U.S. Nuclear Regulatory Commission Actions to Address Priority Open U.S. Government Accountability Office Recommendations

Addressing the Security of Radiological Sources

The U.S. Government Accountability Office (GAO) identified seven open priority recommendations for the U.S. Nuclear Regulatory Commission (NRC) from four reports that addressed the security of category 3 sources (GAO-16-330), security measures for radioactive materials that could be dispersed through a radiological dispersal device (GAO-19-468), verification of licenses for category 3 materials (GAO-22-103441), and security of sources no longer in use (GAO-24-105998).

In the report GAO-16-330, "Nuclear Security: NRC Has Enhanced the Controls of Dangerous Radioactive Materials, but Vulnerabilities Remain," GAO recommended that the NRC:

- 1) Take the steps needed to include category 3 sources in the National Source Tracking System [NSTS] and add Agreement State category 3 licenses to the Web-Based Licensing [WBL] System as quickly as reasonably possible.
- 2) At least until such time as category 3 licenses can be verified using the License Verification System, require that transferors of category 3 quantities of radioactive materials confirm the validity of a would-be purchaser's radioactive material license with the appropriate regulatory authority before transferring any category 3 quantities of licensed material.

On the same topic in the report GAO-22-103441, "Preventing a Dirty Bomb: Vulnerabilities Persist in NRC's Controls for Purchases of High-Risk Radioactive Materials," GAO recommended that:

- 1) The Chairman of the NRC should immediately require that vendors verify category 3 licenses with the appropriate regulatory authority.
- 2) The Chairman of the NRC should add security features to its licensing process to improve its integrity and make it less vulnerable to altering or forging licenses. These security features could include multifactor authentication or moving away from paper licenses to electronic-based licensing.

The Commission approved the NRC staff's recommendation not to amend the regulations to include category 3 sources in the National Source Tracking System or to impose security requirements to prevent aggregation of category 3 sources to a category 2 quantity of radioactive material.

The Commission directed the staff to develop a proposed rule, SECY-22-0112, "Proposed Rule: Radioactive Source Security and Accountability" that examined other potential enhancements related to source security and provided it to the Commission for consideration; the Commission did not approve the proposed rule.

The regulations in 10 CFR Parts 30, 40, and 70 currently require, before the transfer of byproduct materials, that the licensee transferring the material verify that the transferee's license authorizes the receipt of the type, form, and quantity of byproduct material to be transferred. To ensure the validity of an unknown applicant for a license, NRC and Agreement

State regulators implement a pre-licensing checklist during site visits for all unknown entities to provide a basis for confidence that a new applicant (i.e., an entity that has never had a license or is unknown) requesting a specific license, or a licensee requesting transfer of control to a new applicant, will store and use radioactive materials at locations as specified on the license. Agreement States may elect to use the WBL system, as the NRC has made it available for Agreement State use; however, adoption of WBL is not mandatory, and Agreement States may use their own systems. There are currently 13 Agreement States that have elected to use WBL as their primary licensing system.

The NRC staff continues to engage licensees and the Agreement States on the issues identified by this GAO report. In July 2022, the NRC staff issued a communication to its manufacturer and distributor licensees and Agreement State regulators to ensure that they are aware of the issues identified by GAO and remind them of ways to identify fraudulent licenses. The NRC staff also reminded licensees that under current requirements they can contact the regulator (either the NRC or the Agreement State, as appropriate) to verify that a license holder can receive radioactive material under the terms of its license. In addition, the NRC staff contacted industry trade associations for source producers to discuss the GAO recommendations and encouraged the trade associations to proactively engage their member companies. The NRC staff will continue to engage with relevant stakeholders on their responses to NRC communications and the findings of this GAO audit.

Currently, the NRC staff is exploring implementation of security features for radioactive materials documents that may also be considered for implementation for all categories of NRC licenses. The NRC staff has completed an evaluation of the advantages and disadvantages of security features such as two-factor authentication, non-fungible tokens, data tokens, and QR codes. Tokenization and QR codes demonstrated the most promise of security improvement with reasonable implementation cost. A path towards adoption of tokenization and QR code security features is being developed and will be tested for integration into radioactive materials documents by the end of FY 2025.

In the report GAO-19-468, "Combating Nuclear Terrorism: NRC Needs to Take Additional Actions to Ensure the Security of High-Risk Radioactive Material," GAO recommended that the NRC:

- 1) Consider socioeconomic consequences and fatalities from evacuations in the criteria for determining what security measures should be required for radioactive materials that could be used in a radiological dispersal device (RDD).
- 2) Require additional security measures for high-risk quantities of certain category 3 radioactive material and assess whether other category 3 materials should also be safeguarded with additional security measures.

The NRC acknowledges GAO's recommendation regarding considerations for socioeconomic consequences and fatalities from evacuations in the criteria for determining what security measures should be required for radioactive materials that could be used in an RDD. The agency maintains that the current regulatory requirements provide for the safe and secure use of radioactive materials for each category (see Summary of NRC Actions – Response to GAO Reports (Enclosure), <u>ML20052D885</u>). Moreover, the NRC's established policy on the security of radioactive materials continues to be based on potential health effects, not socioeconomic impacts.

