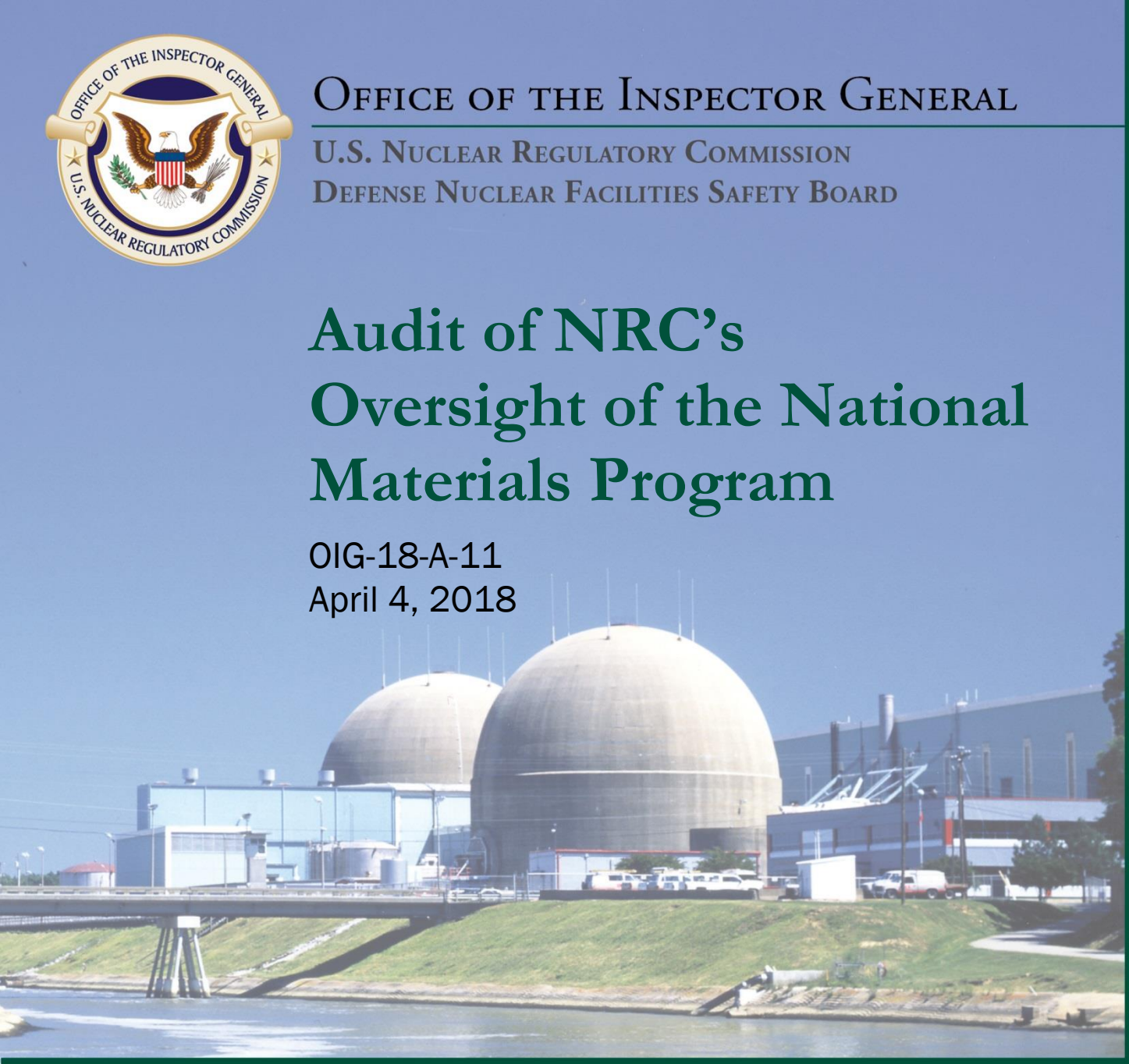
OFFICE OF THE INSPECTOR GENERAL

U.S. NUCLEAR REGULATORY COMMISSION
DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Audit of NRC's Oversight of the National Materials Program

OIG-18-A-11
April 4, 2018



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

OFFICE OF THE
INSPECTOR GENERAL

April 4, 2018

MEMORANDUM TO: Victor M. McCree
Executive Director for Operations

FROM: Dr. Brett M. Baker ***/RA/***
Assistant Inspector General for Audits

SUBJECT: AUDIT OF NRC'S OVERSIGHT OF THE NATIONAL MATERIALS PROGRAM (OIG-18-A-11)

Attached is the Office of the Inspector General's (OIG) audit report titled *Audit of NRC's Oversight of the National Materials Program*.

The report presents the results of the subject audit. Following the March 26, 2018, 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 recommendations within 30 days of the date of this memorandum. Actions taken or planned are subject to OIG followup 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 Sherri Miotla, Team Leader, at (301) 415-5914.

Attachment: As stated

Office of the Inspector General

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

OIG-18-A-11
April 4, 2018

Results in Brief

Why We Did This Review

The National Materials Program is a term that has been used for many years "to describe the broad collective effort within which both the Nuclear Regulatory Commission (NRC) and the Agreement States function in carrying out their respective regulatory programs for agreement material."

