulatory options. Section 3.1 identifies the attributes that the staff expects the proposed rulemaking to affect. Section 3.2 describes how the values and impacts have been analyzed. Finally, Section 3.3 presents the detailed results of the projected impacts.

3.1 Identification of Affected Attributes

This section identifies the factors within the public and private sectors that the final rule is expected to affect, using the list of potential attributes in Chapter 5 of NUREG/BR-0184,

“Regulatory Analysis Technical Evaluation Handbook,” issued January 1997, and in Chapter 4 of NUREG/BR-0058, “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission,” Revision 4, issued September 2004. The evaluation considered each attribute listed in Chapter 5 of NUREG/BR-0184. The basis for selecting those attributes is presented below.

Affected attributes include the following:

- **Industry Implementation.** The proposed changes would require certain licensees to implement general performance objectives, establish and follow written MC&A procedures, implement an item control system, implement a two-person rule for certain operations such as tamper-safing of containers or vaults, and designate material balance areas and/or item control areas and custodial responsibilities for these areas. Certain items currently exempted from an item control program would be subject to item controls. An irradiated fuel reprocessing plant would no longer be exempted from the requirements for a Category I facility in 10 CFR Part 74, Subpart E.
- **NRC Implementation.** Under the proposed action, the NRC would develop the proposed rule package to be published by the Office of the *Federal Register* and prepare the final rule package that responds to comments from stakeholders and sets forth the final rule text for publication by the Office of the *Federal Register*. The NRC would revise guidance and inspection procedures to accommodate the requirements that would be added or modified by the rulemaking process.
- **Industry Operations.** The proposed changes would require certain licensees to maintain their newly established item control system and to conduct physical inventories. Licensees would maintain the two-person rule by ensuring that individuals are qualified and authorized to perform and observe certain MC&A operations. Licensees would maintain material balance areas and/or item control areas and ensure custodial responsibilities are assigned to these areas. Certain items currently exempted from item control requirements would be tracked to maintain current knowledge of each item.
- **NRC Operations.** The proposed changes would include inspection and enforcement of requirements for certain licensees to adequately assure common defense and security of workers and members of the public from lost, missing, stolen, or diverted SNM. Inspectors would assess licensee implementation of the requirements noted above and operational activities noted above to maintain the MC&A program at licensee facilities. The NRC does not estimate any additional operating cost due to the proposed regulations because the routine inspection program is reviewed and updated at 3-year intervals and the proposed changes would be incorporated without increasing cost to the NRC to update procedures. The NRC inspection activities at a facility would include the proposed changes without increasing inspection effort.
- **Safeguards and Security Considerations.** The regulatory basis for 10 CFR Part 74 is security and the information and data and activities to manage the information and data are subject to the safeguards requirements in 10 CFR Part 73. Therefore, all the

proposed changes would affect the current safeguards and security programs that have been implemented by the licensees that hold SNM.

Attributes that the rulemaking options would *not* affect include the following: occupational health (routine), occupational health (accidents), public health (routine), public health (accidents), regulatory efficiency, environmental considerations, general public, improvements in knowledge, offsite property, onsite property, antitrust considerations, and other Government regulations.

3.2 Analytical Methodology

This section describes the methodology used to analyze the consequences associated with the proposed rule. The values (benefits) include any desirable changes in the affected attributes. The impacts (costs) include any undesirable changes in the affected attributes.

As described in Section 3.1, the attributes expected to be affected include the following:

- Industry implementation
- Industry operation
- NRC implementation
- NRC operations
- Safeguards and security considerations

This analysis relies on a qualitative evaluation of one of the affected attributes (safeguards and security considerations) due to the difficulty in quantifying the impact of the current rulemaking. This attribute would be affected by the regulatory options through the associated reduction in the risks of damage from malevolent use of SNM. Quantification would require estimation of factors such as: (1) the frequency of attempted theft or diversion, (2) the frequency with which theft or diversion attempts are (i.e., pre-rule) and will be (i.e., post-rule) successful, and (3) the impacts associated with successful theft or diversion attempts.

