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# Material Control and Accounting (MC&A) Rulemaking Case Study

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U.S. Nuclear Regulatory Commission  
Office of Nuclear Material Safety and Safeguards  
Division of Rulemaking

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## SUMMARY

The purpose of this case study is to evaluate the material control and accounting (MC&A) rulemaking effort to identify lessons learned for the U.S. Nuclear Regulatory Commission's (NRC's) transformation efforts. Based on insights from a range of data collection activities, this study identified two key themes – (1) a need for greater organizational agility (including more structured and coordinated strategic reviews and enhancing methods for staff's communications and interactions with the Commission), and (2) a need for more complete NRC staff understanding in the justification of the adequate protection exception to the backfit rule. Opportunities for enhancement are offered under each theme (see Enclosure 1 for the consolidated list of enhancement opportunities), and several other insights, including recent rulemaking process improvements, are also discussed. The agency has made progress in recent years to increase its ability to adapt to changes, and there are opportunities for further strengthening and integrating efforts for greater impact.

### **Key Theme 1 – Organizational Agility**

- Organizational Agility Area 1 – More Structured and Coordinated Strategic Reviews
- Organizational Agility Area 2 – Enhancing Methods for Staff's Communications and Interactions with the Commission

### **Key Theme 2 – More Complete NRC Staff Understanding in the Justification of Adequate Protection in Backfitting**

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## 1 BACKGROUND

The NRC ensures its licensees control and account for special nuclear material through MC&A provisions contained in Part 74 of Title 10 of the *Code of Federal Regulations* (10 CFR), “Material Control and Accounting of Special Nuclear Material,” and several sections of 10 CFR Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste.” In 2005, the staff recommended that the Commission consider revising the NRC’s MC&A regulations based on several factors. Over the course of the next several years, the staff worked through the phases of this rulemaking, including obtaining public input and seeking Commission direction multiple times. The staff provided its draft final rule package to the Commission in October 2018<sup>1</sup>. In April 2019,<sup>2</sup> the Commission directed the staff to discontinue the MC&A rulemaking activity and evaluate its history as a lessons learned/case study under the agency transformation initiative. The Commission also directed the Committee to Review Generic Requirements (CRGR) to conduct a lessons-learned evaluation of its endorsement of the draft final rule. Enclosure 2 provides a more detailed discussion and chronology of the history of this rulemaking that was considered in conducting this case study.

In recent years, starting with Project Aim in 2014,<sup>3</sup> the NRC has increased its focus on enhancing its ability to better adapt to a dynamic environment. The Executive Director for Operation’s (EDO) “Strategy on a Page,”<sup>4</sup> which was made publicly available in 2019, provides a framework for guiding the agency’s transformation. The MC&A rulemaking provides a useful lessons-learned opportunity to apply the agency’s current focus on being more adaptable to the changing environment and evaluate different areas that could further benefit from the transformation initiative as it relates to this rulemaking. Enclosure 3 contains questions that can be used for self-reflection or group discussion to apply insights from this case study to the management of other projects.

## 2 EVALUATION PROCESS

At the outset of this lessons-learned effort, the staff identified that it would likely have broad, agencywide implications. As such, the staff assembled an interoffice working group, which was led by the Office of Nuclear Material Safety and Safeguards and included members from the Offices of Nuclear Reactor Regulation, New Reactors, Nuclear Security and Incident Response, and the Office of the General Counsel (see Enclosure 4 for a list of the MC&A case study team members). In its evaluation, the working group focused on identifying insights that could help the agency move forward with its transformation initiative and provide an opportunity for organizational reflection and did not limit its focus to just challenges that occurred in this

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<sup>1</sup> SECY-18-0104, “Draft Final Rule: Amendments to Material Control and Accounting Regulations,” (ADAMS Accession No. ML18061A056).

<sup>2</sup> SRM-SECY-18-0104, “Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096),” (ADAMS Accession No. ML19093B393).

<sup>3</sup> See: <https://www.nrc.gov/about-nrc/plans-performance/project-aim-2020.html>.

<sup>4</sup> “Strategy on a Page,” (ADAMS Accession No. ML19037A325).

rulemaking. As such, the working group took a broader approach by considering the impact of potential insights for long-term, complex efforts in general.

The working group conducted focus groups and interviews with approximately two dozen staff and managers who were involved in the rulemaking. To support the agency's transformation initiative, the working group framed its interview and discussion questions around concepts from the EDO's "Strategy on a Page." In addition, the working group reviewed relevant historical documents and evaluated recent agency efforts associated with the agency's innovation and transformation initiatives. The working group analyzed the information gathered to develop key themes, opportunities for enhancement, and additional insights for consideration. Each enhancement opportunity is offered as an area for consideration and further evaluation. In finalizing this report, the working group coordinated its efforts with the CRGR and with ongoing transformation efforts, as well as incorporated guidance and feedback from senior agency managers.