The National Materials Program covers activities separately carried out by NRC and the individual Agreement State programs as well as shared program activities between NRC and Agreement States.

The National Materials Program concept evolved as the number of Agreement States grew, but to this day, the Program remains a term without a formal structure.

The audit objective was to determine if the National Materials Program is an effective and efficient framework for carrying out NRC and Agreement State radiation safety regulatory programs.

Audit of NRC's Oversight of the National Materials Program

What We Found

OIG found that the National Materials Program provides a framework for carrying out NRC and Agreement State radiation safety regulatory programs; however, opportunities for improvement exist with regard to effectiveness. Specifically, NRC should improve its documentation and communication of the program framework.

The National Materials Program framework is not well understood by stakeholders. In order for a program to be effective at accomplishing its mission, stakeholders should share a common understanding of a program. However, the National Materials Program framework is not well documented or communicated and lacks a champion. As a result, Agreement States are not satisfied with the level of influence they have on the Program.

What We Recommend

This report makes two recommendations to improve the effectiveness of NRC's oversight of the National Materials Program through improving documentation and communication of the Program framework.

Agency management stated their general agreement with the finding and recommendations in this report.

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ABBREVIATIONS AND ACRONYMS

AEA	Atomic Energy Act of 1954, as amended
CRCPD	Conference of Radiation Control Program Directors, Inc.
FSME	Office of Federal and State Materials and Environmental Management Programs
IMPEP	Integrated Materials Performance Evaluation Program
MSST	Division of Materials Safety, Security, State, and Tribal Programs
MSTR	Division of Material Safety, State, Tribal, and Rulemaking Programs
NMSS	Office of Nuclear Material Safety and Safeguards
NRC	Nuclear Regulatory Commission
OAS	Organization of Agreement States
OIG	Office of the Inspector General
PMI	Project Management Institute
RSAO	Regional State Agreement Officer
U.S.	United States

I. BACKGROUND

Regulation of Radioactive Materials

The United States (U.S.) Nuclear Regulatory Commission (NRC) is the Federal agency responsible for protecting the health and safety of the public and the environment by licensing and regulating the civilian uses of radioactive materials. Because of their potentially hazardous properties, the use of certain radioactive materials must be closely regulated. NRC is responsible for licensing and regulating the use of source material,[1] special nuclear material,[2] and byproduct material[3]. Of the approximately 19,300 active source, byproduct, and special nuclear materials licenses in place in the United States, about 15 percent are administered by NRC, while the rest are administered by Agreement States.

Agreement States

Under certain conditions, as allowed in the *Atomic Energy Act of 1954*, as amended (AEA), NRC enters into agreements with State governors. Those agreements authorize individual States to regulate the use of specific radioactive materials within their borders. This includes radioisotopes used in medicine and industry. States that meet these conditions and agree to regulate materials using the same or compatible standards as NRC are called Agreement States. Agreement States also regulate some sources of radiation that the NRC does not and vice versa. For example, Agreement States regulate radiation-producing machines, such as X-ray machines (both medical and industrial) and particle accelerators, as well as the radioisotopes that they produce. However, Agreement States do not regulate nuclear reactors, fuel fabrication facilities, large quantities of certain special nuclear materials, and storage

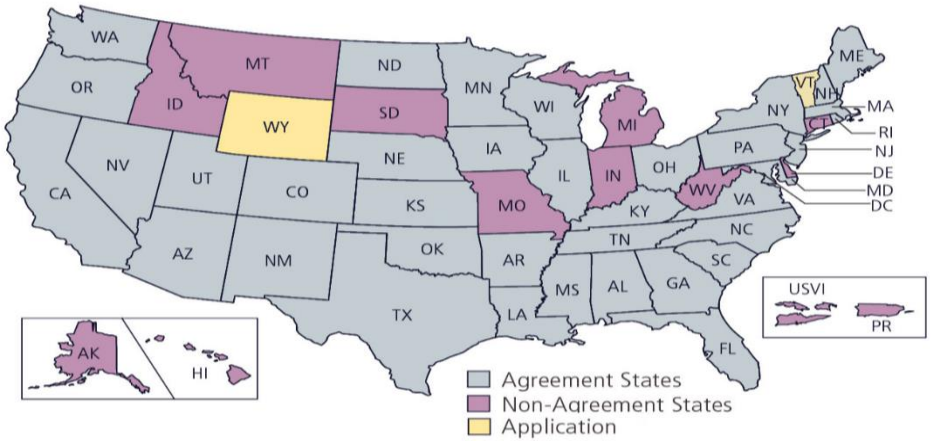
[1] Source material (uranium and thorium). For more details on source material, see Appendix A.

[2] Special nuclear material (enriched uranium and plutonium). For more details on special nuclear material, see Appendix A.

[3] Byproduct material (material that is made radioactive in a reactor and residue from the milling of uranium and thorium). For more details on byproduct material, see Appendix A.

of high-level radioactive waste. Currently, there are 37 Agreement States[4] that have regulatory authority over radioactive materials licensees. (See Figure 1).

Figure 1: Agreement States



Source: NRC.

