UNITED STATES

NUCLEAR REGULATORY COMMISSION

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STRATEGIC PROGRAMMATIC OVERVIEW OF THE DECOMMISSIONING AND LOW-LEVEL WASTE AND NUCLEAR MATERIALS USERS BUSINESS LINES

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THURSDAY,

JANUARY 27, 2022

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The Commission met via Videoconference, Christopher T. Hanson, Chairman, presiding.

COMMISSION MEMBERS:

CHRISTOPHER T. HANSON, Chairman

JEFF BARAN, Commissioner

DAVID A. WRIGHT, Commissioner

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

MARIAN ZOBLER, General Counsel

NRC STAFF:

CATHERINE HANEY, Assistant for Operations, Office of the Executive Director

JOHN LUBINSKI, Director, Office of Nuclear Material Safety and Safeguards (NMSS)

ASHLEY ROBERTS, Deputy Director, Division of Decommissioning, Uranium Recovery, and Waste Programs, NMSS

TED SMITH, Project Manager, Division of Decommissioning, Uranium Recovery, and Waste Programs, NMSS

RICHARD TURTIL, Senior Financial Analyst, Division of Rulemaking, Environmental, and Financial Support, NMSS

KATHERINE WARNER, Senior Health Physicist, Division of Radiological Safety and Security, Region I

ROBERT LEWIS, Deputy Director, NMSS

THERESA CLARK, Deputy Director, Division of Materials Safety, Security, State, and Tribal Programs, NMSS

MARYANN AYOADE, Medical Physicist, Division of Materials Safety, Security, State, and Tribal Programs, NMSS

JAMES THOMPSON, Senior Health Physicist, Division of Nuclear Materials Safety, Region IV

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P-R-O-C-E-E-D-I-N-G-S

9:01 a.m.

CHAIRMAN HANSON: Good morning, everyone.

I convene the Nuclear Regulatory Commission's public meeting for the purpose of discussing the NRC's strategic considerations associated with Decommissioning and Low-level Waste Business Line and the Nuclear Materials Users Business Line.

It's very important to keep the public informed of the Agency's development in these areas of high interest. So, I thank all of you for supporting this meeting today, and I'm looking forward to a great discussion.

In fact, I might note, at our last appearance, Commissioner Baran, Commissioner Wright, and I, when we last appeared before Congress, before the Senate Environment and Public Works Committee, in December of 2021, easily half or more than half of the questions we received were regarding the topics that we're going to be discussing this morning. So, I find this Commission briefing particularly timely.

We'll hear from two NRC staff panelists this morning. First to present are the participants for the Decommissioning and Low-Level Waste Business Line. Next, we'll take a short break. And then, we'll hear from the staff panel for the Nuclear Materials Users Business Line. With each panel, we'll hold questions until the end, and then we'll hear questions from the Commissioners to the panel.

Before we start, I'll ask my colleagues if they have any remarks they would like to make. No?

Okay. With that, we'll begin with the first panel. The first

panel will be kicked off this morning by NRC's Deputy Executive Director of Operations, Cathy Haney.

Cathy?

MS. HANEY: Good morning, Chairman Hanson and Commissioners.

We appreciate the opportunity to provide you with an update on the Decommissioning and Low-Level Waste and the Nuclear Materials Users Business Lines, commonly referred to as DLLW and NMU, including current activities and accomplishments, business line priorities, challenges, and emerging focus areas. These business lines are directed by the Office of Nuclear Material Safety and Safeguards, or NMSS.

Our business lines continue to focus on ensuring we have the right people at the right time to address challenges in this dynamic environment, which you will hear more about from today's panelists.

I would like to take this time to commend the staff in both business lines for their hard work, diligence, and commitment to achieving the NRC's mission. They've adapted to a hybrid work environment and continue to leverage technology to advance the mission of the Decommissioning and Low-Level Waste and Nuclear Materials Users Programs.

Today's briefing will be provided by two panelists, which I'll introduce separately. The first panel will be the Decommissioning and Low-Level Waste Business Line.

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Our first speaker is John Lubinski, who is the NMSS Office Director. He will provide an overview of the Decommissioning and

Low-Level Waste Business Line.

Ashley Roberts, Deputy Director of the Division of Decommissioning, Uranium Recovery, and Waste Programs, will present the key successes and ongoing initiatives in the business line.

Ted Smith, Project Manager in NMSS, will discuss trends in reactor decommissioning and how the staff are transforming the Reactor Decommissioning Program to adjust for these trends.

Rich Turtil, Senior Financial Analyst, will present on decommissioning funding assurance.

And then, we'll end the first panel with Katherine Warner, a Senior Health Physicist in Region I, who will present on the ongoing efforts in the Regions on uranium recovery and decommissioning oversight activities.

I'll now turn the presentation over to John to kick us off with Decommissioning and Low-Level Waste Business Line activities.

Next slide, please.

MR. LUBINSKI: Thanks, Cathy. Appreciate you kicking off the meeting for us this morning. Good morning, Chairman and good morning, Commissioners.

Next slide, please.

Today's presentations will cover several of the significant business line activities and achievements, and we'll have a special emphasis on the 2022 NMSS focus areas. These focus areas are: meet our mission; focus on our people and our future, and optimize.

This includes ensuring greater use of data and risk insights in our decision-making, focusing on recruiting, developing, and retaining our

workforce, and continuing our work on optimizing our processes.

During today's presentation, please note in the top right section of the slides you will find these icons indicating which focus area is demonstrated by each topic we are discussing.

Next slide, please.

We meet our mission by ensuring the effective and efficient licensing and oversight of sites undergoing decommissioning and through ensuring the safe handling of low-level waste. The business line is charged with ensuring effective licensing and oversight of both power reactor and material sites undergoing decommissioning; the licensing and oversight of uranium recovery sites, and ensuring the safe use, handling, and disposal of low-level radioactive waste. The business line also oversees waste incidental to reprocessing and provides support to the Department of Energy for activities related to the West Valley Demonstration Project Act. The business line manages these functional areas in coordination with other federal agencies, states, and Native American tribal governments, as well as licensees and the public.

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Currently, we are seeing a significant growth in licensing and oversight activities as a result of the increasing number of power reactors transferring to active or accelerated decommissioning, many immediately upon closure. In this environment, we anticipate increased communication across the industry on best practices and processes, as we have seen with other business lines.

To adapt to this, the business line is enhancing and risk-informing processes and optimizing our approach to meet the increase

in licensing and oversight activities. For example, the business line leverages partnerships with other offices, Regions, and Agreement States, on the ongoing revisions to materials, uranium recovery, and decommissioning inspection guidance, using tools from the Be RiskSMART framework to evaluate and revise inspection guidance.

Additionally, the business line experienced a reduction in the number of NRC uranium recovery licensees and a decrease in the corresponding workload since Wyoming became an Agreement State. However, now we are starting to see a slight increase in workload in this area, as the staff works with states and the Department of Energy to terminate licenses for uranium recovery sites under state license.

This fiscal year, the staff is working on a transition of two Uranium Mill Tailings Radiation Control Act Title 2 sites to the Department of Energy under general license. Specifically, these are the Western Nuclear and Hecla Durita sites, and we expect more of these in the future.

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We are promoting a culture of continuous development, supporting our people and optimizing our programs by implementing knowledge management and process improvement activities. The business line delivered training on several topics. These included writing requests for additional information and applying the new Alternative Disposal Request Guidance.

The staff also created several Nuclepedia articles on topics including decommissioning; the hydrogeology of the Indian Point Energy Center; background on the American Nuclear Corporation site; a page on below regulatory concern and clearance; and descriptions of innovative and

advanced technologies for decommissioning and remediation at radiologically contaminated sites.

I've highlighted only a few of the accomplishments in this business line, and additional activities and accomplishments will be described in the remainder of this presentation.

That concludes my remarks this morning, and I would now like to turn the presentation to Ashley Roberts.

MS. ROBERTS: Thanks, John. Good morning, Chairman and Commissioners.

Today, I will share several of the key significant accomplishments and other activities of the Decommissioning and Low-Level Waste Business Line since the last Commission briefing in November 2020, as well as forward-looking activities for the program.

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Since promulgation of the dose-based license termination rule in 1997, the business line has successfully completed many decommissioning, uranium recovery, and waste management activities. Among these activities are the safe and effective decommissioning of 27 research and power reactors and 51 complex material sites.

In addition, the business line developed guidance documents, reviewed and approved decommissioning activities, and provided oversight to the license termination process for uranium mill tailings sites, military and non-military radium sites, and provided support to the naval reactors decommissioning efforts related to the Surface Ship Support Barge.

To support these activities, we participated in

decommissioning, uranium recovery, and waste-management-related rulemaking efforts, guidance and inspection manual revisions, and led working groups for various decommissioning-related activities; for example, the reactor transition, financial assurance, and decommissioning working groups.

The chart illustrated on this slide provides you with a visual representation of the number of license terminations executed since 1998. Fifty-one complex materials sites, 19 research reactors, and eight power reactors, totaling 78 licenses safely and effectively terminated over the last 20-plus years. Four of the 78 license terminations were completed during calendar year 2021. The staff terminated the licenses for unrestricted use at Humboldt Bay Power Reactor, the Sigma-Aldrich Complex Decommissioning Site, and two General Atomics TRIGA research reactors.

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This flowchart illustrates an overview of the power reactor decommissioning process and NRC's regulatory function. It highlights main actions required by the licensee and the NRC and the opportunities for engagement with the public during each step of the decommissioning process.

Key steps in the reactor decommissioning process are the certification to the NRC of the permanent cessation of operations and removal of fuel; submittal and implementation of the Post-Shutdown Decommissioning Activities Report, or PSDAR; submittal of the License Termination Plan, or LTP; implementation of the LTP; and completion of decommissioning with license termination.

As the chart reflects, the NRC is required to hold a public

meeting in the vicinity of the facility to obtain public comments on both the PSDAR and the LTP. The NRC reviews the License Termination Plan and only approves after determining the licensee has met all regulatory requirements. In addition, the NRC reviews the final license termination as a license amendment and terminates the license only after confirming all requirements have been met.

The regulation specifies the content of the PSDAR, including the licensee's high-level communication plan; planned decommissioning activities and schedule; the status of the Decommissioning Trust Fund; and affirms decommissioning can be conducted safely within the site's Environmental Assessment.

In addition to establishing license requirements, our oversight program includes routine programmatic inspections. The inspection manual chapter, or IMC 2561, "Reactor Decommissioning Inspection Program," establishes a risk-informed approach for the Regional Offices to perform onsite inspection for routine programmatic reviews and high-risk activities. NRC's oversight program and guidance also defines pertinent NRC follow-up actions for any deficiencies identified during the decommissioning inspections which are prior licensee corrective actions.

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The staff has completed many significant accomplishments over the last year. These accomplishments demonstrate our strong commitment to fulfill the mission within the business line in an innovative manner. This year, the business line developed and provided the Commission a Draft Proposed Rule for Groundwater Protection at Uranium In Situ Recovery, or ISR Facilities. And we received Commission direction

to publish for comments a Proposed Rule focusing on the regulatory improvements for production and utilization facilities transitioning to decommissioning.

These proposed rules will enhance regulatory stability, predictability, and clarity in these aspects of our licensing and oversight programs, and the staff will ensure strong public engagement throughout the process.

The NRC continues to work on the Church Rock license review. The NRC has engaged with the Navajo community in innovative ways to enhance the community outreach during the pandemic -- by scripted radio broadcasts on Navajo radio in English and Dine and expanding the Draft Environmental Impact Statement comment period for a total of 353 days. These actions were needed to address the challenge of the pandemic; ensure the Navajo Nation people had the opportunity to participate in the regulatory process, and to ensure open channels of communication with other government agencies.

The business line has made significant progress on uranium recovery activities for Agreement States and uranium recovery sites. For example, staff inspected the Preliminary Final Long-Term Surveillance Plan in November 2021 for the Western Nuclear Incorporated Site and has held several public meetings with the licensee and the Agreement State of Wyoming to facilitate the license termination process. In this program, these discussions are an innovative way that we are meeting our mission, as we gather perspectives from the relevant stakeholders and provide status updates on the NRC's process.

The NRC staff is planning and preparing for the

termination of additional uranium recovery licenses located in Agreement States, and we expect to continue to work on these activities in 2022.

In 2021, we completed a revision to Inspection Manual Chapter 2801 for operating uranium recovery facilities, which codified and standardized a risk-informed approach to performing onsite inspections. Currently, staff is working on IMC 2602 for the Fuel Cycle and Materials Decommissioning Inspection Program.

We also issued the results of the Very Low-Level Waste, or VLLW Scoping Study which identified possible areas that will merit improvement to the existing NRC's VLLW regulatory framework. The evaluation concluded that the current regulatory framework provides adequate protection of public health and safety, while providing licensees with VLLW disposal flexibility under a risk-informed, performance-based framework.

Also in 2021, we approved a first-of-a-kind license amendment leveraging the Be RiskSMART principles to modify the number of armed responders at the Pilgrim Power Reactor Decommissioning Site in Plymouth, Massachusetts. The staff approval was based on the detailed review of the site-specific issues and risk-informed analysis.

Lastly, as a commitment to our international community, we issued the Seventh U.S. National Report for the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, and are preparing for the Joint Convention meeting, which will be held in June 2022.

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The business line has been heavily focused on developing

the skills necessary to meet our mission and focusing on building and strengthening our workforce. Based on regional demands for decommissioning health physics inspectors, staff in Headquarters and the Regions continue to cross-qualify as Reactor Decommissioning Inspectors to supplement the existing resources in the oversight program. As a result of these cross-qualifications, five Headquarters staff members completed qualifications as Decommissioning Inspectors. And these Headquarters staff supported onsite inspections in Regions I, III, and IV during the fourth quarter of FY 2021. We are continuing with these activities in FY 2022 to ensure we have the right people when and where they are needed.