The results of the evaluation are organized into the following sections: (1) observations on agency transformation; (2) what worked well; (3) key themes and enhancement opportunities; and (4) other insights for consideration.

### **3 OBSERVATIONS ON AGENCY TRANSFORMATION**

In conducting this case study, the working group noted two key observations, identified below. Other additional observations are further discussed and reflected in the themes and enhancement opportunities.

- (1) In the past several years, the agency has increased focus on transformation initiatives to modernize its practices and increase its adaptability. The themes and insights identified by this case study show strong support and the need for such a focus and continued progress in this area to help manage both short-term and long-term projects more effectively.
- (2) In some areas, the efforts associated with the transformation initiatives are in early stages and continued momentum is needed. There are opportunities for further strengthening and integrating these efforts in a more holistic manner for a greater impact.

### **4 WHAT WORKED WELL**

The focus group and interview participants offered some perspectives on what worked well during this rulemaking project. For example, most expressed that, while the Commission did not ultimately adopt the staff's recommendation, the draft final rule package provided a full explanation and rationale for each proposed rule revision. The staff, including the senior managers who approved the rulemaking package, viewed it as a high-quality product that reflected Commission direction. Another positive aspect noted was the MC&A working group demonstrated strong teamwork, open communication, and sharing of diverse opinions and viewpoints; appropriate staff members were involved; and the rulemaking received excellent support from all participating offices.

## **5 KEY THEMES AND ENHANCEMENT OPPORTUNITIES**

The working group identified two key themes with associated enhancement opportunities for consideration.

### **5.1 KEY THEME 1 – ORGANIZATIONAL AGILITY**

During this rulemaking, which spanned from 2005-2019, staff submitted four SECY papers to the Commission and received four SRMs. In addition, there were multiple personnel changes at the staff, management, and Commission levels. In reflecting on this history, the interviewees and focus group participants shared multiple examples of signals that may have warranted a re-evaluation of the project path. Notably, these included the following:

- The extended timeline of the rule development, including the stop/start nature of the work.
- The extensive changes to the rule scope over the course of the process.
- Concerns raised by stakeholders, staff, and managers during various stages of the project.
- Concerns raised by the Commissioners in vote sheets and SRMs.
- The Commission's direction to proceed with an option for the proposed rule that was not the staff's recommended option.
- Changes in agency priorities, external operating environment, and the consideration of factors for pursuing rulemaking.

However, during the focus groups and interviews, the working group learned that the staff continued to strictly adhere to the Commission's previous direction and not consider proposing any changes in the path forward for multiple reasons, including:

- Reluctance to engage with the Commission to share concerns and suggest reconsideration of the rulemaking, due to wanting to avoid the perception that staff was not following Commission direction.
- Reluctance among staff to seek clarification at a later date on earlier Commission direction in SRMs.
- Concerns about proposing to discontinue the rulemaking effort late in the process given the amount of time and effort already expended by the staff and industry.
- Strong belief by the staff that the technical basis for implementing the rule changes was sound.

Based on the discussions above, there are opportunities to improve organizational agility for managing both short-term and long-term projects.

### **5.1.1 Organizational Agility Area 1 – More Structured and Coordinated Strategic Reviews**

The agency has a number of efforts and processes in place to plan for the future and monitor performance, many of which have been started in recent years. There are opportunities to strengthen the agency's tools used to identify strategic direction for long-term projects and make course shifts when needed. Examples include:

- Futures Assessment – In “The Dynamic Futures for NRC Mission Areas” report,<sup>5</sup> the “Consideration for Actions” section discusses the benefits for development of “signposts,” (i.e., precursors toward the direction of the future that should be monitored). The agency is currently evaluating this area.
- Strategic Workforce Planning – The agency developed several products from this new agency process. For example, the agency environmental scan considers the impact of a range of external and internal factors on the agency and the workload forecast describes the expected quantity of activities in different areas. The agency could expand use of these products to provide more strategic direction for long-term efforts.
- Strategic Alignment Meetings – These meetings provide opportunities for senior agency management to focus on topics of strategic importance. The agency could expand the use of these meetings to help identify strategic and proactive shifts that may be needed for projects and initiatives.
- Enterprise Risk Management (ERM) – The agency uses ERM to identify risks and challenges early and then raise them to the attention of the appropriate level of agency management<sup>6</sup>. The agency could strengthen the uses of ERM to more proactively identify potential risks associated with projects or initiatives and develop effective mitigations strategies in the management of long-term, complex efforts (such as rulemakings).
- Common Prioritization of Rulemaking – There is opportunity to conduct more strategic, probing reviews to identify if changes in prioritization are warranted, potentially based on results from the processes described above.