NRC retains a regulatory leadership and oversight role through the Integrated Materials Performance Evaluation Program (IMPEP). In particular, IMPEP was developed to ensure uniform nationwide regulation by reviewing the regulatory performance of both NRC and Agreement States using a common set of performance criteria. Under Section 274 of the AEA, NRC has programmatic responsibility to periodically review the actions of the Agreement States to comply with the requirements of the AEA and to continue to maintain adequate and compatible programs. While this authority is reserved for NRC, the current IMPEP review process is conducted with State staff participation under the National Materials Program. NRC Management Directive 5.6, "Integrated Materials Performance Evaluation Program (IMPEP)," provides guidance on IMPEP reviews. Furthermore, Management Directive 5.9, *Adequacy and Compatibility of Program Elements for Agreement State Programs*, describes the criteria and process used to determine the compatibility of health and safety components of NRC program elements that an Agreement State should adopt for an adequate and compatible program.

[4] In addition to the 37 Agreement States, two states have submitted applications to NRC. The State of Wyoming has requested a limited agreement for the authority to regulate source material involved in uranium or thorium recovery or milling facilities and byproduct material. The State of Vermont has requested a standard agreement for the authority to regulate byproduct, source, and special nuclear material of a certain quantity.

National Materials Program

The National Materials Program is a term that has been used for many years "to describe the broad collective effort within which both the NRC and the Agreement States function in carrying out their respective regulatory programs for agreement material." The scope of the program covers AEA materials, which are currently regulated by both NRC and Agreement States. For more details on the types of materials covered under the National Materials Program, see Appendix A.

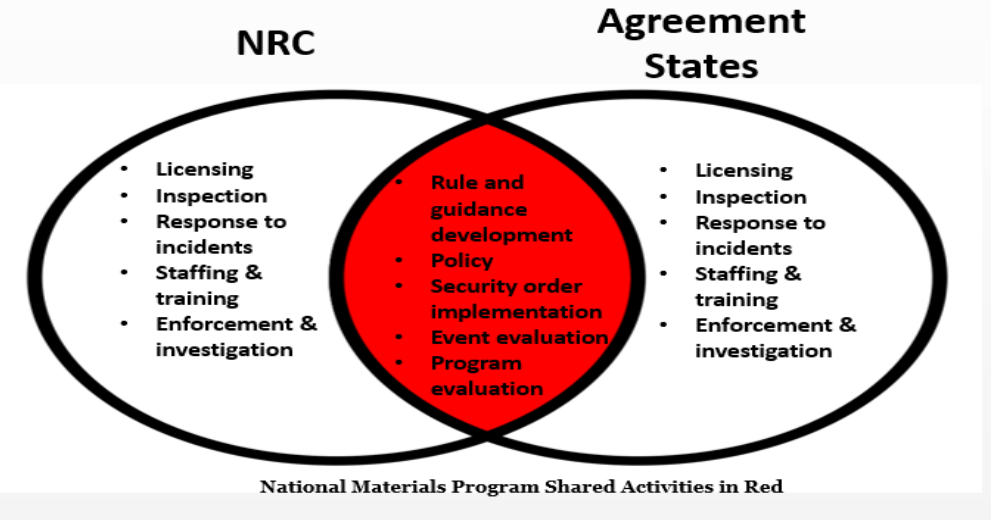
History of the National Materials Program

The National Materials Program concept evolved as the number of Agreement States grew from the first Agreement State, Kentucky, over 50 years ago. NRC's attention on the National Materials Program increased in the 1990s as NRC realized that it was regulating fewer materials licensees and the Agreement States were regulating more. NRC and the Agreement States began several initiatives in an attempt to formalize the National Materials Program, but to this day, the Program remains a term without a formal structure. For more details on the history of the National Materials Program, see Appendix B.

National Materials Program Activities

According to NRC's National Materials Program Web site, the National Materials Program covers activities separately carried out by NRC and the individual Agreement State programs, such as licensing, inspection, response to incidents, staffing and training, and enforcement and investigation. While NRC and each Agreement State have their own procedures and guidance for administering these programs, Agreement State programs must be adequate and compatible with NRC's health and safety regulations and program elements. The National Materials Program also has shared program activities between NRC and Agreement States, such as rule and guidance development, event evaluation for generic implication and issues, implementation of orders to enhance security of radioactive materials, and program evaluation. (See Figure 2).

Figure 2: National Materials Program Activities



Source: OIG generated.

Involved Organizations

The Office of Nuclear Material Safety and Safeguards (NMSS), specifically, the Division of Materials Safety, Security, State, and Tribal Programs (MSST), is responsible for the National Materials Program's implementation, guidance, coordination, policy development, and training. NMSS also cooperates with Agreement States' regulatory programs by providing technical support and maintaining databases of regulatory information. To facilitate cooperation, NRC's regional offices[5] have designated staff, known as Regional State Agreement Officers (RSAOs), who serve as the primary points-of-contact with Agreement States.

The framework of the National Materials Program also includes the Organization of Agreement States (OAS). OAS is a nonprofit, voluntary, scientific and professional society incorporated in the District of Columbia. The membership of OAS consists of state radiation control directors and staff from the 37 Agreement States who are responsible for implementation of their respective Agreement State programs. OAS provides a forum for Agreement States to work with each other and with NRC on regulatory issues, including centralized communication on radiation protection matters between NRC and Agreement States. OAS hosts an annual meeting to discuss specific issues related to the regulation of radioactive materials.