The NRC collected input assumptions using data and information from NRC workgroups and staff experience and NRC databases to estimate the costs associated with implementation and costs associated with annual operations of industry and the NRC.

In accordance with guidance from the Office of Management and Budget and NUREG/BR-0058, Revision 4, this regulatory analysis presents the results of the analysis using both 3-percent and 7-percent real discount rates. The NRC seeks public comments on the accuracy of these regulatory analysis assumptions and on the validity of the proposed rule's value and impact estimation methods.

3.2.1 Data and Assumptions

The analysis assumes that one-time implementation costs will be incurred in calendar year 2013. The analysis assumes that ongoing costs to revise and consolidate requirements for MC&A in 10 CFR Part 74 related to the proposed rule will begin in 2013 and will be modeled on an annual cost basis. The analysis calculated cost and savings over a 10-year time horizon with each year's costs or savings discounted back at a 7-percent and 3-percent discount rate in

accordance with NUREG/BR-0058, Revision 4. Costs and savings are expressed in 2011 dollars.

Data/Affected Entities

The analysis makes the following assumptions regarding the entities affected (licensees): The NRC staff estimates that the following existing facilities will be impacted by this rule:

- ISFSI
- Category III- Fuel Fabrication Facility
- Category III- Enrichment Facility
- Category I- Fuel Fabrication Facility
- 10 CFR Part 70 licensees authorized for academic, research, and industrial uses of SNM
- 10 CFR Part 50 licensees authorized to operate a commercial nuclear power reactor or research and test reactor
- 10 CFR Part 52 licensees authorized to store unirradiated fuel elements containing SNM

Within the next 10 years, the NRC expects to receive and review an application for a medical isotope production facility. Such a facility, if licensed, would likely be a Category II facility.

Other Data and Assumptions

The analysis makes the following other assumptions:

- The analysis assumes that the labor rate for the NRC staff is \$119 per hour.
- The analysis assumes a \$100 per hour labor rate for licensee nonsecurity-related personnel.
- The analysis assumes that the final rule will be published in December 2012 and would be effective in mid-2013.
- The analysis calculated cost over a 10-year timeframe with each year's costs or savings discounted back at a 7-percent and 3-percent discount rate, in accordance with NUREG/BR-0058, Revision 4.
- To the extent practical, quantitative information (e.g., costs and savings) and qualitative information (e.g., the nature and magnitude of impacts) on attributes affected by the rule were obtained from, or developed in consultation with, the NRC staff.

3.3 Detailed Results

This section presents a detailed estimate of the impacts for the proposed rulemaking (Option 2). Some values and impacts are addressed qualitatively for reasons discussed in Section 3.2. Exhibits 3-1 and 3-2 summarize these results.

Option 1: No Action

By definition, this option does not result in any values or impacts.

Option 2: Amend Regulations to Revise and Consolidate Requirements for MC&A of SNM in 10 CFR Part 74Industry Implementation

Impact: Establish, Maintain Written MC&A Procedures

The proposed changes to 10 CFR 74.19(b)(1) would require each licensee authorized to possess SNM, at any one time and site location, in a quantity of 350 grams or more of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to establish, maintain, and follow written MC&A procedures that are sufficient to enable the licensee to account for the SNM in its possession under the license. It is estimated by the NRC that the changes would not impact any additional licensees. The NRC staff compared the current number of licensees subject to the current requirement with the number of licensees that would be subject to the proposed requirement which would reduce the threshold possession limit from one effective kilogram of SNM to 350 grams or more of contained uranium-235, uranium-233, or plutonium, or any combination thereof and determined that no additional licensees would be affected by proposed 10 CFR 74.19(b)(1).

Impact: Item Control System

The proposed changes to 10 CFR 74.19(c)(1) would require each licensee authorized to possess SNM, at any one time and site location, in any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to establish, document, implement, and maintain an item control system as defined in § 74.4. The NRC estimated the proposed change to lower the threshold limit from 350 grams to any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof would impact 25 licensees that do not currently have an item control system because the number of items they possess is small and the number of transactions for their inventory is also small. To establish and maintain an item control system the staff estimated about 5 labor hours would be needed. The labor rate is \$100 per hour. The one time cost per licensee would be \$500 and the total one time cost to the industry would be \$12,500.