Overall, some of these processes could be enhanced by having common points of coordination, with the work performed in a more fully integrated manner. In addition, outcomes would be improved by assigning the work to the same position level across offices (e.g., Branch Chiefs, Technical Assistants, budget contacts, etc.). Moreover, more integrated, structured, and strategic evaluation of potential shifts would improve consistency in adapting to changes and emerging factors. Such evaluations should be done on a recurring basis and with consideration of a well-defined and comprehensive set of data and information.

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<sup>5</sup> “The Dynamic Futures for NRC Mission Areas,” (ADAMS Access No. ML19022A178).

<sup>6</sup> MD 4.4, “Enterprise Risk Management and Internal Control,” (ADAMS Accession No. ML17312B109).

### Enhancement Opportunity 1:

The owners of the processes identified above in “*Organizational Agility Area 1 – More Structured and Coordinated Strategic Reviews*,” will consider evaluating and implementing improvements to the agency’s approach for planning and monitoring long- term efforts, including some examples as discussed above. The staff will also consider improvements to the coordination and integration of these processes to occur on a regular recurring basis (e.g., annual, biannual, etc.). The staff intends to address this enhancement as part of the agency’s transformation effort, specifically under the initiatives to simplify and optimize the NRC’s internal processes and to develop signposts and markers that will enable the NRC to more effectively plan its work. Implementation of improvements in these areas should allow the agency to better adapt to changes, more proactively identify and resolve issues, and enhance coordination and collaboration across organizational boundaries, thus leading to more effective and efficient agency operations.

### **5.1.2 Organizational Agility Area 2 – Enhancing Methods for Staff’s Communications and Interactions with the Commission**

In order to effectively support the Commission, the staff must clearly understand its direction and have the ability to communicate information to support the Commission’s decisionmaking. At times this may involve needing clarifications on complex issues or providing emerging information or changes in circumstances in a timely manner to the Commission, especially in a dynamic environment. This case study highlights some possible opportunities for enhancing how the staff communicates and interacts with the Commission for long-term, complex projects. Currently, available methods for staff use include formal processes such as Commission papers (information and notation vote), SRMs, Commissioners’ Assistants Notes, extension request (with explanations provided), and Commission meetings, as well as more informal ones such as senior management periodics with Commissioners, Commissioners’ Assistants briefings, and other staff interactions with Commissioners’ Assistants. Most of these methods have been in place for many years. There is opportunity to consider if the staff can use these methods more effectively to improve its communication and interaction with the Commission to better meet the agency’s focus towards being a more agile organization.

### Enhancement Opportunity 2:

As part of the agency’s transformation effort, specifically under the initiative to simplify and optimize the NRC’s internal processes, the staff will evaluate the current means of communication and interaction with the Commission to determine if improvements are needed to support staff in effectively engaging with the Commission in a dynamic environment. As part of that activity, the staff will also consider evaluating if there are ways to improve staff’s understanding of expectations for when engaging the Commission is appropriate. Implementation of improvements in these areas should strengthen the staff’s communications with the Commission and provide stronger support for the Commission in their decisionmaking process.

## **5.2 KEY THEME 2 – MORE COMPLETE NRC STAFF UNDERSTANDING IN THE JUSTIFICATION OF ADEQUATE PROTECTION IN BACKFITTING**

For the MC&A rulemaking, the staff provided its basis for justifying the adequate protection exception to the requirement to prepare a backfit analysis for the draft final rule. The CRGR agreed with the staff's basis while recognizing that the final decision in this evaluation rests with the Commission.<sup>7</sup> The Commission ultimately discontinued the rulemaking. In addition to directing the staff to complete this lessons learned, the Commission also directed the CRGR to conduct a self-evaluation of its endorsement of the draft final rule to identify any lessons learned or modifications that may be needed to its evaluation criteria.

The working group received feedback from the focus groups and interviews indicating that, despite agency efforts to improve guidance and provide training on backfitting, the staff still faced challenges in developing the documented evaluation and providing sufficient justification for invoking the adequate protection exception for the rule provisions. The review of the documented evaluation by the CRGR helped the staff in refining its bases and justification and in clarifying the potentially sensitive aspects of the staff's interpretation. As noted in the CRGR review following the discontinuation of this rulemaking,<sup>8</sup> the CRGR views on the adequacy of the staff's justification for invoking the adequate protection exception are important, and the CRGR is planning to enhance its review process to be more rigorous and robust.

Another perspective some shared was that several other rulemakings involving backfitting were still pending with the Commission when the staff was completing the MC&A draft final rule package. As a result, the staff did not have the benefit of recent Commission direction on similar questions. Subsequent Commission decisions on these related rules have since provided further insight for the staff on backfitting.