Additionally, the business line sponsored two IdeaScale Campaigns, one focused on the Guidance for Characterization and Final Status Surveys of Subsurface Residual Radionuclides and the other on Decommissioning Oversight and Inspection Program for Fuel Cycle Facility and Materials Licensees. Also, our staff actively participated in the IdeaScale Campaign on Categorical Exclusions.

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We are strengthening our licensing and oversight programs through strategic resource planning, leveraging technologies to enhance data-driven decision-making, and enhancing our processes to increase effectiveness.

The business line has overcome challenges through systematic optimization and enhanced public outreach. We completed a self-assessment survey on the Waste Incidental to Reprocessing, or WIR Program to evaluate the performance of the WIR Program and identify potential areas where the program could be more effective, efficient, and

risk-informed. The results of the assessment identified two areas for improvement.

The first is focused on the enhancement of existing guidance to support knowledge transfer, consistency, and transparency of across the program. The second is focused on strengthening and enhancing the internal and external communications to improve program efficiency and consistency, as well as facilitate effective interactions with the Department of Energy and other stakeholders within the program. The activities for enhancement of these identified areas are continuing in FY 2022.

I am also very pleased to inform you that the business line successfully completed the transfer of all active casework and non-casework data in the Decommissioning, Uranium Recovery, and Waste Program Division to the Web-Based Licensing System, or WBL. The transition of licensing activities into WBL provides an up-to-date repository of all licenses nationwide and a venue for Agreement States to use the same licensing information platform as the NRC.

Its use will allow the staff to track and monitor workload and ensure consistency across the Nuclear Materials and Waste Safety Programs and enable strengthened, data-driven decision-making. Additionally, it will facilitate data collection and analysis and enhance the visualization of data through consistent datasets and a common system across the Agency.

For example, collection and presentation of data related to performance metrics are being developed now across the program in an integrated fashion, ensuring the use of compatible and authoritative data to

evaluate trends, assess risks, and inform workload planning.

This concludes my presentation, and I will now turn it over to Ted Smith.

Next slide, please.

MR. SMITH: Thank you, Ashley.

Good morning, Chairman and Commissioners. It's an honor to speak with you this morning.

The Reactor Decommissioning Program is mature and will continue to grow for the foreseeable future. We need to continue to innovate our licensing and oversight process while maintaining public health and safety to avoid reputational risk and not being able to meet the continuing demands for timely decommissioning of nuclear power reactors.

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The program continues to adapt to the changing landscape for reactor decommissioning, including an expected increase in the number of sites entering decommissioning and an increase in sites opting to decommission on accelerated schedules under the new business models.

Under the Decommissioning License Transfer Business Model, licensees typically submit License Termination Plans earlier in the process than in traditional decommissioning. Accelerated schedules condense the timeline for required licensing work to five to seven years. If multiple decommissioning reactors request accelerated schedules, including earlier License Termination Plan, or LTP submittals, NMSS and partner offices, primarily NSIR and the Regions, may require additional organizational capacity to support simultaneous licensing and inspection work. The increased workload potentially affects our planning needs for

staffing, travel, and contractual support to conduct confirmatory radiological surveys. An organizational capacity shortfall would create longer review schedules, potentially creating a backlog of LTPs for approval, challenging the metrics in our congressional budget justification, which normally allots two years for approval of an LTP.

In addition, while we will not close actions on a site that doesn't meet our license termination criteria, this delay would impact inspection activities, which rely upon the approved radiological criteria contained in the LTP to assess survey finality. Not having firm radiological cleanup criteria may potentially cause longer timeframes for site decommissioning, which may result in the unscheduled use of Decommissioning Trust Funds and the potential loss of public confidence.

This graphic demonstrates our challenge. The next few slides will discuss our response.

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This graphic demonstrates our current phased approach to work planning. Aggregated resource needs are estimated in the phased approach, so that resources needed for oversight and licensing are based in the current phase that a decommissioning site is in, adjusted by modifiers we've identified that affect resource needs. The modifiers we've used to account for an unplanned shutdown, enhanced stakeholder engagement, and optimization to account for work at a multi-unit site. This graphic represents our current work planning approach, which does not account for accelerated decommissioning.

Next slide, please.

Staff are implementing an updated systematic approach to

better respond to the new dynamics of power reactor decommissioning and provide better fidelity in our work planning process. We are looking at how we have staffed accelerated decommissioning work, applying lessons learned to work planning, including oversight and interagency office support.

To account for accelerated decommissioning schedules as well as provide advanced planning information, staff are working with the Operating Reactor Program in NRR to develop and implement and optimize needs for the transition of decommissioning plants, which addresses the License Transfer Business Model, as well as the anticipated implementation of enhanced NRC guidance, such as guidance revisions resulting from the decommissioning transition rulemaking.

In this augmented graphic, the lighter shaded portions represent adjustments to be made to account for the changes in the program we are currently experiencing, which are causing increases through the reactor decommissioning arena, to include licensing, oversight, support office work, as well as contracts. Increased effort is expected for licensing reviews, such as license transfers to decommissioning entities; security and licensing amendments, and exemptions associated with permanent reactor shutdown; and reviews to support final site release, including License Termination Plans and Final Status Survey Reports.

Inspection activities, such as performing confirmatory surveys, are also expected to increase to support oversight of decommissioning activities. The impact to licensing staff needs some to faster and earlier work on an accelerated site, including LTP reviews for all of the increasing number of sites entering accelerated decommissioning.

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We are updating two key decommissioning guidance documents which provide guidance for the development and completion of site final radiological surveys.

First, we are issuing a revision to NUREG-1575, which is the Multi-Agency Radiation Survey and Site Investigation Manual, or MARSSIM, which provides the statistical basis behind final radiological surveys for demonstrating that a site meets the NRC license termination criteria, and communicating with licensees to help enhance processes and standardize and improve the quality of applications, and help mitigate resource challenges during decommissioning.

Second, staff in the business line are working to issue NUREG-1757, Volume 2, by mid-FY 2022. Volume 2 of NUREG-1757, Consolidated Decommissioning Guidance, contains guidance on characterization, survey, and determination of radiological release criteria.

We are also working with industry to encourage initiatives to develop lessons learned; participate in industry forums; and promoting interactions aimed at providing resources for them to strengthen the technical robustness and clarity of decommissioning submissions, as well as highlight the applicability of existing Agency guidance and resources.

We have been informed that the Nuclear Energy Institute will provide draft guidance early next year that they believe is adequate for addressing the areas of site characterization, remediation planning, environmental reporting, final radiological surveys, and a crosswalk with our NUREG-1700, Standard Review Plan all integrated as a template for LTPs.

We are also working to develop a path forward to interact in the future with industry on improving guidance for subsurface

contamination and discrete particles.

The Reactor Decommissioning Branch has participated in the Nuclear Regulator Apprenticeship Network, NRAN, this year to engage entry-level health physicists to inculcate interests and working knowledge of the unique work of decommissioning health physics. Timothy Hooker has just completed his year with RDB and Louis Caponi recently completed a year in the Risk and Technical Analysis Branch.

Additionally, as part of the start of a larger plan for reorganization, Regions I and IV have reorganized to combine Operating Reactor HP Inspectors and Decommissioning Inspectors in one branch to allow cross-qualification and consolidated resources.

Staff conducted knowledge management sessions on the revision of IMC 2561 on the decommissioning of power reactors and inspection programs and collaborated to provide specific training on the new inspection requirements in Inspection Procedure 71801, "Decommissioning Performance and Status Reviews at Permanently Shutdown Reactors," all that support the Decommissioning Trust Fund financial reviews.

And now, I'd like to turn the presentation over to Rich Turtil.

MR. TURTIL: Thank you, Ted.

Good morning, Chairman and Commissioners.

My name is Richard Turtil, and I'm a Senior Financial Analyst in NMSS.

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Since the Financial Center of Expertise, or FCOE, was established in NMSS in October of 2019, we have successfully worked on

both nuclear materials and reactor and decommissioning financial assurance issues. Staff brings financial qualifications and decommissioning funding assurance expertise to the Center, and that experience and expertise, coupled with effective communications, has helped support needs across the Agency among various business lines. Staff possess skills and knowledge and experience across a broad range of financial, technical, and safeguards fields, including electrical and chemical engineering, finance, business, accounting, and nuclear security and safeguards.

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In coordination with NMSS's Reactor Decommissioning Branch and NRR's Division of Operating Reactor Licensing Branches, financial analysts in the FCOE perform safety evaluations for power reactor license transfer for the purposes of decommissioning. Staff also directly supports the Regions and regional inspectors.

Many decommissioning reactors previously were pursuing SAFSTORE, a decommissioning approach in which licensees can take up to 60 years to complete decommissioning. Many now are pursuing immediate decommissioning. The FCOE has been highly successful in supporting the Agency in addressing this industry transition.

Staff evaluates four primary areas for applicants and licensees: financial qualifications, decommissioning funding assurance, foreign ownership control or domination, and insurance and indemnity.

Regarding financial qualifications and decommissioning funding, in all cases, staff has ensured transferees are financially qualified to acquire the licenses and to fund decommissioning activities.

FCOE staff continues to develop and implement consistent

policies and procedures across all business lines to the extent practical; provide NRC staff with guidance on federal and Agency financial assessment and processes and procedures; ensure that FTE and financial resources are efficiently managed to perform financial review activities for the Agency; and communicate with various audiences, providing insight about NRC's financial qualification, decommissioning funding assurance, insurance and indemnity, and foreign ownership control or domination regulations, oversight, and guidance.

2021 has seen increased coordination between FCOE Financial Analysts and NRR and NMSS Reactor Project Managers and Regional Inspectors, as reactor licensees decommission their facilities, by measure of collaborative interactions with licensing branches and divisions throughout the Agency and completed licensing actions and reactor decommissioning funding evaluation and reporting timeliness. Establishment of the Financial Center of Expertise has been highly successful.

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The NRC's comprehensive, regulation-based Decommissioning Funding Oversight Program provides reasonable assurance that sufficient funding will be available for radiological decommissioning of all U.S. commercial nuclear reactors from the start of reactor operations. NRC's reasonable assurance standard for decommissioning funding assurance is met through a series of lifelong funding and reporting requirements that initially establish, maintain, and then regularly report on the status of Trust assets. Operating reactor licensees provide Decommissioning Fund status reports to the NRC for review every

two years, and every year for those in decommissioning.

A summary of staff's latest review of these reports is provided in SECY-21-0108 entitled, "Summary of Staff Biennial Review and Findings of the 2021 Decommissioning Funding Status Reports from Operating and Decommissioning Power Reactor Licensees," which was made publicly available on January 3rd of this year.

Processes are available to address shortfalls in funding, should they occur, including extending the time horizon for completion of decommissioning and providing additional financial assurance through addition of new funds or other acceptable funding assurance mechanisms.

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Staff's recent Decommissioning Fund Status Report review of plants in active decommissioning included 24 reviews, totaling over $12 billion in Decommissioning Trusts. All plants in decommissioning met NRC's decommissioning funding assurance requirements. These reviews allow us to act during decommissioning, as necessary, to ensure adequate funding is available to complete decommissioning.

Staff continues to develop and has successfully implemented new financial review procedures and guidance in response to findings of NRC's Reactor Decommissioning Financial Assurance Working Group, including updated inspection procedures, one of which the next speaker will address. These efforts have improved NRC oversight and awareness of decommissioning spending at licensees' sites and has enhanced Headquarters and regional collaboration and communication.

Staff also continues to implement improvements in annual decommissioning funding review process controls; update internal annual

review guidance; implement centralized tracking of staff's reviews; and periodically assess Decommissioning Trust Fund trustee compliance with NRC requirements.

This concludes my portion of the presentation. I will now turn it over to Katherine Warner.

Next slide, please.

MS. WARNER: Thanks, Rich.

And good morning, Chairman Hanson and Commissioners.

My name is Katherine Warner. I'm a Senior Health Physicist in Region I.

Today, I will give an overview of the reactor and materials decommissioning inspection activities, including a significant challenge we have in staffing for the Decommissioning Oversight Program and some of our initiatives to transition our oversight guidance to more a risk-informed, performance-based approach.

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There has been an increase in demand for decommissioning inspectors, and it is expected to continue to grow over the next several years, given the increase in reactor decommissioning workload. This increase necessitates that staff acquire and implement a wider skill set, to include both Resident Inspector and health physics topics. This is because when a reactor first shuts down, the inspection focus is split between the spent fuel pool and associated cooling systems, initial changes to the plant, including abandonments and modifications, and occupational health physics.

Once the fuel is fully transitioned to an ISFSI pad, which is

happening earlier in the process as of late, the major inspection focus shifts to health physics as the site is decommissioned. Oversight of site programs, such as environmental and effluent monitoring and fire protection, continues throughout.

The increase in inspector workload is also due to an increase in stakeholder interactions and requests to support meetings around decommissioning, including congressional and state legislators.

Concurrently, we have had, and expect to continue to have, a significant amount of inspector attrition that has resulted in decreased margins in our inspection resources and experience.

The Regions have taken steps, such as hiring new inspectors with a variety of experience, and we are working on knowledge transfer, including having inspectors do cross-regional inspections to see new sites and inspection styles.

The Agency recently hired three inspectors and cross-trained two in the Regions and several more at Headquarters. We expect to train new and/or cross-qualify several individuals over the coming year.

As always, we will meet our safety mission of ensuring public health and safety despite these challenges. However, I should stress the Regions' focus on actively hiring and training inspectors, so we are prepared for the years to come.

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As I just discussed, we have some new decommissioning inspectors getting started. So, we are proactively updating our Decommissioning Inspection Oversight Guidance using Be RiskSMART

principles. The revisions also include working to decrease duplication of efforts and incorporate experience gained since the last revision, which, for some of these documents, was 20-plus years ago.