The proposed changes to 10 CFR 74.19(c)(2) would require each licensee authorized to possess SNM, at any one time and site location, in any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to conduct a physical inventory at intervals not to exceed 370 calendar days. The NRC estimated the proposed change to lower the threshold limit from 350 grams to any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof would impact 5 licensees that do not currently conduct a physical inventory. The implementation time would be 5 hours at \$100 per hour. The one-time cost per licensee would be \$500 and the total one-time cost to the industry would be \$2,500.

Impact: Item Control Exemptions for Category III and II Facilities

The proposed changes to 10 CFR 74.31(c)(6) would require each Category III fuel fabrication facility to include currently exempted items in their item control system. The currently exempted items that a licensee would be required to track include items that exist for 14 days or less and individual items containing less than 500 grams of uranium-235 up to a total of 50 kilograms of uranium-235. It is estimated by the NRC that the changes would impact the three licensees that are currently operating Category III fuel fabrication facilities. The implementation time would be 250 hours at \$100 per hour. The one-time cost per licensee would be \$25,000 and the total one-time cost to the industry would be \$75,000.

The proposed changes to 10 CFR 74.33(c)(6)(ii) would require each Category III enrichment facility to include currently exempted items in their item control system. The currently exempted items that a licensee would be required to track include items that exist for less than 14 days and individual items containing less than 500 grams uranium-235 up to a cumulative total of 50 kilograms of uranium-235. It is estimated by the NRC that the changes would impact two licensees that are operating enrichment facilities and two potential licensees that are constructing enrichment facilities that will be licensed to operate in the future. The implementation time would be 250 hours at \$100 per hour. The one-time cost per licensee would be \$25,000 and the total one-time cost to the industry would be \$100,000.

The proposed changes to 10 CFR 74.43(b)(6) would require any future Category II facility to include currently exempted items in their item control system. The currently exempted items include items that exist for less than 14 calendar days and individual items containing less than 200 grams of plutonium or uranium-233 or 300 grams or more of uranium-235 up to a total of one formula of 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. It is estimated by the NRC that the changes would impact one potential licensee (e.g., a medical isotope production facility could be operating within 10 years) and the implementation time would be 250 hours at \$100 per hour. The total one-time cost to the licensee and the industry would be at \$25,000.

Impact: Two- Person Rule

The proposed changes to 10 CFR 74.31(c)(10) would require each Category III fuel fabrication licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact the three licensees that are currently operating these Category III facilities. The implementation time would be 500 hours to train the workers. The one-time cost of training at \$100 per hour would be \$50,000 per licensee and the total one-time cost to the industry would be \$150,000.

The proposed changes to 10 CFR 74.33(c)(10) would require each uranium enrichment licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact two licensees that are operating enrichment facilities and two

potential licensees that are constructing enrichment facilities that will be licensed to operate within 10 years. The implementation time to train the workers would be 500 hours. The one-time cost at \$100 per hour would be \$50,000 per licensee and the total one-time cost to the industry would be \$200,000.

The proposed changes to 10 CFR 74.43(c)(9) would require any future Category II licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact one potential licensee and the implementation time would be 500 hours to train the workers. The one-time cost to the licensee and the industry would be \$50,000.

The proposed changes to 10 CFR 74.59(h)(6) would require each Category I fuel cycle licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact the two licensees that are currently operating the Category I facilities and the potential licensee that would operate the mixed oxide (MOX) facility. The implementation time would be 150 hours to train the workers. The training time would be less than a Category III or II facility because many operations in a Category I facility are already performed under a two-person rule concept that is similar to the proposed two-person rule. The one-time cost at \$100 per hour would be \$15,000 per licensee and the total one-time cost for the industry would be \$45,000.

