OFFICE OF THE INSPECTOR GENERAL

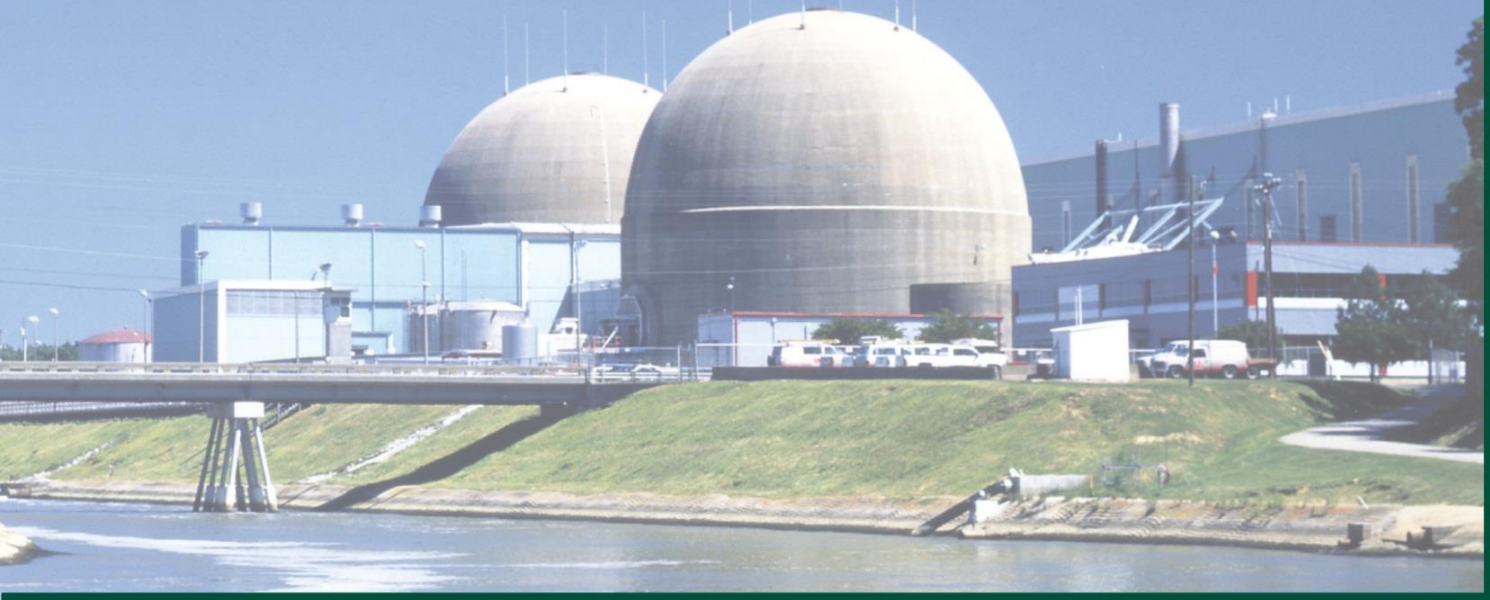
U.S. NUCLEAR REGULATORY COMMISSION

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Audit of COVID-19's Impact on Nuclear Materials and Waste Oversight

OIG-21-A-15

September 23, 2021



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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

OFFICE OF THE
INSPECTOR GENERAL

September 23, 2021

MEMORANDUM TO: Margaret Doane
Executive Director for Operations

FROM: Eric Rivera ***/RA/***
Acting Assistant Inspector General for Audit

SUBJECT: AUDIT OF COVID-19'S IMPACT ON NUCLEAR MATERIALS AND WASTE OVERSIGHT (OIG-21-A-15)

Attached is the Office of the Inspector General's (OIG) audit report titled *Audit of COVID-19's Impact on Nuclear Materials and Waste Oversight*.

The report presents the results of the subject audit. Following the September 15, 2021, exit conference, agency staff indicated that they had no formal comments for inclusion in this report.

Please provide information on actions taken or planned on each of the recommendation(s) within 30 days of the date of this memorandum. Actions taken or planned are subject to OIG follow-up as stated in Management Directive 6.1.

We appreciate the cooperation extended to us by members of your staff during the audit. If you have any questions or comments about our report, please contact me at (301) 415-5915, or Mike Blair, Team Leader, at (301) 415-8399.