[5] Regions I, III, and IV only.

II. OBJECTIVE

The audit objective was to determine if the National Materials Program is an effective and efficient framework for carrying out NRC and Agreement State radiation safety regulatory programs. See Appendix C for information on the audit scope and methodology.

III. FINDING

The National Materials Program provides a framework for carrying out NRC and Agreement State radiation safety regulatory programs; however, opportunities for improvement exist with regard to effectiveness. Specifically, NRC should improve its documentation and communication of the Program framework.

A. The National Materials Program Framework is Not Well Understood

The National Materials Program framework is not well understood by stakeholders. In order for a program to be effective at accomplishing its mission, stakeholders should share a common understanding of a program. However, the National Materials Program framework is not well documented or communicated and lacks a champion. As a result, Agreement States are not satisfied with the level of influence they have on the Program.

What Is Required

Stakeholders Should Share a Common Understanding of a Program's Mission

The U.S. Government Accountability Office's *Standards for Internal Control in the Federal Government* states that effective information and communication are vital for an entity to achieve its objectives.

According to the Project Management Institute, it is crucial that stakeholders share a common understanding of a program's mission and its architecture to accomplish the mission. A shared vision requires a shared understanding of the program among all stakeholders.

Project Management Institute

The Pennsylvania based Project Management Institute (PMI) is an international organization advancing the professional field of project management. It sets standards, through certified education and development, and conducts research and professional conferencing. PMI is considered the world leader in project management advocacy and professional development.

What We Found

The National Materials Program Framework is Not Well Understood

NRC and Agreement States have programs in place to protect public health, safety, and security in the oversight of nuclear materials. However, stakeholders do not have a consistent understanding of National Materials Program membership, members' roles and responsibilities, and the activities covered under the Program.

Inconsistent Understanding Among Stakeholders

Although the National Materials Program conceptually connects the oversight of nuclear materials in the United States, stakeholders do not have a consistent understanding of some of the Program's tenets including membership, members' roles and responsibilities, and the activities covered under the Program.

NRC and Agreement State personnel have varying understandings of what organizations are part of the National Materials Program. For example, NRC staff and Agreement State staff provided varying responses regarding whether non-Agreement States, Federal partners (such as the Air Force, Navy, and Department of Veterans Affairs), and the Conference of Radiation Control Program Directors, Inc., (CRCPD)[6] are part of the National Materials Program. Furthermore, CRCPD's leadership gave conflicting information regarding whether CRCPD is part of the National Materials Program. Information on NRC's National Materials Program Web site also leads to confusion regarding whether CRCPD is part of the National Materials Program. Specifically, the Web site includes an "Introduction" document from 2009 that cites CRCPD as a coordinating organization. Yet, in 2012, NRC's Office of the General Counsel made a determination that CRCPD can no longer participate in National Materials Program working groups due to the applicability of the *Federal Advisory Committee Act of 1972*.[7] This interpretation of the *Federal Advisory Committee Act of 1972* significantly affected CRCPD's ability to actively participate in and be involved with the National Materials Program.

NRC and Agreement State personnel also have an inconsistent understanding of National Materials Program members' roles and responsibilities. NRC staff have varied levels of understanding of who is responsible for the National Materials Program and what those responsibilities are. Some NRC staff were also unaware of OAS' and CRCPD's roles and responsibilities. NRC staff opined that it would be beneficial for the National Materials Program to have documented roles and responsibilities. Moreover, Agreement State personnel expressed that having defined roles and responsibilities would be helpful in providing a clearer and more beneficial relationship between NRC and the Agreement States.

[6] CRCPD is a nonprofit, non-governmental, professional organization dedicated to radiation protection. Its primary membership is made up of radiation professionals in State and local government that regulate the use of radiation sources; moreover, anyone with an interest in radiation protection is eligible to join. CRCPD's primary goal is to assure that radiation exposure to individuals is kept to the lowest practical level, while not restricting its beneficial uses.

[7] *The Federal Advisory Committee Act of 1972* imposes a variety of requirements and restrictions on groups "established" or "utilized" by a Federal agency that provide group advice or recommendations to the agency.

NRC and Agreement State personnel are unclear as to what activities are covered under the National Materials Program. Nevertheless, NRC's RSAOs are available to help Agreement State personnel when they need more information.

Regional State Agreement Officers

The RSAOs serve an important liaison role between NRC and the Agreement States. RSAOs play a key role in facilitating effective and consistent communication between NRC and the Agreement States under the National Materials Program. Staff and managers in the regional offices and Agreement State personnel are complimentary of the RSAOs and the work they do. However, the position descriptions for the RSAOs are inconsistent among the three Regions (I, III, and IV). The variation in position descriptions among the Regions could lead to differences in expectations for the RSAOs from Region to Region.

Inconsistency of Addressing the National Materials Program at Annual OAS/CRCPD Commission Briefings

OIG analyzed transcripts from the annual Commission briefings with OAS and CRCPD since 1996 and found that participants have not been consistently addressing the National Materials Program over the years. The Annual OAS/CRCPD Commission briefing provides an opportunity for the OAS Executive Board and the CRCPD Chairperson to inform the Commission of radioactive materials policy and regulatory issues of mutual interest. This annual briefing originated from an annual letter presented to the Commission, following the OAS annual meeting, discussing areas of concern or mutual interest between the Commission and OAS. This annual briefing has replaced the annual OAS/CRCPD Commission letter. Based on an analysis of transcripts from these briefings, the focus on the National Materials Program increased in the early 2000s, but decreased in the period between 2009 and 2014. In the last 3 years, from 2015 through 2017, there has been increased attention on the National Materials Program. (See Table 1) These changes appear to depend on who the NRC Chairman was and the subject matter of the briefings.