NRC Implementation

Impact: Develop Rule Package and Revise Guidance Documents

The NRC staff would develop the rule package and revise guidance and inspection procedures to accommodate the requirements that would be added or modified by the rulemaking process. This is an estimated \$259,420 one-time cost to the NRC. This effort will require one-half of a full-time equivalent position (FTE) for participating in the rulemaking activities and one-half FTE to revise and update the guidance documents.

Industry Operation

Impact: Item Control System

The proposed changes to 10 CFR 74.19(c)(1) would require each licensee authorized to possess SNM, at any one time and site location, in a quantity of 350 grams or more of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to establish, document, implement, and maintain an item control system as defined in § 74.4. The NRC estimated the proposed change to lower the threshold limit from 350 grams to any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof would impact 25 licensees that do not currently have an item control system because the number of items they possess is small and the number of transactions for their inventory is also small. The annual time to perform these actions would be 3 hours per licensee. The annual cost at \$100 per hour would be \$300 per licensee and the total annual cost to the industry would be \$7,500.

The proposed changes to 10 CFR 74.19(c)(2) would require each licensee authorized to possess SNM, at any one time and site location, in any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to conduct a physical inventory at intervals not to exceed 370 calendar days. The NRC estimated the proposed change to lower the threshold limit from 350 grams to any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof would impact five licensees that do not currently conduct a physical inventory. The annual time would be 10 hours at \$100 per hour. The annual cost per licensee would be \$1000 and the total annual cost to the industry would be \$5000.

Impact: Recordkeeping

The proposed changes to 10 CFR 74.19(c)(3) would require each licensee authorized to possess SNM, at any one time and site location, in any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof, to keep records of a physical inventory at intervals not to exceed 370 calendar days. The NRC estimated the proposed change to lower the threshold limit from 350 grams to any quantity of contained uranium-235, uranium-233, or plutonium, or any combination thereof would impact five licensees that do not currently keep records of a physical inventory. The annual time would be 1 hour at \$100 per hour. The annual cost per licensee would be \$100 and the total annual cost to the industry would be \$500.

Impact: Item Control Exemptions for Category III and II Facilities

The proposed changes to 10 CFR 74.31(c)(6) would require each Category III fuel fabrication facility to include currently exempted items in their item control system. The currently exempted items that a licensee would be required to track include items that exist for 14 days or less and individual items containing less than 500 grams of uranium-235 up to a total of 50 kilograms of uranium-235. It is estimated by the NRC that the changes would impact these three licensees that are currently operating the Category III facilities. The annual time would be 100 hours. The annual cost at \$100 per hour would be \$10,000 per licensee and the total annual cost to the industry would be \$30,000.

The proposed changes to 10 CFR 74.33(c)(6)(ii) would require each Category III enrichment facility to include currently exempted items in their item control system. The currently exempted items that a licensee would be required to track include items that exist for less than 14 days and individual items containing less than 500 grams uranium-235 up to a cumulative total of 50 kilograms of uranium-235. It is estimated by the NRC that the changes would impact two licensees that are operating enrichment facilities and two potential licensees that are constructing enrichment facilities that will be licensed to operate in the future. The annual time would be 100 hours at \$100 per hour. The annual cost per licensee would be \$10,000 and the total annual cost to the industry would be \$40,000.

The proposed changes to 10 CFR 74.43(b)(6) would require any future Category II facility to include currently exempted items in their item control system. The currently exempted items include items that exist for less than 14 calendar days and individual items containing less than 200 grams of plutonium or uranium-233 or 300 grams or more of uranium-235 up to a total of one formula of kilogram of strategic SNM or 17 kilograms of uranium-235 contained in uranium enriched to 10 percent or more but less than 20 percent in the uranium-235 isotope. It is

estimated by the NRC that the changes would impact one potential licensee and the annual time would be 100 hours at \$100 per hour. The annual cost to the licensee and the industry would be \$10,000.