Last April, with travel restrictions in place due to COVID-19, the Decommissioning Power Reactor Inspection Program Working Group optimized our available time and expanded our scope from the inspection manual chapter to also include the core procedures, which are the inspections we perform annually. This allowed us to take a big-picture look at the program. The effort was completed in 2020 and effective January 1, 2021.

The number of inspection hours overall did not significantly change. Instead, they were shifted to focus on risk-informed areas, including Financial Assurance and Inspection Procedure 71801 and Fire Protection, which was originally a section in one of the procedures. But, given its importance, we created its own core procedure.

These newly-revised procedures have had a year of runtime, and we have received positive feedback from the inspectors, which will be further assessed by our Headquarters staff during this year's Decommissioning Counterpart Meeting.

Along the same lines, the Working Group for the Decommissioning Oversight and Inspection Program for Fuel Cycle Facilities and Materials Licensees is ongoing. They are tackling both the manual chapter and most of the procedures incorporating risk insights. This effort is expected to be completed in the spring of this year.

With new inspectors qualifying or cross-qualifying, it was well overdue to take a look at our Training Qualification Journal. We took

an innovative approach to revise the manual by adding a basic inspector qualification, followed by two technical inspector tracks: Materials and Reactors.

Similar to other training manual chapters, this allows a new inspector to go through the initial part of their training to get familiar with NRC processes and procedures, including inspector conduct through the basic qualification. Once achieved, an inspector continues training under one or both technical tracks, but can help perform inspection work under supervision. Having two technical tracks allows the Branch Chief flexibility to have the inspector trained in the area needed most with the ability to cross-train later. We also added some activities to address the increased stakeholder outreach activities I mentioned, including adding media training as a required course.

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While looking at these programs and living through COVID, we tried to incorporate what we were learning. We determined that, while some portions of the inspections could be conducted remotely, such as some of the document review, onsite inspection with direct observation of activities is the preferred method of inspection, as remote inspections tend to be more compliance-based, rather than that risk-informed, performance-based methodology we strive for.

With this in mind, we sought to include guidance that has inspectors spend the appropriate amount of time in the field, such as observing the lineup and physical condition of the spent fuel pool cooling system and radiologically significant work activities.

Also, for the training manual chapter, we incorporated new

inspector feedback to enhance guidance for trainees to get out in the field and better learn technical matters and inspector conduct.

Take a look at the two pictures on the screen. On the right, you're looking at a grainy picture of myself and another inspector looking over the shoulder of a plant employee working around the spent fuel pool area. If I was doing this inspection remotely, I might have access to this camera for this blurry view, but I couldn't look at what the employee is actually doing or see the whole picture of what was going on. But we were there.

And when you look at the picture on the left, you can see that we are watching spent fuel pool racks come out of the pool. This is direct observation of work activities, rather than a blurry or no view and relying on paperwork.

This concludes my portion of the presentation, and I will now turn it over to Cathy to close out this part of the briefing.

Next slide, please.

MS. HANEY: Thank you, Katherine. And thank all of you, the panelists, for your presentations.

Also, I'd like to thank all the NRC Headquarters and Regional staff and Agreement State staff that support and make the Decommissioning and Low-Level Waste and Uranium Recovery Programs a success. Their hardworking commitment helps us to successfully fill our important safety and security mission for the American people.

This concludes our presentation on this business line, and we look forward to answering any questions that you may have for us on this portion of the briefing.

Thank you.

CHAIRMAN HANSON: Thank you, Cathy and John, and the rest of the staff for your presentations.

We're going to begin questions this morning with Commissioner Baran.

Commissioner Baran, over to you.

COMMISSIONER BARAN: Well, good morning.

Thank you all for your presentations and the work you're doing on these issues.

Katherine, I want to follow up on your discussion of the value of in-person inspection. As you alluded to, during the pandemic, some inspections were performed remotely out of necessity. But it sounds like you and other inspectors have found that onsite inspection with direct observation of licensee activities is superior to remote inspections. I was really struck by your description of the stark difference between in-person and remote inspection, the difference between direct observation of what the licensee is actually doing and looking at a blurry camera view or just relying on paperwork.

If our goal is performing a quality inspection -- and, of course, that is the goal -- it sounds like there's no substitute for having independent NRC inspectors onsite; in-person inspection is much, much better. Is that the right takeaway from the inspection experience of you and your colleagues?

MS. WARNER: I agree, the direct observation activities and being onsite is definitely the preferred method of inspection. Like I said, we did find that we could do some of that document review remotely,

and I have also used the ability of having Rich Turtil actually listen in on one of my interviews on financial assurance at the site. So, there have been small silver linings of being able to do some remote, but onsite activities is definitely better for a couple of reasons.

One is the quality of inspection. When I'm doing a remote inspection, I ask a question, and the licensee is generally good about getting back, but when I'm onsite, I can have a quicker interaction, and then, delve deeper into a topic, pull the string, that kind of stuff.

Also, as you can see from the picture, there is no substitute for being there in person and actually watching a work activity. Some of the things that we do just cannot physically be done from home.

So, there's also, with some of the things we do, like watching a pre-job brief, I tried to do that remotely during the pandemic, when we absolutely had to during those early stages. And I just couldn't get anything out of it. They were trying to pass the cell phone around, so I could hear.

So, remote inspections rely on both a licensee's cooperation and their capabilities. So, while I found their cooperation to generally be good, the capabilities just aren't there. So, we need to be there in person.

COMMISSIONER BARAN: And as an inspector, are there issues you find in person that you wouldn't have identified through a remote inspection?

MS. WARNER: Yes. Absolutely. Because when you're there and you're able to see the whole 360 picture, rather than relying on, say, a checkmark of a licensee going and doing their walkdown, I can say I

can do the walkdown with them and see how they do it, but then also, once they're doing the work activities, I can look over, say, at this checklist that was actually a recent inspection and say, "Hey, can you explain to me how you met this part of the checklist?" And it turns out they actually hadn't, and I ended up catching that. And I could not have done that remotely.

COMMISSIONER BARAN: Great. Well, thanks, Katherine.

And, John or Ashley, based on that kind of inspector feedback, I assume that as the Inspection Guidance is updated for Decommissioning Fuel Cycle Facilities and Materials Licensees, a clear default for in-person inspections will be included, is that right?

MR. LUBINSKI: If I could start, Commissioner, thank you, and then I'll let Ashley talk more specifically about some of the guidance with respect to decommissioning inspections.

What Ashley highlighted earlier -- and also, Katherine talked about it, some of our revisions to inspection guidance -- the focus of that was really looking at taking into account risk insights to make sure, as Katherine said in her example, that we focus on the most risk-significant areas of activities. It's not a focus of those reviews to determine whether or not those activities should be done remotely or in-person. We are doing a lessons learned more generally out of COVID to determine what activities should be done in person and whether any could be done remotely.

We, of course, engaged with the inspectors across all the Regions to get their insights. They did issue a report in November. And I believe Rob Lewis in our next presentation will talk about that, but two highlights I want to focus.

From their recommendation for all business lines, they did believe that the majority of inspections being performed should be for direct onsite inspection of those activities, as Katherine said, based on the benefits, which I personally totally agree with what Katherine said.

They also included in there on a case-by-case basis there should be some flexibility for inspectors for certain inspection activities which could be done remotely, as long as they determine that they're effective. Katherine identified a couple of examples, and I really appreciated her identifying that some of the technical expertise, either from Headquarters or other offices, can be pulled in remotely to provide that additional expertise and the individuals don't need to go to the site.

In those cases, the report from the Working Group, again for all business lines, recommended if that was to be done, that it should be aligned, that the inspector and their management totally agree that those parts that could be done remotely are effective, and only based on that would they make the determination to do that.

Ashley, did you want to add anything with respect to the focus of the inspection reviews we've done so far?

MS. ROBERTS: Thanks, John. Yes.

The main focus in risk-informing the IMCs overall, Commissioner, has been incorporating lessons learned in new guidance, eliminating duplication, codifying and standardizing the risk-informed approach to strengthen the effectiveness of the program.

As Katherine mentioned, it gives the inspectors the flexibility to still access facilities that have the most safety-significant consequences and allows inspectors to plan and focus their activities

commensurate with those site activities, which may vary.

So, overall, while we've risk-informed our procedures, as Katherine mentioned -- I'm in the Decommissioning Reactor Program -- the overall number of inspection hours have not changed as a result of the updates, and we're really just focusing on the risk-informed areas.

COMMISSIONER BARAN: Okay. Thanks, John and Ashley.

Rich, I'd like to ask about Power Plant Decommissioning Trust Funds and cost estimates. To satisfy NRC that there will be adequate funds to decommission a nuclear power plant, the regulations currently require operating reactor licensees to set aside enough assets in a Decommissioning Trust Fund to meet or exceed the amount established by NRC's generic decommissioning funding formula.

And then once a plant permanently shuts down, the licensee must prepare a site-specific cost estimate and demonstrate that the assets in the Decommissioning Trust Fund are sufficient to cover the estimated decommissioning costs.

The formula hasn't been updated for over 30 years and has been criticized by GAO and the IG. And I'm concerned that the formula routinely underestimates the actual cost of decommissioning. Have you and your colleagues found that the detailed, site-specific decommissioning cost estimates typically are much higher than the minimum amount required by the formula?

MR. TURTIL: Thank you for your question, Commissioner.

Our assessment of the site-specific cost estimates against

the minimum formula amounts have found kind of a broad range of comparisons. I know one recently that we evaluated for Indian Point Unit 3, reflecting about 90 percent of the site-specific cost estimate for radiological decommissioning, was about 90 percent of the minimum formula amount. But we also recognize some of the minimum formula amount comparisons for other sites have not been as robust and there have certainly been deltas, but the licensee funding and regular reporting that we receive from licensees on a regular basis, that allows us to kind of keep an eye on what funding is available and it forms the basis of kind of our comprehensive analysis of the decommissioning funding requirements and the licensee's obligation.

So, I mean, I'd like to say that for the minimum formula, the staff has concluded it continues to be an adequate method of assessing the amount required to cover what is referred to as the lower end or the bulk, if you will, of expected decommissioning costs. So, we've seen deltas definitely. We recognize there will be outliers regarding the minimum formula and site-specific cost estimate comparisons, but staff still concludes the formula has proven effective. And to this day, of course, no plants have gone through decommissioning becoming short of decommissioning funding.

COMMISSIONER BARAN: Well, I appreciate your comment that it's kind of a range of results. Some of the examples are pretty stark. To take one, at the end of 2016, Beaver Valley Unit 1 had a site-specific cost estimate of $711 million. Unit 2 didn't have a site-specific cost estimate at that time; it had a formula amount of $482 million. But, by the end of 2018, both units at site-specific cost estimates, and they were at $748 and $756 million. So, the formula amount, at least in that case, was over $200 less than what was estimated as necessary to complete

radiological decommissioning.

In terms of kind of the spectrum of cases, have you or your colleagues seen that kind of gap at other plants?

MR. TURTIL: We have seen -- again, what we do as we get closer to decommissioning, we're evaluating the site-specific cost estimate. We have to ensure the cost estimate at all times certainly is equal to or exceeds the minimum formula amount.

I think in the case of Beaver Valley, we are looking at somewhere of 63, between 63-67 percent of the minimum formula amount reflected what you just suggested, 63-65 percent of the site-specific cost estimate provided by the licensee for decommissioning.

So, again, we're looking at this range, and as we get more into decommissioning, we're seeing efficiencies that are coming around, as the industry sort of transitions into special -- like the licensee that has taken on Indian Point, specialized decommissioning activities of that particular licensee. So, we're certainly seeing evolving site-specific cost estimates as efficiencies are gained.

So, we do see those deltas, as you suggest. And in our view, the formula still provides that which is necessary to ensure over that lifetime that the funding is being put in place. Is that responsive here?

COMMISSIONER BARAN: Yes, right, it is.

And how often do you see a plant where the amount required by the formula is deficient to complete radiological decommissioning?

MR. TURTIL: Generally not. Generally, we are seeing the minimum formula amount, that approach, which is not a cost estimate

per se by any means -- it is perceived and used to provide funding for, planned funding over a 35-45-year life of an operating facility to set aside funds for decommissioning. So, it is not a specific cost estimate. So, in most cases, we find that the minimum formula amount would not provide that which would be required specifically for the site-specific cost estimate.

So, in many, many cases -- and maybe it would be most cases -- that would be the case. The site-specific cost estimate would require more than or exceed. But, again, we're finding of late that some of those cost estimates are getting closer to, if you will, the minimum formula amount that's provided. And staff is finding those cost estimates to be reasonable.

COMMISSIONER BARAN: And I know that decommissioning costs vary significantly across sites and depend a lot on site-specific cost-drivers. That's why, ultimately, you need to have a site-specific cost estimate.

But if we're going to rely on a generic formula in the regulation to have licensees accumulating funds appropriately over the years of operation, wouldn't it make more sense to have a formula that did a better job of estimating the total cost of radiological decommissioning? I mean, it seems to me, to kind of put you on the spot, it's a little bit of a policy question. But, I mean, what's the merit of having a formula that just represents the bulk or represents the low end of a decommissioning range? Wouldn't it make more sense to have a formula that actually captures what we think it would take to decommission the site?

MR. TURTIL: Well, I would agree with you. I know the IG and the GAO certainly have made these observations, as you are

indicating. We, of course, would not want licensees, we would not want to put a burden, if you will, on licensees to end up providing for funding that is more than that which would be required for decommissioning. We would want the licensee, obviously, to be able to provide that which is reasonable in terms of meeting the expected decommissioning burden.

And again, we're of the view that, as we get closer to decommissioning, as we find the site-specific cost estimates have started to come in toward the end of life, that process allows us and allows the licensee, to ensure that there is adequate funding in place to meet decommissioning requirements.

