UNITED STATES

NUCLEAR REGULATORY COMMISSION

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MEETING ON THE STRATEGIC PROGRAMMATIC OVERVIEW OF THE FUEL FACILITIES AND THE SPENT FUEL STORAGE AND TRANSPORTATION BUSINESS LINES

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TUESDAY,

MAY 10, 2022

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The Commission met in the Commissioners' Conference Room, One White Flint North, Rockville, Maryland, at 9:00 a.m., Christopher T. Hanson, Chairman, presiding.

COMMISSION MEMBERS:

CHRISTOPHER T. HANSON, Chairman

JEFF BARAN, Commissioner

DAVID A. WRIGHT, Commissioner

ALSO PRESENT:

BROOKE P. CLARK, Secretary of the Commission

MARIAN ZOBLER, General Counsel

NRC STAFF:

DAN DORMAN, Executive Director of Operations

ROBERT LEWIS, Deputy Director, Nuclear Material Safety and Safeguards (NMSS)

SHANA HELTON, Director, Division of Fuel Management, NMSS

DANTE JOHNSON, Acting Deputy Director, Division of Security Operations, Office of Nuclear Security and Incident Response (NSIR)

CHRISTOPHER REGAN, Deputy Director, Division of Fuel Management, NMSS

MATTHEW BARTLETT, Project Manager, Fuel Facility Licensing Branch, NMSS

JENNIFER DALZELL, Technical Assistant, Division of Nuclear Materials Safety, Region III

LUCAS KYRIAZIDIS, Reactor System Engineer, Division of Systems Analysis, Office of Regulatory Research

CHRISTOPHER MARKLEY, Systems Performance Analyst, Storage and Transportation Licensing Branch

CYNTHIA TAYLOR, Senior Fuel Facility Inspector, Division of Fuel Facilities Inspection, Region II

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 NRC's strategic considerations associated with Fuel Facilities business line and the Spent Fuel Storage and Transportation Business Line.

And there's an echo. It's very important to keep the public informed of the Agency's development in these areas of high interest so I thank you all for supporting this meeting today and I'm looking forward to a great conversation. We'll hear from two NRC Staff panels, the Fuel Facilities business line will present first, then we'll take a short break and then we'll hear from the Spent Fuel Storage and Transportation Business Line.

With each panel we'll hold questions until the end and then we'll hear questions from the Commissioners to the panels. Before we start, I'll ask my colleagues if they have any comments they would like to make?

We'll get started then with these two topics I think of pretty significant interest to the public. So, with that, I'll hand it over to Dan Dorman, the NRC's Executive Director for Operations. Dan?

MR. DORMAN: Good morning, Chairman Hanson, Commissioner Baran and Commissioner Wright. We appreciate the opportunity to brief you this morning on, as you say, two of the business lines within the material safety program.

The Staff are pleased to be here in this panel to provide our annual update on the Agency's Fuel Facilities program strategic outlook and

licensing and oversight environment.

The NRC's Fuel Facilities business line provides for public health and safety and protection of the environment through our regulation of the sole uranium conversion facility in the United States, enrichment facilities, nuclear fuel fabrication, and non-reactor licensees possessing greater than a critical mass of special nuclear materials, and through leading the NRC's efforts on fulfilling international material control and accounting obligations.

The business line continues to focus on fulfilling our safety and security mission for the currently licensed facilities and the Fuel Facilities program is seeing a significantly growing workload driven primarily by accident-tolerant fuel development, use of higher enrichments, planned fuel facilities in support of advanced reactor technologies, and new medical isotope production facilities.

The business line continues to seek ways to continue our journey of being a modern risk-informed regulator with a heightened focus on hiring, training, and professional development of Staff to meet the needs of today and the future.

For the Fuel Facilities business line, several NRC offices have a role in carrying out its functions.

These partners include the Office of Nuclear Material Safety and Safeguards in the lead, Region II, the Office of Nuclear Security and Incident Response, and the Offices of Enforcement, International Programs, Chief Financial Officer, and the General Counsel.

This year the Fuel Facilities business line program is

comprised of roughly 70 full-time equipment Staff. I want to commend all of the Staff who contribute to this business line for their hard work, diligence, and commitment to ensuring the safe and secure use of radioactive materials.

Next slide, please.

Our first speaker will be Rob Lewis, the NMSS Deputy Director who will provide a strategic overview of the Fuel Facilities business line. Then Shana Helton, the Director of the Division of Fuel Management will present on how we are preparing for the fuel cycle program of the future.

Matt Bartlett, a Senior Project Manager in the Division of Fuel Management, will discuss fuel facilities, licensing activities, and how the Staff are making advancements in licensing effectiveness.

Cynthia Taylor, Senior Fuel Facility Inspector in the Division of the Fuel Facility Inspection in Region II, will present on the fuel facilities oversight activities and the ongoing efforts regarding the implementation of the Smarter Inspection Program.

Dante Johnson, acting Deputy Director of the Division of Security Operations in NSIR will present on the Agency's authorizing official activities. I'll now turn the presentation over to Rob to kick us off with the Fuel Facilities business line activities.

Next slide, please.

MR. LEWIS: Thank you, Dan. Good morning, Chairman and Commissioners. It's a pleasure to be with you in person this morning. Next slide, please. Just last month, the NRC issued a refreshed strategic plan covering the next five years.

This plan provides three strategic goals, which you can see on the slide, ensuring the safe and secure uses of radioactive materials, fostering a healthy organization, and inspiring stakeholder confidence in the NRC.

Thank you, Commission, for setting this direction to Staff. I think you'll hear today that these goals speak both to the current and the future needs of this business line in particular and they're going to be very useful to guide our decision-making and prioritize our work over the next few years.

Given my agenda is actually a strategic outlook, I thought a great way to frame my comments would be to talk about what those goals mean to me for this business line.

So our fuel facilities team ensures safe and secure radioactive materials through our licensing and oversight work, our international safeguards work, and our material controls and accountability work.

We regulate uranium conversion, uranium enrichment facilities, fuel fabrication facilities, and several universities and research facilities that possess greater than a critical mass of special nuclear material.

This is a wide range of facility types and they use a wide range of technologies and processes. Our business line differs from others at NRC in that its focus tends to be on chemical processing engineering issues, uranium health physics, and prevention of inadvertent nuclear criticality as the main hazards.

Indeed, many of regulated facilities look more like chemical

plants than nuclear power-plants. Over the coming years, our strategic workforce planning tells us that we have high confidence, we have increase work related to new fuel fabrication and enrichment for advanced reactors.

We have increasing work for accident-tolerant fuels and higher enrichment for existing reactors and there will likely be additional business drivers for domestic conversion and enrichment capabilities driven by world events.

It's important that we maintain situational awareness and understand these evolving technologies, provide for regulatory clarity and reliability, and take the actions to be ready to review any licensing submittals if and when they come in.

Recruiting and developing and retaining a workforce where people feel welcome to express their views on the complex nuanced safety issues we will encounter will be essential to the success of our mission.

Regarding stakeholder confidence, we take pride not only in our technical competence but in our work to ensure openness and transparency of our regulatory decisions.

In addition to the many public meetings we hold near facilities and on topical issues throughout the year, one good practice of this business line is every six months we hold a fuel facility stakeholder meeting with the entire fuel facility industry represented, where we talk about joint priorities, we present an integrated schedule, and we improve awareness of key NRC activities and initiatives.

We truly believe that these meetings help us make better,

more risk-informed and more informed regulatory decisions. We look forward to further enhancing our stakeholder confidence activities over the next five years to rise to the challenge set by the new strategic plan.

Next slide, please.

With regards to fostering a healthy organization, I'd like to spend a minute on what we mean by the modern in NRC's transformation mantra of modern risk-informed regulator.

It's important for us to look and act modern so we are a workplace where top talent wants to come and, more importantly, wants to stay. To that end, in NMSS we're using an employee experience model to look at transformation areas of people, innovation, risk, and technology.

We're asking ourselves to think of what a modern company would look like, a lot of people think of tech firms or something. So, let's act and look like a tech firm. Some simple ideas but ideas that nevertheless mean a lot of people's everyday life and make a real difference.

First, I'd like to talk about paperless. We've gone paperless, not paper-free, today I'm setting a bad example but we're on the path.

We embrace paperless office concepts including collaborative editing via shared documents and strict use of e-concurrence, ideas that were really foreign to the NRC a couple years ago.

We were doing it before the pandemic started on NMSS and it really helped us during the pandemic. These tools have made our work easier, better, and faster. I haven't heard anybody that doesn't like to do it.

I'd like to never touch another paper concurrence document

again, personally. Second, we're stressing the use of data to make more informed decisions. You'll hear from Matt today about how we use data to resolve some long-standing questions about fees.

Using Be RiskSMART framework for our daily activities is another emphasis area. We've integrated Be RiskSMART concepts into standard briefing sheets, we hold pop-up seminars for the office to demonstrate how the framework can be used both for big decisions and small decisions.

The final area I wanted to mention and the most important to me in terms of making a difference in people's experience in the workplace is we stress that the managers in our program need to frequently emphasize the principles of good regulation that the NRC values and the leadership model in daily interactions. Model those behaviors.

Those are the behaviors that speak to us, that's the way we want to be treated and that's the way we want to treat others in the workplace. So, every chance we get we emphasize those with our team.

We've come a long way in two years but I'm going to admit there's a lot more to do and culture changes are a sustained effort in NMSS and in the rest of the Agency. We're committed to sustaining the effort and the momentum that we have.

We're actually hiring a lot of people this year, as you know, Commission, in NMSS and across the fuel facilities program. We're very committed to getting their NRC career off to the right start including using the leadership model behaviors.

So, I appreciate the opportunity to speak to you today in person and Shana Helton is our next panelist.

MS. HELTON: Thank you, Rob. Good morning, Chairman and Commissioners, I appreciate having the opportunity today to give you a snapshot of some of the activities that are on the horizon for the fuel facilities business line.

Next slide, please.

Industry has expressed interest in loading their first batch of ATF with enrichments of up to 10 weight percent uranium-235 by the late 2020s with the goal of extending operating cycles for existing large light-water reactors.

The Fuel Facilities business line is ready to support these plans from a regulatory perspective, including licensing and oversight related to enrichment and fabrication of ATF.

Staff has proactively engaged with industry to understand their plans for regulatory engagement. We've publicly communicated our needs to receive applications for fuel enrichment and fabrication approximately two years prior to deployment and we strongly encourage pre-application activities prior to any submittals.

These pre-licensing engagements are critical for establishing shared expectations regarding the scope and the licensing path forward and to ensure Applicant and regulator readiness for a timely and effective review.

In the case of new technologies, early pre-application

discussions are especially important to ensure we identify any areas where we may see a need for research or regulatory guidance updates.

To date, we have found that our regulatory processes and framework to be effective as demonstrated by our experiences over the past several years of licensing the enrichment and fabrication of fuel.

We've already approved one licensee's request to change their minimum margin of subcriticality for enrichments of up to 8 weight percent uranium-235.

We're currently reviewing a similar request from Louisiana Energy Services to go up to 10 weight percent uranium-235.

Applicants typically first seek approval of revised criticality assessments prior to seeking approval to process material up to a higher weight percent enrichment at a facility.

As such, we are anticipating follow-along licensing amendments to allow fuel fabrication using increased enrichments. Next slide, please.

Fuels for advanced reactors is a dynamic arena within the business line and we anticipate an increased workload going forward. Many advanced reactor designers have expressed an interest to use fuel that is enriched from 5 to 20 weight percent uranium-235.

This is referred to as high-assay, low-enriched uranium, or HALEU fuel.

The range of enrichment between 10 percent and 20 percent uranium-235 is considered by NRC regulations to be Category 2

material, also known as special nuclear material of moderate strategic significance.

