

Proposed Rule to Amend Material Control and Accounting (MC&A) Regulations and the  
Proposed Guidance for Fuel Cycle Facility MC&A Plans and NRC Form 327  
Public Meeting Material—September 25, 2014

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 them. The proposed amendments add new requirements that would apply to NRC licensees who are authorized to possess SNM in a quantity greater than 350 grams.

The material for today's public meeting begins on the next page and has been excerpted from pages 3-6, Attachment 5 (Regulatory Analysis), letter dated March 10, 2014, from the Nuclear Energy Institute (Comment letter 10, ADAMS Accession No. ML14070A329).

The NRC staff is seeking clarification of the cost estimates that are discussed in the comments. To revise the draft regulatory analysis for rulemaking the staff is developing a realistic range of estimates for the one-time implementation costs and the annual operating costs for the proposed requirements. An estimated range is needed for each type of facility.

**Excerpted from Comment Letter 10, the Nuclear Energy Institute (ADAMS Accession No. ML14070A329), Attachment, 5, Proposed Regulatory Analysis Comments**

• **Fuel Cycle Facilities**

- o Fuel Cycle Facilities take strong exception to the NRC cost estimates to implement the new requirements (one-time cumulative industry costs of <\$200K and annual costs of <\$100K). FCFs believe that the annual costs are significantly underestimated. One-time costs would vary widely from facility to facility but for example at Category III fuel cycle facilities the one-time costs would exceed millions of dollars with similar numbers for annual costs.
- o In order to meet the proposed GPOs at Category III fuel cycle facilities, which include both SNM in items and SNM that is in-process, it may be necessary to search every person and their belongings each time they leave an area within the plant where SNM is stored and/or processed. This would be extremely expensive and time consuming and, because LEU is a relatively weak alpha emitter that is easily shielded from detection equipment it is uncertain if equipment even exists that could handle the throughput at the sensitivity level required to detect the removal of 1 gram of U235.
- o In addition, with respect to 74.3(e), the NRC indicated that their expectations for this GPO included storing all MC&A information in locked cabinets, files, offices, etc. and printing MC&A information only in secure locations. This level of access control is not currently in place and if staff expectations are clarified to include this level of control then physical changes to facilities and administrative changes to routine operations will be required. An estimate of the cost to complete both the physical and administrative changes including potential software changes are on the order of \$200K.
- o Elimination of the two exemptions to item control requirements for items containing less than 500 grams U-235 and items that exist for less than 14 days would have serious cost impacts at Category III fuel cycle facilities. Currently lab samples and standards contained in the various lab facilities are exempted from item control and can therefore be transported to the lab for analysis without being weighed, tracked, etc. as items. We note that some laboratories are under mass control rather than item control. We estimate that elimination of these exemptions would reduce lab efficiency by up to 20%. It would also require facility modification, equipment procurement and installation to procure containers and ID them with permanent IDs and to add stations for the weighing, scanning, and updating the item control system for items not currently tracked under item control because they are not expected to exist for more than 14 days. This estimate does not include information technology costs to modify our item control system for these new materials required to be tracked.
- o Current item control system capabilities and MC&A processes are designed to only track those material forms currently required to be tracked and not these additional material forms. These material forms will need to be containerized in some instances, measured for SNM quantity in certain instances, and entered into the item control tracking system. Containers will have to be modified to include unique identification and item control system software will have to be modified to include transactions to track new material forms/containers. Measurement methods will need to be developed, measurement equipment will need to be procured and integrated with the item control system software. Personnel will have to perform new routine measurements and item control transactions

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- o This proposed requirement, in conjunction with new requirements for detecting the loss, theft, diversion, or misuse of any SNM would necessitate tamper safing of all items throughout the year rather than only at the time of annual physical inventories. Although the staff has stated in the public meetings that the intent of the requirement is to require a robust tamper-safing program subject to control, audits, and inspection, the wording of the new requirements lacks the clarity necessary to make this determination. Therefore, our cost analysis is based on the regulation as written. For example, in order to implement a fulltime tamper-safing program at one Category III fuel cycle facility that included all items from creation to destruction and would include all items currently exempt from item control requirements 8 additional FTEs would be required at an annual cost of \$600K (\$75K/FTE) and that the cost of additional seals would be \$500K annually. Additionally, one-time costs to “harden” certain existing storage facilities are estimated to be \$250K. If the new requirements are reworded to make it clear that the new requirements do not impose requirements above what industry is doing now then there would be no additional costs, since our current programs are well defined with controls that have been acceptable to NRC for years.