Impact: Two-Person Rule

The proposed changes to 10 CFR 74.31(c)(10) would require each Category III fuel fabrication licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact the three licensees that are currently operating the Category III facilities. The annual time would be 1,500 labor hours each to assign at least two qualified and authorized individuals to prevent collusion and ensure that correct procedures are used, the operations are completed correctly, and that information about the operation is accurately documented. The annual cost at \$100 per hour would be \$150,000 per licensee and the total annual cost to the industry would be \$450,000.

The proposed changes to 10 CFR 74.33(c)(10) would require each uranium enrichment licensee to use the two-person rule (as defined in § 74.4) for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact two licensees that are operating enrichment facilities and two potential licensees that are constructing enrichment facilities that will be licensed to operate within 10 years at 500 labor hours each to assign at least two qualified and authorized individuals to prevent collusion and ensure that correct procedures are used, the operations are completed correctly, and that information about the operation is accurately documented. The annual cost at \$100 per hour would be \$50,000 per licensee and the total annual cost to the industry would be \$200,000.

The proposed changes to 10 CFR 74.43(c)(9) would require any future Category II licensee to use the two-person rule (as defined in § 74.4) for tamper-safing operations, for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. The NRC estimates this will impact one potential licensee at 1,000 labor hours to assign at least two qualified and authorized individuals to prevent collusion and ensure that correct procedures are used, the operations are completed correctly, and that information about the operation is accurately documented. The annual cost at \$100 per hour would be \$100,000 for the licensee and the annual cost to the industry would be \$100,000.

The proposed changes to 10 CFR 74.59(h)(6) would require each Category I fuel cycle licensee to use the two-person rule (as defined in § 74.4) for tamper-safing operations, for conducting tamper-safing operations, physical inventories, transfer of SNM, and for any handling of SNM that is not under an active control measure or monitoring or surveillance condition. It is estimated by the NRC that the changes would impact the two licensees that are currently operating the Category I facilities and the potential licensee that would operate the MOX facility. The annual time would be 750 labor hours for each licensee to assign at least two qualified and authorized individuals to prevent collusion and ensure that correct procedures are used, the operations are completed correctly, and that information about the operation is accurately

documented. The annual cost at \$100 per hour would be \$75,000 per licensee and the total annual cost to the industry would be \$225,000.

Impact: Removal of exemption in 10 CFR 74.51(a) for an irradiated fuel reprocessing plant

This proposed change would impact no licensees, because there are currently no operating irradiated fuel reprocessing plants.

NRC Operation

Impact: The amount of NRC inspection effort would not change. Inspectors would evaluate licensee implementation of the changes within the scope of the routine inspection program elements. The inspection procedures would be updated within the normal review and revision cycle at 3-year intervals. The procedures were revised in December 2010 and would be reviewed and updated in 2013 which would coincide with the issuance of the final rule.

Exhibit 3-1
Quantitative Results
Total Present Value for the Cost

| | One-time Implementation Costs | Annual Operating Costs | Total Combined Implementation and Annual Cost for 10-year Period at 3% Discount Rate | Total Combined Implementation and Annual Cost for 10-year Period at 7% Discount Rate |
|----------------|-------------------------------|------------------------|--|--|
| Industry Costs | \$660,000 | \$1,068,000 | \$9,770,257 | \$8,161,185 |
| NRC Costs | \$259,420 | \$0 | \$259,420 | \$259,420 |
| Total | \$919,420 | \$1,068,000 | \$10,029,677 | \$8,420,605 |

