October 16, 2014 SECY-14-0112

FOR: The Commissioners

FROM: Mark A. Satorius
Executive Director for Operations

SUBJECT: RECOMMENDATIONS FOR A PATH FORWARD FOR CHEMICAL SECURITY

PURPOSE:

This paper responds to the Staff Requirements Memorandum (SRM) on SECY-11-0108, "Regulation of Chemical Security," dated February 15, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML120470207). Also, the paper presents the Commission with options and a staff recommendation for monitoring chemical security at fuel cycle facilities (FCFs) regulated by the U.S. Nuclear Regulatory Commission (NRC) to ensure that adequate protection of chemicals of interest (COIs) in quantities of concern is maintained.

SUMMARY:

On August 5, 2011, staff submitted to the Commission SECY-11-0108 "Regulation of Chemical Security" (ADAMS Accession No. ML111400109), detailing the staff's initial review of security for COIs at NRC-licensed facilities. The staff recommended that the NRC undertake a rulemaking to address a regulatory gap resulting from a statutory exemption from the Department of Homeland Security's (DHS) Chemical Facility Anti-Terrorism Standard (CFATS) for NRC-licensed facilities. In the resulting SRM, dated February 15, 2012 (ADAMS Accession No. ML120470207), the Commission disapproved the staff's recommendation to undertake a rulemaking to establish chemical-security requirements for NRC-licensed facilities. Additionally, the Commission directed the staff to gather information from all FCFs to determine which

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facilities possess chemicals in quantities of interest stored outside existing security areas, the amounts and location of these chemicals, the current level of security for the chemicals, and any security enhancements proposed to be implemented. The staff has completed this data collection and analysis effort and found, for all sites, that there were no security gaps in the protection of chemicals from sabotage, theft or diversion. This was due to the facilities current business practice to store these chemicals in existing secure areas. As a result, the staff has developed five potential options for regulating/verifying chemical security at facilities subject to NRC and Agreement State regulations: (1) preserve the status quo by not imposing additional requirements; (2) impose additional security requirements on selected classes of licensees through Orders; (3) impose additional security requirements on selected classes of licensees through rulemaking; (4) maintain awareness of chemical inventories and the adequacy of site-specific security measures through an annual in-office review of chemical inventories and telephonic discussions with the licensees; and (5) conduct triennial site visits to maintain awareness of chemical inventories and the adequacy of security measures. The staff recommends Option 4 because it will ensure the continued security of COI at facilities regulated by the NRC and Agreement States while minimizing the resource burden on the NRC and licensees.

BACKGROUND:

In Section 550 of the U.S. Department of Homeland Security Appropriations Act for Fiscal Year (FY) 2007 (Public Law 109-295), Congress directed DHS to issue regulations to: (1) establish risk-based performance standards for the security of chemical facilities determined by the DHS Secretary to prevent high levels of security risk, and (2) require vulnerability assessments and the development and implementation of site security plans for chemical facilities. Section 550 provides that the regulations issued by DHS under that section shall not be applied "to any facility subject to regulation by the Nuclear Regulatory Commission." DHS implements this requirement by a proprietary assessment approach that results in rankings called tiers. Facilities placed in one of the first four tiers are considered to be progressively higher in risk with tier 1 considered to be the highest risk.

DHS has not interpreted the statutory language to exempt all facilities that are licensed by the NRC and Agreement States. Instead, in the Statement of Considerations accompanying the CFATS regulation, DHS made this statement in regard to certain facilities licensed under various parts of Title 10 of the *Code of Federal Regulations* (10 CFR):

> *[The Department]…will apply the statutory exemption [for facilities subject to NRC regulation] to facilities where NRC already imposes significant security requirements and regulates the safety and security of most of the facility, not just a few radioactive sources. For example, a power reactor holding a license under 10 CFR Part 50 ["Domestic Licensing of Production and Utilization Facilities"], a special nuclear material fuel cycle [facility] holding a license under 10 CFR Part 70 ["Domestic Licensing of Special Nuclear Material"], and facilities licensed under 10 CFR Parts 30 ["Rules of General Applicability to Domestic Licensing of Byproduct Material"] and 40 ["Domestic*

> *Licensing of Source Material"] that have received security orders requiring increased protection will all be exempt from 6 CFR Part 27 ["Chemical Facility Anti-Terrorism Standards"]. A facility that only possesses small radioactive sources for chemical process control equipment, gauges, and dials is not exempt. 72* Fed. Reg.*,17699* (April 9, 2007).