Attachment: As stated

Office of the Inspector General

U.S. Nuclear Regulatory Commission
Defense Nuclear Facilities Safety Board

OIG-21-A-15
September 23, 2021

Results in Brief

Why We Did This Review

The Nuclear Regulatory Commission (NRC) is responsible for protecting the health and safety of the public and the environment by licensing and regulating the civilian uses of radioactive materials.

Federal guidance requires agencies to develop implementation plans to address pandemic situations. According to a 2005 presidential memorandum, National Strategy for Pandemic Influenza, agencies should develop implementation plans to include all components of the U.S. government and to address the full range of consequences of a pandemic.

The audit objective was to assess and evaluate the NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic.

Audit of COVID-19's Impact on Nuclear Materials and Waste Oversight

What We Found

The NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic have generally been effective in helping the NRC accomplish its mission; however, opportunities exist for strengthening the process during prolonged work disruptions. Specifically, the NRC should:

- Improve guidance to address radioactive materials and waste inspections during prolonged work disruptions; and,
- Improve the recordation of radioactive materials and waste inspection data.

What We Recommend

The OIG made 5 recommendations to strengthen the agency's approach to conducting its mission during prolonged work disruptions.

The NRC did not provide formal comments to this report.

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ABBREVIATIONS AND ACRONYMS

COOP	Continuity of Operations
COVID-19	Coronavirus Disease 2019
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	Nuclear Regulatory Commission
OIG	Office of the Inspector General
WBL	Web-Based Licensing

I. BACKGROUND

The U.S. Department of Health and Human Services declared a public health emergency for the United States on January 31, 2020, to aid the healthcare community in its response to Coronavirus Disease 2019 (COVID-19). The World Health Organization characterized the COVID-19 outbreak as a pandemic on March 11, 2020.

Response to the COVID-19 Pandemic

The U.S. Nuclear Regulatory Commission (NRC) regulates the nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety. The NRC's regulatory responsibilities include licensing activities and inspections programs of nuclear materials and waste. As the COVID-19 pandemic unfolded, the NRC responded by issuing a series of memoranda to address the changing environment brought about by COVID-19. For example, in March 2020, the NRC issued a memorandum implementing maximum use of telework to safeguard NRC employees' health and safety, followed by another memorandum making telework mandatory in March 2020.[1] In addition to implementing maximum use of telework, the NRC requested its employees to social distance, wear masks, and limit work-related travel.

[1] As of August 26, 2021, the NRC remained under maximum telework and flexibilities.

Regulatory Exemptions

The Office of Nuclear Material Safety and Safeguards (NMSS) issued a memorandum on April 7, 2020,[2] that provided guidance on how the agency's radioactive materials and waste licensees[3] could obtain temporary exemptions from regulatory requirements, amendments to license conditions or technical specifications, and aspects of enforcement.

Materials and Waste Oversight

The NMSS is responsible for materials and waste oversight policies and programs. NRC Regions I, II, III, and IV are responsible for the implementation of both licensing and inspections activities.

Licensing Activities. Licensing activities are primarily carried out by the license review branches within the Division of Radiological Safety and Security, and the Division of Nuclear Materials Safety in Regions I, III and IV. License applications and other license-related submissions are sent electronically to the agency for staff review.

Inspections. The Division of Radiological Safety and Security and the Division of Nuclear Materials Safety are also responsible for materials and waste inspections, which are conducted by inspection branches located in Regions I, III and IV.

[2] This memorandum provides guidance on resident office coverage at Category I fuel facilities during maximum teleworking for COVID-19.

[3] The NRC's materials licensees include those licensed to use, possess, and store byproduct material. In addition, uranium recovery, decommissioning, fuel cycle, and spent fuel storage facilities comprise materials and waste licensees.

Agency Lessons Learned Efforts

In 2020, the NMSS began a lessons learned program to assess the impact of the COVID-19 pandemic on materials and waste oversight. During this effort, the NMSS evaluated the feedback received from staff and management responsible for implementing the oversight in the Nuclear Materials and Waste Safety Programs. The program's ultimate objective is to provide recommendations on potential enhancements to inspection programs based on what has been experienced and learned during COVID-19. By considering these recommendations, the NRC hopes to effectively implement the oversight programs and position the agency for success in future situations of prolonged work disruptions.[4]

II. OBJECTIVE

The objective of this audit was to assess and evaluate the NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic.

The report appendix contains information on the audit scope and methodology.