Since our last Commission briefing on this business line, we've issued a variety of communications related to HALEU fuel. On our public website, we posted questions and answers on the physical security requirements for Category 2 material.

This is a topic of interest discussed at one of the NRC's routine public advanced reactor stakeholder meetings. Last December, we issued a report to Congress concluding that near-term updates to NRC regulations or policies were not necessary to license HALEU fuel.

And in the coming months, we plan to issue updated guidance in NUREG-2159 on material control and accounting practices at facilities possessing Category 2 material.

As Rob mentioned, we have routine engagement such as the advanced reactor stakeholder meetings and the fuel facilities stakeholder meetings.

These meetings help us maintain awareness of stakeholder needs and potential new technologies and regulatory issues.

At the NRC's Regulatory Information Conference as an example, we hosted a panel on the unique attributes of the molten salt fuel reactor cycle, including diverse panelists representing the Nuclear Regulatory Commission, Department of Energy, the Canadian Nuclear Safety Commission, and Elysium Industries.

Additionally, the Staff has as a variety of touch-points with

our interagency and international partners through our involvement in forums such as the International Atomic Energy Agency, the Nuclear Energy Agency and other forums.

There has been a good deal of licensing activity related to advanced fuels as well. In the arena of fuels enrichment, we approved the license amendment for Centrus to demonstrate the commercial production of HALEU at the Department of Energy reservation in Piketon, Ohio.

Centrus has halted the installation of the HALEU demonstration centrifuges in cascade form until the Department of Energy completes its solicitation to competitively award the contract for finishing the demonstration project for HALEU.

In the area of fuel fabrication, on April 6th we received the first application for a new Category 2 fuel facility from TRISO-X. We've never licensed a Category 2 facility before but I believe that overall, our licensing framework is ready for novel designs.

You can see on the slide, along with the photo taken when NRC received the application for TRISO-X, the depiction of the tristructural isotopic or TRISO fuel used in the designs.

In addition, Staff is also continuing pre-application activities with Kairos Power on its planned Atlas fuel fabrication facility in Oak Ridge, Tennessee, which will be co-located near the Hermes demonstration reactor that the NRC is currently reviewing.

I should also mention the increased licensing activity we're seeing related to medical isotopes. Last fall, we were informed by Niowave

of their plans to submit a future license application under Part 70 to commercially produce the molybdenum-99 isotope.

Pre-application engagement is underway to understand the technology and the licensing approach for this facility. Lastly, I'd like to mention that while our regulatory framework has demonstrated its flexibility in licensing new technologies, there are some areas where more research or guidance will help us with our reviews.

We're actively participating in discussions, monitoring Department of Energy activities, and conducting regulatory gap assessments to better understand the state of knowledge for these technologies and assure that we are ready to effectively and efficiently license them when submitted.

Next slide, please.

As has been discussed, the EDO has set a priority to hire more than 300 people by the end of the fiscal year. Personally, I'm thankful that the EDO placed a high priority on staffing as this has been a focus area already in the Fuel Facilities business line.

Our goal is to hire the right number of people based on insights from strategic workforce planning to support the anticipated in-flux of workload within the business line and to continue to support our existing work activities.

To achieve this, we need to onboard roughly more than 15 staff this fiscal year, which is not insignificant for a relatively small business line.

Chris Regan will describe our approaches for recruiting and

hiring in the next panelist of speakers, and these approaches are also being used in the Fuel Facilities business line.

As we focus on staffing, we're likewise placing a high priority on developing our people and preserving and transferring our institutional knowledge. We've proactively engaged staff in knowledge capture and transfer.

We've held several seminars and key areas including commercial fuel cycle safety analysis and licensing in the United States, molybdenum-99 isotopes technology and licensing, implementation of international standards, and recently revised division instructions containing guidance to Staff on licensing with a focus on making the process more stable and predictable.

As Rob mentioned, Staff is currently using Nuclepedia on an increasing basis and this tool is starting to become part of our day-to-day practices. We've implemented a knowledge management action plan which includes an effort to revamp our internal SharePoint site in response to feedback from Staff and managers within the Fuel Facilities business line.

We're also leveraging technology for managing and analyzing our work processes. I'd like to give a shout-out to the Staff of the Chief Financial Officer for the dashboard they created to visualize budget execution data.

This has been a real-time way of monitoring and managing expenditures within the business line. Matt and Cynthia will both describe further efforts to use data and technology in our licensing and oversight

processes.

So, with that I will now conclude my remarks and turn it over to Matt Bartlett. Thank you.

MR. BARTLETT: Good morning, Chairman and Commissioners. I will be presenting on the Fuel Facilities licensing activities.

Next slide, please.

The fuel cycle business line regulates a broad range of facilities including 10 universities or research facilities, 5 fuel fabrication facilities, one enrichment facility, one uranium conversion facility, and one application under review for a new fuel fabrication facility, TRISO-X.

The business line continues to process and complete a large number of both routine and complex licensing reviews to support these facilities. The graph on the bottom left of this slide demonstrates that the business line staff processes just over 40 fuel cycle licensing actions per year.

This includes reviews, amendments, renewals, and new license applications. These reviews are completed in a timely manner on average using 80 percent of the established schedule.

The number of actions has been consistent over the last four years with a projected increase to an estimated 57 actions in Fiscal Year 2022.

This is due in part to the COVID-19 exemptions completed in Quarter 1, the oversight of classified networks, several amendments to support the transition to higher enrichments, and licensing of new fuel types such as sodium and pebble fuels.

The business line is processing several major actions

including the Westinghouse license renewal, which is expected to be completed in August 2022, three renewals for universities and a research facility, the Honeywell restart expected to be completed in April ‘23, a new application for the TRISO-X fuel fabrication facility, a wholly-owned subsidiary of X-energy.

The trend in fuel cycle is for the enrichment and fuel fabrication facilities to increase their enrichment limits above 5 percent. Two fuel fabrication facilities and one enrichment facility have submitted amendments to validate their criticality codes to support this effort.

There is also interest in developing fuels to support advanced reactors with high-assay low-enriched uranium fuels up to 19.75 percent of U-235. Next slide, please.

The Fuel Facility business line continues to improve tracking and transparency on projects.

For example, over the past several years, fuel cycle licensees have expressed increased interest in understanding how their annual fees support specific tasks such as rulemaking, guidance development, administrative tasks, et cetera.

In the past, developing a detailed breakdown of the hours spent per project was challenging because historically, the bulk of non-direct-fee billable work was charged to a few generic codes.

This made identifying the hours spent on specific projects difficult because multiple projects were grouped together. This is demonstrated on the slide in the top-left graphic.

The red in the chart represents the hours charged to generic codes and the gray on top represents the hours charged to task-specific codes. The majority of non-direct-fee billable work in 2018 and 2019 was charged to generic codes.

The business line has been working to improve our data collection by establishing the policy that projects involving 40 hours or more should have a task-specific charge code.

The top left graphic demonstrates the use of generic codes represented by the red portion of the column in 2018 made up 72 percent of the charges. The red portion was reduced to 26 percent in 2021.

The result of better data collection enables the Staff to observe trends in the data. The pie chart on the lower portion of the slide illustrates the type of dashboards we are working to develop to draw useful information from the data.

The pie chart displays a breakdown of several of the major projects supported by our non-direct-fee billable work. Improved data and analysis facilitate our ability to tell the story to our internal and external stakeholders.

These types of dashboards provide a better understanding of where resources are being utilized and facilitate communicating that information to stakeholders.

The business line holds a semiannual stakeholder meeting, as Rob mentioned, with industry and the public at which we use this type of information to provide feedback on the level of effort spent on projects

including non-fee billable tasks.

This allows stakeholders to better understand the projects supported by the annual fees. These presentations have been well received and enhanced discussion on the projects supported by the business line.

Next slide, please.

Another area where the business line has seen marked improvements in new processes and tools is the use of web-based licensing. Web-based licensing is as online database used to track licensing actions from receipt to completion.

The software facilitates project management as summarized in the graphic on the left half of the slide. The software is used to create a review schedule, track progress on the milestones, and monitor resources and the review's progress.

The web-based licensing provides a number of built-in reports that Staff and management can use to monitor the licensing action status, percent of the metric used, number of actions completed, et cetera.

In addition, the web-based licensing software provides a log to capture notes about the review. These records are searchable and provide a useful history for knowledge management.

The recent example of the benefits of using web-based licensing is the improvement the Staff has observed in the time required to generate the quarterly metric reports submitted to the Senate Oversight Committee and to support the Congressional budget justification.

Use of this software in place of manual calculations has

reduced the time needed to compile the data from 250 hours per year to under 50 hours. Next slide, please.

The business line has recently incorporated 32 Smarter licensing recommendations into the division instructions, which are used as guidance for a fuel cycle and spent fuel business lines.

These Smarter licensing recommendations were developed by the NRC Staff and industry stakeholders. Incorporating these recommendations into the procedures ensures they're a part of our routine processes.

The Smarter licensing recommendations were incorporated to enhance the review process by providing more opportunities to interact with the Applicant, improve the efficiency of our reviews, and provide more transparency for stakeholders to understand the review timeline and process.

Examples of the improved interactions include more opportunities to hold pre-application meetings early in the review process, and when feasible, to involve the review team in a site visit.

When developing requests for additional information, Staff are also encouraged to discuss the draft final request with the Applicant before sending them the formal letter.

This ensures mutual understanding of the information that's needed. These interactions facilitate the Applicant's development of high-quality submittals. Examples of improved efficiency result from flexibility for scheduling and implementing tasks.

For simple actions, the Staff can combine multiple steps of

a review into a single action, such as combining the acceptance review with the development of the safety evaluation report.

For major licensing actions, Staff can stagger the issuance of requests for additional information based on the technical areas.

This improves efficiency because both the Applicant and the NRC Staff can continue to work on one or more technical areas, even though other technical areas may require additional time.

The updates provide improved transparency by requiring Staff to estimate the number of hours needed to complete the review and provide the Applicant a projected completion date in the acceptance letter.

The Staff also plans to make certain portions of the division instructions publicly available so the review process is more transparent to stakeholders.

The Smarter licensing recommendations contribute to openness and outreach because they provide more opportunities to interact with the Applicant in the review process.

These meetings are generally open to the public and provide additional opportunities for stakeholders, including the public, to observe the NRC decision-making process.

That concludes my prepared remarks. I will now turn the discussion over to Cynthia Taylor. Next slide, please.

MS. TAYLOR: Thank you, Matt. Good morning, Chairman and Commissioners. I'm a Senior Fuel Facility Inspector in the Division of Fuel Facilities Inspection, or DFFI, in Region II.

Today I will highlight several fuel cycle oversight accomplishments, enhancements, and ongoing activities. Next slide, please.

DFFI has successfully implemented the oversight program for the nation's fuel cycle facilities this past year while preparing for inspections at new facilities.

While remaining focused on public health and safety in 2021, we completed all core inspection activities except for a limited number of emergency preparedness and force-on-force exercises that were granted COVID exemptions and were rescheduled this year.

Separately, in 2021, we completed all program adjustments carried over from 2020. We maintained our event response capabilities during the pandemic by evaluating all licensee events and notifications.

Recently, our inspectors responded to an event that occurred at a license facility that reported a loss of all controls of their credited accident sequences.

Inspectors quickly evaluated the event focusing on the immediate safe condition of the plant and completed a special reactive inspection.

We believe strong partnerships with internal and external stakeholders are essential for meeting our mission.

Listening to local feedback in the area around one of our sites, this year, we plan to conduct an in-person license performance review near the site and plan to partner with the Division of Management Licensing Staff to answer additional questions from our external stakeholders.

We have incorporated lessons learned from the pandemic for exemplifying our people-first philosophy.