Table 1: Commission Meetings with OAS/CRCPD

Year	Attendees	"National Materials Program" mentioned?
1996	OAS	No
1997	No Meeting	Not Applicable
1998	No Meeting	Not Applicable
1999	OAS/CRCPD	Yes*
2000	OAS/CRCPD	Yes
2001	OAS/CRCPD	Yes
2002	OAS/CRCPD	Yes
2003	OAS/CRCPD	Yes
2004	OAS/CRCPD	Yes
2005	OAS/CRCPD	Yes
2006	OAS/CRCPD	Yes
2007	OAS/CRCPD	No
2008	OAS/CRCPD	Yes
2009	OAS/CRCPD	No
2010	OAS/CRCPD	No
2011	No Meeting	Not Applicable
2012	OAS/CRCPD	No
2013	OAS/CRCPD	No
2014	OAS/CRCPD	No
2015	OAS/CRCPD	Yes
2016	OAS/CRCPD	Yes
2017	OAS/CRCPD	Yes
*In the 1999 transcript, the National Materials Program was referred to as the "Materials Program."		

Source: OIG analysis of Commission transcripts.

OIG found that over the past 22 years, the Commission met with OAS and CRCPD 18 times, and the Commission met with OAS only 1 time. OIG found that the National Materials Program was not mentioned 37 percent of the time. When the National Materials Program was mentioned, meeting participants discussed the growing number of Agreement States, the National Materials Program working group, Agreement States' participation in prioritizing policy and Agreement State training.

Frequent Management Turnover

NRC managers in positions that affect the National Materials Program change frequently. OIG recognizes that NRC reassigns senior managers for developmental and operational purposes; however, when these changes happen frequently, it affects the ability of stakeholders to understand the National Materials Program.

Based on an analysis of NRC documents and data provided by the Office of the Chief Human Capital Officer, OIG found in an approximate 10 year period, there have been 8 different managers who held the NMSS/MSST Division Director position.[8] Table 2 shows the number of managers who held various management positions which affected the National Materials Program.

Table 2: Management Turnover Analysis (October 2007 – January 2018)

Position	Number of People Who Held the Position
NMSS or FSME Director	5
NMSS or FSME Deputy Director	6
NMSS/MSST or NMSS/MSTR or FSME/DMSSA Division Director	8
NMSS/MSST or NMSS/MSTR or FSME/DMSSA Deputy Division Director	6
Agreement State Program Branch (ASPB) Branch Chief	3

Source: OIG analysis of NRC documents and Office of the Chief Human Capital Officer data.

[8] The Office of Federal and State Materials and Environmental Management Programs (FSME) was in charge of the materials program during the period between 2006 through 2014. After this period, NRC went through a reorganization where FSME merged with NMSS, and NMSS gained control of the materials program. Therefore, between 2006 and 2017, the Division of Material Safety, State, Tribal, and Rulemaking Programs (NMSS/MSTR) Division Director position was called FSME/ Division of Materials Safety and State Agreements Division Director. In 2018, the division changed its name to NMSS/MSST.

To date, management changes are still occurring. For example, on December 10, 2017, the Director, MSTR was temporarily reassigned to a position in one of NRC's regional offices and another senior manager was detailed to his position. On January 30, 2018, the senior manager acting as the Director, MSST[9] was detailed to a different position and another senior manager was detailed to the Director, MSST position. This position changed twice in the span of less than 8 weeks. It is expected that the senior manager permanently assigned as the Director, MSST will eventually return to that position.

Internal and external stakeholders noted that frequent changes among NRC headquarters managers have resulted in concerns regarding NRC's ability to consistently carry out the National Materials Program. Different managers have different beliefs and levels of understanding of how the National Materials Program should be implemented. This concern is further compounded by the lack of a systematic process for knowledge transfer. Specifically, these managers do not have a consistent understanding of the relationship between NRC and the Agreement States. Agreement State staff expressed frustration with having to constantly re-establish working relationships with new NRC managers. An OAS representative told OIG that it would be helpful if NRC formalized processes and procedures on how the National Materials Program should work because Agreement States would then trust that things would be carried out consistently despite management turnover.

Why This Occurred

The National Materials Program Framework is Not Well Documented or Communicated and Lacks a Champion

The National Materials Program framework is not well documented or communicated and lacks a champion.

[9] On January 30, 2018, MSTR officially became MSST.

National Materials Program Attributes are Not Well Documented or Communicated

While there is a general understanding of the National Materials Program, the attributes of the National Materials Program framework are not well documented or communicated. Some framework attributes, such as a definition, vision, mission, goal, and objectives, are documented, but these attributes are scattered throughout various documents. For example, the recently updated *Agreement States Program Policy Statement* and Management Directive 5.6, currently in draft, contains a definition for the National Materials Program. The 2001 *National Materials Program Working Group Report* further defines a mission, goal, and objectives for the National Materials Program.