[4] For the purposes of this audit, "prolonged work disruptions" means an extended period of time that might occur during periods of pandemics, natural disasters, or other emergencies.

III. FINDINGS

The NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic have generally been effective in helping the NRC accomplish its mission; however, opportunities exist for strengthening the process during prolonged work disruptions. Specifically, the NRC should:

- Improve guidance to address radioactive materials and waste inspections during prolonged work disruptions; and,

- Improve the recordation of radioactive materials and waste inspection data.

Despite challenges with implementing the materials inspection programs in a virtual environment, the NRC completed most 2020 materials and waste inspections and provided reasonable assurance of adequate protection of public health and safety.

A. Agency Guidance Needs Improvement

The NRC did not have adequate, sufficient, and timely guidance to address radioactive materials and waste inspections during prolonged work disruptions. Federal guidance requires agencies to develop implementation plans to manage pandemic situations. This occurred because existing inspection guidance at the start of the COVID-19 pandemic did not focus on oversight during prolonged work disruptions. As a result, regions improvised their materials and waste inspection processes before formal guidance was eventually issued.

What Is Required

Implementation Plans to Address Pandemic Situations

Federal guidance requires agencies to develop implementation plans to address pandemic situations. According to a 2005 presidential memorandum, *National Strategy for Pandemic Influenza,*[5] agencies should develop implementation plans to include all components of the U.S. government and to address the full range of consequences of a pandemic. In addition, agencies should develop and exercise preparedness and response plans that consider the potential impact of a pandemic on the federal workforce, and are configured to support state, local and private sector efforts, as appropriate.

What We Found

Agency Guidance Needs Improvement

The NRC did not have guidance in place to address materials and waste inspections during prolonged work disruptions. Once the COVID-19 restrictions were announced in March 2020, the NMSS put a hold on materials and waste inspections for a few weeks. According to agency management and staff, this pause in inspections did not have a significant impact on the public's health and safety.

Meanwhile, when it became clear that the pandemic would last longer than a few weeks with continued travel restrictions, management decided

[5] *National Strategy for Pandemic Influenza*, Homeland Security Council, November 2005.

the staff should implement different inspection programs remotely. In some cases, management decided inspections would be completed using a combination of remote and onsite inspections. During most of 2020, inspectors were primarily conducting virtual or hybrid inspections.[6] During remote sessions, licensees used their cellular phones to provide the samples requested by inspectors. In addition, inspectors leveraged a variety of available information technology tools to gather information needed during remote inspections.

Although the remote inspections demonstrated reasonable assurance of adequate protection for the public, the change represented a shift from performance-based[7] inspections to compliance-based[8] inspections. This shift changed the inspection focus to an increased emphasis on documentation reviews as during virtual inspections in 2020, inspectors were unable to observe the licensee's performance onsite.

Inspections/Remote Inspection Guidance

The NMSS issued oversight-related guidance in June 2020.[9] In the interim, regional staff had to make their own decisions regarding how to implement remote inspections. Regional staff and management had to develop their own guidance on how to conduct virtual inspections. This guidance was not formally documented.

[6] "Hybrid" inspections are inspections that are performed part onsite and part remotely.

[7] NRC performance-based inspections focus on licensee activities that most significantly affect safety.

[8] NRC compliance-based inspections focus on licensees meeting the applicable regulatory requirements.

[10] In its June 2020 memorandum, the NMSS directed responsible offices to perform inspections remotely, as hybrid inspections, or leave them uncompleted in 2020.

According to regional staff, the NMSS had to develop new guidance to address the pandemic. Staff told the OIG that the new agency guidance did not sufficiently address the needed details for performing inspections in a virtual environment. Despite the impediments experienced during the pandemic, most inspections were scheduled and completed in their assigned timeframe.[10]

Why This Occurred

Inspection Guidance Does Not Cover Prolonged Work Disruptions

Existing inspection guidance at the start of the COVID-19 pandemic did not focus on oversight during prolonged work disruptions. Management Directive 6.2, *Continuity of Operations (COOP),* and its related procedures address pandemics at a high level but do not specifically focus on oversight. Instead, they focus on how the agency should implement continuity of operations in situations where there is significant absenteeism due to staff illness.