COMMISSIONER BARAN: Well, thanks, Rich. I appreciate the conversation. You know, the formula, if we're going to have a formula approach, this conversation matters because if an operating plant isn't setting aside enough funds each year under a formula that's kind of underperforming, there could end up being a large deficiency at the time of shutdown that would have to be made up. And that raises the risk of insufficient funding to decommission the plant, if the licensee is struggling financially at that time. Fortunately, we haven't had that happen, but I think that's the risk. So --

MR. TURTIL: I'm sorry.

COMMISSIONER BARAN: Go ahead.

MR. TURTIL: If I may add, in our latest biennial report, which I allude to in my presentation -- and again, I just want to indicate that's SECY-21-0108 -- there's a table in there that actually shows and provides what is the funding that is currently in place and what is that funding at time of decommissioning. And if one were to look at that, the funding at time of

decommissioning, in all cases there is more-than-adequate funding to meet that minimum by a large percentage in almost all cases, just as a reflection of where would facilities be at time of decommissioning. So, how that process is working I think is reflected well in that table, just to provide additional information.

COMMISSIONER BARAN: Okay. Thanks, Rich.

I may have gone over my time. I don't have the benefit of the tracking I usually have. Next time, I'll set a stopwatch myself.

Thank you. Thank you, Chairman.

MR. TURTIL: Thank you.

CHAIRMAN HANSON: Thank you, Commissioner Baran.

Commissioner Wright?

COMMISSIONER WRIGHT: Thank you, Mr. Chairman, and good morning to everyone.

And thank you for your presentations. Even though I'm seeing you on the screen, I'd much rather see you in person, and I look forward to that. But, regardless, I still continue to be impressed by your ability to adapt. I mean, things are changing constantly. Even this morning, you all have to be nimble, isn't that right, Cathy?

(Laughter.)

So, your ability to see the possibilities in these times, I mean, it's evident in the presentations today. And the bulk of my questions are going to go, really, to hone in on our readiness for the future, I think, and are we going to be staffed and ready for it. So, Cathy, I'll come back to you in a second with that.

But I want to follow up, very quickly, on something, that

line of questioning that Commissioner Baran was on. So Leon, I'll come to you.

This is a change for me because in a former life as a state regulator, not even 10 years ago, states were very concerned that the utilities, the Decommissioning Trust Funds that they had could possibly be a slush fund; you know, that they had more money than they need to do the decommissioning, and then in the end, the money that was left would go to the utility, right, and it could be shared for whoever, their stockholders, or whatever.

But, in the majority of these utilities that have nuclear operations, this is ratepayer money we're talking about that's funding the Decommissioning Trust Fund. So, there has to be some recognition and balance, which I think that we do at the NRC through the minimum funding thing that you've got while the plant is operating.

And it's my understanding -- and I don't think this has changed -- that five years before shutdown, they have to move toward fully funding their Decommissioning Trust Fund, is that correct?

MR. TURTIL: So, this is Rich Turtil. So, the case is at five years prior to the termination of operations, the licensee will provide a preliminary site-specific cost estimate.

COMMISSIONER WRIGHT: Right.

MR. TURTIL: And at that point, staff will evaluate that and ensure that the funding that is presently provided by that licensee within the DTF will meet that site-specific cost estimate. So, that is the case at five years prior to.

Now what occurs, of course, is some licensees don't allow

for that five-year planning because they'll terminate operations earlier. So, it's at that time we would be seeking site-specific cost estimates. The staff would want site-specific cost estimates at that point as soon as possible. The licensee, if they were to discontinue operations in a very short notice, they must provide a site-specific cost estimate within two years of termination of their operations.

So, as all this comes together, whether it's long-term planning, because a licensee will terminate at its projected operational license termination date, or if it's shorter than that, and if it's a lot less notice than that period, we are looking to receive the site-specific cost estimate and then do those evaluations. And again, at this point, we have found no exceptions, no outliers, to licensees meeting those requirements.

COMMISSIONER WRIGHT: All right. So, thank you for that clarification. I appreciate it. Thank you. So, Cathy, I'm going to come back to you now.

We've heard about the great resignation that they say is out there, and there's concern that employees are going to resign en masse across all sectors of the economy, not just in ours, right? But in talking with Mary Lamary about this, and with Dan earlier, too, it doesn't appear that that's happening overall at the NRC. And I wanted to hear, I guess from you, whether you're concerned about that. Or, in your opinion, are we experiencing higher-than-normal attrition?

And I'll just preface that by saying we all kind of anticipated that, when we came out of COVID and as we started out of COVID, people who had put off retirement because they could work at home might exercise that opportunity now. So, we might see a little bump, anyway.

But, with that as a caveat, could you give me your opinion?

MS. HANEY: Sure. I'd be happy to. Thank you for asking.

So, I think let me start out by looking at, kind of addressing how we've seen the mass exodus. We actually went back and looked over multiple years' data on a number of individuals that left the Agency over a given year. And we really found a pretty constant -- you know, plus or minus a few people, obviously, I believe if you look over an eight-to-ten-year span -- but looking at calendar year 2021, we didn't see a larger number of people retire than what we had in past years.

Now, with that being said, you used the words, am I concerned about the loss of staff going into the future now? And I kind of smiled because it's like I could say yes to that question of whether I was concerned or I could say no.

The reason that I would give you a yes answer is I do think that we need to be sensitive to the number of people that could leave going forward, could leave for other agencies, could leave for various reasons. So, we do need to be sensitive to that.

The other thing that we need to be sensitive to is we need to be building the workforce for the future. It's not just this year that the executive team is looking at. We really are looking out into future years as far as the number of people. And it's not just the number of people; it's really we need to just look at it from the standpoint of, do we have the critical skill sets that we need?

So, with that in mind, we've been working with our Chief of Human Capital Office to look for ways of identifying our needs, which we're

using strategic workforce planning, which I believe we've spoken to the Commission before, which is where we go out and look at our needs over the next five years. We've looked at that data. We've been talking with the different Office Directors, the business line leads, and looking for where are those pockets that we need to focus our hiring areas, or that we need to look at specifically.

And because of that, now Mary, as you mentioned, will work with her recruiters looking at where to recruit; when to post; how to post; what vehicles to use. There are several different tools that are available to us, taking advantage of that, and we are working very closely on that.

So, back to your question about a concern, we are very sensitive to the needs of building the future workforce, needing these critical skills. There are some pockets within the Agency where we have greater demands and we, as a team, are focusing our attention on making sure that we have the right people.

COMMISSIONER WRIGHT: Okay. Well, thank you for that. And I'm going to follow up real quickly. There are really three questions I really want to get to, but I'll do my best to kind of combine them here.

Thanks for your update on that. Because I, myself, am concerned that there may only be one or two staff members in a certain area that are basically the experts in that area, right? And if they leave, we've got a problem, and that is problematic, you know, for several reasons. And I know you're concerned about the bench strength. I just heard you talk about knowledge management and all that.

So, is there anything that you need or you all need from the Commission level to address these concerns that you don't have right now? And in the budget process, I certainly would encourage you to be vocal about it, including in the budget request and the justifications as well.

MS. HANEY: So, I think if I answer that question right now, "Today is there anything that I need from the Commission?" I would say not today. But, really, you're going towards the budget request, and that's something that as we're working on the budget going forward and we're identifying needs and particular areas that could have an impact on our budget, we certainly want to dialogue with the Commission. And possibly in the future -- I don't want to say yes -- but when we get into the budget areas, I think it's likely that we'll be communicating with you.

COMMISSIONER WRIGHT: Okay. And my last question I'm going to be able to spit in here, I hope, Mr. Chairman, is, you know, I've heard about and we've talked about some of the activities to retain and recruit, especially health physicists, right, including cross-training and matrixing licensing and inspection staff.

Can you tell me a little bit more about how we're going to be addressing staff shortages in other skill sets? I mean, are there certain skill sets that we expect to be more challenging to recruit or to retain than others?

MS. HANEY: I would say there's a little bit across the board. Some of the areas, you know, if I focus on the NMSS program areas, really the financial area, the decommissioning areas that we've spoken about today, those are areas that, in all honesty, have been some challenges over the years, and as you've heard, will continue to be

challenges. That's the particular areas that we need to look for.

There's also some going into the advanced reactors. I'm going outside of this business line briefing. But, as we're hearing more and more about the advanced reactors, there are different skill sets that we'll need there.

We are competing with industry. We are competing with other federal agencies, as that part of the industry goes. So, that will be a challenge for us there.

There are a couple of other pockets in our Office of Investigations, our agents. We have been doing some specialized targeting there to bring individuals. We've had a large number of agents leave over the last year. So, that's another targeted area. But Tracy, who is the head of our Office of Investigations, is well on top of that, working with OCHCO.

There's a few other pockets in our Office of Administration. So, I mean, that's a very long answer to, yes, there are pockets across the Agency, but using our strategic workforce planning and working with the Office Directors, I think we've done a great job in identifying those. And then, that will help us go out with the targeted recruiting.

COMMISSIONER WRIGHT: Okay. Thank you.

And I know that you're having attrition with the decommissioning inspectors. And I know we're too short on time here, but I would appreciate, maybe later on, you know, learning a little bit more about the knowledge management being incorporated into inspection document revisions, so that the new inspectors benefit from this going forward from the past inspection experience. So, that would be helpful probably to me and the other Commissioners' offices as well. So, thank you.

MS. HANEY: Certainly.

COMMISSIONER WRIGHT: Mr. Chairman, I yield back.

CHAIRMAN HANSON: Thank you, Commissioner Wright. Really good discussion on I think a lot of really important topics this morning.

And this is always the risk, I think, of going last in these things, is to think about the other areas that maybe haven't been covered this morning by my colleagues.

Ted, I wanted to start with you. You made a really interesting comment to me about establishing firm cleanup criteria, radiological criteria, in the LTPs. And I was hoping you could clarify that for me and for the public, about how that works, right? Because, you know, fundamentally, we have a free release standard in decommissioning, right, where it's supposed to be the sites are supposed to be available to anything, for any use, after decommissioning is completed.

We also have EPA criteria out there with regard to exposure for the public. And we also have "As Low As Reasonably Achievable" in our own regulation. So, could you tell me how those things kind of interact to establish how we're going to evaluate how clean is clean enough for a site at the conclusion of decommissioning?

MR. SMITH: Yes, Chairman, I'd be happy to discuss the License Termination Plan.

The License Termination Plan focuses heavily on the final site conditions. The criteria that apply for power reactors in decommissioning is, as you mentioned, release for unrestricted use, which is defined in Part 20 as 25 millirem plus ALARA.

And so, what we expect to see, and what we look for and analyze in those License Termination Plans is their analysis of what are the scenarios that could apply. And typically, for power reactors, they look at a very conservative scenario: the resident farmer living on the site.

And then, they look at the radionuclides of interest that are remaining at that site, and you basically sum up the potential dose from all pathways, and you confirm that it's under 25. And so, after you run all the computational models, you end up with an allowable concentration by radionuclide for each of the survey units that you've divided the decommissioning area into. So, the areas are divided by where you would expect to see a like kind of contamination.

So, you end up with a list of these allowable concentrations, that if they're at those limits, you will be under our standard of 25 millirem a year in that very conservative scenario. So, we have to have those in place, so we can go do surveys and show that they're meeting those allowable concentrations.

CHAIRMAN HANSON: You mentioned the survey units across the site. Of course, that could be really important. Are the survey units averaged across the sites? How do you take into account, say, for instance, hot spots, for lack of a better term, at a site?

MR. SMITH: Yes. So, a great question.

We do look at each survey unit individually for its dose contribution, and those are divided. And the statistical basis for making determinations of them are based upon the radiological history of that particular survey unit.

So, for areas in the interior of a plant, or where we know

there was radiological material, it's a much more robust set of surveying that we do, and up to 100 percent of scans and sampling in a gridded approach. That would minimize the chance for having hot spot concentrations by the statistical process which allows a way of evaluating areas that are elevated by using a grid approach. So, in an area where you would see that kind of potential, it would fall under that rigor of a survey plan. And so, you're right that the classification survey unit is important to ensuring that we're doing enough with those kind of elevated areas.

Now separately is hot spots, which are a little different than elevated areas. It's a very small, discrete hot area. And that's its own challenge, in that it is really looked at site-specifically, depending on those plants' site-specific conditions and history. And so, it's one of those several areas in decommissioning where we really rely upon the expertise of our performance analysts and health physicists to go make sure that the licensees are doing the right things to address the conditions at their site.

CHAIRMAN HANSON: Okay. Great. Thank you. That's very helpful, particularly as I know this is a big concern for the public and community oversight boards, and so forth, understanding how we're making those determinations about what the release criteria for the site are.

Katherine, I've got a couple of questions for you. And I'm very interested in your experience as an onsite inspector. You know, we don't keep inspectors onsite full-time during decommissioning. We go out, the Agency goes out to the site for certain kinds of activities at regular intervals. And I was just wondering if you could talk a little bit about what kinds of activities would bring you to the site to oversee, and what kind of frequency you find yourself onsite to oversee those kinds of activities.

MS. WARNER: Sure.

So, for reactor decommissioning, a site will be in a different category, whether they're in active decommissioning, post-operational transition and that category determines what procedures and about the amount of effort for each procedure we perform annually.

But a lot of that is based on site activities. So, there's a split. You do inspection for specific site activities that are more radiologically significant, but you also do basically a program review, especially any changes to programs. Like environmental and effluent monitoring is something that we do annually, especially looking at any changes.

So, I find myself, for active decommissioning, we generally go out about every six weeks, but it really does depend again on those site activities. And something that would definitely take need to the site is, say, reactor internal segmentation, setting up for that, actually doing it. Cutting into higher contaminated components, I want to see how they're controlling occupational health physics, making sure their workers are safe, and that they're not releasing into the environment.

Also, for fire protection, as they're getting into decommissioning, it is another focus area for us because they start doing "hot cutting," typically, on some of these contaminated components. And making sure that they're really controlling that work area and controlling transient combustibles in that area we've found to be of importance.