Exhibit 3-2
Detailed Quantitative Results: Licensee Costs

| Citation | Description | Number of Licensees Affected | Labor Rate \$/hr | Annual Hours per Licensee | Annual Cost per Licensee | Total Annual Cost | One Time Implementation Cost per Licensee | Total One-Time Cost |
|-----------------|----------------------------------|------------------------------|------------------|---------------------------|--------------------------|-------------------|---|---------------------|
| 74.19(b)(1) | Written MC&A Procedures | 0 | | | | | | |
| 74.19(b)(2) | Recordkeeping | 0 | | | | | | |
| 74.19(b)(3) | Recordkeeping | 0 | | | | | | |
| 74.19(c)(1) | Item Control System | 25 | \$100 | 3 | \$300 | \$7,500 | \$500 | \$12,500 |
| 74.19(c)(2) | Physical Inventory | 5 | \$100 | 10 | \$1,000 | \$5,000 | \$500 | \$2,500 |
| 74.19(c)(3) | Physical Inventory Recordkeeping | 5 | \$100 | 1 | \$100 | \$500 | \$0 | \$0 |
| 74.31(c)(6) | Item Control Exemptions | 3 | \$100 | 100 | \$10,000 | \$30,000 | \$25,000 | \$75,000 |
| 74.33(c)(6)(ii) | Item Control Exemptions | 4 | \$100 | 100 | \$10,000 | \$40,000 | \$25,000 | \$100,000 |
| 74.43(b)(6) | Item Control Exemptions | 1 | \$100 | 100 | \$10,000 | \$10,000 | \$25,000 | \$25,000 |
| 74.31(c)(10) | Two-Person Rule | 3 | \$100 | 1,500 | \$150,000 | \$450,000 | \$50,000 | \$150,000 |
| 74.33(c)(10) | Two-Person Rule | 4 | \$100 | 500 | \$50,000 | \$200,000 | \$50,000 | \$200,000 |
| 74.43(c)(9) | Two-Person Rule | 1 | \$100 | 1,000 | \$100,000 | \$100,000 | \$50,000 | \$50,000 |
| 74.59(h)(6) | Two-Person Rule | 3 | \$100 | 750 | \$75,000 | \$225,000 | \$15,000 | \$45,000 |
| Total | | | | | | \$1,068,000 | | \$660,000 |

4. Presentation of Results

4.1 Values and Impacts

This section summarizes the values (benefits) and impacts (costs) estimated for these regulatory options. (Section 3.3 presents a more detailed analysis.) To the extent that the affected attributes could be analyzed quantitatively, the net effect of each option has been calculated and is presented below. However, some values and impacts could be evaluated only on a qualitative basis.

The benefits of this proposed rule are associated with safeguards and security considerations and the decreased risk of a security-related event, such as theft, diversion, or radiological sabotage of SNM and subsequent use for malevolent purposes. The values and impacts of the proposed changes that are nonquantifiable would improve a licensee's capabilities to deter and detect any loss, theft, diversion, or misuse of SNM that could result in a malevolent event. The proposed changes would promote the common defense and security of SNM.

Exhibit 4-1 summarizes the results of the value-impact analysis. Relative to the no-action alternative (Option 1), Option 2 would result in a net quantitative impact estimation of approximately \$10,000,000 at a 3-percent discount rate and \$8,400,000 at a 7-percent discount rate.

Exhibit 4-1
Summary of Impacts at Discount Rates of 3 Percent and 10 Percent for a 10-Year Period

| Attribute | One-time Implementation Costs | Annual Operating Costs | Total Combined Implementation and Annual Cost for 10-year Period at 3% Discount Rate | Total Combined Implementation and Annual Cost for 10-year Period at 7% Discount Rate |
|-------------------------|--------------------------------------|-------------------------------|---|---|
| Industry Implementation | \$660,000 | | \$660,000 | \$660,000 |
| Industry Operation | | \$1,068,000 | \$9,110,257 | \$7,501,185 |
| Industry Total Costs | | | \$9,770,257 | \$8,161,185 |
| NRC Implementation | \$259,420 | | \$259,420 | \$259,420 |
| NRC Operation | | | | |
| NRC Total Costs | | | \$259,420 | \$259,420 |
| Total | \$919,420 | \$1,068,000 | \$10,029,677 | \$8,420,605 |

5. Decision Rationale

The changes in this rulemaking are intended to consolidate MC&A requirements in 10 CFR Part 74 and to clarify, revise, modify, and strengthen the existing requirements. The decision rationale is based on how the values and impacts have been analyzed. Relative to the no-action alternative, Option 2 would result in a net cost estimated at approximately \$8,400,000 assuming a 7-percent discount rate, or approximately \$10,000,000 assuming a 3-percent discount rate. Offsetting the net cost, the NRC believes that Option 2 would result in substantial non-quantifiable benefits related to safety and security. Although costs are incurred as a result of the rule, the qualitative benefits associated with the rule outweigh its cost. The NRC believes that the rule is cost-justified because the proposed regulatory initiatives would promote the common defense and security of SNM.