DHS promulgated a final rule specifying the list of COIs and the quantities of those chemicals that present concerns in the *Federal Register* (FR) at 72 FR 65396 (November 2007). During NRC staff discussions with DHS on implementation of the statute, DHS made clear that there would not be dual regulation at exempted facilities or portions of exempted facilities that are licensed by the NRC and Agreement States. The NRC or Agreement State would have the exclusive regulatory authority to ensure adequate security for chemicals possessed by licensees.

NRC/DHS Memorandum of Understanding (MOU)

The NRC and DHS worked together to reach agreement on which NRC or Agreement State regulated facilities are exempt from DHS chemical-security requirements. Exempted facilities are only subject to NRC or Agreement State requirements. Accordingly, the NRC and DHS entered into an MOU on March 31, 2011 (ADAMS Accession No. ML110940416), which specifies the classes of NRC and Agreement State-regulated facilities that are exempt from CFATS. The NRC staff informed the Commission of its intent to enter into the MOU and provided the Commission with the proposed text in SECY-11-0034, "Memorandum of Understanding Between the U.S. Nuclear Regulatory Commission and the U.S. Department of Homeland Security on Chemical Facility Anti-Terrorism Standards" (ADAMS Accession No. ML102720476).

Under the MOU, DHS and the NRC have agreed that the NRC will have sole responsibility for the security of all COIs at power reactors; Category I, II, and III fuel cycle facilities; uranium enrichment plants; and uranium conversion and deconversion facilities. At facilities where the NRC or an Agreement State regulates only a portion of the site, only that portion of the site regulated by the NRC or Agreement State would be exempt from DHS requirements. Categories of licensees for whom DHS may have a regulatory role, based on consultation between the two agencies, include non-power reactors and some radioactive materials licensees.

SECY-11-0108 and Resulting SRM

The staff submitted SECY-11-0108, "Regulation of Chemical Security," dated August 5, 2011 (ADAMS Accession No. ML111400109), which detailed the staff's initial review of security for COIs at NRC-licensed facilities. The staff recommended that the NRC undertake a rulemaking to address a potential regulatory gap in the area of chemical security at NRC and Agreement State facilities. In the resulting SRM, dated February 15, 2012 (ADAMS Accession No. ML120470207), the Commission disapproved the staff's recommendation to initiate rulemaking to establish independent chemical-security requirements. The Commission directed the staff to

gather additional information from all FCFs to determine which facilities possess chemicals of interest in quantities of concern stored outside existing security areas, the amounts and location of these chemicals, the current level of security, and any security enhancements proposed to be implemented. The SRM further stated that the staff should brief the Commission Technical Assistants after the information was gathered; conduct a workshop with licensees to identify what, if any, additional measures should be incorporated in security plans; maintain cognizance of DHS's program as it is implemented; determine the tiers into which the FCFs fall; and provide the Commission with a notation vote paper that describes the staff's evaluation of those measures necessary for constituting an adequate chemical-security framework at these facilities. The staff was also directed to propose any security enhancements for COIs that should be incorporated in site security plans.

DISCUSSION:

To address the requirements of the SRM, the staff maintained awareness of the DHS process, evaluated the COIs and related security measures at FCFs, determined the tiers for each FCF using the DHS process (see enclosure 2 tiering discussion), and interacted with stakeholders.

To better understand the DHS process, staff met with DHS on several occasions. In May 2012, staff met with the developers of the tiering algorithms used in the DHS evaluation process to better understand how chemical-security information was evaluated by DHS. During a meeting in February 2013, staff briefed DHS National Protection and Programs Directorate (NPPD) staff on certain personnel screening components of NRC's access-authorization program for nuclear power plants and discussed the potential for NPPD to adopt components of this program in the CFATS Personnel Security Program. In November 2013, DHS informed staff that they had completed the approval process for nearly 400 facilities subject to the CFATS rule and had commenced compliance inspections. DHS has also begun a process to verify exemptions to the CFATS rule. Finally, in response to Executive Order 13650, "Improving Chemical Security Safety and Security," DHS will be forming a working group to evaluate the CFATS COI list. Under that same Executive Order, the NRC is mentioned as an agency that DHS should consult. Additionally, staff attended the DHS annual conference for CFATS in 2011, 2012, and 2014.