In addition, several efforts are underway or planned which should help improve the backfitting justification guidance and resources for staff. On May 29, 2019, in SRM-SECY-18-0049, "Management Directive and Handbook 8.4, 'Management of Backfitting, Issue Finality, and Information Collection,'" <sup>9</sup> the Commission approved revisions to MD 8.4, "Management of Backfitting, Issue Finality, and Information Collection" <sup>10</sup> and its companion Management Directive Handbook. <sup>11</sup> In July 2019, the Commission provided direction <sup>12</sup> to make changes to

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<sup>7</sup> Memorandum from Edwin M. Hackett, "Committee to Review Generic Requirements: Minutes of Meeting Number 456," (ADAMS Accession No. ML18233A519).

<sup>8</sup> Memorandum from Andrea D. Veil, "Response to the Staff Requirements – SECY-18-0104-Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096)," (ADAMS Accession No. ML19098B622).

<sup>9</sup> SRM-SECY-18-0049, "Management Directive and Handbook 8.4, 'Management of Backfitting, Issue Finality, and Information Collection,'" (ADAMS Accession No. ML19149A296).

<sup>10</sup> Enclosure to SRM-SECY-18-0049, "Enclosure 1 – Edit to Management Directive 8.4," (ADAMS Accession No. ML 19149A308).

<sup>11</sup> Enclosure to SRM-SECY-18-0049, "Enclosure 2 – Edits to Management Directive Handbook 8.4," (ADAMS Accession No. ML19149A313).

<sup>12</sup> SRM-SECY-18-0042, "Draft Final NUREG/BR-0058, Revision 5, 'Regulatory Analysis Guidance of the U.S. Nuclear Regulatory Commission,'" (ADAMS Accession No. ML19207A042).

NUREG/BR-0058, “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission”<sup>13</sup> to conform to MD 8.4 as approved in SRM-SECY-18-0049 and to resume work on revisions to agency internal procedures and guidance governing backfit provisions, including NUREG-1409, “Backfitting Guidelines.”<sup>14</sup> Staff is in the process of revising MD 8.4, NUREG/BR-0058, and NUREG-1409 in accordance with Commission direction. Related internal guidance, such as office or regional level procedures, will be updated to reference these revised documents. These updates will provide comprehensive backfitting and forward fitting guidance for the staff to use in the future.

Additionally, there is a Community of Practice that shares best practices and resources on backfitting and forward fitting across the agency. Two representatives from offices having backfitting and forward fitting responsibilities and each regional office have been identified as resources to help develop expertise and standardize the backfitting and forward fitting processes.

Finally, as previously noted, the planned improvements to its processes outlined in the CRGR self-evaluation report<sup>15</sup> should also be helpful to the staff in developing stronger justifications for adequate protection.

### Enhancement Opportunity 3:

The staff will continue to utilize the Community of Practice to share best practices and resources, develop expertise, and standardize the backfitting and forward fitting processes. The Community of Practice will allow staff to collaborate and communicate on the application of the agency’s backfitting and forward fitting provisions, promote consistency in implementing these provisions, and capture knowledge for future NRC staff.

## **6 OTHER INSIGHTS**

### **6.1 ORGANIZATIONAL DECISIONMAKING**

Based on its observations during the conduct of this case study, the working group is offering the following insights to support more effective organizational decisionmaking:

- The purpose of Commission papers is to aid the Commission in their decisionmaking on matters to support the NRC’s mission. Where applicable, staff may present more than one viable option for achieving that purpose. The working group noted that in certain cases, some individuals may have a strong preference for a recommended option and may feel challenged to provide analyses of non-preferred approaches that are robust as the analysis underpinning the preferred option. Additionally, the working group further identified that

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<sup>13</sup> NUREG/BR-0058, “Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission, Draft Report for Comment,” (ADAMS Accession No. ML17100A480).

<sup>14</sup> NUREG-1409, “Backfitting Guidelines,” (ADAMS Accession No. ML032230247).

<sup>15</sup> Memorandum from Andrea D. Veil, “Response to the Staff Requirements – SECY-18-0104-Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096),” (ADAMS Accession No. ML19098B622).

some staff may have considered Commission decisions that do not agree with the staff's recommendation to be a "loss." The working group acknowledges this perception does not reflect the proper function of Commission papers: the purpose of an "options" paper is to present the Commission with accurate, complete, and unbiased information, so it can make a well-informed decision. The working group noted that the EDO's "Strategy on a Page" provides clear expectations in this regard, and there are additional resources available to staff to facilitate effective preparation of Commission papers. In addition, the agency recently began using an internal document quality checklist which contains expectations for including discussion of all reasonable and appropriate options. Continued reinforcement of these expectations by agency management is important.