While balancing Staff personnel safety with our mission reinforces that while some inspection aspects can be successfully conducted remotely, direct onsite inspection remains the most effective inspection method and is in line with our performance-based risk-informed methodology.

As a result, we updated our inspection guidance to provide additional flexibilities to our inspection program during a pandemic. DFFI is busy with new fuel facility oversight activities.

Last year we conducted several operational readiness reviews in multiple disciplines at the Centrus American Centrifuge Plant in Piketon, Ohio. Beginning in late 2022 and into 2023, we have planned increased inspection activities associated with the planned restart of Honeywell, the U.S. sole uranium conversion facility in Metropolis, Illinois.

We share oversight of the SHINE facility with the Office of Nuclear Reactor Regulation and conduct nuclear criticality safety and material control and accountability inspections out of DFFI.

SHINE is a Part 50 medical isotope facility in Janesville, Wisconsin, which intends to pursue a phased approach to initial operation of the facility. In their October 15, 2021, letter, SHINE estimates Phase 1 construction to be substantially complete by May of 2023.

Before I leave this slide, I'd like to take a moment to highlight some of my colleagues that perform fuel facility inspection activities.

From top to bottom, we have Brannen Adkins, a senior fuel

facility inspector, verifying the cylinder field mask for a uranium hexafluoride cylinder during an operation inspection.

And Alejandro Alen, senior resident inspector for BWXT, inspecting instrumentation measurements in the uranium recovery process area during a plant status walkdown.

Next slide, please.

Intentional individual talent development remains an essential focus area. Through formal and informal means, we empower our Staff to seek out critical knowledge needed to excel in our mission.

We conduct biannual integrated counterpart meetings where technical and regulatory topics relevant to inspection oversight are shared and shown in the first photo, where DFFI Staff meets with Laura Dudes, Regional Administrator Region II, during an integrated counterpart meeting.

We have implemented functional area specific community of practice in such areas as nuclear criticality, health physics, and plant operations to provide informal technical training to our Staff.

We recently completed a holistic review of our inspector qualification requirements and planned to revise and improve our qualification process. To support professional development, we have performed competency modeling to assess and identify strengths and opportunities for individual development.

In the Region II-focus area of teamwork, the Staff partnered with the Technical Training Center to update the fuel cycle self-study courses and exams. For cross-training activities, inspectors routinely support the

operating and new reactor business line on a variety of inspections.

We continue to support the Agency's diversity and inclusiveness definitions through activities such as conversations for growth and civility training.

Finally, the Diversity Management Advisory Committee, which includes two individuals from DFFI, received a 2021 Federal Executive Board Outstanding Achievement Diversity Award of the Year, as shown in the second photo, further illustrating the business line's efforts to enhance diversity and inclusion across all our organizations.

Next slide, please.

We continue to innovate and enhance the fuel cycle oversight program. Last January, implementation of the Smarter Inspection Program began.

In 2020, during the development of the Smarter Inspection Program we used inspection experience and data insights to adjust our inspection focus to better align our resources to areas commensurate with their risk.

We updated our manual chapter and inspection procedures to reflect the smarter inspection program changes.

Currently, the program has not yet completed a full inspection cycle, but we have gleaned early insights through our use of an inspector pulse survey.

We determined that several Smarter inspection program changes to inspection procedures improve the focus of the resident inspector

program. For example, to reduce overlap we credited certain regional inspection procedures for facilities that have resident inspectors.

Since the scope is duplicative to the resident inspector program, sections of the regional inspection radiation protection procedure were omitted for facilities that have a resident inspector.

In addition, modification to inspection procedures with similar risk-significant elements and management measures were made.

Specifically, waste management risk elements and management measures were absorbed into the radiation protection procedures while similar attributes for the maintenance and surveillance inspection procedures were incorporated into the plant operating procedures.

The fuel facility oversight program is a mature inspection program and the Smarter inspection program improvements are enhancements to the program. Our pulse survey indicates that we have not identified any early implementation challenges to meeting our mission.

Survey responses also affirm inspections continue to meet our mission and provide reasonable assurance of adequate protection.

We continue to develop the Category 2 fuel facility inspection program by partnering with the Division of Fuel Management Staff to evaluate inspection procedures to add and/or clarify inspection guidance.

We routinely collaborate to identify any differences in licensing and hazards from these types of facilities by using RiskSMART principles to further inform future inspections.

We have leveraged and repurposed replacement reactor

program systems and inspection scheduling tracking and reporting tools to increase consistency and clarity in fuel facility inspection planning and execution.

We are committed to enhancing our self-sustaining knowledge management program across the business line, including investments in Wiki-based Nuclepedia platform by providing site-specific and technical information relevant to fuel cycle facilities.

My final slide, moving from top to bottom far right, shows Larry Harris, senior resident inspector, and Laura Dudes, Region II Regional Administrator, during a site familiarization tour at Nuclear Fuel Services.

The bottom photo shows TRISO-X pilot laboratory facility. Thank you very much for the opportunity to present today. This concludes my remarks, and I will now turn it over to Mr. Dante Johnson.

MR. JOHNSON: Thank you, Cynthia. Good morning, Chairman and Commissioners.

Today I will give you an overview of how the Office of Nuclear Security and Incident Response supports the Fuel Facilities business line and provide you with the details in the development of the NRC's new authorizing official program.

Next slide, please.

NSIR collaborates with the Fuel Facilities business line in several areas, including licensing and oversight of fuel cycle and spent fuel storage facilities, cybersecurity, transportation security, and protection of radioactive and nuclear materials.

Additionally, NSIR leads and conducts force-on-force inspections at Category 1 fuel fabrication facilities.

In the emergency preparedness and incident response areas, NSIR coordinates event response for incidents at fuel facilities and conducts emergency preparedness licensing reviews for fuel cycle facilities.

NSIR is currently involved in rulemaking for cybersecurity and was involved in the development of the initial enhanced weapons rulemaking for spent fuel storage installations and transportation, which will be published later this year.

NSIR also conducts reviews of classified information systems at fuel facilities as part of the authorizing official program, which I will discuss in more detail in the next slide.

Next slide, please.

Fuel facilities, specifically enrichment facilities, have classified information related to the methods used for the enrichment of uranium. The protection of this information aligns with the Agency's goal of security and protection of sensitive information.

Three enrichment facilities, Urenco USA, Global Laser Enrichment, and Centrus, each have isolated classified networks which require a sponsoring federal agency to approve the classified networks operations.

The Department of Energy previously performed the authorizing official role for these facilities through interagency agreements with the NRC.

In September 2020, following an announcement that DOE's Office of Nuclear Energy was closing its Oak Ridge site office, a decision was made to transfer this responsibility to the NRC.

In December 2020, the NRC assumed formal responsibility as the authorizing official for classified networks at Urenco USA, Global Laser Enrichment, and Centrus.

An agile, collaborative, and cooperative Agency response led to successful development of the NRC's authorizing official program within about one year. Next slide, please.

Cooperation among the Agency's offices including the Office of the Chief Information Officer, the Office of Nuclear Materials Safety and Safeguards, Region II, the Office of Enforcement, the Office of the General Counsel, and NSIR to establish the NRC's authorizing official responsibilities led to a comprehensive program which integrates well with the NRC's existing regulatory oversight.

Once the NRC assumed formal responsibility as the authorizing official, the Executive Director of Operations designated the Chief Information Officer to perform the duties of authorizing official on an interim basis until a Work Group could develop and make more permanent recommendations about the program that will put in place the framework to enable further transfer of the authorizing official role to the director of NSIR.

The Working Group developed processes and procedures for implementing the NRC's authorizing official program.

The new classified authorization program for licensees

established as part of the authorizing official program, documents the process for authorization and continuous monitoring for classified networks and information technology systems located at NRC-regulated fuel cycle facilities.

Region II division of fuel facility and inspection staff will conduct inspection activities in areas that were previously performed by DOE at the fuel facilities.

Since the authorizing official program transitioned from DOE to the NRC, all operational classified systems at fuel cycle facilities have been granted interim authority to operate by the NRC's Chief Information Officer as the interim authorizing official.

Next slide, please.

Since the facilities traditionally work with DOE as their accreditation authority for compliance with the various standards and policies for use of classified networks, the Working Group ensured that licensees impacted by any changes received background and information on how the NRC would move forward.

In October 2021, Staff hosted a workshop attended by the enrichment facilities and the other stakeholders to respond to questions and concerns. As the NRC prepared to take over the authorizing official role, Staff looked at the licensee's security programs and the versions of standards in use.

Staff identified a gap in one of the major NIST standards being used for the protection of classified networks. While the current standard was sufficient for an interim period, it needed to be updated in the long term.

As a result, the NRC requested that each licensee upgrade their security posture from Version 3 to Version 5 on NIST special publication 800.53. The request to upgrade did result in some questions within the community, however, Version 5 does address and modernize the security posture within licensee's classified environment and aligns with what other security organizations require of contractors, licensees, certificate holders, and other persons.

Another dynamic change addressed by the working group occurred when the Department of Defense as an executive agent of the National Industrial Security Program transitioned the National Industrial Security Program Operating Manual to a rule under the Code of Federal Regulations Title 32 Part 117.

During the same time period as the authorizing official transitioned for the NRC, the Working Group used the workshop to provide a common background and requirements for the protection of classified information based on the new rule.

Next slide, please. The NRC is also responsible for enforcing requirements of Code of Federal Regulations Title 10 Part 95, which pertains to providing facilities security clearance and safeguarding classified information.

The NRC is now also required to enforce a relatively new set of requirements promulgated by the Department of Defense Title 32 Part 117 which requires protection of classified information shared with licensees and other stakeholders to prevent unauthorized disclosure.

In closing, the NRC has an operational program and all operational classified systems at enrichment facilities have been granted authority to operate and the new infrastructure has been developed.

Development of the authorizing official program is an example of how the Agency can quickly adapt to meet our mission. Thank you very much for the opportunity to present today.

This concludes my presentation, and I will turn it over to Dan.

MR. DORMAN: Thank you, Dante, and thank you to all of the panelists for your presentations.

Again, I'd like to thank the NRC Headquarters and regional staff that support and make the Fuel Facilities business line a success and all the Staff who helped to prepare us for this discussion today.

With that, Chairman, this concludes the Staff's presentation and we look forward to your questions.

CHAIRMAN HANSON: Thanks, Dan, thanks everybody.

I think I'm going first this morning with questions, so we'll just get rolling with that. Shana, you mentioned I think it was on Slide 9 about working with the Department of Energy about a Gap assessment for regulations for HALEU and other kinds of advanced fuel cycles.

Could you just expand on that a little bit about what that entails? Is that something we are doing or DOE is doing, et cetera?

MS. HELTON: Thank you, Chairman, yes, that's a good question. When I talk about gap assessments I'm referring to specifically Strategy 2 in the NRC's vision and strategy document for advanced reactors.

So, the Fuel Facilities business line is really watching and supporting the broader Agency effort around advanced reactors. Research does a number of things, and you're going to hear from Lucas in the second panel in the Spent Fuel business line on the research activities.

But just as an example, right now for gap assessments I'm not referring to our regulatory gaps in the regulations so much as data needs to inform code development activities, neutronics for Non-Light Water Reactors fuels will be useful in updating our SCALE suite of codes, as an example, to help us with our regulatory reviews and any confirmatory analysis that we do.

This data helps us focus on the most important technical issues for review and help make our reviews more efficient and effective.

CHAIRMAN HANSON: OK. That's helpful. I think I want to tack maybe between you and Matt a little bit. You talked about we haven't licensed a Category 2 fuel facility I think you said ever, but at least in a really long time.

But we've got a specific application in front of us. I was wondering, Shana, we could start with you, if you could just talk about in general terms how we're preparing to license these Category 2 fuel facilities in the near term.