The SRM also directed staff to obtain additional information from all FCFs on the types and locations of onsite chemicals and the security measures applied to these chemicals. Enclosure 1 provides a list of the FCFs and two reactors that were visited for this effort. Using site visits, staff reviewed the types and amounts of chemicals onsite, compared those values to the DHS COI list, and toured the sites to determine where chemicals were stored and to observe physical security features in place in those areas. Also, staff interviewed site personnel to develop an understanding of safety and administrative features that would support the security of chemicals in use at the site. Staff determined that, for all sites, there were no security gaps in the protection of chemicals from sabotage, theft, or diversion. The staff provided the Commission with a summary of its results and conclusions through a briefing of the Technical Assistants in February 2014.

Staff was further directed to use the DHS process to determine the tier of each FCF. In 2010, NRC tiered multiple facilities; none came out higher than Tier 2 (see enclosure 2). NRC staff determined FCF security features such as fencing, vehicle barriers, and access control exceeded DHS requirements. No information gathered from subsequent site visits changed this conclusion.

Throughout this review, the chemical-security assessment effort has been coordinated and discussed with relevant NRC offices and regions and licensed facility personnel. In addition, staff has presented updates on its efforts at the Nuclear Energy Institute (NEI) annual meeting in March of 2012 and 2014, at the Fuel Cycle Information Exchange in June 2012 and 2014, and at the Institute of Nuclear Material Management annual meeting in 2013 and 2014. As required by the SRM to SECY-11-0108, staff held a closed workshop with industry in Atlanta in March 2014.

The following options describe proposed approaches for ensuring that adequate protection of COIs is maintained.

OPTIONS:

Option 1 - Maintain Current Level of Security

The NRC could determine that no additional security requirements or additional actions are necessary to assure adequate protection of COIs at FCFs.

As noted previously in SECY-11-0108, all NRC-regulated facilities are required to comply with relevant safety and environmental regulations promulgated by both Federal and State agencies that pertain to the safe use, storage, and disposal of chemicals. For FCFs, NRC's current regulations address chemical-safety risks associated with licensed materials, facility conditions which affect the safety of licensed material, and hazardous chemicals produced from licensed material (see 10 CFR 70.64(a)(5)). The NRC does not have security requirements for chemicals subject to 10 CFR 70.64(a)(5). For onsite chemicals not within the purview of 10 CFR 70.64(a)(5), the NRC has not imposed safety or security requirements except for specific cases through orders (e.g., Part 40 licensees).

Option 1 - Pros

Under this option, no action would be taken. No additional regulatory burden would be imposed on licensees. Also no additional regulatory resources would be expended by the NRC.

Option 1 - Cons

Maintaining the status quo would result in no additional actions being taken for COIs at NRC-regulated facilities exempt from CFATS. As a result, there would be no mechanism to determine if security features currently associated with COIs were maintained.

Option 2 - Impose Additional Requirements on Selected Classes of Licensees through Issuance of an Order

The NRC could issue an Order to specific licensees to incorporate CFATS-type requirements in licensee developed security plans. Through issuance of an NRC order, licensees would be required to report planned site changes such as new chemicals, or changes in the location of stored chemicals. The NRC would then determine whether existing protection measures provide adequate security. If, after completion of site security evaluations, enhanced security measures are warranted, licensees would revise their security plans and submit them to the NRC for review and approval.

Option 2 - Pros

This option would provide a consistent approach between DHS and the NRC for the regulation of chemical security at NRC-regulated sites.

This option would ensure that all COIs at NRC facilities continue to be protected to a level similar to that stipulated in DHS CFATS.