- The working group noted that following the Commission decision to discontinue this rulemaking, some staff were considering whether the technical basis for the rulemaking should have included more quantitative support, similar to the results of a probabilistic risk assessment that is performed for a safety analysis of a power reactor. However, quantitative analyses for many security or safeguards risks, such as theft or diversion of special nuclear material, are not fully realized for all types of facilities. Some efforts may be warranted within the agency to provide better understanding and alignment on expectations for risk assessments for security or safeguards requirements.
- The working group noted that more than 4 years elapsed between the public comment period for the MC&A proposed rule and the completion of the staff's comment resolution in conjunction with the rulemaking package. As such, the working group offers that the agency may want to consider providing additional comment opportunities for longer-term and/or dynamic activities, in order to obtain a full and diverse range of views.

## **6.2 CHANGE MANAGEMENT**

Based on its observations during the conduct of this case study, the working group is offering the following additional insights to support more effective management of changes during long-term efforts:

- Some specific staff concerns for this rulemaking were tied to the amount of time between the initial proposed action and the completion of the draft final rule. As previously noted, the scope of the rule revisions changed in response to specific Commission direction (i.e., the SRMs on the rulemaking options<sup>16</sup> and on the text of the proposed rule<sup>17</sup>). In addition, resource limitations led to pauses in activity between the last specific Commission direction in May 2013<sup>18</sup> and the completion of the draft final rule more than 5 years later. The working group noted that stops and restarts of the rulemaking process can be inefficient and set up the risk for potential misalignments among different parts of the organization in

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<sup>16</sup> SRM-SECY-08-0059, "Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material," (ADAMS No. ML080580307).

<sup>17</sup> SRM-COMSECY-12-0026, "Revisions to Proposed Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61)," (ADAMS No. ML13130A077).

<sup>18</sup> SRM-COMSECY-12-0026, "Revisions to Proposed Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61)," (ADAMS No. ML13130A077).

understanding of the issues, approaches, and solutions. The enhancement opportunities discussed under the organizational agility theme should help mitigate these situations.

- The working group noted one consequence related to the long timeframe for this rulemaking was the associated delay in updating or finalizing guidance documents for MC&A. In conjunction with the proposed rule that was published for comment in 2011, staff worked on developing associated guidance documents, including the solicitation of public comments on the guidance documents. Staff deferred updates or other revisions of the guidance documents in anticipation of a timely completion of a final rule. With the discontinuation of this rulemaking, actions to finalize these draft guidance documents are now on hold pending resource availability. One guidance document<sup>19</sup> developed for the proposed rule exists only in a draft form. This document addresses the acceptable standard format and content for the fundamental nuclear material control plan required by 10 CFR Part 74 for licensees possessing Category II quantities of special nuclear material. While no such facility is currently licensed, several potential applicants have inquired about guidance in this area. This outcome demonstrates the importance of identifying the full impact of course changes and developing mitigation strategies to address them. Increasing the use of ERM for management of long-term projects, as discussed under the organizational agility theme, could assist in this regard by identifying and more proactively mitigating project risks from potential changes in direction.
- The working group noted that some staff expressed frustration that the rule was ultimately discontinued, especially in light of the amount of time and effort they may have spent working on it. The working group also noted that some staff did not have a full and clear understanding of the basis of the outcome. The working group acknowledged that when there are significant shifts to longer-term projects, providing opportunities for individuals to express concerns and receive acknowledgement of their efforts can help ease the transition to the next steps.

### **6.3 PROGRESS ON RULEMAKING PROCESS IMPROVEMENTS**

The working group noted that the Division of Rulemaking (DRM), which serves as an agency Center of Expertise, recently began implementing several innovations to improve its rulemaking process. Examples include:

- Conducting a “rulemaking efficiency” project to improve the overall timeliness of the rulemaking process, while maintaining or improving the quality of the technical and policy content.
- Using the Common Prioritization of Rulemaking process to conduct a more robust, strategic review of all the agency’s planned rulemaking activities to identify if shifts in direction for specific efforts should be considered (e.g., discontinuation, alternatives to rulemaking, changes in prioritization). To facilitate this focus for the fiscal year (FY) 2021 – FY 2022

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<sup>19</sup> NUREG-2159, “Acceptable Standard Format and Content for the Material Control and Accounting (MC&A) Plan Required for Special Nuclear Material of Moderate Strategic Significance, Draft Report for Comment,” (ADAMS Accession No. ML13253A310).

cycle, DRM will provide more specific tools, guidance, and communications to guide a more in-depth evaluation. The DRM also plans to increase engagement with senior managers involved in the Common Prioritization of Rulemaking process to leverage their strategic planning experience.

- Reconsidering potential alternatives to rulemaking for some specific projects using more risk-informed decisionmaking perspectives.
- For certain rulemakings, engaging with the Commission to provide additional insights/emerging information and, where needed, seeking additional Commission direction based on changes in factors or circumstances that could influence the Commission's previous direction.
- Implementing efficiencies related to specific steps under agency control for certain rulemakings, such as streamlining the regulatory basis stage.
- Taking steps to help improve the planning for future rulemakings. In 2018, staff assessed the process for establishing rulemaking due dates and developed an updated schedule template, which can be adjusted on a case-by-case basis as needed.