Moreover, other attributes of the National Materials Program framework, such as membership, members' roles and responsibilities, and scope of activities, are not defined or documented. A 1999 SECY paper[10] identified mission, goals, objectives, members' roles and responsibilities, and scope of activities as attributes key to defining and implementing a National Materials Program. Although some of these program attributes are defined, there is no single document that communicates all of the attributes of the National Materials Program framework to stakeholders.

National Materials Program Champion

Designating an individual with expert knowledge in the National Materials Program to serve as its champion could strengthen program understanding and consistency. A champion can help improve and coordinate clear communications with regard to various aspects of the National Materials Program framework, and help ensure that the Program is consistently implemented and understood among all parties. In essence, a champion can serve a significant role in enhancing the Program's success.

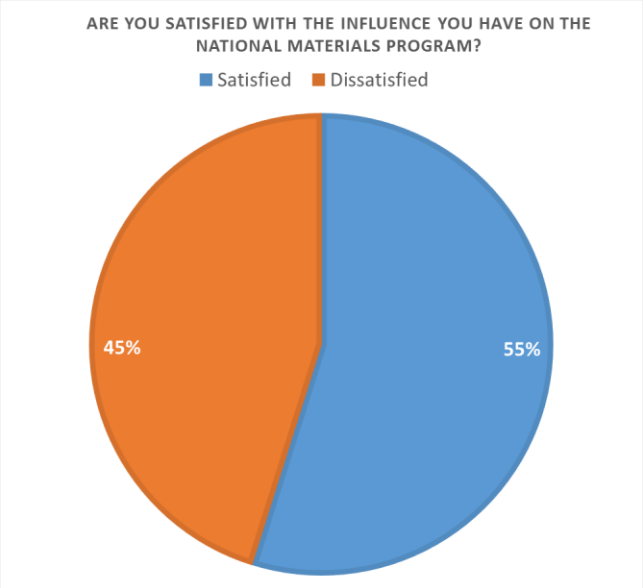
[10] SECY-99-250, "National Materials Program: Request Approval of the Formation of a Working Group on the Increase in the Number of Agreement States and Impact on NRC's Materials Program," October 14, 1999.

Why This Is Important

45 Percent of Agreement States Not Satisfied With Level of Influence

Numerous Agreement States are not satisfied with the influence they have on the National Materials Program. OIG contacted all 37 Agreement States; 31 of those States provided an answer to the question, "Are you satisfied with the influence you have on the National Materials Program?" Of these 31 Agreement States, 45 percent were dissatisfied with their influence on the National Materials Program. Moreover, some of the Agreement States that responded *they are satisfied with their influence on the National Materials Program* had caveats to their responses. For example, one satisfied Agreement State representative stated there is still room for improvement. Another satisfied Agreement State representative told OIG that some States feel like their voice has not been able to influence the outcome of NRC's decisions. An additional satisfied Agreement State representative expressed they had a frustrating experience trying to draw attention to an issue.

Figure 3: Agreement State Satisfaction



Source: OIG generated.

Many Agreement States do not see their relationship with NRC as an equal partnership and feel they are not provided with the opportunity to be substantively involved. Several Agreement State representatives told OIG there is a perception of a parent-child relationship between NRC and the Agreement States. In particular, many Agreement State representatives expressed frustration with their lack of influence relative to the prioritization of policy and rulemaking and not being involved on the "front end" of document development and revision. Considering that the Agreement States provide oversight of about 85 percent of the materials

licenses in the U.S.,[11] it is important for Agreement States to be satisfied with their level of influence on the National Materials Program.

Communication Challenges

OIG found that there is a communication challenge and conflicting perspectives between NRC and the Agreement States. NRC senior managers believe the National Materials Program is working well while numerous Agreement State personnel have voiced their discontent with various aspects of the Program, such as the relationship with NRC and the lack of Agreement State influence. Documenting the framework and designating a champion of the National Materials Program could help improve clarity and communication with regard to the NRC and Agreement State relationship and increase Agreement State satisfaction. Further, a champion could help ensure knowledge management of the National Materials Program is maintained during organizational and managerial changes.

Notwithstanding these communication challenges, Agreement State personnel are currently active in 18 working groups on a number of topics and projects, including the Standing Committee on Compatibility, the NUREG 1556 series, Management Directive 5.6, "Integrated Materials Performance Evaluation Program," and various medical uses of radioactive materials.

Recommendations

OIG recommends that the Executive Director for Operations

1. Formalize the National Materials Program framework in a document to include a definition, vision, mission, goals and objectives, membership, members' roles and responsibilities, and activities.

2. Designate an NRC individual with expert knowledge to serve as the National Materials Program champion to help with consistent communication. NRC should also encourage the Agreement States to create a co-champion to serve as the NRC champion's peer.

[11] Data as of December 2017.

IV. AGENCY COMMENTS

An exit conference was held with the agency on March 26, 2018. Prior to this meeting, after reviewing a discussion draft, agency management provided comments that have been incorporated into this report, as appropriate. Agency management then provided additional comments at the exit conference which have also been incorporated into this report, as appropriate. As a result, agency management stated their general agreement with the finding and recommendations in this report and opted not to provide formal comments for inclusion in this report.