**Industry Analysis for Fuel Cycle Facilities**

<b>CFR Citation</b>	<b>Description</b>	<b>Annual Cost Per License</b>	<b>One-Time Implementation Cost per License</b>
74.3	General Performance Objectives	\$6M	\$1.7M - \$10M
74.31(c)(6) 74.33 (c)(6)(ii)	Item Control Exemptions	\$0.5M	\$5-10M
74.31(c)(9) 74.33 (c)(9)	Tamper-Safing	\$1.1M	\$0.25M

- **Power Reactors**

[Note: For the purpose of the following cost estimates, we use a rate of \$87/hour.]

- **10 CFR 74.3 – General Performance Objectives (GPOs)**

- o The general performance objectives were unanalyzed by the NRC in the draft regulatory analysis.
- o In particular, 10 CFR 74.3(e) has the potential for significant impacts. During the public meeting on January 9, 2014, the NRC staff indicated that the intent was to include all MC&A information and require 10 CFR 2.390 or greater controls, though this remains undefined. We understand that 10 CFR 2.390 could not be directly applied to MC&A information maintained and handled at licensee facilities. Based upon that meeting, it would appear that this proposed revision could subject vast amounts of information that is currently handled under record control protocols for each facility to be significantly changed to incorporate undefined increased controls and potentially Safeguards Information.
- o During the February 5, 2014, public meeting the NRC made reference to current practices at all categories of licensees, including power reactors to comply with existing requirements for recordkeeping (i.e. 10 CFR 74.19). The indication was that compliance with existing recordkeeping requirements would yield compliance with this proposed GPO. However, page 67227 of the FRN, explicitly indicates that fuel cycle facilities would not need to alter their MC&A programs in response to the GPOs. If this is the intent for all categories of licensees, it should be explicitly stated. The FRN further notes that 74.3(e) would require that MC&A information be stored in a locked file cabinet or office which is prescriptive and not aligned with recordkeeping requirements.
- o The very nature of MC&A information generally precludes it's designation as Safeguards Information. Therefore, this estimate is based on creating a new program for control of MC&A information that would be considered Sensitive Unclassified Non-Safeguards Information. We estimate one-time costs per site to be \$39,300.
- o We estimate the one-time cost to revise procedures and conduct training to be 160 hours (\$13,920).
- o Additionally, conversion of records to a new information handling/protection program would appear necessary. We estimate 80 hours (\$6,960) to retrieve and identify records.
- o Once records are identified that need new protection, we estimate 160 hours (\$13,920) to research historical records, understand the scope, and reclassify the records. This does not consider reviews of remote storage of duplicate records.
- o New storage cabinets (3 at \$1,500 per cabinet) would be needed - \$4,500 per site.
- o If the current practices are considered sufficient to satisfy the each of the proposed GPOs, the cost impacts for power reactors will require one-time costs of 120 hours (\$10,440) per site (including adoption of a fleet-wide approach where appropriate) to update procedures and conduct reviews by Licensing, Qualified Reviewer, Management, and the Plant Safety Review Committee.

- **10 CFR 74.19 – Item Control System**

- o The Regulatory Analysis estimate for the implementation of an item control system at power reactors if current industry practices for item control (e.g. consistent with ANSI N15.8) are adequate to satisfy the proposed requirement, would exceed the NRC's cost estimates. The cost impacts for power reactors will require more than 5 hours of effort. Bringing an existing program that is not a requirement under direct regulatory control takes effort. Therefore, the cost impacts for power reactors will require one-time costs of 120 hours (\$10,440) per site (including adoption of a fleetwide approach where appropriate) to update procedures and conduct reviews by Licensing, Qualified Reviewer, Management, and Plant Safety Review Committee.
- o We believe that current annual physical inventories are sufficient. If the NRC's intent is that the periodic SNM audits between annual inventories be conducted we estimate a one-time impact of 160 hours (\$13,920) per site (e.g. determine what is acceptable and procedure revisions) and an ongoing cost of 50 hours (\$4,350) per inspection. The inspection cost assumes that 10 fuel assemblies in the spent fuel pool would be identified, which is the standard NRC inspection criteria and a full day (10 hours) for camera setup/removal, SFP Bridge Crane surveillance, and inspection for 5 people (Reactor Engineering, Operations, and Health Physics).
- If current industry practices for item control are inconsistent with the intent of item control systems at power reactors, and the intent is to develop a full scale material management system, the cost structure in the Regulatory Analysis is underestimated and the resulting system may be contradictory to the intent of the other General Performance Objective to control MC&A information. We are unable to estimate the costs based upon the information provided but expect that they would be significant.