Option 2 - Cons

Imposition of requirements by an Order may contribute to the current cumulative effect of regulations challenges as licensees integrate site-specific protective strategies, make changes to their site security plans, and address other NRC initiatives.

This approach would likely require using the DHS tiering methodology. Since the NRC has no role in the development or modification of the proprietary tools used to tier the facilities, this could result in regulatory instability and greater uncertainty if DHS were to change the tool or its regulatory approach.

Option 3 - Impose Additional Requirements on Selected Classes of Licensees through Rulemaking

If the rulemaking option is approved, the staff recommends a comprehensive approach including a full explanation of the expectations for monitoring and protecting COIs. Under the rulemaking option, the NRC would establish independent chemical-security requirements for CFATS-exempt NRC-licensed facilities. The regulatory approach to protecting COIs would be similar to that used to protect radioactive or other materials within NRC's jurisdiction. The NRC would then determine the appropriate level of security. Since COIs are currently being adequately protected, the rulemaking would impose controls that would be equivalent to the existing security controls in place by licensees.

During rulemaking, the staff would identify chemicals and quantity thresholds that would require an evaluation of the consequences resulting from a malicious act or other event that could result in chemical releases. The chemicals included would be those identified by DHS in Appendix A

to the CFATS regulations, as well as any additional chemicals the NRC and DHS might agree pose comparable risks and would be incorporated into Appendix A.
The staff would develop criteria, informed by DHS requirements, to determine the appropriate level of security and controls required for the given amount of chemicals present at the facility. Additionally, a reporting requirement, similar to DHS, for the addition of new chemicals and/or change to chemical storage locations would be proposed.

If the rulemaking option is adopted, the staff would propose to place chemical security requirements in 10 CFR Part 73, “Physical Protection of Plants and Materials.”

Option 3 - Pros

The required security measures will be based on the type and quantity of chemicals held and licensees would choose how to implement the measures. Therefore, addressing chemical-security requirements in the rulemaking process will result in a graded approach and a risk-informed, performance-based regulation that is consistent with NRC practice and policies.

This option would provide a consistent approach between DHS and the NRC for the regulation of chemical security at NRC-regulated sites.

This option would ensure that all COIs at NRC facilities continue to be protected to a level similar to that stipulated in DHS CFATS.

This approach could require licensees to protect COIs located outside the existing security area, when necessary.

This approach could also limit future security and regulatory gaps and maintain consistency with DHS regulations.

Option 3 - Cons

The Commission has previously considered and rejected this option.

The elements of the chemical-security program at selected licensees subject to the NRC chemical-security requirements could differ from those at comparable facilities subject to the DHS requirements because of different regulatory approaches. However, the NRC staff believes that the level of security would likely be comparable.

Additional resources above those already budgeted would be required to incorporate chemical security in the NRC regulatory framework. The resources needed might be difficult to justify because of the limited number of licensees that are likely to be affected.

Option 4 - Maintain Awareness of Chemical Inventories and the Adequacy of Security Measures

As previously noted, NRC-regulated facilities that are exempt from DHS regulation of chemical security already maintain adequate protection of COIs on their sites because of their co-location with secured nuclear materials. However, FCFs do occasionally change the manner in which they process licensed material and/or the structural layout of the facility. Both of these types of changes may impact the protection level afforded COIs. Additionally, the DHS regulation and the associated COIs listed in 6 CFR 27 are under review, which might result in a change in the type or quantity of chemicals that need to be protected. For these reasons, this option would provide for routinely monitoring chemical inventories and locations at FCFs. The continuance of monitoring chemical inventories at FCFs aligns with the information-gathering approach set forth by the Commission in the previous SRM (ADAMS Accession No. ML120470207).

This alternative would involve the development of a process to govern staff's annual review of quantities of chemicals possessed by FCF licensees. Such a review would be triggered by Office instructions calling for an annual review. In addition to this review, NRC staff would contact licensee staff to discuss the quantities and location of COIs and any plans to add or remove COIs. Based on this review, no action would be required if the chemical quantities are maintained below certain threshold levels or if chemicals are located within the security boundary at the site. Chemicals above threshold limits located outside the license's security boundary would result in additional review and additional engagement with the licensee on how to achieve adequate protection for those chemicals. Since there would be no traditional enforcement tools to require the licensee to implement adequate security measures, should the staff and licensee be unable to resolve the security issue, the staff would then need to consider further actions such as orders or rulemaking. The results of the annual review would be documented. Confirmatory visits may be conducted, as necessary.