Obviously, we've got one of these applications now in front of us, but I think we've seen from the industry several more coming along behind, all of them may be in some cases slightly different. Some of them may be really different.

If you could talk about that, that would be great.

MS. HELTON: Sure, at a high level, the Category 2 fuel facilities are coming in under our existing Part 70 framework.

That's already risk-informed, performance-based and I think there's a joke among fuel facility Project Managers, Dan's probably familiar with this joke, that if you've seen one fuel facility, well, you've seen one fuel facility.

We're used to seeing unique things with each application that we have and you're right, we've got Category 1 and 3 facilities currently licensed but this will be new for Category 2.

Some of the nuances we've been anticipating we need to prepare for are really in the security arena and that's why we've put out our Qs and As on the public website.

And we've also been having a number of interactions with applicants before they come in for licensing to ensure they've got their safeguards program established, they can receive information about the types of things they'll need to do for security at those sites.

The other area that's different is material control and accounting. We've had a number of discussions, not just with our interagency partners but with external stakeholders as well, and that's why we want to publish NUREG-2159.

Stakeholders have seen a draft of that already so we're working through those issues in the comment resolution, and we're in the final stages. So, we do anticipate publishing that probably this summer or early this fall.

I'll flip it to Matt, if he has anything else he wants to add about

the nuances of Category 2?

MR. BARTLETT: You touched on it, we regulate Cat. 3 and Cat. 1 so Cat. 1 is much more security involved than a Cat. 2, and I'd just note that just this morning before this meeting, I took the safeguards plan for TRISO-X to the security folks.

And just as a point of interest, some of the security folks that are involved in writing that plan were originally at the NRC and retired.

And the security folks I was talking to was anticipating that the plan would be very solid and they didn't anticipate any problems reviewing it at a Category 2 level.

CHAIRMAN HANSON: Matt, you mentioned the use of WBL as an internal project management tool for the NRC to deal with some of these things.

Presumably, in licensing Category 2 facilities as well, I thought that was really interesting because I've heard about it mostly in the context of agreement state programs and trying to get it, licensing other materials licensees.

So, that was kind of a new spin on that. Are there reports that can come out of WBL that are available to the licensee so they see our progress as well, as well as us tracking our own progress?

MR. BARTLETT: We're essentially using WBL for fuel cycle but there's multiple modules in WBL, spent fuel, for fuel cycle, waste, materials, like you said. But on the fuel cycle side, there's no direct public access.

We can run reports and we use those to inform management on what we're doing and to track our own progress, but there's nothing specifically that the licensees can go into in WBL.

Now, we use information from WBL to keep public websites on specific – like TRISO-X has its own public NRC site and we put information in there on its status. So, we do that for each of the main facilities and that information would be drawn from WBL.

But they wouldn't have direct access to WBL.

CHAIRMAN HANSON: Sorry, Rob.

MR. LEWIS: Chairman, just a thought. I like Matt's answer. I can talk a little about the other business lines as well and the public-facing nature. To date, WBL is an internal tool.

We do use it to produce public information but the public themselves can't directly access and basically, licensees can't either.

It was built with the concept that licensees could do online banking-type, and that's actually part of our WBL modernization project that we're talking about as a future innovation and investing in.

You're correct that's focused mainly on the materials side but NMSS as a whole, we're 300 people. So, John and I have been asking since we've got there. 300 people, we don't do that many types of licensing.

Let's do it all in WBL and it's reflecting a lot what Matt's saying, just last year, for example, all the decommissioning licensing is now added in and being done with WBL. So, we want to use it going forward as the centerpiece tool and more and more include some external-facing features to it.

CHAIRMAN HANSON: I want to applaud those efforts because you're getting data about budget execution, people hours, et cetera. So, there's a lot of transparency internally to the ongoing licensing.

MR. BARTLETT: And in terms of pulling data from budget, that piece is still in budget so we'd like to see more of that capability.

CHAIRMAN HANSON: More WBL, that's the theme. Matt, could you give us an update on the status of the TRISO-X application review?

MR. BARTLETT: We received their application on April 5th I think is the date on the document. It went into ADAMS on April 12th; we've started our acceptance review.

Interesting thing about the TRISO-X application is they recently transitioned where their facility was going to be located to 10 miles down the road. And so they're still collecting site data to support their environmental submittal.

As a result, they weren't able to submit their environmental report at the same time as their safety analysis report.

The regs require them to be submitted together, so they submitted an exemption request that would allow them to submit those separately, which we approved.

And so what we actually received in April was just the safety analysis report and so the regs also require that we can't formally docket the submittal until we complete the acceptance review for both the safety analysis piece and the environmental piece.

So, we've started our internal acceptance review of the safety

analysis piece because we don't want to hold up the technical review.

So, we'll proceed with that acceptance review but we won't formally accept it for docketing until we get the environmental report and complete that acceptance review.

And that's likely to happen, we'll probably get their ER in the June, July timeframe, complete the acceptance review for that.

Then once we can accept both the SAR and the ER, then we'll proceed with the formal review.

CHAIRMAN HANSON: And is the review plan under development as you do the acceptance review so that review plan is then issued upon docketing?

MR. BARTLETT: If you look at the overall schedule, we have two months for acceptance and then roughly 36 months is what NEIMA requires, but 30 months for the technical review.

So, the acceptance review, it's just the Staff doing a high-level look at is all the critical information here?

We won't actually start development of the safety evaluation report until we get into the technical review and that will start after acceptance. But yes, we develop that as we do the review.

As we go through and try to write up our report, if we find areas where have to ask questions, we'll just leave a blank spot there, I have a question.

CHAIRMAN HANSON: Great. Thank you, that's very helpful. Commissioner Baran?

COMMISSIONER BARAN: Thank you all for your presentations and for all your work. Cynthia, you talked briefly about the SHINE medical isotope facility.

Can you give us an update on the construction schedule and construction activities, and discuss NRC's oversight activities during construction?

MS. TAYLOR: Thank you for that question, Commissioner. SHINE intends to pursue a four-phased approach to their construction.

In their letter that they submitted back in October of 2021, they estimate that Phase 1 construction, which is the production facility, will be substantially complete by May of 2023.

Like I said, there are three other phases and those phases just identify the number of unit irradiators that are going to be placed in the facility. And the flow of completion of those phases go out to August of 2025.

And so we are currently doing construction inspections out of the Division of Construction Oversight.

Actually, there's an inspector there today doing inspections and he's looking at the building safety-related activities, foundation, process piping installation.

And so those constructions will continue up until next year when we'll go into the operational readiness phase. And as you know, DFFI will help NRR in doing material accountability inspections, control accountability inspections and nuclear criticality inspections.

So, we will be assisting our business line partners in those

types of inspections.

COMMISSIONER BARAN: And you noted the Honeywell Metropolis uranium conversion facility is ramping up activity for a restart in 2023. Are there any issues or challenges expected with that restart or our inspection activities there?

MS. TAYLOR: No, not at this time. Of course, we've just had some inspectors go there the other week doing and completing an inspection.

They haven't been operating since 2017, so it's going to take time for the inspectors to come up to speed on the site and they're doing that by going out periodically conducting these site familiarization inspections.

So, no, we don't anticipate any issues with the restart of Honeywell.

COMMISSIONER BARAN: Westinghouse has applied for a 40-year license renewal for its fuel fabrication facility in Columbia, South Carolina. Given the performance in ground water contamination issues in recent years, some stakeholders are arguing for a shorter license renewal term.

The Department of the Interior, for example, recommends a 20-year license renewal. I know the Staff review is ongoing.

Can someone walk us through how the Staff determines the appropriate license renewal term for a fuel cycle facility like Westinghouse Columbia?

MS. HELTON: Sure. I'll give it a start and if anybody else wants to chime in, like Matt or Rob, please help me out.

But essentially, like you said, we're still in the process of considering that review. We're in the final stages, working towards completing our review in the August timeframe.

And we are still looking at the request. They requested a 40-year license term and fundamentally, what plays into our decision is safety, the environmental review, and the licensee operating performance history.

We're following the Commission direction on license renewals to license fuel facilities up to the 40-year maximum licensing term. We can go less than 40 years on a case-by-case basis in the case of novel technologies or licensee performance issues.

So, that's something we're weighing very heavily as we consider this licensing decision.

COMMISSIONER BARAN: My sense is, and tell me if I'm wrong about this, there's no real guidance around that aspect of the licensing decision, though, right?

So, how do you figure out, you've got whatever their performance is, how do you then determine what the appropriate license term is, whether it's 40 or whether it's something less than 40?

MS. HELTON: You're right, we don't have specific criteria. I think going back, probably the thinking was that for such a small number of facilities having well developed criteria for those license renewals, we didn't develop it back then.

So, today we have the discussion from the SECY paper that we sent to the Commission, SECY-06-0186, and we looked at that.

We look at precedent, we do have a number of renewals that we have already gone through so we can look at those as precedents, going back to NFS and Honeywell renewals, really.

COMMISSIONER BARAN: Anything else on that topic? You looked like you might have something.

MR. LEWIS: I was on the fence. I think Shana gave an awesome answer, couldn't improve on that, I'd maybe just add one thought, and she was getting to this.

The totality of all of the information we use, just like any other issue in the licensing review, we use all of that information and make our conclusion that there's reasonable assurance of adequate protection.

And every facility is different as we've talked about before and the circumstances are different, and we factor all of that in as we make our reasonable assurance decision and licensing decision related to that.

The one thing that keeps guiding us is safety and security and precedent and operating experience. But it would be very difficult to have a firm recipe-type set of conditions that would say this is 40, this is less than 40.

Because I do think each situation we need to bring to bear our regulatory guidance and wisdom on.

COMMISSIONER BARAN: I had also been interested in the TRISO-X update and that was well discussed with the Chairman's questions. So, with that I'll turn over the rest of my time and turn it back.

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

COMMISSIONER WRIGHT: Good morning, thanks for each of your presentations and thank you to the rest of the Staff for all they do and what they did in helping prepare you too today. So, with that, a quick question for you, Rob.

You talked about the fuel facilities stakeholder meetings that you hold every six months. Have you or are you considering expanding that type of initiative to other business lines?

MR. LEWIS: That's a great question. We definitely do the function across other business lines. The format varies across business lines because each business line is unique. Fuel facility has a benefit in that it's small and there's a limited set of licensees.

It's easier to get everybody together, so we leveraged that and had the meetings every six months. In the materials arena, for example, we have the ACMUI, the Advisory Committee on Medical Uses of Isotopes, they perform some function prioritization workload planning, some of the same functions.

Organization of Agreement States meetings perform some of those functions for that business line. I might be harder to get the entire business line together in the room in some of those, even spent fuel is a much bigger business line.

One business line I do think is a great idea and we're going to explore this model, the stakeholder meeting model, is the decommissioning business line. As you know, big changes recently, the business models, we have companies buying the plant and performing the decommissioning.

Just a small set of companies are doing that. NEI has been getting those companies together. We can do something similar. We can explore it. I'm not necessarily sold that the fuel cycle way will work there.

The function needs to be done and bringing people together to share priorities, to share workload planning, that's a business line where that function is definitely a top priority for us.

COMMISSIONER WRIGHT: Very good. Thank you. Shana, good morning. You mentioned that prioritization of work activities is one way that you're trying to enhance the employee experience. Can you tell me more about how you are prioritizing the work?

For example, what are some typical high-priority items and maybe what are some lower-priority items?

MS. HELTON: Great question, we talk about prioritizing our work almost every day at the management and Staff level in the Division. So, at the highest level we've got the Agency's add/shed/defer process.

The EDO has a procedure. We've developed one in the Division of Fuel Management and recently expanded that to be an office procedure. For the Division of Fuel Management for the business line, we do have prioritization schema that we use.