CHAIRMAN HANSON: And do you, say, focus on -- for instance, if you had a repetitive task where there were, say 12 of something that we're going to be decommissioning, do you go at the beginning of, say,

taking apart those 12 things, or do you kind of go in the middle or are you there throughout? How do you prioritize your efforts in that area?

MS. WARNER: So, as we're able to, and a good example of this is like removal of a steam generator, right? Sometimes they'll try to cut segments of it, and then, groom the segments at a time. So, what I like to do for something like that is go near the beginning and take a look at how they have everything set up; if they're, again, controlling the area for contamination, radiation, airborne. You're always thinking about those things.

And if they are doing it well and things are going well so far, I might not go back as much, based on licensee performance. But if they're having a lot of issues and I'm seeing a lot of CRs, especially like personnel contamination events, those are indicators to me that I need to go back and watch more of it. And that's what I'm going to do.

CHAIRMAN HANSON: CRs being Condition Reports.

MS. WARNER: Yes. Thank you for defining that.

CHAIRMAN HANSON: Yes, no problem.

I agree with Commissioner Baran wholeheartedly that nuclear safety is a contact sport. And so, do you feel like, the public health emergency notwithstanding, that you're onsite at sufficient intervals to provide reasonable assurance and to have sufficient situational awareness that you could walk out of a plant and go talk to the public, and assuming that it was actually the case, that you could tell them that things were happening safely and securely?

MS. WARNER: Yes, absolutely. I believe that our inspection program provides that reasonable assurance of adequate

protection.

And I should also point out that, in addition to our onsite time, we do have periodic calls with these sites, as they're going through decommissioning. So, I have a weekly or biweekly, kind of depending on what's going on, update and they'll give me an update status of what activities they're working on, any issues that they're having. And I do review those Condition Reports on a weekly or biweekly basis so I have initial indications if there's something that I want to go out and see. Any my management is very supportive if I say, "Hey, there's something going on. I want to get out to the site sooner than I had planned." And we make it happen.

CHAIRMAN HANSON: That's great. Thank you very, very much for that. I really appreciate hearing that. The last one of these is kind of out of left field a little bit. This is a questions for John and Ashley. The Department of Energy recently finalized its interpretation of the definition of high level waste and I know that the discussion this morning is really on decommissioning and low level waste, but the Department of Energy's taken moves under its authority under the Atomic Energy Act to potentially change its interpretation about what goes in the high level waste bucket and what goes in the low level waste bucket. And I guess I am just interested to hear what implications that has for us for the waste incidental to reprocessing determinations, for our authorities and equities under the Atomic Energy Act, as well as the Nuclear Waste Policy Act. I wondered if one or both of you could talk about that for a minute.

MR. LUBINSKI: Thank you, Chairman. John Lubinski here. I'll take that one. I appreciate the question.

And as you said, when you start to think high-level waste, you think other programs. But when DOE was looking at the definition of high-level waste, it definitely separates out into low-level waste, which is part of this program, and is there an impact?

So, let me start with, most recently, the Department of Energy did an affirmation of their definition, which was just issued in December. There were no changes from the criteria on which we had been engaging with DOE. DOE issued its original definition in 2019. NRC did provide comments on that, and we appreciate that DOE did accept and address our comments.

In providing comments, we also worked closely with the Agreement States because they have authority for licensing the low-level waste sites, which could be impacted by this.

As you said, the comments were focused on reprocessing waste, and the majority of which were focused on waste incidental to reprocessing.

With respect to the disposal itself, we generally agree with DOE that we appreciate their considerations of taking risk significance into consideration in making those determinations. And we believe they've done that in an adequate way.

We also appreciate the definitions that they had for material that is not high-level waste. That is with respect to reprocessing, and it made it clear that that would be, definitions would be that it's not greater than Class C waste, and that it would need to meet the requirements, the performance objectives, for a disposal facility, which in our case would be 10 CFR Part 61. So, from a safety standpoint, it's very clear

that they would be meeting the adequate standards that we already have for low-level waste.

Finally, as you know, and I mentioned earlier, we do have a role with respect to an oversight function for DOE with respect to waste incidental to reprocessing. We have done an evaluation of that program recently to make sure that it is effective and incorporating lessons learned. And we continue to work effectively with DOE on the implementation of that program.

Finally, DOE did commit to us, as they continue to work through this, that they'll continue to keep us, the NRC, involved in their determinations about specific waste that meets this definition. So, I think we're in a really good place with DOE on this definition.

CHAIRMAN HANSON: Thanks, John. That's really helpful. I appreciate the clarification on that this morning.

With that, I think my questions are ended. I think, for our first panel, this is a very, very good discussion. We touched on a lot of topics that are really important to the public:

NRC's organizational capacity going forward to oversee our licensees and their decommissioning and low-level waste activities; financial assurance of our licensees to be able to complete the work that's set before them; how those sites are evaluated and, ultimately, released for unrestricted use going forward.

I want to thank the staff this morning for your insights and your comments, and I'll thank my fellow Commissioners as well for the very robust and excellent discussion.

With that, we're going to take a few minutes break, and we

will reconvene at around 10:30.

Thanks very much, everybody.

(Whereupon, the above-entitled matter went off the record at 10:23 a.m. and resumed at 10:31 a.m.)

CHAIRMAN HANSON: OK, welcome back everyone. We're going to start off here with our next panel on the Nuclear Materials Users Business Line. With that, I am going to hand it over to Cathy Haney to get us started. Cathy.

MS. HANEY: Well, hello again, Chairman and the Commissioners. So our second panel this morning features our Nuclear Materials Users, or NMU Business Line. This Business Line participates with our Agreement State partners in the National Materials Program.

The Business Line is adapting to workload drivers including rapidly developing new technologies in a medical area and is making sure that we have the skills and expertise to ensure safety and source security for a wide range of regulated activities.

Next slide, please. For this morning's panel Rob Lewis, the Office of Nuclear Material Safety and Safeguards Deputy Director, will provide an overview of the Business Line.

Theresa Clark, the Deputy Director of the Division of Material Safety, Security, State, and Tribal Programs, will present on key successes and challenges for the NRC and the National Materials Program, how we are transforming our hiring strategies for health physicists and how we are using data in our daily work.

Maryann Ayoade, Medical Physicist in NMSS, will present on changes to our emerging medical technologies review processes and

how we interact with stakeholders to identify new technologies.

Finally, James Thompson, Senior Health Physicist in Region IV, will discuss how we are redesigning our materials oversight program for the future and how we are working together across regional boundaries to meet challenges of our evolving workload.

This concludes my opening remarks and I will now turn it over to Rob.

MR. LEWIS: Good morning. Good morning, Chairman. Good morning, Commissioners. Nice to see you all again.

It has been my pleasure to serve as the Deputy Director of NMSS since June 2019 and I am always grateful to have an opportunity like this to highlight our Business Line team's great accomplishments, as well as some of the things we'll be focusing upon.

I actually would like to start with the latter, our focus areas. So said simply, in the coming year we want to focus on increasing the use of data in our decisions.

We want to focus on recruiting, developing, and retaining our workforce and we want to complete several projects that will standardize and optimize several of our processes in this Business Line and across NMSS Business Lines.

Our panelists will cover each of these focus areas. Just like with the last panel the upper-right of today's slides show the focus area applicable to that slide's content.

So can I have Slide 33, please? A little bit about us for the audience, the Nuclear Materials Users Business Line broadly covers all industrial, medical, academic, and research uses of radioactive materials.

Together with our regional office, NMSS regulates nearly 2,300 licensees. We also work with 39 Agreement State programs which regulate another 16,500 licensees.

I would also like to highlight three attributes of the Nuclear Materials Users Business Line that distinguish it amongst NRC's other Business Lines.

First, we have 40 regulators operating in a partnership. Second, we have a very wide range of regulated activities with strong interstate and international nature to them. And, third, the activities we regulate are and have for some time been rapidly evolving. For example, medical therapies used today are much different than those that were available ten years ago.

With respect to our partnership of co-regulators the NRC and the 39 Agreement States coordinate the regulation of radioactive materials throughout our National Materials Program.

Agreement State regulations on radioactive materials follow the same standards as NRC regulations, though specific requirements may differ somewhat.

The NRC retains a leadership and oversight role of the National Materials Program through the Integrated Material Performance Evaluation Process, or IMPEP, which we use to ensure nationwide uniformity of regulation, and we review all of our programs, NRC included, in the States under a common set of performance criteria.

A final note about us, our Business Line is also the home to NRC's Tribal Liaison Program. Our intergovernmental liaison project managers ensure that NRC communicates effectively with over 500 tribal

governments on all aspects of NRC's reactor, materials, and waste programs.

Next slide, please. In the last year and for the coming year the Nuclear Materials Users Program has a conscious focus on knowledge management and staff development and growth. Investing in staff development and growth is particularly important for NMU because we have many different types of regulated activities and because of the pace of change we see in uses of radioactive material.

During the last year we have both seen turnover of staff in specialized areas, like materials engineers, project managers, and health physicists. We actually had 12 retirements in NMSS over the last four months. For a bit of perspective, NRC has about 300 people.

In the last year we invested in 68 rotational assignments for career growth and we took 79 external training classes. These are classes outside of what is offered through NRC's great Technical Training Center Program.

We also processed 25 promotions and 17 external hires. Note these statistics are not Nuclear Materials Business Line, it's all of NMSS. This year our goal is 30 external hires, but I think all of this illustrates our commitment to recruiting and developing and retaining a world-class team.

With attrition and retirements, having a healthy knowledge management function is very important for us. It will help us make better informed and more efficient future decisions.

So to that end, we have been actively using Nuclepedia as a knowledge management tool. It's an internal version of Wikipedia. On

this slide you see Taylor Lamb interviewing Duncan White for an 11-episode podcast series related to the National Material Program history and key issues. Duncan is one of our most experienced people when it comes to partnering with Agreement States.

Also on this slide you see Dr. Donna Beth Howe, who retired in December with 44 years of medical regulatory experience. In fact, she was a mentor for me when I used to work on medical regulation in the '90s and 2000s. Before she left she was gracious enough to share her experience and expertise through these ten knowledge management videos. We are going to share all of these knowledge management videos with the public through our state communications portal in the near future.

Next slide, please. From John and my position, we are very proud of the way the Nuclear Materials Users Business Line adapted to the COVID pandemic, with such a strong commitment by everyone to our licensing and inspection mission.

Our operational decisions not only had to consider NRC, but the 39 Agreement State Agency's approaches, and the situation and needs of some of our licensees, such as hospitals, that were on the front lines dealing with the public health response.

The feedback we have gotten both internally and externally indicated our situational awareness and our increased communications posture all worked very well and led us to sound regulatory decisions.

Today I wanted to highlight that our ongoing look at the pandemic is a great example of our commitment to learning and being receptive to new information, as we take what we learned during the pandemic forward. In the last year a working group collected and evaluated

lessons from the pandemic for our oversight activities and developed proposed recommendations.

The working group held public meetings in 2021 and meetings with the Agreement States. In November 2021, the working group published its proposed recommendations. It also asked for alignment meetings before decisions are made or actions assigned related to those recommendations. The first of those alignment meetings is coming up on February 9th with John and myself.

As was discussed in the first panel, among recommendations is one that the majority of routine inspection activities return to being performed through direct onsite inspection with some case-by-case considerations.

Just a thought, if I may, on the dialogue that occurred in the first panel. I am quite like-minded to Katherine. I think you will hear later from James that he is in the same group. In-person inspection of operations is best wherever it's practicable.

I would just offer that for this Business Line, for radioactive source licensees in particular, it's not always possible to be there to directly observe operations, like radiography field operations, medical procedures. We try to do it when we can, but we can't always be there. So in addition, our inspection manual does reflect conditions for telephone contact for some very low-risk activities, like gas chromatographs or leak testing service licensees.

The key I think to all of this is being open to using all of the tools available to collect information that maintains our ongoing reasonable assurance of adequate protection of public health and safety and us doing

our mission.

I would say for our pandemic lessons learned we are coordinating our lessons with the Office of Nuclear Reactor Regulation. We actually offered a person from our group to support their work.

That concludes my remarks. Thank you for the opportunity to highlight some of the work and dedication to public service of our regulatory experts across the Nuclear Materials Users Business Line.

I did want to take one moment to especially thank Celimar Valentin-Rodriguez from NMSS. She project managed the preparation of myself and the entire panel today for this meeting and it was exceptional.

So the rest of our panel, starting now with Theresa Clark, is designed to complement the focus areas I introduced. I thank you for your attention.

MS. CLARK: Thank you, Rob. Good morning, Chairman and Commissioners. It's a pleasure to be with you this morning to showcase three topics for the Nuclear Materials Users Business Line.

How we are weaving new ideas into our mission work, how we are making sure we have the expertise we need for the future, and how we are making the most of data in our decision-making.

Next slide, please. This is the first of several slides on how we are being open to new ideas as we meet our everyday mission.

In 2021, we conducted the NRC's Integrated Materials Performance Evaluation Program, or IMPEP review, as Rob mentioned, as one agency for the first time.

In the past each regional office and NMSS received separate IMPEP reviews. This change came from a 2018 self-assessment

and it means that we now look at the NRC like how we would look at large States with multiple agencies involved in radioactive material safety and security.

We took extra measures to make sure that the review was independent and safely performed. The team was nearly half Agreement State staff. We also adapted to the pandemic with a hybrid approach. The review itself was done remotely, but eight of the ten inspector accompaniments were done in person. I am happy to report that the NRC received the highest scores from the team in all review areas and there were no recommendations for improvement.

Next slide, please. Rulemaking is a mission-critical work area for our Agency and it includes essential process steps to make sure we get input from the public and then we develop a sound regulatory basis for the rule. Within these bounds, our rulemaking team has truly embraced innovation.

For example, this month you authorized us to start a rulemaking on emerging medical technologies. This rule will streamline the approval pathway for medical technologies that used to be new but are now licensed routinely. It will also provide for reliable and clear regulation in licensing of rubidium-82 generators.