Option 4 - Pros

This approach would accomplish several important measures while having minimal impact on licensees and the NRC. It would build on information already submitted to the NRC by licensees in compliance with current regulations. An annual review would assure a current knowledge of chemical quantities at FCFs and their location in relation to security features at the sites.

The review process would also acquire information about planned changes associated with COIs so the NRC could evaluate the adequacy of associated security measures ahead of site changes. This proactive aspect would also reduce the likelihood that FCF licensees would have to install or adjust security features after the fact.

Finally, such a process would make use of the latest changes to the COI list in the DHS regulations, reducing the likelihood of a regulatory gap between the agencies.

Option 4 - Cons

Option 4 would result in a slight increase in the workload for staff responsible for programmatic oversight. It is anticipated that this additional work in the Fuel Facilities Business Line could be conducted without a need for additional resources. However, there would be an initial increase in burden to develop office instructions and other guidance. This short-term burden will not result in a significant impact to the current resources for FY14 or FY15.

In the longer term, for COIs that exceed the thresholds and are stored outside the developed security features at a licensee site, resources would have to be expended to review licensee-proposed alternatives. Resources would also be needed for a limited number of confirmatory site visits each year.

Option 5 - Continue Chemical-Security Site Visits for Awareness of Chemical Inventories and the Adequacy of Security Measures

As stated above, NRC-regulated facilities that are exempt from DHS regulation of chemical security maintain adequate protection of COIs on their sites because the chemicals are co-located with secured nuclear materials. However, chemical inventories and locations at FCFs could change.

This alternative would involve a continuation of the process used during the recently completed site visits. Under this option, the Office of Nuclear Security and Incident Response (NSIR) staff, with the support of the Office of Nuclear Material Safety and Safeguards (NMSS) staff, would review licensee information and visit each site to maintain assurance that COIs were adequately protected. As in Option 4, chemicals above threshold limits located outside the licensee's security boundary would result in additional review and additional engagement with the licensee to resolve the security issue. Since there would be no traditional enforcement tools to require the licensee to implement adequate security measures, should the staff and licensee be unable to resolve the security issue, the staff would then need to consider further actions such as orders or rulemaking. Staff proposes that such visits be conducted on a triennial basis to minimize licensee burden and NRC costs.

Option 5 - Pros

This alternative would build on information already submitted by the licensee. It would provide assurance that existing chemicals were adequately protected through a process of site visits that would "walk down" the chemical storage locations and the physical security measures in their proximity. For some sites, something similar to a triennial frequency was used to complete the additional information-gathering requirements stipulated in the last SRM. This approach determined that existing FCF chemical security was adequate.

Option 5 - Cons

Since Option 5 would not involve an annual review of chemical inventories, any licensee changes completed between site visits may result in a backfit issue because licensees may need to reevaluate and install or adjust security features after the fact.

Such a process would also lag the latest changes to the COI list in the DHS regulations, increasing the likelihood of a regulatory gap between the agencies.

Additional resources would have to be allocated to perform site visits. Licensees would have to allocate resources to support NRC staff visits. In the event a backfitting issue arose, significant licensee resources may be required to install security for COIs.

RECOMMENDATION:

The staff recommends Option 4. This option provides a minimally burdensome approach to chemical security at FCFs and reduces the potential for security gaps for COIs. Using this approach, the NRC would use information already submitted by FCFs as a means to determine whether licensees have implemented adequate security controls for COIs.

The staff does not recommend adoption of Option 1 because regulatory gaps and potential gaps in protection can occur when relying on voluntarily action to identify and implement security for COIs. The staff also does not recommend Option 2 or 3. While these approaches would ultimately retain NRC regulatory authority and oversight, adoption of either could result in a lack of regulatory stability because orders and rulemaking could not be easily adapted to changes in CFATS regulations. Additionally, rulemaking and orders would require new resources not currently allocated for such purposes. Option 5 is not recommended because it increases the possibility that licensee changes might not be considered from a chemical-security perspective before the site changes are implemented. It might also result in the development of a regulatory gap with DHS changes if chemical-security reviews take place several years after those changes. Currently no resources are allocated for the site visits envisioned under Option 5.