The NRC continues to encourage GAO to consider the conclusions of the Radiation Source Protection and Security Task Force (Task Force), which is comprised of independent experts from 14 Federal agencies and one State organization. Task Force reports represent the coordinated Federal consensus on source security in the United States. The Task Force has determined both the isotopes and activity thresholds appropriate for enhanced security and concluded that "current measures for the security and control of radioactive sources are appropriately protective of risksignificant quantities of radioactive material." Further, the Task Force found that "there are no significant gaps in the area of radioactive source protection and security that are not already being addressed." The NRC will continue to participate in efforts both to educate the public on appropriate responses to emergency situations and to maintain capabilities to mitigate adverse consequences of the misuse of radioactive materials.

The NRC also acknowledges GAO's recommendation for additional security measures, for certain category 3 radioactive materials (see Enclosure -Response to GAO 2023 Priority Recommendations, ML23143A336). However, the agency respectfully disagrees and maintains that the current regulatory requirements provide for the safe and secure use of radioactive materials, regardless of the category of material.

In the report GAO-24-105998, "High-Risk Radioactive Material: Opportunities Exist to Improve the Security Sources No Longer in Use," GAO recommended that the Chair of NRC, in coordination with the Department of Energy (DOE), and in consultation with other relevant stakeholders, should conduct an analysis to evaluate options and take action to facilitate long-term storage, within agency authorities, to better secure foreign-origin americium-241 until a permanent disposal or viable recycling option is available.

Current regulations and oversight programs facilitate the long-term safe storage by licensees of sources awaiting a disposal pathway. NRC regulations do not distinguish between foreign- and domestic-origin americium-241. Long term, safe storage by licensees of sources awaiting a disposal pathway is facilitated by current NRC regulations and oversight programs. The NRC will continue to participate in interagency activities to further a disposition solution for foreign-origin americium-241. DOE/National Nuclear Security Administration (NNSA), rather than the NRC, is primarily responsible for managing high level radioactive waste, while the NRC regulates the storage and disposal of this waste when it is subject to long-term storage, and issues licenses for facilities that store this waste.

The NRC staff will continue to communicate with DOE/NNSA staff during NNSA's evaluation of storage, disposal, or viable recycling recovery options for foreign-origin americium-241 under NNSA's Off-Site Source Recovery Program. The NRC and DOE/NNSA staff previously collaborated on a common position statement regarding disposal of foreign-origin americium-241. The NRC is prepared to license (if appropriate) any facility that DOE/NNSA determines is a viable option to store foreign-origin americium-241.

The DOE, as a member of the Task Force on Radiation Source Protection and Security, has been discussing options for disposition of foreign-origin americium-241 under activities pursuant to Recommendation 5 from the 2010 Task Force report. The recommendation is still considered open by the Task Force, which provides a vehicle to regularly update the Administration and Congress on this item.

Improving the Reliability of Cost Estimates

In the report GAO-15-98, "Nuclear Regulatory Commission: NRC Needs to Improve Its Cost Estimates by Incorporating More Best Practices," GAO stated that the NRC should align its cost estimating procedures with relevant best practices identified in the GAO Cost Estimating and Assessment Guide (GAO Cost Guide).

In Executive Order 14192, "Unleashing Prosperity Through Deregulation" the President directed the Office of Management and Budget (OMB) to revoke OMB Circular No. A-4 of November 9, 2023 and reinstate the prior version of Circular A-4, issued on September 17, 2003. The NRC's approach to regulatory analysis is documented in NUREG/BR-0058 "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," and is consistent with the 2003 OMB Circular A-4. The NRC continues to look to opportunities to improve its cost-benefit analyses, in line with the Administration's direction.

Improving Risk-Informed Decision Making

In the report GAO-24-106326, "Nuclear Power Plants: NRC Should Take Actions to Fully Consider the Potential Effects of Climate Change," GAO recommended that the NRC should develop and finalize guidance on incorporating climate projections data into relevant processes, including what sources of climate projections data to use and when and how to use climate projections data.

The NRC's Process for the Ongoing Assessment of Natural Hazards Information functions as a framework for the NRC staff to systematically monitor and assess new and updated natural hazards information to determine the safety significance of the new information. Under this process, NRC staff contracted support from Pacific Northwest National Laboratories for the review of the Fifth National Climate Assessment (NCA5) and supporting technical literature. In September 2024, the NRC staff also began a survey of existing regulatory guides to determine which should be reviewed for potential updates related to extreme weather. Further, the NRC staff will revisit its approach to considering climate projections data as part of its review of recent Executive Orders and guidance related to this topic. This review will leverage NRC's well-established program for the development and maintenance of guidance. The NRC staff's NCA5 review will also support a determination of whether specific new guidance related to use of climate projections is warranted. Due to funding constraints, the NRC does not currently have a timeline for completion of this work.