Once the COVID-19 pandemic emerged, the NRC response was focused more on preventive measures to limit the spread of the disease and did not address implementation of materials and waste inspection programs. For example, Inspection Manual Chapter 2600, Appendix E, *Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases*, was issued on January 1, 2021. Among other things, this Appendix states, "Upon formal declaration that

[10] Inspection Manual Chapters 2600, 2602, and 2800 provide inspection scheduling flexibilities such as rescheduling inspections outside of their scheduled frequency.

the agency is in a pandemic activation, inspection activities should be implemented in accordance with the Agency Pandemic Plan."

However, the Agency Pandemic Plan, COOP 429, states, "As absenteeism grows above 60 percent…NRC expects to activate the COOP Plan." As of April 29, 2021, NMSS and regional offices have had a small number of staff affected by the COVID-19 pandemic, and the NRC did not meet the criteria for the COOP Plan to be activated.

Why This Is Important

Better Oversight Needed During Prolonged Work Disruptions

Adequate guidance will mitigate potential inconsistent implementation of virtual inspections and will reduce the impact on the inspection schedule, which will help accomplish the NRC's mission during emergency situations such as the COVID-19 pandemic.

Management Directive 9.26, *Organization and Functions, Office of Nuclear Material Safety and Safeguards*, requires the NMSS to take actions to ensure technical adequacy and program consistency nationwide. However, until the agency guidance for situations such as the COVID-19 pandemic is finalized, staff could be inconsistently implementing materials and waste virtual inspections across the regions.

Due to the lack of guidance on how to proceed, staff had to personally identify what could or could not be performed remotely, which created staff confusion. For example, two managers said their regional inspectors had to develop processes and procedures for conducting remote inspections.

Additionally, another senior inspector stated that NMSS guidance was insufficient and regional staff had to coordinate and develop inspection plans with other regional inspectors.

Inspection program guidance provides for a window where inspections that otherwise would have been scheduled to be performed in 2020, were scheduled to be performed in 2021. An experienced staff member expressed concerns that changes to the inspection schedule will result in inspectors having to do inspections back-to-back—2 years' worth of inspections in 1 year.

Recent and Ongoing Actions

The NMSS issued updated guidance in February and April 2021, based on the lessons learned in 2020. Additionally, NMSS management stated they are in the process of revising Inspection Manual Chapters and Inspection Procedures to provide guidance on how remote inspections should be performed. The NMSS is also holding townhall meetings with NRC's material and waste inspectors, as well as public meetings and other means of communication to identify staff and licensees' feedback.

Recommendation

The OIG recommends that the Executive Director for Operations:

1. Revise NRC materials and waste inspection guidance to include instructions on how to respond to prolonged work disruptions, including those that result in required maximum telework or a lack of access to inspection sites.

B. Web-Based Licensing Data is Not Tracked Consistently Across Regions

The NRC could not easily retrieve complete materials and waste inspection data pertinent to COVID-19. Agencies should have policies and procedures in place to ensure the availability of relevant data from reliable sources. This occurred because the NRC has not clearly communicated that Web-Based Licensing (WBL)[11] is the official system to manage materials and waste inspection data, nor has it provided guidance on how to record data consistently. Consequently, the agency may make decisions based on WBL inspections data that is incomplete and inaccurate.

What Is Required

Availability of Relevant Data from Reliable Sources

According to the U.S. Government Accountability Office's *Standards for Internal Control in the Federal Government,* agencies should have policies and procedures in place to ensure the availability of relevant data from reliable sources. In addition, management should be able to obtain such data in a timely manner, and the data should be reasonably free from errors and biases. Lastly, the ability for management to obtain this data on a timely basis allows for effective monitoring.

Further, the NRC's *WBL Data Entry Guideline: Guidelines for the Standardization and Consistency of Data Entry in WBL*, May 2016*,* states

[11] The WBL system is a materials licensing system that supports the NRC and Agreement States in managing the licensing information of businesses that use radioactive materials. WBL was deployed in August 2012.

that WBL is the agency database system to manage the NRC Materials and Licensing and Inspection Program. As such, it is important that the data elements entered in the system are accurate and consistent.