Once the Commission makes a decision and provides the staff with direction on the approved path forward, the staff will develop the plan and schedule associated with the implementation of the Commission-approved option.

RESOURCES:

The resource implications associated with the staff's recommendations are addressed in Enclosure 3, which is non-public.

COORDINATION:

This paper has been coordinated with the Office of the General Counsel, which has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA Michael R. Johnson for/

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Enclosures:
1. List of Facilities Reviewed and Visited for Chemical Security
2. Tiering Discussion
3. Resources (OUO-SII)

List of Facilities Reviewed and Visited for Chemical Security

Facility Name	Location	Facility Type
AREVA NP, Inc.	Richland, WA	Uranium Fuel Fabrication
Brunswick	Wilmington, NC	Commercial Power Reactor (Boiling-Water Reactor)
B&W Nuclear Operations Group	Lynchburg, VA	Uranium Fuel Fabrication
General Electric - Vallecitos	Sunol, CA	Non-Power Reactor and Spent Fuel Research and Storage
Global Nuclear Fuel-Americas, LLC	Wilmington, NC	Uranium Fuel Fabrication
Honeywell International, Inc.	Metropolis, IL	Uranium Hexafluoride Production (Conversion)
International Isotopes Fluoride Products, Inc.*	Lea County, NM	Uranium Deconversion
Louisiana Energy Services	Eunice, NM	Gas Centrifuge Uranium Enrichment
Nuclear Fuel Services	Erwin, TN	Uranium Fuel Fabrication
Oconee	Greenville, SC	Commercial Power Reactor (Pressurized-Water Reactor)
SHINE Medical Technologies, Inc.*	Janesville, WI	Medical Isotope Production
U.S. Enrichment Corporation	Piketon, OH	Gas Centrifuge Uranium Enrichment
Westinghouse Electric Company, LLC	Columbia, SC	Uranium Fuel Fabrication

* Office discussion with applicants for a license

Tiering Discussion

Under the Chemical Facility Anti-Terrorism Standard (CFATS) regulation, facilities that possess any of the 322 chemicals of interest (COIs) at levels at, or above, the screening threshold quantity must first complete a questionnaire called a "Top-Screen." The U.S. Department of Homeland Security (DHS) then uses the data in the Top-Screen submittals to determine if a submitting facility is covered under the CFATS requirement. If a determination is made that a facility is covered by CFATS, the facility must submit additional information referred to as a "security vulnerability assessment." Using a proprietary assessment approach, DHS develops scores or rankings called tiers. Facilities placed in one of the first four tiers are considered to be progressively higher in risk. Tier 1 facilities represent the highest risk under CFATS requirements.

In 2010, U.S. Nuclear Regulatory Commission (NRC) staff working with DHS staff developed a set of six hypothetical facilities, including their chemical inventories, that were entered in the automated Top-Screen online tool to determine their initial tiering. These hypothetical facilities were based on actual NRC fuel cycle facilities (FCFs) and were selected to represent their class of facility. The submissions used information for the facilities at their actual locations. The same facilities were also evaluated as if they were located in higher population centers (or as if populations had migrated to the areas around the facilities). In addition, submissions were made for these facilities with slightly more chemicals than were observed during the site visits to understand how sensitive the tiering might be to future increase in chemical inventories.

As a result of that exercise, it was determined that the driving force for CFATS tiering was population density. Given that there have not been any population changes in the range of orders of magnitude, there was no need to re-evaluate the tiering from 2010. At that time, all but one facility tiered to Tier 3 or less. One facility tiered at Tier 2 for theft of one chemical.

Currently, all FCFs store and use COIs within their security footprint. NRC security regulations for nuclear material at FCFs exceed DHS requirements for COIs. Given the DHS-approved security measures for Tier 2 and 3 facilities, it is clear that all COIs at NRC-regulated fuel cycle facilities are adequately protected, having at least comparable protection to that required under CFATS.