There is always discretion to elevate priorities on an as-needed basis for Agency response but at the top of the list are urgent, imminent, safety and security issues, Agency response, safety issues at a lower level than the imminent level, operational considerations for licensees.

Often times I've seen it more in the Spent Fuel business line

but for fuel facilities as well, if there's an operational need where a licensee might not be an urgent safety issue but certainly an operational one, we try to accommodate their needs.

For the Staff development activities, that's another area where we're prioritizing that very high and we might need to update our prioritization criteria. But right now given the needs of the staffing within the business line, hiring has been made a top priority for all of our Branch Chiefs in the Division.

And soon after we're finished hiring, bringing the new Staff up to speed, getting them qualified, doing knowledge transfer, that's going to be the highest priority as well.

COMMISSIONER WRIGHT: Let me stay with the new hires for a minute.

During this whole COVID-19 thing, you've onboarded a lot of people, they haven't had an opportunity to interact face to face with people to develop those relationships around the water cooler and things like that.

Really, I think its valuable for new employees to have, someone they can turn to, especially if they have questions. Will all or most of the new employees maybe have mentors, NRC mentors or groups they can reach out to?

MS. HELTON: Absolutely, and that's one model that we've been already following even for employees who are not new to the Agency but may be new to the business line activities. We pair up senior staff with more junior staff to ensure that we're facilitating knowledge management.

But the onboarding of employees who are new to the Agency,

we want them to have mentors with the Staff, the senior Staff, mentors at the management level, and we also want them to band together.

Right now we've only hired a few folks but as we work towards the end of the year, there's going to be a need for a bootcamp for Staff qualification activities.

And I think having them form a cohort within the business line within the office, even absent being part of a program like the Nuclear Regulatory Apprenticeship Network, those peer networks are very important too.

So, we're putting a focus on all of that.

COMMISSIONER WRIGHT: Very good. Thank you. I'm going to follow up real quick on a question the Chairman asked you about the regulatory gaps. And you did mention that it wasn't necessarily regulatory where the gaps were.

But in that area, the ones that you found, these gap assessments, whatever, have you identified a path forward for each of these? I don't know that I heard that talked about.

MS. HELTON: I would say the work is ongoing. We've got near-term, mid-term, and long-term needs identified in the NRC's vision and strategy. So, we're in that period now of zero to five years.

This is one of the reasons why we really emphasize early pre-application engagement, especially for new technologies, because we want to make sure that if we see something we can work towards the research or the data or the regulatory guidance needs that we have.

But to date I think we've been able to effectively license but as we get even more novel designs, I think that's going to be very important. The Department of Energy, other organizations, you'll hear about it on the back end of the fuel cycle, EPRI has a number of activities going on.

We've worked closely with Research and NRR, we follow all of those efforts, as we do as well.

COMMISSIONER WRIGHT: Thank you, I'm done with you. Matt, I'm going to come over to you here for a second, Shana rocks, doesn't she? She's good.

So, Matt, you mentioned the Staff is improving transparency by telling licensees in acceptance letters how much the time the Staff's review might take and when you might be anticipating completing the review.

So far, how accurate are those predictions?

MR. BARTLETT: That's a great question. I think in one of my slides, or at least I mentioned it, on average we complete the actions within 82 percent. So, that's good probably a good indicator of how accurate our estimates are.

If you were to dig into those numbers, you'd see several items that are way over two to three times longer than what we anticipated. And you'd see a bunch of items that are under what we anticipated.

Our goal generally is to complete them under but close to what we estimated. I'd say the Staff is getting better at it, we've only been doing it about a year it seems like. So, when we first started at the Staff level, we were kind of like how are we going to do this?

We don't have the data to make these estimates.

Now that we're a year in, we have a better feel for, yes, this is probably a reasonable estimate. It's always our goal to complete it as efficiently as possible and I think that's why some of our actions are completed generally earlier than we anticipated. The long actions, those are just always going to happen because there's always things you can't control, like the licensee asks for a time-out or there's an external agency you have to get information from and you can't control them.

So, I would say in general maybe 80 percent accurate is a good estimate.

MS. HELTON: I know you said you were done with me, Commissioner, but I would like to --

COMMISSIONER WRIGHT: But you weren't done with me.

MS. HELTON: Matt's answer is great, but one thing I'd like to emphasize, and it's something that Rob said earlier, which is our primary focus is always on ensuring that we have reasonable assurance of adequate protection of public health and safety, common defense and the environment.

So, that's always top priority. Even in some high-profile reviews where there's schedule pressure, if, for example, we have a new set of eyes to take a look due to Staff turnover, it's a safety issue, we're going to address it.

We're going to ask the question and take the time we need because that's the top priority. Even as we want to be more efficient, we always like to emphasize being effective in our regulatory reviews.

COMMISSIONER WRIGHT: Thank you.

MR. BARTLETT: Can I add one more thought? In cases where we do go over, it is in our policy and guidance that we reach back out to the licensee and give them a letter that says, hey, because of these reasons, we're going to have to extend our estimated date by, whatever, a month.

So, we do reach back out and give a new estimate.

COMMISSIONER WRIGHT: Thank you.

CHAIRMAN HANSON: Thank you, Commissioner, and thank you, all for your presentations this morning, Rob, Shana, Matt, Cynthia, and Dante, I really appreciate it and I appreciate my colleagues' questions.

We're going to take a 5-minute break, we will reconvene at 10:20 a.m. Thank you.

(Whereupon, the above-entitled matter went off the record at 10:15 a.m. and resumed at 10:21 a.m.)

Welcome back, everyone, the meeting will recommence now with the second panel on Spent Fuel Storage and Transportation business line. Dan Dorman, once again, the floor is yours.

MR. DORMAN: Thank you, Chairman, and good morning, once again, Chairman Hanson, Commissioner Baran, and Commissioner Wright. Our second panel today features our Spent Fuel Storage and Transportation business line.

Like the Fuel Facilities business line, we continue to self-assess the program and make necessary adjustments to further risk-inform our regulatory approaches and ensure effectiveness with optimal efficiency.

The business line continues to focus on ensuring that we have the right people at the right time to address the challenges in our evolving environment, which you'll hear more about from today's panelists.

We continue to maintain an appropriate focus on our mission for the safe and secure management of spent nuclear fuel while also maintaining effective external communication, transparency, and stakeholder engagement as we prepare for the use of new technologies.

Next slide, please.

So, for this panel, Rob Lewis will again provide the strategic overview for the business line. He'll be followed by Christopher Regan, the Deputy Director of the Division of Fuel Management, he will present on the Spent Fuel Storage and Transportation program environment.

Dr. Christopher Markley, systems performance analyst in NMSS will discuss the Spent Fuel Storage and Transportation licensing activities. Jennifer Dalzell, technical assistant in the Division of Nuclear Materials Safety in Region III will present on Spent Fuel Storage and Transportation oversight activities.

And finally, Lucas Kyriazidis, reactor systems engineer in Research, will discuss Spent Fuel Storage and Transportation research activities. That concludes my opening remarks and I'll turn it over to Rob.

MR. LEWIS: Thanks Dan. Good morning, again, Chairman Hanson, Commissioner Baran, Commissioner Wright. Next slide, please.

The primary responsibilities of NRC's Spent Fuel Storage and Transportation business line include the review and certification of

transportation packages for radioactive materials under 10 CFR Part 71 and the review and licensing of Spent Fuel Storage facilities and certification of spent fuel storage cask designs under 10 CFR Part 72. We inspect the vendors of casks in transportation packages and we also inspect the users of those packages.

As the program office, NMSS sets expectations across the business line and works closely with the regions and other headquarters offices to manage the priorities and work.

Today's panel illustrates our coordination and partnership. Since the first dry casks were loaded in 1986, dry storage has released no radiation that has affected the public or contamination of the environment.

Today, more than 159,000 steel assemblies are loaded into more than 3,600 dry casks around the nation. All but one nuclear power reactor site now has an associated independent spent fuel storage installation, or ISFSI, and there are several away from reactor license ISFSI sites. On this slide you can see the cover of our spent fuel storage brochure, NUREG BR-0528, which you can find on NRC's public website and it supports our outreach and transparency efforts for this program.

Some of the areas that this program is focusing on for the year include hiring and fostering a positive work environment, focusing on Staff development through knowledge management and cross-training, and enhancing our decision-making using data and risk insights.

Today, our panel hopes to leave a positive impression of how we're doing with these areas. Next slide, please.

The NRC has completed several risk studies over the years to analyze the risk of transportation and of loading and storing spent fuel in dry casks. These studies support our conclusion that the potential radiological health risks are very small for both storage and transportation when conducted in accordance with NRC's regulations.

The Staff is making use of risk insights to shape and focus our licensing and inspection activities.

This includes recently investing in the Be RiskSMART framework, developing a new licensing risk tool, using a graded approach for licensing, and working on the very low safety significance issue resolution, or VLSSIR process, more on that in a minute.

You'll hear about the other activities from the rest of panel today. I'd like to finish with an example of our use of risk.

In the last year, we closely looked at the risks of weather events like tornados on dry fuel storage systems during loading and transfer of a cask from the pool to the ISFSI pad.

It's a short period of operation. We looked at the history and licensing basis for vendor’s cask designs as well as how those general designs are adopted by the utilities to use as the site-specific basis.

Our inspectors identified that licensees in some instances were using administrative controls in lieu of technical analysis or engineered controls and there are questions as to whether those changes represent licensing basis changes that would have required NRC's approval before being implemented.

These findings provided the Staff and industry the first opportunities to apply the VLSSIR process outside the NRC's reactor programs and we've worked on that for the last several months.

We do acknowledge that there were several lessons learned and those lessons will pay dividends going forward.

These learnings include how to apply the VLSSIR screening criteria in non-reactor programs, how vendor-approved cask licensing basis interfaces with the site's licensing basis, application of backfit to both of those licensing bases, a lot of learnings.

The Staff has recently identified a case where the licensing basis was not clear, and we used VLSSIR to not expend additional inspection effort due to very low risks. So, the lessons are paying dividends already.

Also in April, the Staff issued an enforcement guidance memorandum indicating, based on the safety risks that these issues present, although a violation might be present, licensees are afforded time to implement corrective actions before the apparent violation would be cited.

This is just one example of how we're learning and using risk insights to make better decisions as a regulator. Thank you for the opportunity to address you and I'll now turn to Chris Regan.

MR. REGAN: Thank you Rob. Good morning, Chairman Hanson and Commissioners. The Spent Fuel Storage and Transportation program framework is effective for the management of complex regulatory activities.

You heard mentioned that we have issued a license to Interim

Storage Partners for a consolidated interim storage facility and that the Holtec International consolidated interim storage facility license is in process.

From a practical standpoint, what have which done in the interest of inspiring stakeholder confidence and enhancing our external engagement efforts?

The tremendous Staff technical and environmental review effort aside, we have developed comprehensive communication plans for both of these licensing actions.

Consistent with one of the principles espoused in our strategic plan, throughout both consolidated interim storage facility licensing reviews, we have persistently sought to inspire stakeholder confidence.

Similarly, throughout the transportation regulatory readiness review, we exercised a diverse range of external communications opportunities by NRC-sponsored public meetings, through industry and technical conferences and meetings such as the National Transportation Stakeholders Forum, the Tribal Radioactive Materials Transportation Committee, and various engagements at Nuclear Energy Institute venues.

In fact, just last week, Staff attended the annual NEI Used Fuel Management Conference engaging with industry and communicating on topics ranging from aging management, spent fuel operating experience, transportation issues, and risk-informed licensing.

And the list goes on because Staff also took advantage of opportunities where briefing staff and representatives from legislative bodies from state and federal level Congressional institutions.