Staff is in the process of communicating many of these efforts to the Commission in the late FY 2019/early FY 2020 timeframe. The results of this case study show strong support for continuing and fully implementing these improvements. The DRM should also consider how to more widely communicate early progress to sustain the momentum as well as further increase agencywide engagement.

## **ENCLOSURE 1 – CONSOLIDATED LISTING OF ENHANCEMENT OPPORTUNITIES**

### *Key Theme 1 – Organizational Agility*

#### *Organizational Agility Area 1 – More Structured and Coordinated Strategic Reviews*

##### *Enhancement Opportunity 1:*

The staff will consider evaluating and implementing improvements to the agency's approach for planning and monitoring long-term efforts, including, for example, Futures Assessment, Strategic Workforce Planning, and Strategic Alignment Meetings. The staff will also consider improvements to the coordination and integration of these processes to occur on a regular recurring basis (e.g., annual, biannual, etc.). The staff intends to address this enhancement as part of the agency's transformation effort, specifically under the initiatives to simplify and optimize the U.S. Nuclear Regulatory Commission's (NRC's) internal processes and to develop signposts and markers that will enable the NRC to more effectively plan its work. Implementation of improvements in these areas should allow the agency to better adapt to changes, more proactively identify and resolve issues, and enhance coordination and collaboration across organizational boundaries, thus leading to more effective and efficient agency operations.

#### *Organizational Agility Area 2 – Enhancing Methods for Staff's Communications and Interactions with the Commission*

##### *Enhancement Opportunity 2:*

As part of the agency's transformation effort, specifically under the initiative to simplify and optimize NRC internal processes, the staff will evaluate the current means of communication and interaction with the Commission to determine if improvements are needed to support staff in effectively engaging with the Commission in a dynamic environment. As part of that activity, the staff will also consider evaluating if there are ways to improve staff's understanding of expectations for when engaging the Commission is appropriate. Implementation of improvements in these areas should strengthen the staff's communications with the Commission and provide stronger support for the Commission in their decisionmaking process.

### *Key Theme 2 – More Complete NRC Staff Understanding in the Justification of Adequate Protection in Backfitting*

##### *Enhancement Opportunity 3:*

The staff will continue to utilize the Community of Practice to share best practices and resources, develop expertise, and standardize the backfitting and forward fitting processes. The Community of Practice will allow staff to collaborate and communicate on the application of the agency's backfitting and forward fitting provisions, promote consistent implementation, and capture knowledge for future NRC staff.

## ENCLOSURE 2 – CHRONOLOGY OF THE MC&A RULEMAKING EFFORT

The U.S. Nuclear Regulatory Commission (NRC) staff was directed by the Commission to discontinue the material control and accounting (MC&A) rulemaking activity and evaluate its history as a lessons learned/case study under the agency transformation initiative. This enclosure provides a more detailed discussion and chronology of the history of this rulemaking.

The NRC ensures licensees control and account for special nuclear material (SNM) through the MC&A provisions contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 74, “Material Control and Accounting of Special Nuclear Material,” and several sections of 10 CFR Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste.” The NRC developed 10 CFR Part 74 in 1985, in part, to separate the MC&A requirements in 10 CFR Part 70, “Domestic Licensing of Special Nuclear Material,” from safety requirements for licensees authorized to possess SNM under 10 CFR Part 70 (50 *Federal Register* (FR) 7579). Since that time, the NRC staff has worked to clarify, strengthen, and enhance the NRC’s MC&A requirements, and to consolidate the MC&A requirements for different types of licensees into 10 CFR Part 74.

Following the terrorist attacks of September 11, 2001, the NRC staff conducted a comprehensive review of the NRC’s safeguards and security programs, including MC&A requirements. Also, during 2001-2002, the Office of the Inspector General (OIG) conducted an audit to determine whether the NRC adequately ensures that licensees control and account for SNM. In its report, OIG-03-A-15, “Audit of NRC’s Regulatory Oversight of Special Nuclear Materials,” dated May 23, 2003, OIG recommended that the NRC document the basis used for risk informing its oversight of MC&A activities.<sup>20</sup>

In SECY-05-0143, “Proposed Changes to the Material Control and Accounting Program,” dated August 5, 2005 (non-publicly available), the staff recommended that the Commission consider revising the NRC’s MC&A regulations, since MC&A programs complement physical security programs in safeguarding nuclear materials against malevolent acts.<sup>21</sup> These proposed changes were based, in part, on: (1) the OIG’s recommendation in OIG-03-A-15; (2) an evaluation of the 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 subsequent staff requirements memorandum (SRM)-SECY-05-0143 dated November 18, 2005 (non-publicly available), the Commission directed the staff to evaluate the NRC’s MC&A regulations, identify issues and areas for regulatory improvement, work with internal and external stakeholders to develop a comprehensive agency approach to MC&A programs, and develop a rulemaking plan to update the NRC’s MC&A regulations for SNM.<sup>22</sup>

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<sup>20</sup> Office of Inspector General Report, OIG-03-A-15, “Audit of NRC’s Regulatory Oversight of Special Nuclear Materials,” (ADAMS Accession No. ML031550068).