What We Found

Information Related to Materials and Waste Inspections Is Not Easily Retrievable

Request for COVID-19 Inspection Data

The NRC could not easily retrieve complete materials and waste inspection data pertinent to COVID-19. Due to the COVID-19 pandemic travel restrictions, staff performed onsite materials and waste inspections remotely, or in a hybrid manner. To assess and evaluate the NRC's nuclear materials and waste oversight processes during the pandemic, the OIG requested information from the NMSS to identify the onsite, remote, or hybrid inspections conducted in 2020. In addition, the OIG requested detailed data regarding inspections conducted between 2018 through 2021[12] to determine if the number of overdue inspections increased in 2020 compared to 2018 and 2019. In response, the NMSS informed the OIG that the requested data is not easily retrievable and would require at least 2 months to assemble. Moreover, regional staff informed the OIG that unless inspectors indicated which inspection was conducted remotely or as a hybrid inspection, this information could only be found by manually reviewing each inspection report.[13]

[12] The OIG's data request was for 2018 through the first quarter of 2021.

[13] Inspectors write reports detailing the inspection results.

Inconsistencies in Recording WBL Inspections Data

The NRC's Regions I, III, and IV use WBL[14] to record materials and waste inspections data; however, they are performing this task inconsistently. For example, the regions are not consistently capturing what type of inspections were conducted during COVID-19. While the NMSS added a way to capture remote inspections in WBL, a mechanism to designate the inspections performed as "hybrid" was not created. In addition, the regions are not consistently capturing key inspection dates into WBL. While staff from one region enter the exit conference date with the licensees' as the inspection completion date, other regional staff indicated that they use the last day of inspection work as the completion date.

Why This Occurred

Unclear Designation of Data Management System and Better Guidance for Data Recordation Needed

The NRC has not clearly communicated that WBL is the official system to manage materials and waste inspection data. Management and staff are informally aware they should use WBL as the system to manage materials and waste inspections data. However, the OIG had to search for documentation to confirm that WBL is the official system and could not locate this formal designation. Subsequently, the OIG contacted the WBL program manager and the various regions to inquire about agency

[14] Unlike Regions I, III, and IV, Region II implements inspection programs at nuclear power plants and fuel fabrication facilities. Therefore, Region II staff do not use WBL like the other three regions, but rather a system that supports commercial nuclear power plants and fuel fabrication facilities.

guidance directing the use of WBL to record inspections data; yet, no one could identify such guidance.

Additionally, there is no clear guidance or mechanisms for recording inspections data in WBL. For example, some inspections were conducted as hybrid during COVID-19. However, the NRC has not added a feature for recording such inspection data into WBL. Additionally, while there is a WBL user guide, it does not provide specific instructions on how to navigate the system. Features such as how to use the remote inspections feature, and which inspection dates should be entered in the system, should be covered in agency guidance. The capability to identify and record remote inspections was added to WBL during COVID-19, but the user guide does not indicate when this feature should be used. Staff from one region indicated that they use this feature when any part of the inspection is performed remotely, while staff from another region said that they select remote inspections to indicate only a fully remote inspection.

Why This Is Important

Better Information Leads to Improved Decision-Making

Without policies and procedures in place to ensure the availability of relevant data from reliable sources, the NRC cannot be assured materials and waste inspection information shared between headquarters and the regions is accurate, nor can it soundly determine trends for decision-making. For example, without guidance or mechanisms for denoting hybrid inspections in WBL, inspection decisions made for situations such as COVID-19 may be based on incomplete and inaccurate data. Inconsistent data entry will continue to occur, and duplication of effort

could happen should future events such as COVID-19 require a return to hybrid or remote inspections.

Additionally, without guidance on how to record data consistently into WBL, inspection life cycles calculated based on system data entry cannot be assured as accurate. This could result in delays in identifying inspection life cycles during events such as COVID-19.

While by definition WBL is the agency database system to manage NRC materials and waste licensing and inspection programs, NMSS should formally designate WBL as the official materials and waste licensing and inspection data management system. When the NRC formally communicates that WBL is the official system to manage materials and waste inspection date and provides guidance on how to record data consistently, NRC management will be better positioned to ensure decisions made are based on timely, accurate, and complete data.

Recommendations

The OIG recommends that the Executive Director for Operations:

2. Formally designate WBL as the official system to manage materials and waste inspections data;

3. Provide guidance on how to record data consistently in WBL, including specific information on how and when to populate inspection-related information fields;

4. Review and reconfigure WBL to include mechanisms for recording complete inspections data; and,

5. Update and implement training for NRC staff to consistently employ the mechanisms developed by the NRC to record the inspections data in WBL.