We also piloted an approach for faster and better integrated decision-making when we look at petitions for rulemaking. During last year's Innovate-a-thon we challenged the whole Agency to come up with ideas and IdeaScale about how we could apply agile project management concepts more broadly.

Then we used these ideas to review a petition for

rulemaking on whether we should require event reports from nuclear medicine injection extravasations. The review of this petition presented particular challenges for us, as we had already started on an independent evaluation and there was high public interest with a large number of petition comments. During this pilot we identified several best practices. It's good to form small cross-functional development teams that have the right background to evaluate the petition.

It's helpful to break up the work into monthly sprints that help the team properly react to evolving information. And finally, it's best to have a single project sponsor who can give high-level oversight and help minimize redirection. We are planning to use what we learned on a second pilot petition to make sure we have the process right.

Next slide, please. We continue to look for ways to better gather perspectives from outside the NRC, and particularly from Agreement States on how best to base our challenges.

We have held several topical meetings with the States recently and hot topics included fusion reactor licensing and how we have operated during COVID.

Our National Materials Program co-champions were Duncan White of the NRC and Terry Durst in a Pennsylvania's regulator, continue to lead the way on collaboration across the National Materials Program.

They have held multiple Champions Chats which have high participation by NRC and State regulators. The most recent ones have been on remote inspections, as we discussed a lot today, the future of the IMPEP Program, and misplaced radioactive shipments in transit.

These chats give us an open forum on topics of mutual interest and it's part of that partnership that we treasure as part of the National Materials Program. The chats also allow our newer staff to learn from the knowledge and experience of our senior regulators, like Duncan who was introduced earlier.

Next slide, please. Connecticut and Indiana recently declared their intent to become the 40th and 41st Agreement States and we are currently in the application process for that. This development prompted us to ask ourselves how we should best shape a vibrant and effective National Materials Program as Agreement States continue to oversee a greater and greater proportion of the materials licenses in the United States.

We are asking questions like what would our program look like if there are 50 Agreement States? What risks do we foresee? What would we need to do? What decisions do we need to make to address them? To this end, we have established a working group with the Agreement States to help identify and answer these questions, and that group should have its report done by the end of 2022.

Next slide, please. I want to turn now to how we are focusing on our people and our future using strategic workforce planning.

Through our review of projected work and attrition we knew there would be an Agency-wide gap in health physics expertise if we didn't act. To mitigate this risk we took a three-pronged approach of pipeline, development, and community. First, we are building the pipeline of health physicists that we can hire. We are working to increase awareness and profile the NRC among universities and professional societies. We

highly emphasized our grants program this year, that provides scholarships and fellowships to students and we added health physics detail to the solicitation.

We have also increased our outreach to the universities with big health physics programs, like Colorado State and Oregon State. In fact, one of the professors from Colorado State is on a health physics panel discussion that I am moderating at the Regulatory Information Conference this Spring.

Next, we are developing our staff to meet future needs. We are increasing ways that our existing health physicists can use their skills in new ways. One exciting example is that we have recently chartered a joint working group with the Conference of Radiation Control program directors that will pave the way for more developmental rotations of NRC Staff and States, and vice versa.

Joe Nick, a manger in Region III, is the NRC's co-chair. We also expect the Health Physics Society and the Organization of Agreement States to participate.

Finally, we are keeping a sense of community that is so important in retaining our talented staff. To that end, we recently created a Health Physicists Community of Practice. This is a staff-led group that meets monthly and discusses work of interest across the NRC. For example, they are teaming up to create a study group that will help people prepare for the Certified Health Physicist examination. This is a grassroots effort that was inspired by a similar activity at EPA.

Next slide, please. Finally, I want to spend some time on how we are optimizing by using data.

In 2021, our office established the Data Foundation, so named because we want data to be at the foundation of the decisions we make and the strategies that we take across the office and with our other partners.

The first tools from this effort are in place and our change management strategy emphasizes having visible near-term successes that will get people excited about these new methods.

This year we'll use those capabilities to reduce the burden of data gathering and reporting to provide consistent and rapid information to decision makers and to manage workload better.

My next two slides illustrate the work of the Data Foundation to create tools for both widespread and specialized use.

Next slide, please. This slide shows a snapshot of our Materials Inspection Timeliness dashboard, displaying Region I's routine inspections from the last fiscal year. It uses data directly from web-based licensing to show how we are doing both on specific inspections and on the overall timeliness metric that we report to Congress.

We can spot issues early with this tool and we can address coming challenges. The dashboard also, by the way, shows the number of remote inspections, which was a feature that we added during the pandemic.

In conjunction with other dashboards we are developing on how we plan inspections and which inspections are in progress, this suite of tools is going to be widely used across the Regions by inspection planners, as well as regional managers. It will also save us about 15 hours a quarter by automatically calculating those metrics without the need to run manual reports.

Next slide, please. This slide shows a specialty dashboard that is very important to one branch in my Division.

Every January, licensees need to do an inventory reconciliation to compare the radioactive sources that they have with the inventory that is located in the National Source Tracking System. This new dashboard was created to help our source management staff monitor the status of this annual requirement by pulling data directly from the National Source Tracking System.

The snapshot shown on the slide shows that last year we reconciled the inventory data for all of our NRC licensees and we also resolved all of the escalations, which by whom we get unexpected information.

This year, we are using this new dashboard as a one stop shop for information related to the reconciliation. As a result, our analysts are saving time on searching databases and consolidating data to give updates on the status of the task. This is an example of a quick win that builds excitement about how these tools can make our lives easier. This concludes my remarks. I will now turn it over to Maryann Ayoade. Next slide, please.

MS. AYOADE: Thank you, Theresa. Good morning, Chairman and Commissioners. My name is Maryann Ayoade and I am currently a medical physicist in NMSS. I was formerly a materials inspector and license reviewer in Region I and I have been with the NRC for over 12 years.

My presentation will cover the update on the emerging medical technologies review process and how we are leveraging external

partnerships to identify new technologies.

Next slide, please. 10 CFR 35.1000 was added to the medical use regulations in Part 35 in 2002 to capture the new and emerging medical uses and technologies that are not specifically addressed in the current regulatory framework because of their unique characteristics.

35.1000 is a one-of-a-kind flexible approach within the NRC's medical use regulations for the licensing of new emerging medical technologies while continuing to provide and assure safety for patients, for medical workers, and for members of the public.

The creation of 35.1000 and its 20 years of use it reflects favorably on NRC's ability to provide for safety while adapting to the rapidly changing pace of development of often life-saving new medical technologies that are essential to patient care.

Next slide, please. Each emerging medical technology is valuated on a case-by-case basis by NRC and Agreement States and we develop licensing guidance with input from the Advisory Committee on the Medical Uses of Isotopes, the developers of the new technology, the Food and Drug Administration, or the FDA, and the medical community, all to determine the risks and the appropriate regulatory requirements for each technology.

Timely development of licensing guidance from emerging technologies is essential so that we do not limit patient care and so that medical professionals can use these technologies safely.

Now, to date, we have issued ten licensing guidance documents under the 35.1000 framework, including some of the technologies that you see on this slide, like the NorthStar and RadioMedix

radionuclide generator systems that produce radiopharmaceuticals, which are then used for different medical procedures, and, also, the Gamma Stereotactic RadioSurgery units that use many precisely focused radiation beams for treatment. We have also licensed Yttrium-90 microspheres which are used to treat liver cancer and is the most used technology under 35.1000.

Next slide, please. We are currently piloting a new licensing guidance development process for emerging medical technologies that streamlines and provides consistency to the existing process by incorporating stakeholder feedback early in the technology review process.

This new review process involves using a Standing Committee that includes NRC and Agreement State staff with experience in medical licensing, oversight, and emerging technologies.

The Standing Committee's role is to provide feedback and to vote on the Staff's recommended licensing determination, and also to review the proposed licensing guidance developed by Staff to ensure that it is adequate and addresses all of the necessary radiation safety considerations.

NRC and Agreement States regulatory expertise is supplemented by the ACMUI's medical expertise during the review process and the ACMUI provides us with practical use and medical feedback on these technologies and they also form subcommittees to review our proposed licensing guidance and make recommendations.

Next slide, please. With our new process we are ensuring that we have the key players involved in the review process early so that we can take advantage of their expertise as we review and develop guidance for

these new technologies.

Furthermore, we are being proactive in identifying and addressing any regulatory challenges so we can be ahead of the game and ensure medical licensees and patients have access to safe new technologies in a timely manner.

The Standing Committee has been meeting regularly since November of 2020 and we have evaluated three technologies using this new process since the committee's inception. Alpha DaRT is the first manual brachytherapy therapy device that uses alpha-emitting radiation for treatment of superficial solid tumors. We also have the Liberty Vision, which is a new brachytherapy source for eye treatments. That last picture to your right is the CivaDerm, which is a temporary brachytherapy devices that uses gamma-emitting radiation for surface application treatment of skin cancer.

To date, the Standing Committee has approved the Staff recommendation for two of these technologies to be licensed under 35.1000 and for the third technology to be licensed under 10 CFR 35.400.

We are also currently reviewing and evaluating two additional technologies for possible licensing under 35.1000 and the recommendations from the reviews will be provided to the Standing Committee for their approval soon.

Next slide, please. Recognizing the ever-changing landscape for therapeutic and diagnostic medical uses of radioactive materials, we do devote significant time to staying well-informed of the external environment to collect insights on how it might affect our workload and workforce expertise needs.

We continue to engage and communicate with different external stakeholders to identify new technologies and understand their technology-specific radiation safety considerations.

The ACMUI continues to serve as a useful resource of information by giving presentations on new technologies and subcommittee recommendations on the staff licensing guidance documents for new technologies.

The ACMUI is instrumental in also helping the NRC prepare for future challenges. In 2021, the ACMUI formed a subcommittee to outline the knowledge, specific practice requirements, and safety considerations for emerging radiopharmaceuticals in theranostics. Now, that subcommittee presented their work and recommendations during the ACMUI's Commission meeting last October.

In 2020 the ACMUI recommended the need for additional expertise and intervention radiology and Yttrium-90 microspheres on the committee. The Yttrium-90 microsphere administrations are the most commonly performed medical procedure that are licensed under 35.1000. In 2021, the NMSS Office Director appointed Dr. John Fritz Angle as a medical consultant at NRC to assist with this need.

The Food and Drug Administration, or the FDA, is another resource for information and NRC Staff continues to engage with the FDA and relevant information on new technologies is shared under the NRC/FDA Memorandum of Understanding.

Since October of 2020, the NRC and FDA have co-hosted two joint workshops that are open and accessible to the public to discuss topics of mutual interest related to new technologies. The workshops

focused on how to enhance the development of new radiopharmaceutical and radiological devices and on the development and regulation of new alpha-emitting radiopharmaceuticals. Both workshops were widely attended with over 550 participants in each workshop.

Next slide, please. The NRC Staff also continued to engage with the Agreement States via different avenues, such as our monthly calls, also through the Agreement State representatives that serve on the ACMUI and the Agreement State members of the Emerging Medical Technology Standing Committee.

We also have opportunities for engagement with different medical professional societies. These medical professional societies continue to share new information and any updates that are related to new technologies directly with the NRC.

They also share information on any new or developing standards for different technologies. NRC Staff also interfaces with these stakeholders in their roles as NRC liaisons on several professional society committees and attend professional society meetings throughout the year.

We also do hear from the technology manufacturers. These manufacturers share relevant information with NRC directly or during the professional society meetings on new technologies and any updates to existing technologies.

This concludes my presentation. I will now direct your attention to James Thompson.

MR. THOMPSON: Thank you, Maryann. Good morning, Chairman and Commissioners. I am James Thompson, Senior Health Physicist in Region IV, and have been a materials inspector for just over 20

years.

Today I am pleased to be talking with you about recent oversight programmatic enhancements undertaken by the Nuclear Materials Users Business Line in today's dynamic environment, as well as our continuing cross-regional support efforts.

Next slide, please. In 2020, the Staff began an effort to review and revise the materials inspection procedures to modernize them and incorporate additional risk and performance insights. A working group of NMSS and regional experts as well as our Agreement State partners have been reviewing 20 procedures and prioritizing their finalization based on potential safety significance, impacts to the program, such as number of affected licenses and inspections, and time since last revision.

Our new approach adopts a new concept of risk modules. Our past inspection procedures had the same focus areas for all types of licensees regardless of whether they are industrial or medical licensees, or whether they are licensees in broad scope or limited scope.

As part of incorporating more risk insights into our oversight program we created tailored risk modules which should focus the inspector's attention to the areas of a licensee's safety program that have the greatest potential to impact public health and safety and the safety of the workers, such as the use of license material at temporary job sites.

We also created new instruction procedures so that these risk modules could be further tailored to the unique risks of specific license activities. For example, we split the existing inspection procedure for industrial, academic, and research programs into six inspection procedures, which will focus on specific activities.

Some examples of these new inspection procedures are broad scope academic and R&D programs, self-shielded irradiator and calibrator devices, and veterinary use programs.

Next slide, please. Over the past year and a half, we have been performing many routine materials inspections remotely, reflecting appropriate pandemic controls, while at the same time meeting our important public health and safety mission.

We used all available tools to adapt to the pandemic by performing materials inspections using email, telephone, and video conferencing, aware that the use of these tools was not standard practice for performing routine materials inspection.

We used resources such as box and document encryption to exchange security related information with licensees where necessary. Note that even at the height of pandemic restrictions, our approach did not preclude NRC traveling to a particular licensee site for an inspection or event response should that be deemed critical for accomplishing our mission.

After travel restrictions lightened, we resumed performing onsite inspections as our normal approach, although these inspections had been announced to ensure that we could comply with any COVID-related protocols. In some circumstances, these onsite inspections could not be performed as initially planned due to circumstances directly related to the pandemic and had to either be postponed or performed remotely instead.