<sup>21</sup> “Technical Basis for 10 CFR Part 74 Rulemaking Plan,” (ADAMS Accession No. ML072681003).

<sup>22</sup> SECY-08-0059, “Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material,” (ADAMS Accession No. ML080580307).

Accordingly, in SECY-08-0059, “Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material,” dated April 25, 2008, the staff provided six options for Commission consideration related to consolidating and strengthening the NRC's MC&A program<sup>23</sup>:

- Option 1 (the staff's recommended option) – Create a new SNM categorization table, add a new Diversion Path Analysis (DPA) requirement, revise and consolidate the current MC&A requirements in 10 CFR Part 74, and revise guidance documents.
- Option 2 – Only add a new SNM categorization table.
- Option 3 – Only add a DPA requirement.
- Option 4 – Revise and consolidate the current MC&A requirements in Part 74 and revise guidance documents.
- Option 5 – Only revise guidance documents.
- Option 6 – Take no action and maintain the status quo.

In the subsequent SRM-SECY-08-0059, dated February 5, 2009, the Commission directed the staff to proceed with Option 4 – rulemaking limited to revising and consolidating the current MC&A requirements in 10 CFR Part 74.<sup>24</sup>

On May 16, 2011, the staff published the preliminary proposed rule language for public comment in the *Federal Register* (76 FR 28193). The NRC received 13 comment submissions. Following consideration of the comments received, in SECY-11-0175, “Proposed Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61),” dated December 15, 2011, the staff submitted a proposed rule to the Commission.<sup>25</sup> The proposed changes included requirements related to a “two-person rule” to ensure that two qualified and authorized individuals would be present whenever certain tasks covered by the rule are performed. In SRM-SECY-11-0175, dated April 12, 2012, the Commission approved publication of the *Federal Register* notice (FRN) for the proposed rule, with specific changes, including seeking public comment specifically on the use of the “two-person rule.”<sup>26</sup>

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<sup>23</sup> SECY-08-0059, “Rulemaking Plan: Part 74 - Material Control and Accounting of Special Nuclear Material,” (ADAMS Accession No. ML080580307).

<sup>24</sup> SRM-SECY-08-0059, “Rulemaking Plan: Part 74 – Material Control and Accounting of Special Nuclear Material,” (ADAMS Accession No. ML090360473).

<sup>25</sup> SECY-11-0175, “Proposed Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61),” (ADAMS Accession No. ML113400219).

<sup>26</sup> SRM-SECY-11-0175, “Proposed Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61),” (ADAMS Accession No. ML121030104).

On October 18, 2012, prior to publication, the staff provided the revised FRN to the Commission. On November 6, 2012, a Commissioner requested that the Office of the Secretary of the Commission convert it to a COMSECY for Commission vote.<sup>27</sup>

In SRM-COMSECY-12-0026, dated May 10, 2013, the Commission disapproved publishing the proposed revisions to MC&A requirements and directed the staff to conduct a backfit analysis on the proposed “two-person rule” provision or, as an alternative approach, remove the provision from the rulemaking package and consider the issue in a future rulemaking effort.<sup>28</sup> The Commission also directed the staff to provide an adequate explanation in the FRN to support any conclusion that the proposed revisions or addition to the requirements in 10 CFR Part 74 do not impose backfits.

In following SRM-COMSECY-12-0026, the staff decided to remove the provision for the “two-person rule” in the revised proposed rule. The proposed rule stated that the staff maintained the position that backfitting did not apply to any of the proposed changes, as the NRC staff regarded MC&A requirements as constituting information collection and reporting. The staff provided the revised proposed rule<sup>29</sup> to the Commission for information prior to publication in accordance with SRM-COMSECY-12-0026. The Commission provided no further direction to the staff on the revised proposed rule, and on November 8, 2013, the staff published the revised proposed rule in the *Federal Register* (78 FR 67225) for a 100-day comment period. On December 30, 2013, the comment period was extended for an additional 20 days (78 FR 79328).