I mentioned the Staff's transportation and regulatory readiness review to ensure preparedness for the oversight of potential commercial large-scale transportation of spent fuel.

Highlighting our external engagement with partners on this effort, we worked closely with our federal partners at the Department of Transportation and the Department of Homeland Security, with whom we share responsibilities for the safe and secure transportation of spent nuclear fuel.

At our invitation, Staff from these agencies presented on their roles at the NRC public webinar where we shared the results of the regulatory readiness review.

In fact, as a general rule, on a significant portion of our spent fuel management interest, we also keep in touch with our partners at the Department of Energy and other federal agencies and non-governmental organizations.

I mentioned a bevy of domestic counterparts and stakeholders, so I should also highlight that we have similar partnerships and engagements with internationally and actively collaborate with the Nuclear Energy Agency, the International Atomic Energy Agency, and for a specific example, the Canadian Nuclear Safety Commission to exchange technical information and operating experience regarding radioactive material transportation.

In the big picture, we continue to strengthen our external engagements in the spirit of inspiring stakeholder confidence and have ramped up our support of outreach and communications related to efforts in

the area of spent fuel storage, transportation, and radioactive material package transportation issues.

Next slide, please.

I'll now shift the focus to sharing strategies we're employing to address the current workload, noting some of the results of our efforts over the last year as well as ensuring the utmost agility as we prepare for future or anticipated workload challenges.

I should note the program already has the ability to be responsive to highly visible emerging issues.

For example, our business line Staff recently contributed to the Agency's extremely rapid one-month comprehensive assessment of the presence of counterfeit, fraudulent, and suspect items in the commercial nuclear industry.

Long-term planning must also account for potential for significant changes in the spent fuel management environment.

For example, the more rapid decommissioning of power reactors cascades to an interest by licensees for faster movement of spent fuel into dry storage, resulting in the potential for increased licensing action and inspection activities.

As you heard earlier from the Fuel Facilities business line on support of the Agency's ATF, HALEU, and advanced reactor activities, this business line is also staying in lockstep with industry work in this extremely dynamic area, and of which you'll hear more from later in this panel.

Another example is our Staff work on multiple items, largely

completed, that were also captured in an NEI white paper defining spent fuel performance margins on spent fuel licensing and inspection effectiveness improvements.

Furthermore, the spent fuel transportation regulatory readiness review verified that our existing regulatory framework provides reasonable assurance of adequate protection for commercial shipments of spent nuclear fuel.

This work was specifically aimed at being proactive and ensuring our preparedness for this future challenge.

With these in mind and being forward-focused, we are looking to the outcomes from additional internal evaluations of recent business line activities such as the effectiveness review of the ISFSI inspection program enhancement initiative, COVID oversight program lessons learned, experience from the consolidated interim storage facility licensing, work to consolidate Division instructions, and you heard mentioned during the Fuel Facilities panel, and the wealth of experienced we have gained from a significant increase in external engagements and outreach efforts on Spent Fuel Storage and Transportation issues. Our enhanced strategies that include more frequent communications and engagements with our broader suite of applicants and current licensees and vendors, also support a goal, one among many, to learn as much as possible and get advanced notice of upcoming licensing actions and industry schedule drivers.

A particular success in this area was our proactive engagement with vendors and suppliers supporting ATF to ensure they had appropriately

counted for the time necessary for any required licensing actions to support the transportation package certifications for the shipment of fresh fuel.

Given the challenges for the dynamic environment we are experiencing, being able to use the insights gained to inform the way we prioritize and plan our workload is of utmost importance.

Rolled up, all this helps us appropriately assess our five-year workload forecast reflected in the Agency's strategic workforce planning tool and to prioritize our work using an informed add/shed/defer process as case work and emergent demands shift.

This all contributes to maintaining a continuum of learning and ensuring the business line is an agile and adaptable organization. Next slide, please.

I can't close my portion of the presentation on this business line without also speaking to the topic of human capital, it's our people. More pointedly, recruitment, retention, and recognition.

Here too, and continuing the theme for the Spent Fuel Storage and Transportation business line, our hiring strategies include double-encumbering, pursuing staff from our Nuclear Regulator Apprenticeship Network cohort, hiring additional Staff where appropriate to be more proactive in areas of anticipated losses, looking at external grant recipients, leveraging other direct-hire processes to onboard new Staff more quickly, and partnering with other divisions and offices when posting ads for vacancies and working to prioritize hiring needs on a daily basis.

And at the office level, bringing additional Staff on rotation to

increase the ability to focus on our hiring process.

To help us with successful recruitment and retention efforts, we are surfacing and highlighting all those attributes and likes, especially from the current Staff of why seeking a position within this business line might be fulfilling to an individual. While our staffing fluctuates as people come and go, we are working to support the Agency's goal to onboard more than 300 new Staff, which includes no less than 13 new hires in support of the protected workload within this business line.

We are also ensuring equitable attention to activities to retain Staff, identifying and understanding reasons for Staff departing the organization and our Agency is equally important.

We are taking action to address as many of these reasons as possible. Finally, adding to this is our heightened focus on how and how often we reward and recognize our Staff.

I'd like to say that in addition to newsletter shout-outs, personal emails and notes from leadership, and lots and lots of simple thank yous, last year we fully expended our allocation of award funding and this year we're on track to do the same thing.

These efforts aside, we have continued development of our existing subject-matter expert expertise within the Division of Fuel Management and we exercise multitalented Staff to support technical review actions for licensing and inspection work in both business lines within the Division, for example, with criticality reviews.

And we have a set of programs for knowledge management

and transfer by having Headquarters technical Staff observe and participate in regional onsite inspection activities.

The benefits of this are extensive and symbiotic; technical staff reap the benefits of seeing the physical equipment in use and perhaps more importantly engage with inspectors in the field and share their insights from licensing technical reviews of the equipment actually being inspected.

Likewise, inspectors get the benefit from Headquarters Staff of the deeper technical review behind the license spent fuel storage design. All this contributes to growing our organizational body of knowledge and furthering individual subject-matter expertise.

With that, thank you for the opportunity to present to you again. This concludes my remarks and I'll now turn it over to Chris Markley.

MR. MARKLEY: Thanks, Chris. Good morning, Chairman, Commissioners, I'm Chris Markley and I currently work as the spent fuel licensing project manager, focusing on storage renewals and was previously involved in the repository safety program.

I'll be discussing some of the recent accomplishments in the areas of licensing, certification, and rulemaking for the Spent Fuel Storage and Transportation business line.

I'll also cover some activities and initiatives we are implementing to prepare for the future and to enhance the processes that we currently have in place. Slide 36, please.

Over the past two-plus years, the Staff continued to ensure safety through successful implementation of our licensing and rulemaking

work.

Despite the challenges that we encountered during this time, we continued to effectively and efficiently conduct licensing and certification reviews at spent fuel storage facilities, transportation packages, and spent fuel storage cask systems.

In the previous fiscal year, we completed 43 licensing actions, 32 of those actions were transportation certificate approvals, the other 11 actions were for storage licensing and certifications, which included 6 storage amendments for storage renewals and the aforementioned consolidated interim storage facility.

The number of spent fuel transportation certification actions decreased relative to the previous year due to a decrease of incoming transportation applications while the number of spent fuel storage licensing certification actions decreased because we are no longer receiving the number of public-health-emergency-related exemption requests.

During this past year, we completed a number of notable licensing action including the centralized interim storage facility.

In the last Storage and Transportation business line briefing, the Staff report contained first cases that support the shipment of accident-tolerant fuels.

We continue to build upon those achievements.

In the past six months we approved two additional transportation package applications for accident-tolerant fuel and we are currently reviewing a package expected to transport high-assay low-enriched

uranium that is almost 20 percent U-235 by weight, as uranium hexafluoride. We expect to make a decision later this year. We continue to prepare for the future transportation of accident-tolerant fuels and advanced reactor fuel types.

As Chris previously discussed, engaging our stakeholders is key to maintaining a successful program.

We leverage these engagement activities to plan for current and future research and licensing activities related to the transportation of fresh, accident-tolerant and advanced reactor fuels.

For example, this past February we held a pre-application meeting with Global Nuclear Fuel - Americas to discuss an upcoming certificate of compliance amendment application.

The application expected later this year will request the transport of fresh nuclear fuel assemblies having uranium-235 enrichments up to 8 weight percent.

Another example of our engagement is with our federal partners to support Project Pele. Project Pele is a prototype demonstration of a mobile nuclear reactor to be tested at Idaho National Lab under the authorization of the Department of Energy.

We are preparing to review an application currently expected in mid-2023.

We also continue to coordinate with the Department of Transportation in harmonizing our Part 71 transportation requirements with the International Atomic Energy Agency's transportation safety standards and

ensuring compatibility with the Department of Transportation regulations.

We are coordinating with the Department of Transportation to concurrently publish our respective proposed rules for public comment and we'll consider the comments we receive when developing the draft final rule.

Slide 37, please?

In addition to the recent progress and accomplishments in licensing and rulemaking, we continue to work on innovations for storage and transportation by using insights to enhance our licensing program to play our regulatory role in supporting America's nuclear future.

We are doing this by implementing innovative approaches to further risk-inform our efforts while engaging our stakeholders and industry. Among other things, the intent of these approaches is to streamline what information is needed in certificates of compliance to consider alternative ways technical information can be provided and to use risk information to ensure reviews are efficient.

Successful implementation of these approaches can provide additional flexibility for our licensees and can streamline the technical review. So, let's begin with the initiative that we called the graded approach.

This approach describes efforts to streamline the format and content of storage certificates of compliance.

This streamlining includes rearranging the certificate format to better organize information, risk-informing the content, removing duplicative items, and relocating non-safety-related items to other regulatory documents such as the safety analysis report.

A benefit is this graded approach allows vendors of spent fuel storage systems to make non-safety-related changes to existing regulatory processes rather than having to request a new or amended certificate, which among other things would require rulemaking.

The NRC completed the review of that pilot implementation in a graded approach in August of 2020 and currently added three additional amendments applying the graded approach in house.

The next topic I'd like to discuss is piloting the use of topical reports to streamline the cask certification process.

For this, industry can provide topical reports to the NRC for review and approval for use in the licensing process in lieu of specific parameters and limits.

These topical reports can then be included by reference in future applications and certificates where appropriate.

This can reduce the time NRC needs to review an application and provides additional flexibility for vendors and general licensees to make future changes without the need to request approval of individual certificate amendments.

The NRC approved the first topical report, which covered some thermal parameters in September of 2021. The NRC Staff are currently reviewing an amendment application using this report.

While the development and review of certificates of compliance and technical specifications are expected to be streamlined, there are challenges. One, it takes resources for industry to develop and Staff to

review the topical reports.

The Staff must also balance the applicability of the topical report to future applications and how broadly it can be applied to future licensing actions.

In other words, the broader the methods provided in the topical report could be applied, the more efficiencies can be realized. That said, Staff are currently reviewing a second topical report, this one on aspects of shielding and expect to make a decision towards the end of the year.

Another activity I'd like to briefly mention, the use of Phenomena Identification and Ranking Tables, or PIRTs, where experts engage in dialog in an attempt to come to consensus on some technical topic or issue.

For example, last summer we participated in a PIRT exercise on spent fuel cladding gross rupture to develop an actionable and durable definition of gross rupture.

Updating the definition would allow qualification of fuel based on the safety significance and could avoid unnecessary jamming of spent nuclear fuel in a damaged fuel cannister that could otherwise be directly stored in storage systems or transportation packages.

The PIRT panel found that the performance-based approach was actionable and practical.

For example, based on detection of transuranic elements in the reactor coolant system water chemistry, rather than based on presence of very small cladding defects that in practice had been proven to be difficult to detect.