Appendix A

CATEGORIES OF RADIOACTIVE MATERIALS NRC AND AGREEMENT STATES REGULATE UNDER THE NATIONAL MATERIALS PROGRAM

Categories of Radioactive Materials NRC Regulates Under the National Materials Program

Agency	Byproduct Material	Waste Tailing	Source Material	Source Material (High Mass)	Special Nuclear Material	Special Nuclear Material (Quantities not sufficient to form a critical mass)	Low Level Radioactive Waste Disposal	Sealed Source and Device Evaluations
NRC	●	●	●	●	●	●	●	●

Categories of Radioactive Materials Agreement States Regulate Under the National Materials Program

Agreement States	Byproduct Material	Waste Tailing	Source Material	Source Material (High Mass)	Uranium Recovery	Special Nuclear Materials (Quantities not sufficient to form a critical mass)	Low Level Radioactive Waste Disposal	Sealed Source and Device Evaluations
AL	●		●			●	●	●
AR	●		●			●	●	
AZ	●		●			●	●	●
CA	●		●			●	●	●
CO	●	●	●			●	●	●
FL	●		●			●	●	●
GA	●		●			●	●	
IL	●	●	●			●	●	●
IA	●		●			●		
KS	●		●			●	●	●
KY	●		●			●	●	●
LA	●		●			●	●	●
ME	●		●			●	●	●
MD	●		●			●	●	●
MA	●		●			●		●
MN	●		●			●		
MS	●		●			●	●	●
NE	●		●			●	●	●
NV	●		●			●	●	●
NH	●		●			●	●	●

Agreement State	Byproduct Material	Waste Tailing	Source Material	Source Material (High Mass)	Uranium Recovery	Special Nuclear Material (Quantities not sufficient to form a critical mass)	Low Level Radioactive Waste Disposal	Sealed Source and Device Evaluations
NJ	●		●			●	●	
NM	●		●			●	●	
NY	●		●			●	●	●
NC	●		●			●	●	●
ND	●		●			●	●	
OH	●	●	●			●	●	●
OK	●			●		●	●	
OR	●		●			●	●	
PA	●		●			●	●	
RI	●		●			●	●	
SC	●		●			●	●	●
TN	●		●			●	●	●
TX	●	●	●			●	●	●
UT	●	●	●			●	●	
VA	●		●			●		
WA	●		●			●	●	●
WI	●		●			●		
WY*		●						
VT**	●		●			●		

*Final application submitted
**Draft application submitted
Source: OIG generated from NMSS documents

- Agreement State –The term "Agreement State" means a State that has entered into an agreement with the NRC under section 274 of the AEA and has authority to regulate the disposal of low-level radioactive waste under such agreement.

- Byproduct Material – Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material; or any discrete source of radium–226 that is produced, extracted, or converted after extraction, before, on, or after August 8, 2005, for use for a commercial, medical, or research activity; or any material that has been made radioactive by use of a particle accelerator; and is produced, extracted, or converted after extraction.

- Waste Tailing – The tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.

- Source Material – Uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of section 61 of the AEA to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time.

- Source Material (High Mass) – Source material used to take advantage of the density and high-mass property where the use of specifically licensed source material is subordinate to the primary specifically licensed use of either 11e (1) byproduct material or special nuclear material.

- Special Nuclear Material – Means any quantities of special nuclear materials not relevant to the critical mass threshold. NRC can regulate any quantities of special nuclear materials not relevant to the critical mass threshold. NRC is not limited to the amount of special nuclear materials it can license.

- Special Nuclear Material (In quantities not sufficient to form a critical mass) – Means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the AEA, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

- Low Level Radioactive Waste Disposal – Grants authority to the Agreement States for the regulation (licensing and inspection) of low-level radioactive waste disposal facility in accordance with compatible regulations to Part 61 of *Title 10 Code of Federal Regulations.* All low level waste disposal facilities operating in the U.S. are under Agreement State jurisdiction.

- Sealed Source and Device Evaluations – Grants authority to the Agreement States to perform sealed source and device evaluations and issue registry sheets for such evaluations.

- State of Wyoming – NRC received the final application from the State of Wyoming.