6. Implementation

The staff proposes to make the final rule effective 90 days after its publication in the FR. For this analysis, the final rule effective date is mid-2013.

7. References

- NUREG/BR-0184, "Regulatory Analysis Technical Evaluation Handbook, Final Report," U.S. Nuclear Regulatory Commission, Washington, DC, January 1997.
- NUREG/BR-0058, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," Revision 4, U.S. Nuclear Regulatory Commission, Washington, DC, September 2004.
- SECY-08-0059, Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material, April 25, 2008.

**DRAFT ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT
FOR THE PROPOSED RULE
AMENDING 10 CFR PARTS 40, 70, 72, 74, AND 150**

AMENDMENTS TO MATERIAL CONTROL AND ACCOUNTING REGULATIONS

**Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission**

I. INTRODUCTION AND BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC or the Commission) is proposing to amend, clarify and update its regulations regarding the material control and accounting (MC&A) of special nuclear material (SNM) located in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 74. The current MC&A requirements in Subpart D of 10 CFR Part 72 would be consolidated in Subpart B of 10 CFR Part 74.

The MC&A regulations apply to NRC licensees who are authorized to hold SNM, and to certain licensees within the jurisdiction of the Agreement States that hold SNM in quantities less than a critical mass and who are required by 10 CFR 150.17 to submit material status reports to the NRC via the Nuclear Materials Management and Safeguards System (NMMSS).

II. THE PROPOSED ACTION

In the proposed rulemaking action, the MC&A requirements for independent spent fuel storage installations (ISFSIs) in Subpart D of 10 CFR Part 72 would be consolidated with the MC&A regulations in Subpart B of 10 CFR Part 74. In this regard, some of these ISFSI requirements are repeated in 10 CFR Part 74 and the redundant 10 CFR Part 72 requirements

in §§ 72.72, 72.74, 72.76, and 72.78 would be removed. The majority of the changes would be to the MC&A provisions in 10 CFR Part 74, and are intended in general to reduce ambiguity, facilitate implementation, and better align the requirements with current standards of practice for MC&A of SNM. Such changes would include (1) adding general performance objectives (GPOs) in Subpart A of 10 CFR Part 74 (GPOs are informational activities to deter, detect, or aid in responding to any loss, theft, diversion or misuse of SNM) that would apply to all licensees authorized to hold SNM; (2) extending to all SNM licensees requirements to have item control systems to better ensure that all facilities authorized to hold SNM will have adequate internal controls in place to deter or detect any diversion or misuse of SNM; (3) adding a “two-person” rule (*i.e.*, requiring the presence of at least two qualified and authorized individuals) for tamper-safing, performing physical inventories, transferring SNM, or any handling of SNM that is not under an active control measure or monitoring or surveillance condition; (4) removing or modifying some current exemptions in Subparts C, D, and E of 10 CFR Part 74; and (5) revising 10 CFR Part 74 Subparts C, D, and E to require that certain procedures be established for tamper-safing containers or locations, and to require that procedures be established for designating material balance areas, item control areas, and custodial responsibilities for these areas.

Plain language revisions to 10 CFR Parts 74 and 150 would clarify the required elements of an MC&A program and the various systems that comprise the MC&A program. In this regard, existing references to the fundamental nuclear material control (FNMC) plan in 10 CFR Part 74 would be replaced by references to an MC&A plan.

In addition, the proposed action would add new definitions and modify some existing definitions in 10 CFR Part 74. The new terms are: *accounting*, *custodian*, *item control system*, *item control area*, *material balance area*, *material control and accounting*, and

two-person rule. To improve clarity, the term *formula quantity* would be modified by describing it as a Category I quantity of material, consistent with the existing definitions of this term in 10 CFR Parts 70 and 73. Similarly, the terms *SNM of moderate strategic significance* and *SNM of low strategic significance* would be modified by describing them as a Category II quantity of material and a Category III quantity of material, respectively, consistent with the existing definitions of these terms in 10 CFR Parts 70 and 73. The term *effective kilogram* would be removed from 10 CFR Part 74 and the affected requirements would instead refer to gram or kilogram quantities of nuclear material.