In May of 2020, two months into the pandemic, we began a self-assessment of oversight activities during COVID-19. In interviews conducted as part of the self-assessment, Staff were concerned about how the pandemic might shape how we perform inspections in the future.

Early in the self-assessment we realized that remote inspections were a valuable tool for us and could be performed on a case-by-case basis, but that these remote inspections were not the preferred inspection method during normal operations.

Additionally, many of the Staff agreed, including myself, that under normal operations we should continue to perform announced inspections as much as possible. For a small subset of licensees or during pandemic conditions, announcing inspections may make it easier for the inspector to coordinate with licensees on their licensed activities, especially in scheduling temporary job site inspections.

Next slide, please. The Staff continues to assure our safety and security mission by engaging efforts to strengthen our partnering and share expertise and resources across regional boundaries to ensure effective oversight activities of both materials licensing and inspection.

Given the wide scale and range of regulated activities in industrial medical uses, it makes sense that individual staff experts in different regions will have greater experience and expertise for specific areas and the use of all of our organizational resources best serves public safety.

One example of this cross-regional support was the inclusion of inspectors and license reviewers from each materials region, as well as from NMSS Program Office on multiple team inspections. These team inspections were performed either in response to reported events involving radioactive contamination at facilities or for broad scope licensees with multiple licenses that were involved in previous escalated enforcement actions.

These team inspections successfully provided licensee with insights to improve the safety at their facilities and in their radiation safety programs. Those successes can be attributed to the continued inclusion of Agency experts from across the regions and NRC Headquarters on team inspections.

The picture on the slide shows the inspection team for an inspection at Idaho State University in early March 2020, which reviewed the use of license material for research and academic purposes. The team included staff from the Office of Nuclear Reactor Regulation, the Technical Training Center, the Office of Nuclear Material Safety and Safeguards, Region I, and Region IV.

Next slide, please. Another example of these cross-regional support efforts was to share resources across regional boundaries to assist in the processing licensing actions and performing inspections.

The picture on the slide shows a Region III inspector performing an assist inspection for Region IV in October 2021 at the Sanford Underground Research Facility in Lead, South Dakota, when onsite inspections had resumed.

At the beginning of the COVID-19 pandemic, we were forced to quickly adapt our licensing and inspection processes to fully remote. We also had to figure out how to provide the appropriate temporary regulatory relief to our licensees that requested it and process these requests from our licensees in a timely manner. This caused us to get behind on some of our licensing and inspection work. We were resilient, however, and showed our commitment to the NRC mission by working as

one NRC and we are now back on track.

We are now looking closely at how we can continue to work together to train and qualify new inspectors and license reviewers to ensure that we can meet future staffing needs.

This ends my presentation. I will turn the meeting now back over to Cathy.

MS. HANEY: Thank you, James. And thanks for all of the panelists for their presentation. Also, I'd like to thank all the Staff who supported the development of the presentations this afternoon.

I'd also like to thank all the NRC headquarters and regional staff and our Agreement State staff that support and make the national materials program assistance. Their hard work and commitment help us to successfully fulfill our important safety and security mission for the American people.

This concludes my remarks, and now we will answer any questions you may have. Thank you.

CHAIRMAN HANSON: Thanks, Cathy, and thanks to the staff panel. We're going to start our questions again for the second panel with Commissioner Baran.

COMMISSIONER BARAN: Thanks. Well thank you all for your work with the National Materials Program.

James, I'd like to start by asking about inspections. On the first panel, Katherine discussed the value of in-person inspections. We had a good discussion of it then. Rob talked about it earlier on this panel, too.

You've been a material inspector for 20 years, what do you

think about the value and effectiveness of in-person inspections compared to remote inspections?

MR. THOMPSON: That's a good question, Commissioner. And I'd like to start out by saying, I believe that remote inspections served a very valuable purpose during the pandemic.

We were faced with an opportunity, with a fact that we could not travel out to the licensee's facilities and we needed to find a way that we could still support our health and safety mission. And I think the performance of remote inspections, during that time, was very valuable. And I'm glad that we did it.

Some of the ways that it was successful was through video conferencing. We had some opportunities to observe some license activities. It is difficult to do, but we were able to in some certain circumstances. And some of those opportunities ended up in violations being identified.

And that said, if it's a comparison that you're looking for, I, like Katherine, also believe that onsite inspections are always a better indicator of licensed activities, whether they perform safely as opposed to remote. Some of the limitations of the remote inspections are, for instance, performance of independent radiation surveys. It's very difficult to do that remotely.

And so there are some things that cannot be performed remotely, such as, it was alluded to earlier, observation of license activities. In some certain circumstances, those can be observed, but not very often. So the value of onsite inspections is very high as compared to remote inspections.

COMMISSIONER BARAN: Okay. And you mentioned in your presentation the importance of unannounced inspections. Can you talk a little bit about why that is and whether that's practical to conduct unannounced inspections remotely?

MR. THOMPSON: Yes, I would be happy to. So, in announcing, or trying to perform inspections unannounced, we're attempting to see what the licensee is doing when we're not there. That's our attempt.

And it serves a very valuable purpose, especially if you're able to observe activities at temporary job sites. It's very valuable to show up unannounced in those circumstances so you can just watch them operate and see how they interact, especially with maybe members of the public that may be around the licensed activities, how they're interacting with them. If they're maintaining security and surveillance. And in my opinion, that's best performed, at least at first, on an unannounced basis.

I think some of the unattended consequences of performing announced inspections, that I really wasn't aware of until we started announcing a lot of these inspections due to COVID, was the fact that it also has some unintended consequences. And the fact that licensees, they, if you announce the inspection, I've had it told to me by licensees that they prefer actually unannounced inspections, which I wouldn't have thought that they would have ever thought that, but they did. And it was because the fact that we didn't want, we spent the two weeks waiting, worrying about it, we would prefer that you would have just showed up unannounced.

And also I think, one of the things that I identified and I noticed was the fact that when we announce inspections sometimes the

licensee, a lot of times the licensee, there will be no licensed activities ongoing during the time of that announced inspection.

And I think that's one of the things that is an unattended consequence because I had actually one facility, it was actually a medical facility, that it actually cleared the calendar for the day of the inspection to make sure that they could accommodate the inspection. And as you well know, we try to do performance-based inspections. And if they're not performing licensed activities, it makes it very difficult to actually get a performance-based inspection done.

So, I think unannounced, and I think a lot of inspectors would agree, unannounced inspections are a better approach than announcing our inspections.

COMMISSIONER BARAN: Great. Well thanks, James, I appreciate it.

Rob, the staff and Agreement States are in the midst of Phase 3 of the update to the materials inspection procedures. In the past, there was talk about leveraging remote inspections in the inspection procedures. It sounds like there is a consensus among the staff that in-person inspections should be the norm. Is that what we're going to see in the updated inspection procedures?

MR. LEWIS: Yes, thanks for asking me that, Commissioner. I, short answer is, I believe that will be reflected in the inspection procedures, as we talked about in the past panel. We do have in receipt the pandemic recommendations. And their recommendation is, as we heard, that routine implementation should be done in-person. Onsite inspection is favored.

However, there is case-by-case basis. Some of the examples James was just saying where the inspector needs some adjustment and we need a process to get that adjustment approved for that particular inspection.

But I will caveat that, as I kind of alluded to in my talk, that we're now in receipt. We got that report November 24th, we're in receipt of their recommendations. They had different views on the working group. And in fact, they also had asked us to, before we decide and take actions based on the recommendations, to have a series of alignment meetings. The first of those alignment meetings is February 9th with John and I.

So I don't want to predetermine the outcome, I want to hear it out before we make a decision. But I'm strongly making a vote, as you heard from Katherine and James, I think we're all like-minded. John, I would say the same. When we can go out it's better to go out. And we should have a predisposition to do onsite inspection of operations. And I'm distinguishing between going to the Headquarters office versus going out in the field and seeing the operating whenever they can.

I would say also that there is, even before COVID we have a category of radioactive sources where we have the ability to not travel out and do telephone contact with that licensee. We've had that in our program for a while. The working group on pandemic is not recommending revising that at this time, as I understand it, but we'll look at that as well.

COMMISSIONER BARAN: Okay. Thanks, Rob. Theresa, during your presentation you mentioned Indiana and Connecticut applying to become agreement states. Can you give us just a brief update on the status of those applications and the timeline for review?

MS. CLARK: Thanks for that question, Commissioner. So we're still in the relatively early stages of those reviews. Connecticut was looking for their agreement by 2025 and Indiana by 2026. So this is a process that involves a lot of back and forth between us and the state for them to develop the legislative needs that they have and their regulatory needs within that.

So we've already started engaging with those states to review, for example, draft legislation, to talk with them about their regulations. We've gone out and met with them a number of times so that we understand what each other needs.

And we've also, I mentioned WBL in my talk, those states have been engaged in listening to what we're offering states in web-based licensing so that they can possibly begin from the beginning by having all of their information online in web-based licensing. And we're also beginning the outreach process to tribes who are interested in the conversion to an agreement state as well.

COMMISSIONER BARAN: Great. And the Osage Nation has expressed interest in the Indiana application. I know that in the past some tribes have been concerned about other agreement state applications because states don't have the same trust responsibility with the tribe that the federal government does and states don't have the same title consultation responsibilities as NRC under the National Historic Preservation Act.

Are we hearing those kinds of concerns for the Indiana and Connecticut applications, and if so, what can we do to address those legitimate concerns?

MS. CLARK: Thanks for that additional question. This is something that's been very much on our minds because, as you know, we have a trust responsibility with the tribes, and we also have a government-to-government relationship with them as sovereign nations.

And so we have heard that feedback in the past about how we handle consultation and historic preservation as we transition from NRC jurisdiction to Agreement State jurisdiction. And one of the ways that we're getting ahead of that for the Connecticut and Indiana agreements is through increased outreach to those tribes.

At the outset, when we heard that those states wanted to become Agreement States, we sent out letters to all the interested tribes. I think it was about seven for Connecticut and about 30 for Indiana who had either current or historical ties to those states to explain to them what the process is and to offer our services from an outreach perspective.

And you mentioned the Osage Nation, we're actually planning to meet with them this afternoon, to make sure they understand what is and is not part of an Agreement State application and the relationship that we have with them under the tribal policy statement.

COMMISSIONER BARAN: Okay, thanks. Thank you very much, Theresa. Thanks, Chairman.

CHAIRMAN HANSON: Thank you, Commissioner Baran. Commissioner Wright.

COMMISSIONER WRIGHT: Thank you, Mr. Chairman. And that was really good conversation right there.

Before I get started, I do want to apologize to the first panel. I had a Microsoft Teams moment, I guess. I called Rich, Leon, I

believe, and I was looking at the screen where Leon Montgomery's name was up and I made that mistake, and I apologize to Rich, but I think I probably need to apologize to Leon too because I probably scared him to death by calling him out. So I apologize to both guys.

I thank each of you for your discussion on this panel here. Theresa, I'm going to come to you.

At the May spent fuel storage and transportation business license meeting, I had a discussion with Jessie Quintero and Allan Barker about the tribal liaison programs and methods we've been exploring to increase our outreach, including the examples from the Church Rock project.

Can you maybe provide me an update on how we've enhanced tribal engagement and where you see the program going?

MS. CLARK: Thanks for providing that. And yes, we, as was mentioned earlier today, the Church Rock outreach was really a novel way of thinking about how we engage with tribes and make sure we understand their needs versus doing business in the way that we've always done it. So that was sort of a marquee accomplishment for us.

Tribal is something that we've really increased our focus on over the last year or so, and so we have developed new documents. We've got, you know, the tribal policy statement has been in place for several years now. We have an update to our procedures, so we have a governing management directive about how we do that. And an internal procedure about how we do that work on a kind of a day-to-day basis.

But more important than just those procedures is the relationships that we have within the NRC to make sure that the tribal liaison program housed in my division is an asset to the entire agency. That we

can help people in every corner of the agency enhance their outreach to tribes as they're taking on decisions or reviews that may be of interest to those tribes. And so we've started frequent meetings across the agency for managers to be aware of what we're doing. We have our tribal liaison staff augmented now.

And we've been even more engaged in that kind of ongoing outreach. And it's just been something that we have been focusing on significantly over the last couple of years to make our processes even better and more proactive.

COMMISSIONER WRIGHT: Thank you for that. I'm going to stay with you for a second. So, in the first panel, we talked a little bit about the health physicist issue that we got. And again, I'm really pleased to hear about the progress that's being made in NMSS on this. But are there other agencies that have experienced the same issues with recruiting and retaining health physicists as well and have you thought about maybe expanding the developmental rotations or lending of staff from, to other related agencies? From like DOE or NNSA.

MS. CLARK: Thank you, Commissioner, that's a great question and a great idea. And so when I was describing the health physics efforts that we've already taken on, those are sort of the first steps. When we started strategizing in this area we had a lot of ideas and so the partnership area was kind of the next area that we wanted to tackle for doing just the sorts of things that you've talked about.

There are health physicists that we interface with at the Department of Transportation for transportation of hazardous materials. There's health physicists at EPA, like I mentioned, that we were talking

about how they have their certified health physics study group. And of course at the agreement states we already have that robust relationship with them.

So we're looking to do more of that. In the last year or so we've focused on the quicker wins in the areas that I mentioned earlier.

COMMISSIONER WRIGHT: Thank you so much. I'll shift gears over to Maryann for a minute. Hi, I hope you're doing well today. And thank you for your discussion on EMTs. So the Commission, we recently approved the Staff's plan to initiate a rulemaking that would establish regulatory requirements for well-established EMTs.

Given that that rule is, will now include the well-established EMTs, do you anticipate future rulemakings will be needed to incorporate other EMTs into the rules once they are considered well established?

MS. AYOADE: Thank you, Commissioner, for your question. And I am doing well. And so, just to repeat your question, you wanted to know if we would anticipate any more rulemakings based on what we're currently seeing for emerging medical technologies.