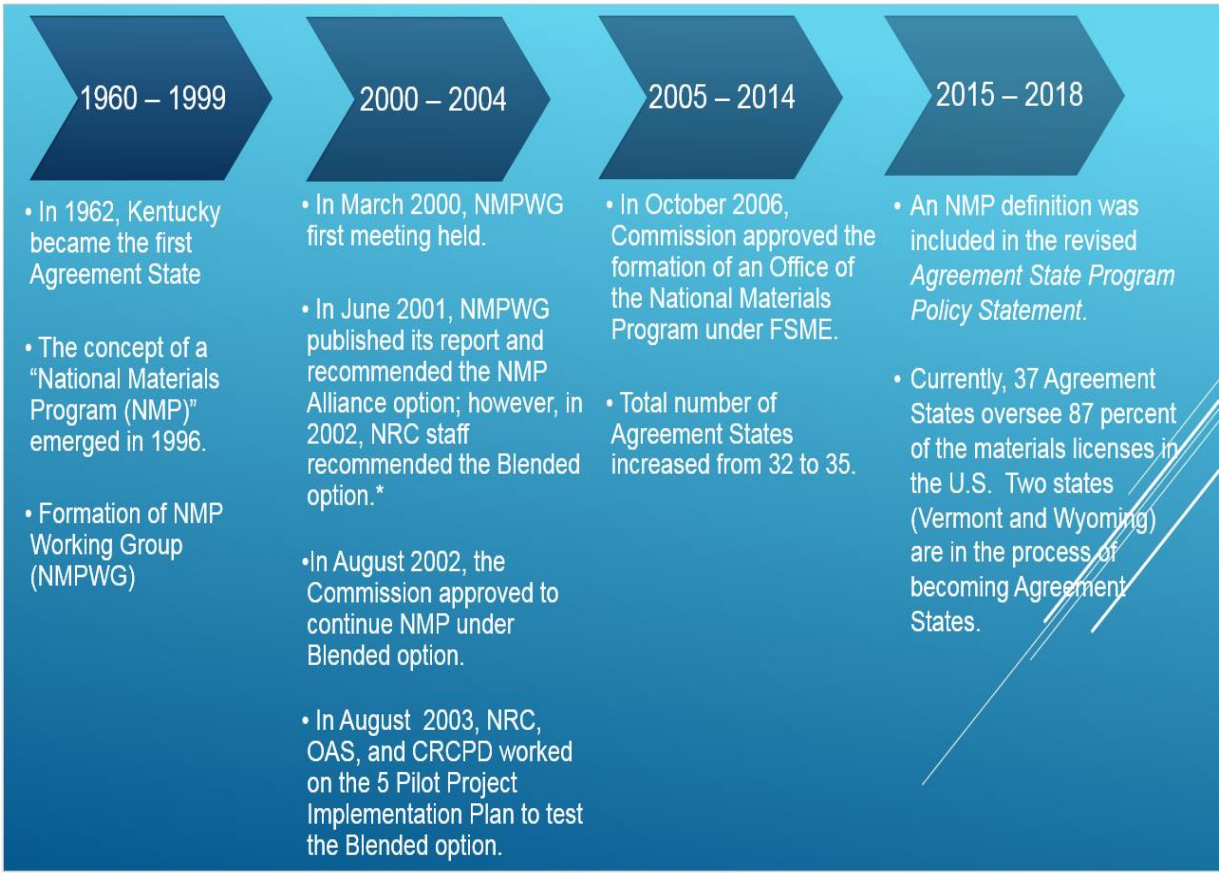
- State of Vermont – NRC completed reviewing the draft application from Vermont and is in the process of preparing comment letters back to Vermont.

- NRC – Including non-Agreement States and the U.S. territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and U.S. Virgin Islands.)

Appendix B

NATIONAL MATERIALS PROGRAM TIMELINE

National Materials Program Timeline (1960 – 2018)



*****Alliance option represents a possible future evolved state of the NMP where NRC and Agreement States would work cooperatively to identify, prioritize, and address the regulatory needs of the materials program. Blended option represents an NMP structure which essentially reflects how NRC and Agreement States interact and operate today as an NMP.

Source: OIG generated from NMSS documents

Appendix C

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The audit objective was to determine if the National Materials Program is an effective and efficient framework for carrying out NRC and Agreement State radiation safety regulatory programs.

Scope

This audit focused on evaluating the National Materials Program framework. We conducted this performance audit at NRC headquarters (Rockville, Maryland), Region I (King of Prussia, Pennsylvania), Region III (Lisle, Illinois), Region IV (Arlington, Texas), and the Organization of Agreement States annual meeting (Memphis, Tennessee) from July 2017 to January 2018. Internal controls related to the audit objective were reviewed and analyzed.

Methodology

OIG reviewed relevant documents and data including:

- The *Atomic Energy Act of 1954*, as amended.
- The *Energy Policy Act of 2005*.
- U.S. Government Accountability Office's *Standards for Internal Control in the Federal Government* (2014).
- NRC Management Directive 5.6, "Integrated Materials Performance Evaluation Program (IMPEP)."
- Commission Papers and Staff Requirements Memoranda.
- Project Management Institute, "Fundamentals of Program Management: Strategic Program Bootstrapping for Business Innovation and Change."
- Transcripts from the Commission meetings with the OAS/CRCPD.
- Office of Chief Human Capital Officer data pertaining to supervisory position changes within NMSS.

OIG interviewed NRC staff and management to gain an understanding of the National Materials Program framework and its attributes. Auditors interviewed the Chairman and the Commissioners as well as staff from NMSS and the Office of the General Counsel. Auditors also traveled to Region I (in Pennsylvania), Region III (in Illinois), and Region IV (in Texas) to interview staff and management. Furthermore, OIG reached out to officials from the 37 Agreement States, an official from a State that submitted a letter of intent, an official from a State with a draft application, and to OAS and CRCPD board members. Finally, OIG attended the annual OAS meeting in Memphis, Tennessee and listened in on a monthly NRC/OAS/CRCPD teleconference meeting.

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

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.

The audit was conducted by Sherri Miotla, Team Leader; Ziad Buhaissi, Audit Manager; Regina Revinzon, Senior Auditor; Roxana Hartsock, Senior Auditor; Connor McCune, Management Analyst; and John Thorp, Senior Technical Advisor.

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