This effort, along with others, is being done in parallel with the activities associated with the Nuclear Energy Institute's white paper Chris mentioned earlier.

And the final activity I'd like to mention is the development and refinement of a risk tool for use by NRC Staff. In general, the goal is for NRC Staff to use risk information to focus license amendment reviews.

We recently completed a pilot application of this tool and are assessing the results. The initial reaction shown provides a strong basis for Staff to discuss risk significance in the various pieces of a storage system application.

In other words, it engages Staff in differing technical disciplines to consider the system under review as a whole.

One challenge identified is that the risk tool is general in nature while amendments are expected to be more detailed, potentially limiting the applicability to specific amendment reviews.

That said, senior staff are highly involved in piloting the risk tool and confirm the risk information in the tool is consistent with their understanding and consistent with how reviews have been previously conducted.

So, it does have potential use in training and knowledge management. While acknowledging the accomplishments and challenges I just discussed, I'd like to end my presentation with a recent success in spent fuel storage renewals.

After several years of engaging our stakeholders, the NRC

Staff streamlined the storage renewal review process by issuing the 2016 update in the standard review plan for spent fuel storage renewals and issuing the managing aging processes in-storage report.

This guidance provided information that led industry to submit higher-quality applications and helped the NRC Staff perform more efficient reviews. We reported last year on the improvements and cost and review schedule over the pre-streamlining averages.

And in the past year we've seen additional gains. Over the past year we've cut the time for storage renewal review by an additional month and had a nearly 20 percent further reduction in Staff hours.

So, currently, Staff averages just under 23 months and about 1400 Staff hours to review a spent fuel storage renewal application. For context, prior to the standard review plan update, Staff reviews averaged over 48 months and 4700 Staff hours.

I'd like to thank you for the opportunity to present. With that, I'd like to turn the presentation over to Jennifer.

MS. DALZELL: Thank you, Chris. Good morning, Chairman Hanson and Commissioners. As mentioned before, I am Jennifer Dalzell and I am currently the technical assistant for the Division of Nuclear Materials Safety in Region III.

Previously, I was a reactor engineer conducting spent fuel dry cask storage inspections. Today, I will be presenting the status of the oversight program for spent fuel storage and transportation.

I will be highlighting our accomplishments including recent

enhancements to the program, the cross-regional and business line support efforts, and the inspection work of the Staff. Next slide, please.

Starting in 2019, the Staff began an effort to revise the spent Spent Fuel oversight program to be more risk-informed, comprehensive, and consistent in our approach to ISFSI inspections and to ensure the focus is on areas most important to safety.

The revised procedures became effective on January 1, 2021, and have been used during inspections completed over the last year. The result of this effort has shown the oversight program continues to be highly effective in ensuring spent nuclear fuel is stored safely and securely.

Just recently in March of 2022, the Division of Fuel Management at NRC Headquarters initiated a pulse survey to gather current data and information from the regional and Headquarters ISFSI inspection staff and our management related to the implementation of the risk-informed ISFSI program enhancements.

So far, the responses to the survey indicate that the inspection changes implemented to this point have proven to be reasonable, a balanced approach, and has led to improved consistency across all of the regions.

While the revised inspection program was still under review by NRC Staff, the start of the COVID-19 public health emergency was on the forefront of everyone's mind.

Because of this, the Working Group decided to incorporate lessons learned on the implementation of the ISFSI inspection program during the COVID-19 public health emergency.

Throughout the pandemic, the regions and Headquarter Staff have continued to conduct inspections including in-person observations of licensee activities. The Staff did make some changes to how inspections were completed.

For example, more paperwork reviews were completed in office but on-site observations continue to play a key role during our inspection efforts. In 2021, the Agency completed 63 inspections including spent fuel loading campaigns, reviews on transportation systems, and inspections of vendor facilities.

Recently, with the easing of travel restrictions related to the COVID-19 public health emergency, the Agency has started to conduct both domestic and international inspections of certificate of compliance holders and fabrication facilities.

One such Part 71 radiographic material packaging inspection was completed in September 2021 at a corporate office in Hanau, Germany. A second Part 72 dry cask storage system fabrication inspection is scheduled to occur this summer in Busan, Republic of Korea.

On this slide, you see an example of the transportation package from the inspection completed a few months ago. These inspections are essential to ensuring the safe storage of spent fuel and transportation of licensed radioactive materials.

Also on this slide, you can see a recent inspection that occurred at Wolf Creek that included inspectors from both Region IV and Headquarters. Next slide, please.

Inspection workload challenges and the need for more inspectors has led to more collaboration and resource sharing, including cross-qualifications. These challenges stem from a variety of factors, including several reactor facilities that have ceased operations and inspector attrition that has resulted in a decrease in the number of experienced staff.

The regions and headquarters inspectors have been successful in addressing these challenges by sharing expertise and resources within the business line and across regional and headquarters offices.

One example of this cross regional and headquarters support was the recent Region II need for additional inspector resources due to numerous licensee ISFSI loading campaigns occurring over multiple and sometimes consecutive weeks with little or no flexibility within the different schedules.

Qualified inspectors from Headquarters and Region I made strategic adjustments to their schedules to be able to support Region II, demonstrating a dedicated collaborative spirit within the business line.

To ensure continued and successful completion of the ISFSI inspection program agency-wide, Staff from all regions and Headquarters are working collaboratively with their inspector resources to ensure inspections can be completed as required.

Another area within the inspection program that the NRC has been focusing on is qualifying Staff to conduct the inspections.

During the revisions to the inspection program, the governing manual chapter was revised to provide additional guidance on the inspector

training program.

The training guidance embraces a streamlined approach to cross-qualification, specifically for Staff that were previously qualified in the resident inspector or regional engineering inspector program.

This new approach takes into consideration training and experience the inspector has already achieved. The new program allows for flexibility and efficiency and provides a path for cross-qualifications including across business lines for inspectors in the operating reactor program.

This streamlined approach is currently being used to train Staff in Region III, both as full-time spent fuel inspectors and to cross-qualify inspectors looking to gain new skills and to learn about the spent fuel program.

Another advantage of the cross-qualification program is that the inspection staff with expertise in certain areas such as structural support can collaborate with the spent fuel inspectors by providing key insights into areas important to safety.

Next slide, please.

Actions are being taken to ensure readiness in inspection and training programs for consolidated interim storage facilities.

A team of inspectors from both Headquarters and the regions have been working to develop inspection procedures and training programs to support the oversight of the construction of consolidated storage facilities and the large-scale transportation of spent nuclear fuels.

The team is working to ensure the Agency is ready to provide oversight of the construction and transportation activities when consolidated

interim storage facilities are ready to be built and utilized.

That concludes my remarks, I will now turn it over to Lucas. Thank you.

MR. KYRIAZIDIS: Good morning, Chairman Hanson, Commissioner Wright, and Commissioner Baran and thank you for the opportunity to discuss key research activities the Office of Nuclear Regulatory Research is performing in support of the Spent Fuel Storage and Transportation business line.

Next slide, please.

The mission within the Office of Nuclear Regulatory Research, also referred to as Research, is to provide the Agency with technical analyses, advice, tools, and information to support identifying and resolving critical safety issues in support of risk-informed regulatory decision-making.

To fulfil this mission, Research continually looks over the horizon by proactively monitoring industry plants through periodic stakeholder engagement.

Research also stays abreast of new technical findings through our collaborative partnerships.

Research continually assesses and identifies research needs from these interactions with the goal of safe and effective regulatory decision-making. It is these research needs that translate into new tasks and projects for the Office.

New work within Research is driven by fulfilling the regulatory need. We work closely with our partners in the Office of Nuclear Material

Safety and Safeguards to recognize and resolve these needs.

Work and technical assistance is requested by the user need request process. User need requests identify specific tasks, resources required, and the schedule for completing the work, all the while ensuring proper tracking, monitoring, and closure is maintained.

Many user need requests are currently in place for executing and completing spent fuel research. Research falls into four major technical areas including dry cask storage systems, aging management, spent fuel cladding performance, and criticality safety.

Next slide, please.

Research is actively engaged in many domestic and international research programs and collaborative efforts. The goal of these interactions are to identify areas of cooperation while leveraging the outcomes of these efforts.

The NRC's domestic relationships play a critical role in identifying and resolving key technical issues.

Ongoing collaborations with the Department of Energy and the Electric Power Research Institute are yielding much success in obtaining additional confirmatory data for the long-term performance of high burnup fuels through the high burnup spent fuel data project.

This work supports NRC licensing activities to renew or extend the dry cask storage of spent fuel for longer times, while ensuring the safety of the public and the environment are upheld.

The NRC and the Department of Energy's spent fuel and waste

disposition program periodically have technical information exchanges discussing spent fuel management research, further identifying areas of cooperation.

These technical exchanges are primarily focused on accident-tolerant and advanced reactor fuels, aging management topics, and spent fuel performance. International collaboration is and has always been beneficial to the Nuclear Regulatory Commission.

It reduces the financial burden of independently funding experimental projects while allowing the technical Staff to work alongside many international experts.

One international program Research actively participates in is the Studsvik Cladding Integrity Project. This five-year international project is aimed at collecting data for higher burnup fuels such as thermal creep and on spent fuel degradation mechanisms like hydride reorientation.

Projects like these produce a significant amount of empirical test data that inform the technical Staff, inform existing guidance, and even inform our suite of computer codes, like our fuel performance code, FAST.

Next slide, please.

The Office of Research continually delivers tools, methods, and data that support spent fuel licensing. An example of this is maintaining and enhancing our validated suite of computer codes.

For a risk-informed regulator, validated computer codes play a key role in helping the technical Staff and reviewers focus on the most important technical issues.

NRC's fuel performance code, FAST, and the neutronics computer code, SCALE, have both been assessed and updated specifically for simluating accident-tolerant, extended enrichment, and higher burnup fuels.

On the NRC's public page for accident-tolerant fuels, several assessment reports using both FAST and SCALE for spent fuel applications can be found.

In October of 2021, an assessment of FAST was performed, summarizing the impacts of high burnup and increased enrichment fuels had on spent fuel behavior.

The assessment also identified the data availability and additional data needs for improving confidence in our simulations. The SCALE computer code supports performing criticality and shielding analyses of spent fuel.

Code benchmarks have also been performed to assess the impacts that accident-tolerant, increased enrichment and higher burnup fuels have on the backend of the fuel cycle.

The latest work underway is an assessment identifying the impacts of both increased enrichment and high burnup fuels have on decay heat and isotopeic inventory of spent fuel that will be publicly available later this month.

Research is also supporting the business line and the readiness for the review of spent fuel for advanced reactors. Research Staff have developed generic technical assessments for the nuclear fuel cycle,

including the backend for Non-Light Water Reactors designs.

This methodology is documented in Research's code readiness strategy, which is based on adapting our existing computer codes such as SCALE and MELCOR for performing these analyses.

A significant amount of work is also being completed as it relates to aging management research. Aging management research ensures that our partner office can perform independent and effective safety reviews of potential renewals of dry cask storage systems and facilities and provide effective oversight of licensees' aging management activities informed by an enhanced understanding of potential degradation mechanisms.

Corrosion is one degradation mechanism of dry cask storage systems. Research has been performed to verify the current state of knowledge on corrosion and chloride-induced stress corrosion cracking.

These phenomena are a slow developing degradation mechanism in welded stainless steel cannisters that are used in dry cask storage systems. While there are no known operational occurrences of this mechanism in welded cannisters of spent fuel in the U.S., there have been operational experiences of this phenomenon within nuclear reactors located near open oceans or bays.

Cannister inspection technologies, current and new, have been studied aimed at the early detection of chloride-induced stress corrosion cracking. This has been demonstrated at the Pacific Northwest National Laboratory, where inspection methods such as using robotic crawlers to deploy non-destructive examination methods were exercised on a mock

cannister.