A new Appendix A, entitled “Categories of Special Nuclear Material,” would be added to 10 CFR Part 74. The Appendix would include a table showing the quantities for each category, the corresponding subpart in 10 CFR Part 74 for each category, and formula to calculate any combination of strategic SNM in a quantity for a category.

The following guidance documents would be revised and updated in conjunction with the proposed action. In addition, a guidance document for Category II facilities (SNM of Moderate Strategic Significance) would be updated and issued with the existing guidance documents below:

- NUREG-1280, “Standard Format and Content Acceptance Criteria for the Material Control and Accounting (MC&A) Reform Amendment”
- NUREG-1065, “Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Facilities”
- NUREG/CR-5734, “Recommendations to the NRC on Acceptable Standard Format and Content for the Fundamental Nuclear Material Control (FNMC) Plan Required for Low-Enriched Uranium Enrichment Facilities”
- NUREG/BR-0096, “Instructions and Guidance for Completing Physical Inventory Summary Report”

III. THE NEED FOR THE PROPOSED ACTION

Many of the current MC&A requirements were developed over 20 years ago and need to be updated, in part, to reflect advances in technology. As discussed above, some MC&A requirements in 10 CFR Part 72 that apply to ISFSIs are repeated in 10 CFR Part 74 and the redundant 10 CFR Part 72 requirements would be deleted. The NMMSS reporting requirements for an ISFSI fall into this category, and §§ 72.72, 72.74, 72.76, and 72.78 would be consolidated in Subpart B of 10 CFR Part 74.

IV. ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

The proposed amendments will not result in any significant environmental impact. The proposed rule pertains to MC&A program requirements, which consist of administrative procedures and operations to track and control SNM and related information, in order to deter and detect any loss, theft, diversion, or unauthorized production of nuclear material. The amendments are intended to strengthen MC&A programs and plans that have already been approved by the NRC. Under Subpart B of 10 CFR Part 74, licensees would be required to establish, implement, and maintain an MC&A program to achieve the GPOs that would be added to Subpart A. Such a program would not require NRC approval before implementation, but would be subject to NRC inspection. Licensees would also be required to establish, implement, and maintain item controls. As the proposed amendments pertain to information collection and reporting requirements, adopting them would have no significant impact on the quality of the human environment.

Thus, the proposed action does not alter the amounts of any radioactive effluents that could be released offsite from an NRC-licensed facility, and does not cause a significant

increase in individual or cumulative radiological exposures to plant workers or members of the public. Further, the proposed action does not result in any significant increase in the potential for accidents at NRC-licensed facilities.

V. ALTERNATIVES TO THE PROPOSED ACTION

The alternative to this proposed action is to take no action. Under the no-action alternative, the NRC would not amend the current regulations. Thus, the more risk-informed and performance-based proposed changes, and their associated program and safety enhancements, would not be achieved.

Under the no-action alternative, licensees would continue to comply with existing regulations. The existing MC&A requirements would not be updated, clarified, or consolidated as described above.

VI. ALTERNATIVE USE OF RESOURCES

There are no irreversible commitments of resources determined in this assessment.

VII. AGENCIES AND PERSONS CONTACTED

No agencies or persons outside the NRC were contacted in connection with the preparation of this draft environmental assessment.

VIII. FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined under the National Environmental Policy Act and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not have any significant environmental impacts, and therefore this rulemaking does not warrant the preparation of an environmental impact statement. The proposed rule pertains to MC&A program requirements, which consist of administrative procedures and operations to track and control SNM and related information, in order to deter and detect any loss, theft, diversion, or unauthorized production of nuclear material. As discussed above, the amendments pertain to information collection and reporting requirements, adopting them would have no significant impact on the quality of the human environment.