Right now we do not. But, again, as we continue to receive requests for us to license new emerging medical technologies, and as we do that on a case-by-case basis, we will make sure to look at also the new requirements that we have in place to anticipate any, which is what we currently do right now, anticipate any changes that we might need to make for, to the requirements in Part 35.

But right now we do not currently anticipate that. We do, we will go through our usual process, which is, as new technologies come in, we do keep track of things in the regulations that may need to be changed.

Which is how we build over the years enough operational experience, enough just, as we go through the licensing process with these emerging medical technologies. And we realize how much we need to change as we move forward in Part 35.

COMMISSIONER WRIGHT: All right. So to follow, just to let me probe a little bit more on that.

MS. AYOADE: Yes.

COMMISSIONER WRIGHT: So right now I'm hearing you say, I think that you don't have, you don't really see any other challenges right now to licensing or regulating these technologies at the moment? Or do you really anticipate some other challenges?

MS. AYOADE: As far as anticipating challenges as it relates to licensing, moving forward after the --

COMMISSIONER WRIGHT: Correct.

MS. AYOADE: -- rulemaking process?

COMMISSIONER WRIGHT: Yes.

MS. AYOADE: Not, again, not right now. We believe that this, with this new process that we have, it's going to make things better in terms of things like the different type of microspheres that we get in the future.

COMMISSIONER WRIGHT: Okay.

MS. AYOADE: We'll be able to hopefully incorporate them into being licensed under the rulemaking after it's completed. And also, the bigger technologies where, with the gamma knife units, we anticipate being able to incorporate them into being licensed under the regulations after the rulemaking is completed.

COMMISSIONER WRIGHT: All right. So at the last meeting, the last business line briefing that we had, the staff had just established the emergency medical technology standing committee, right?

MS. AYOADE: Yes.

COMMISSIONER WRIGHT: And so now you've had it mid going, quite a little bit more than a year now. So how is that going and how did the review of the three technologies evaluated by the Standing Committee differ from maybe previous reviews?

MS. AYOADE: So, it's been going well so far. The Standing Committee was the big thing that we incorporated into the review process. And it was great because we integrate earlier on, we get feedback from them.

The Standing Committee includes members from the Agreement State, from the regions that have medical expertise, also expertise with emerging technologies. And we also have somebody from our legal counsel as well on that committee.

And so we're able to get feedback from them earlier on in the process. And so far it's helping to ensure that when we review and evaluate these technologies we're getting earlier feedback that we didn't get before when we had the working group. And it's making it better for a more thorough, a more prompt, and safer product at the end of the day for the licensing guidance documents.

COMMISSIONER WRIGHT: Thank you. So, I appreciate that. So, James, I'm going to end with some questions for you real quick. Or a question.

First off, before I ask the question let me just be clear.

Like Commissioner Baran and like the Chairman, and I believe every other person out there, I don't think anything beats boots on the ground for inspections. And that would be preferred in every scenario, in a perfect world.

But I do know that there are, and I agree that there is a place for remote inspections and for doing things a little bit differently. Especially if it's not compromising safety and we're able to accomplish what our mission goals are.

And I really appreciated your dialogue with him about the unannounced inspections versus announced inspections. That was interesting.

So, you had, you talked about cross-regional support. How, if at all, do inspectors regularly perform cross-regional knowledge management and are there any regular forums like quarterly training or inspector meetings that focus on that?

MR. THOMPSON: Thank you, Commissioner. So, basically I think the question is, for these cross-regional support efforts is there any type of routine training associated with that?

COMMISSIONER WRIGHT: Or anything that, where you can share, especially with the new inspectors, right, where you're sharing, training would be one way to put it, yes. But where you're gathering this knowledge, maybe housing it somewhere and do you have regular forums where you're doing that already?

MR. THOMPSON: Well, as far as regular forums, what we do for newer inspectors is, when we have an inspection, especially complex inspections where there are multiple modalities of use involved, we

always try to bring out the inspectors along on all of those inspections.

And the thing is, the important thing to remember is, also, different regions have different types of licensees that other regions may not have. For instance, Region IV has a lot of well-logging licensees. Not, Region III doesn't have that many, Region I probably doesn't have as many as Region IV.

So, we like to reach across the regional boundaries and pull in inspectors, and even trainees from the other regions, to assist them in learning about a certain type of licensed activity that may not exist in their region.

And additionally, we like to pull inspectors from the different regions for these team inspections. It's a wonderful asset for us to be able to use because of the vast amounts in knowledge and experience that exists across the regional boundaries.

COMMISSIONER WRIGHT: Thank you for that answer, I appreciate it. And, Mr. Chairman, I yield back. Thank you.

CHAIRMAN HANSON: Thank you, Commissioner Wright, very much. I wanted to start this morning with picking up, actually Commissioner Wright, on a line of question you had about certified health physicists. And this kind of gets back to, I think the previous panel as well.

And, Theresa, I really thought your framework for building the pipelines, staff development community was a really interesting one. And yet I'm acutely aware that the NRC is competing for, potentially for CHPs with other elements, right? With industry, with the states. And I worry about that. And so, I'm thinking about that element on the one hand, and on the other hand, we have this opportunity for cross training. Which I

think was mentioned by Katherine and some other folks in the first panel about taking inspectors in the regions or at Headquarters and teaching them to do different things and whether that's taking formal resident inspectors for sites that have been shut down and reorienting them towards overseeing decommissioning, or providing opportunities for folks to expand their skill set.

And so I'm thinking about, in the universe of certified health physicists how to, to quote former President Bush, "how to make the pie higher," if you will. And wondering if what you think about what we might need in terms of additional authorities within human capital, whether or not things like tuition reimbursement or other kinds of staff development might be useful in terms of expanding the total universe of CHPs?

MS. CLARK: Thank you, Chairman, for that very thoughtful question. And you raise a number of things that we're already thinking about and talking about amongst the staff.

And so, when Commissioner Wright brought up this topic, he mentioned other agencies, and I failed to emphasize. This is a nation-wide, and perhaps a worldwide, challenge.

There is only so many programs that are accredited to provide health physic degrees and curricula. And the people who are choosing those degrees, similarly to how we've looked at nuclear engineer in the past, need to see that there is a future for them when they choose that degree.

So that really goes into the pipeline piece. And where we're very grateful that the NRC has this grants program that provides for curriculum development, scholarships, and fellowships for students who

want to go into these fields. It's a number of engineering and science fields, of course, not just health physics.

But we've been really amping that up because that will help increase that pipeline, not just for us, but for the entire industry. Because those students who receive the scholarships, they don't commit to the NRC they commit to the nuclear industry. So that's been a, kind of a marketing point for the states when we say, hey, please help us market these grants because you can benefit from this as well.

Another point that I think I'll make on the “expanding the pie” idea is that, yes, there are certified health physicists, but not everybody needs to be a certified health physicist. That requires a certain amount of exams, practical experience, and other exams to do the work that we do.

There's a lot of health physicist adjacent fields, if you will, that can be trained to do our work. And one of the things that I was really excited to see as we were going through the hiring process for the next Nuclear Regulator Apprenticeship Network class was that we were able to draw in additional people in these sorts of adjacent fields so that we can train them up on what the NRC needs out of people as a health physicist.

And I think the final thing that I'll mention in terms of other authorities or ideas, one thing that has been successful, in some cases in the past, is using the NRC's fellowship program to pay for degrees when we know we need them in specialized areas.

And one example of that where we don't need a ton of medical physicists, but the ones that we need, we need them to really know their stuff. And we have used the fellowship program in the past to support that activity.

CHAIRMAN HANSON: Yes, thank you, that's just great. I'm really glad to see that we're kind of thinking creatively about how to use all the tools in the tool box to meet the kind of ongoing and emerging needs.

If I can, Theresa, I just wanted to stick with you for a couple more minutes. You mentioned some innovation and some efficiencies around evaluating petitions for rulemaking. And I know we've only done, I guess one agile petition for rulemaking review so far, but have you, what are the lessons learned on kind of that PRM pilot and do you have a sense of kind of the time savings around this and how to maybe apply some of those lessons learned going forward, at least initially?

MS. CLARK: Thanks for that question, Chairman. And our rulemaking group has this really good habit of doing small lessons learned activities after many of their projects, so we actually do have some documented lessons learned from that first petition review. And that went into what I was saying earlier.

So, some things worked really well in this review. They liked having these monthly check-ins if things weren't languishing. They were able to stay on schedule with the working group and with the process owner who was driving that petition. That was very helpful.

Something that they thought they might have gotten to but they weren't able to for this situation was, if there was so much coordination throughout that process through these monthly check-ins, you may not even need the formal petition review board at the end of the petition review, because everyone would have been looped in and it would have just been a formality.

They didn't get there in this case just because of the

complex nature of the petition. And I don't think they achieved a tremendous time savings, but they learned a lot that they want to apply to another pilot where they do see that they might be able to save some time. And also remove some of the process steps that would be a mere formality if everyone is plugging along every month in these sprints.

CHAIRMAN HANSON: Thank you, that's super helpful. I'm really, I'll be interested to follow this going forward, right, because we know, just even in my limited tenure on the Commission I can clearly see that sometimes these petitions rulemaking take a long time to process, right?

But we'll get a paper on the Commission and we'll say, the petitioner submitted this request for rulemaking like five or six years ago. And certainly, I don't want to short-change the public participation process as part of those because I think that's really important. But if we can have, if we can put in parallel some of review processes and other things so that we can be more responsive, both to the petitioners, and more transparent to the public about how we're reviewing some of these things, I think that's all the better. And I'll be super curious to kind of see if the lessons that you guys are reaping from this can be shared with, say NRR or NSIR or other parts of the organization too. So I'm really looking forward to this. And I appreciate your, I appreciate your remarks this morning.

That's really it for me in terms of questions. I want to thank everyone this morning. I think the Nuclear Materials Users business line is really critically important.

I know sometimes the operating reactors gets a lot of focus within the agency. We have 94 operating reactors, but we have tens of thousands of materials licensees around the country, and so the breadth of

work that NMSS does in this area, in partnership with our agreement states, really touches the everyday lives of Americans in an entire myriad of ways and so I want to thank you all for your commitment to public service and to the agency's mission.

I want to thank my colleagues, I think, for their comments this morning, for their emphasis on how to strengthen the programs that we have in front of us. I'm sorry, I'm going to take just two minutes here.

I did have one last question as I was wrapping up and I just remembered it so I'm going to, I think I had a little bit of time left so I'm going to use my prerogative to do that.

I mentioned the emphasis sometimes on operating reactors and we have, there is an emphasis on that internationally, as well in terms of sharing expertise around the world. But we see that countries who may not want to build a reactor still have a need for expertise on materials uses.

Countries that want to have medical devices or industrial devices, that they climb the economic and social development ladder. And I'm just, I know we do some of these activities, I'm wondering if Cathy or Rob can just kind of speak to some of our activities in this area and your thoughts about how we may be able to expand those going forward.

MS. HANEY: So I'll start, but then I'll turn to Rob for the specifics. So, Chairman, thanks for the question.

I think it's very important that we are working internationally, just as well for working domestically with our partners. We do a lot of work through NEA and the International Atomic Energy Agency, as I said, I'll Rob hit on some of the specifics, but I do think it's important that

we keep up that effort.

But we learn a lot. We also contribute a lot. There are several cases where our staff has gone out on a different, providing support to an individual state. And when I say state, another international regulator. And I think the feedback that I've gotten, whether it's been personal feedback or through our Office of International Program, is that the receiving country is very appreciative of the work.

We've also hosted individuals from other countries coming in and working with, side-by-side, with the NRC Staff to share that knowledge. So there are formal mechanisms and informal.

And, Rob, if you want to touch on any of the specific outreach efforts that would be good.

MR. LEWIS: Yes, thanks, Cathy, that was great, a great start. Yes, I would just, we also value our international partnerships. Our licensees appreciate that we value those international partnerships, especially on the medical side and the sources side.

They're selling their equipment across the world, so when it's transported across the world, we all try to use the same standards. When it's licensed in individual countries, we want the same foundational standards for, to support that international business provided they provide for safety.

So to do that, the, actually, Kevin Williams, the Division Director on Theresa's division, he's a member of the IAEA radiation safety standards committee. They meet twice a year. We participate in their activities and the sub-tier groups that meet the standards and guidance that they developed. We're very active in that program.

We participated as well in IRS missions for non-nuclear countries. We've had several of our staff do those, including myself. I was team leader for IRS mission to Poland, they're an embarking country but a big part of our review included their nuclear radioactive materials program.

And then also in the bilateral support area we work very closely with Nadar Mamish and OIP people. They have a very active assistance program. Many of the countries that we're working on in that assistance program are non-nuclear reactor countries, but they do have a radioactive materials program, medical and industrial uses.

And we actually have our staff join Nadar's staff and some of the contractors that OIP has on trips to those countries to assist developing the regulatory program. A lot of that recently has been focused on source security.

Particularly in the country of Africa. We've done several workshops in that area in the last few months. And they're remote obviously. But we're a very active participant in those.

And the last point I'll make is, it's not just the NRC. I think when we're dealing with countries that are developing a regulatory program for radioactive sources, we partner with the NNSA, the DOE NNSA, and they go as well. And they have a security interest. We have a safety and security interest and I think we complement each other well as we interact internationally.

CHAIRMAN HANSON: That's great, Rob, thank you very much. I think you hit on all the right notes.

We heard a lot this morning about how our nuclear materials program and the business line today really interacts with both our

licensees and the Agreement States, and I was glad to end on a note of international cooperation as well.

And I certainly appreciate everyone, particularly my colleagues forbearance on my left turn there right at the end. I remembered that I wanted to bring up that point.

And again, I want to thank the Staff this morning. I want to thank Commissioner, Baran, Commissioner Wright for a really good discussion. And with that, we are adjourned.

(Whereupon, the above-entitled matter went off the record at 11:46 a.m.)