IV. CONSOLIDATED LIST OF RECOMMENDATIONS

The OIG recommends that the Executive Director for Operations:

1. Revise NRC materials and waste inspection guidance to include instructions on how to respond to prolonged work disruptions, including those that result in required maximum telework or a lack of access to inspection sites;

2. Formally designate WBL as the official system to manage materials and waste inspections data;

3. Provide guidance on how to record data consistently in WBL, including specific information on how and when to populate inspection-related information fields;

4. Review and reconfigure WBL to include mechanisms for recording complete inspections data; and,

5. Update and implement training for NRC staff to consistently employ the mechanisms developed by the NRC to record the inspections data in WBL.

V. AGENCY COMMENTS

An exit conference was held with the agency on September 15, 2021. After reviewing a discussion draft, agency management provided comments that have been incorporated into this report, as appropriate. As a result, agency management opted not to provide formal comments for inclusion in this report.

Appendix A

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The audit objective was to access and evaluate the NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic.

Scope

The audit focused on the NRC's nuclear materials and waste oversight processes during the COVID-19 pandemic. The OIG conducted this performance audit from March to September 2021 via teleconferences with staff from NRC headquarters (Rockville, MD), Region I (King of Prussia, PA), Region II (Atlanta, GA), Region III (Lisle, IL), and Region IV (Arlington, TX), and with the Nuclear Energy Institute (Washington, DC).

Internal controls related to the audit objectives were reviewed and analyzed. Specifically, the OIG reviewed the control environment components, risk assessment, control activities, information and communications, and monitoring. Within those components, the OIG reviewed the principles of establishing structure, responsibility, and authority; identifying, analyzing, and responding to risks; designing control activities; communicating quality information internally; and establishing and operating monitoring activities to monitor the internal control system.

Methodology

To accomplish the audit objective, the OIG reviewed relevant federal laws, regulations, and guidance including:

- Government Accountability Office *Standards for Internal Control in the Federal Government*, 2014;
- *National Strategy for Pandemic Influenza*, 2005;
- Office of Management and Budget, M-20-13, Memorandum for The Heads of Departments and Agencies: *Updated Guidance on Telework Flexibilities in Response to Coronavirus*, 2020;
- Management Directive (MD) 6.2, *Continuity of Operations Program*, 2020;
- Management Directive (MD) 9.26, *Organization and Functions*, NMSS, 2021;
- Memorandum from the Office of Nuclear Material Safety and Safeguards, *Inspection Guidance During Transition from Covid-19 Mandatory Telework for the Nuclear Materials and Waste Safety Programs*, 2020;
- Memorandum from the Office of Nuclear Material and Waste Safety and Safeguards, *Actions Required to Maintain the Effectiveness of Office of Nuclear Material Safety Inspections Programs*, 2021;
- NRC Inspection Manual, Inspection Manual Chapter 2600, *Fuel Cycle Facility Operational Safety and Safeguards Inspection Program*, 2021;
- NRC Inspection Manual, Inspection Manual Chapter 2800, *Materials Inspection Program*, 2020; and,
- WBL Web-Based Licensing, *WBL Data Entry Guideline, Guidelines for the Standardization and Consistency of Data Entry in WBL*, 2016.

The OIG conducted approximately 41 interviews with NRC staff and management to understand the roles and responsibilities related to materials and waste oversight processes during the COVID-19 pandemic and coordination among offices that have the responsibility of leading

these regulatory efforts. Auditors interviewed staff from the Office of Nuclear Material Safety and Safeguards and its divisions, including the Division of Fuel Management, the Division of Material Safety, Security, State, and Tribal Programs, and the Division of Decommissioning, Uranium Recovery and Waste Program.

In addition to interviews, the OIG communicated via email with NRC staff and management to obtain data related to the materials and waste inspection programs during 2018 and 2019, and the COVID-19 timeframe. The OIG analyzed this data to determine whether the number of overdue inspections during 2020 increased from 2018 through 2019. The OIG also spoke with the Nuclear Energy Institute to obtain the industry perspective on the NRC's oversight of nuclear materials and waste during COVID-19.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Throughout the audit, auditors considered the possibility of fraud, waste, and abuse in the program.

The audit was conducted by: Mike Blair, Team Leader; Tim Wilson, Audit Manager; Roxana Hartsock, Senior Auditor; Jennifer Cheung, Senior Management Analyst, Connor McCune, Senior Management Analyst; and John Thorp, Senior Technical Advisor.

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COMMENTS AND SUGGESTIONS

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