The staff held two public meetings in early 2014 during the comment period to discuss the proposed changes. The NRC received 27 comment submissions from members of the nuclear industry, Agreement State organizations, and private citizens that encompassed a variety of viewpoints. Several commenters requested that staff prepare a backfit analysis because provisions in the rule would require changes in facility operations. The staff held an additional public meeting in September 2014 to seek clarification on industry comments related to cost estimates for implementation, to further inform the staff’s regulatory analysis. A summary of the comments received, and detailed responses, are provided in the comment and response document.<sup>30</sup> At a subsequent public meeting on March 5, 2015, the staff shared preliminary information about modifications to the proposed rule language, as well as the staff’s various resource estimates for initial implementation of the draft final rule and annual operations thereafter.

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<sup>27</sup> COMSECY-12-0026, “Revisions to Proposed Rule: Amendments to Material Control and Accounting Regulations,” (ADAMS Accession No. ML12311A439).

<sup>28</sup> SRM-COMSECY-12-0026, “Revisions to Proposed Rule: Amendments to Material Control and Accounting Regulations,” (ADAMS Accession No. ML13130A077).

<sup>29</sup> ADM Package for SRM-COMSECY-12-0026, “Proposed Rule Amending 10 CFR Part 74,” (ADAMS Accession No. ML13228A184).

<sup>30</sup> “U.S Nuclear Regulatory Commission Staff Responses to Public Comments on Proposed Rule: ‘Amendments to Material Control and Accounting Regulations’ and Associated Draft Guidance 78 FR 67221 and 78 FR 6225 (November 8, 2013),” (ADAMS Accession No. ML18061A050).

Resource constraints and competing priorities led staff to suspend work on the rulemaking activity during fiscal year (FY) 2016. The staff resumed activities on the rulemaking in FY 2017, and the draft final rule package was completed in FY 2018. As part of the draft final rule package, the staff included a backfit evaluation for four provisions of the draft final rule, partly in response to public comments on the proposed rule.

On August 16, 2018, the staff briefed the Committee to Review Generic Requirements (CRGR) on the rulemaking package, with a focus on the staff's backfit evaluation. On August 30, 2018, the CRGR provided a memorandum to the Office of the Executive Director for Operations documenting its review and endorsement of the draft final rule and, in addition, the CRGR also stated that it recognized the final decision in the staff's adequate protection evaluation rests with the Commission.<sup>31</sup> The staff held a final public meeting on August 28, 2018, with licensees and other industry representatives to discuss the cumulative effects of regulation, potential challenges, and timeframes for implementing the revised requirements.

In SECY-18-0104, "Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096)," dated October 15, 2018, the NRC staff requested Commission approval to publish the final rule in the *Federal Register*.<sup>32</sup> Subsequently, in SRM-SECY-18-0104, dated April 3, 2019, the Commission disapproved the draft final rule and directed the staff to discontinue the rulemaking activity.<sup>33</sup> The Commission further directed that staff should evaluate the history of the MC&A rulemaking as a lessons learned/case study under the agency transformation initiative. The Commission also directed the CRGR to evaluate its endorsement of the draft final rule and provide a report on any lessons learned or modifications that may be needed to its evaluation criteria.

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<sup>31</sup> Memorandum from Edwin M. Hackett, "Committee to Review Generic Requirements: Minutes of Meeting Number 456," (ADAMS Accession No. ML18233A519).

<sup>32</sup> SECY-18-0104, "Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096)," (ADAMS Accession No. ML18061A056).

<sup>33</sup> SRM-SECY-18-0104, "Draft Final Rule: Amendments to Material Control and Accounting Regulations (RIN 3150-AI61; NRC-2009-0096)," (ADAMS Accession No. ML19093B393).

## ENCLOSURE 3 – MC&A CASE STUDY REFLECTION QUESTIONS FOR APPLICATION TO OTHER PROJECTS

The questions below can be used for self-reflection/group discussion to apply insights from this case study to the management of other projects:

- (1) What lessons learned from this case study can I/we apply to the management of my/our project?
- (2) What are applicable “signals” or “signposts” that I/we can monitor to help identify changes that may be needed in the course of my/our project?
- (3) What are some risks that may come up for my/our project?

*Note: In the context of this question, risk is defined by Management Directive 4.4,<sup>34</sup> as “an event or situation that, if it occurs, will negatively impact the NRC’s assets, activities, or operations.” For a list of examples of risk types, see Appendix A of “Playbook: Enterprise Risk Management for the U.S. Federal Government” (<https://cfo.gov/wp-content/uploads/2016/07/FINAL-ERM-Playbook.pdf>).*

How can I/we take steps to mitigate those risks?

- (4) What are some ways I/we can periodically review how the project is going (e.g., meeting its goals/objectives) and proactively identify any changes or adjustments needed?
- (5) What are some ways I/we can improve the effectiveness, efficiency, or agility of the management of my/our project?

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<sup>34</sup> MD 4.4, “Enterprise Risk Management and Internal Control,” (ADAMS Accession No. ML17312B109).

## **ENCLOSURE 4 – MC&A CASE STUDY TEAM**

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