Additionally, in the event of identifying a defect attributed to chloride-induced stress corrosion cracking, cold spray mitigation and repair methods have also been assessed, aimed at demonstrating their effectiveness in arresting this degradation mechanism.

The Office of Research, along with industry stakeholders, have also supported the development of a new consensus American Society of Mechanical Engineers Boiler and Pressure Vessel Code for establishing the requirements for in-service inspection and acceptance criteria for dry cask storage cannisters.

A standardized set of inspection requirements and development of the technical bases for cannister selection and inspection frequency would be a benefit to the business line as it would reduce the number of site-specific aging management program reviews.

The NRC assesses public safety and develops regulations through risk-informed and performance-based approaches.

For example, feedback from industry has revealed that current guidance for classification of the condition of fuel assemblies may be unnecessarily conservative and practically difficult to implement.

This may have led to a wider than necessary use of damaged fuel cannisters. These cannisters are secondary metal containment enclosures used to prevent fuel fragment dispersal within the cask's internal cavity.

We are leading the efforts in developing the technical bases

required for developing new risk-informed, safety-focused guidance for fuel classification during cask loading.

Work is also underway to take advantage of potential thermal margins to enable more efficient cask loading while still maintaining the adequate protection of the public and environment.

This initiative is guided by performing technical analyses and participating in industry-led phenomena identification and ranking table exercises through expert solicitation related to the decay heat thermal modeling and cladding performance of spent fuel.

Results from these efforts are being used to explore how risk insights may be incorporated into our current regulatory framework, which may instill changes to our current approaches for the safe licensing of spent fuel loading into dry cask storage systems.

This concludes my presentation, thank you again for the opportunity. I'll now turn it over to Dan.

MR. DORMAN: Thank you, Lucas, and thanks to all the panelists.

I'd also like to thank all the Headquarters and Region Staff who support the Spent Fuel Storage and Transportation business line and make it a success, and all the Staff who supported the preparation for this meeting.

This concludes our presentations and we look forward to your questions.

CHAIRMAN HANSON: Thanks Dan. Thanks to all of you for your presentations. Certainly, spent fuel storage and transportation is one of

the most visible and I think often least understood aspects of NRC's mission.

So, in that vein, I wanted to do two things. One, I wanted to recognize and applaud the significant public communication efforts that the team has made in this regard in trying to communicate both NRC's sphere of responsibilities as well as some pretty technical information about spent fuel storage and transportation itself, and also how we regulate that.

Along those lines, one of the things that's gotten some attention recently is what we call the transportation readiness report.

So, Chris, I was just wondering if we could check in for a few minutes about -- I think you touched on it in your presentation, talk a little bit about what that report says?

And also, just NRC's overall sphere of responsibilities when it comes to spent fuel transportation.

MR. REGAN: Yes, if include go back in my time machine for a couple years and look at some scribblings on a white board for preparing on transportation in light of the consolidated interim storage facilities, really what prompted the effort.

And in an interest to be as proactive as possible, in looking at from a regulator's standpoint, were we ready? And then the second piece is do people even understand what our role is?

Because of the number of entities that were involved in the safe and secure transportation of spent fuel, there's perhaps I won't say an absence of information but just lack of clarity to some of our external stakeholders.

So, the effort on our part was to try and help clarify roles and

responsibilities, provide a little bit of clarity on the technical aspects of regulations, spent nuclear fuel transportation.

And so we undertook the effort, it was a holistic look at all the aspects of communications, the technical bases, the relationships, and get that documented and share that and promulgate that out to our external stakeholders so they could have something to refer to as we move forward.

Looking at the communications aspect, it was really an opportunity for us to talk with our external stakeholders, answer questions, use that as a guide for any lines of interest or questions they may have had from us.

We started off with some fairly fundamental, there's the National Transportation Stakeholders Forum, which DOE sponsored the organization, its primary role was to engage with external stakeholders on DOE transportation of spent nuclear fuel.

But we use that venue to engage with the broader scope of stakeholders, everything from local law enforcement to first responders to DOE representatives, and of particular note, the tribal community.

And use that as a starting point to help start that dialog and share that understanding of the results, not only what we found but also the results of our regulatory readiness review.

We're continuing that, this is on a continuum, it's not a one and done.

In fact, in June the National Transportation Stakeholders Forum is having their annual meeting and we'll be present at that one and we'll

continue to talk about next steps, what we're doing as a regulator to enhance our program as a result of the recommendations from that regulatory readiness review to ensure that we are ready for the time when the spent fuel starts being transported again.

CHAIRMAN HANSON: And so our sphere of responsibility is really around transportation, the packages, and if I remember my transportation correctly there are other entities in the Department of Transportation, et cetera, who may inspect the trailer or the 18-wheeler separately.

Do I have that right?

MR. REGAN: When we put it in a context of a timeline, for example, with a shipment of spent fuel from one ISFSI to a consolidated storage facility, for example and where it starts and where it ends and who is responsible for that.

And yes, you're correct, the NRC is responsible for licensing our certification of the transportation package itself. We would do the inspection to ensure the package is ready for shipment.

And in large part, DOT would take over that transportation evolution from the point of origin until it arrives at a destination. And then we start again with the receipt inspections, receipt of the packaging and then re-emplacement into a new storage configuration.

So, you've got the Part 72 regulations at point of origin, Part 71 regulations for the packaging, and then the Part 72 regulations again at the backend when it actually gets in place with the new destination.

CHAIRMAN HANSON: Thank you, that's really helpful. Have we ever had a situation where we've done storage, transport, storage for a cask? Is there anything special that needs to be done with amendment of certificates of compliance or other things?

MR. REGAN: I don't recall specifically if it's been from dry storage to dry storage but transportation of spent fuel is not something that's new. There have been licensees, I think back in the 1970s and 1980s, that moved spent fuel from one facility to another.

So, it's not a new evolution and industry likes to tout the fact that this is something they're familiar with, that they have experience with in the past. Could you repeat the second part of your question?

CHAIRMAN HANSON: You're capturing it, that's pretty helpful. You had mentioned dry storage, transport to dry storage, that there might be a little twist in there, but overall, transport is something we've done quite a lot of obviously.

We have both within the utility fleet itself, we know this has happened and also, utilities utilizing something like GE-Morris, for example, and other facilities. So, I think that helps. Dan, did you want to jump in?

MR. DORMAN: I would just also note that in the international community, there's a lot of experience with movement of spent fuel. So, we have colleagues internationally that we can draw on their experience as well.

CHAIRMAN HANSON: With regards to Project Pele, I think this is really interesting and kind of a twist. Spent fuel is one thing, we know it's spent and we have things, as a technical term, inside the cask to prevent

criticality and we control criticality very carefully.

Pele is a fully loaded microreactor, it wouldn't have to be Pele but any microreactor under transport.

Are there efforts to look at our regulations and evaluate those for the readiness for something like Project Pele?

Could maybe one of you expand on that?

MR. REGAN: I'll start off in a broad sense, it's a transportation package required to meet the requirements of Part 71. We have technical Staff that are looking at what we might receive from the applicant.

Under the regulations of Part 71, there is the option for using a probabilistic risk assessment approach, which we understand they intend to take. And we have Staff with expertise in PRA who are ready to entertain that.

As far as the process goes, maybe perhaps if I can invite Chris Markley who's going to be on the licensing end, he can add some details on the process and perhaps the timeline of what we might expect to receive from Department of Defense by way of an application.

Chris?

MR. MARKLEY: Yes, I can help out there, Chris. Talking about Project Pele obviously, it's a unique situation. It's the first of a kind, we haven’t approved transport of a mobile micro-reactor up to this point.

But from our understanding of the approach we think they plan on taking, our framework can accommodate it.

As Chris alluded to, there's the probabilistic risk assessment

approach that they could take and there is precedent for unique situations that we've approved previously. For example, the Trojan reactor vessel, that was approved with exemptions.

So, there are tools they can use. Our main role right now, is just staying informed and trying to keep an understanding of what's going on with the Strategic Capabilities Office and Department of Defense as we move forward.

I know they're still working out how exactly they want to apply this risk-informed approach so we expect to review any reports they're developing just to get a sense of what direction they're going and comment as appropriate.

As Chris mentioned, we do teams throughout the agency and NMSS; we have rulemaking, environmental folks, financial folks, we have technical experts in the Division of Fuel Management, Office of Research is helping with the PRA aspects, NRR is involved.

So, it is an interagency effort and we're coordinating quite well. And I think as you're aware, obviously, on Thursday they will be coming in for a Commission briefing so more technical details will probably be potentially available then.

Hopefully that helps.

CHAIRMAN HANSON: Great. Very much. Thank you both, I really appreciate it. Commissioner Baran?

COMMISSIONER BARAN: Thanks. Well, I think it's been an interesting discussion on the spent fuel transportation issues.

I recently met with the Prairie Island Indian Community Tribal Council and like many communities hosting nuclear power plants, they're interested in seeing a disposal option for spent nuclear fuel and they raised some broad concerns about the level of tribal involvement along transportation routes if spent nuclear fuel moves from one storage facility to another.

When I say broad, I just mean not specific to them. I think they were interested in other tribes as well. What's the Staff's current thinking about the appropriate role of tribal governments in spent fuel transportation?

Should tribes be automatically notified of shipments rather than being required to opt in? And what kind of tribal participation is envisioned for future spent fuel transportation regardless of the destination?

MR. REGAN: I'll see if I can, you've got quite a few questions embedded in there, or at least areas of interest.

I mentioned earlier the value of the opportunity of engaging with the tribal community and we use the Transportation and Radioactive Materials Tribal Committee as one venue to engage with the tribal community.

And I think early on, at least from a very personal perspective, the value of those face-to-face relationships can't be underscored how important those are.

I know probably in reference there was a tabletop exercise conducted a couple of years ago to speak specifically to potential transportation and the local tribal community was involved in that. There was feedback I heard that they found that extremely valuable as well.

As far as the communications and the engagement, like I said,

the opportunity to engage with the Committee involves a large array of tribal individuals from across the nation to use that venue.

He mentioned notifications, is there options for notifying the tribal community? In opting into the program specifically, the benefit of that is the control of safeguards information. It's critical.

We want to be sure that whoever is in receipt of information related to transportation has the proper controls and framework in place to handle that information.

Similarly, notifications from the Agency, we don't want to surprise the tribe, we don't want to surprise any individuals. We want to make sure they're prepared for the information we might be providing them and they know what to do with it.

The organizations that ship the material are required by regulation to notify anyone along the transportation route, and that would include the tribes. So, there is that mechanism, there is a notification.

But as I may have mentioned earlier, just developing those relationships with the tribal community as a regulator are important to open those channels of communication.

As far as individual tribes, a lot of it rests with the tribe as far as how much they want to engage and where their interests are in becoming aware of transportation in their community and on their tribal lands.

So, it really is about relationships and forging those solid relationships with our counterparts in the tribal communities.

COMMISSIONER BARAN: That's helpful. And in terms of

the question about whether tribes should need to opt in, under our regulations is it different treatment for a tribal government than a state or local government?

Are they the only ones who have to opt in and if that's the case, why is that given the safeguards issues you raised and just the readiness issues?

MR. REGAN: My understanding is that program is focused primarily on the tribal communities and establishing a framework for their ability to handle SGI material. It is something that is optional for them.

We do communicate, we send letters out to the tribal communities every five years to remind them and urge them that opting in has its benefits.

And we've also received feedback explicitly from those that have opted into the program that it's not very burdensome for them to run through that program, to set up the framework where they can receive those notifications and ensure they can handle the material they receive in an appropriate manner.

COMMISSIONER BARAN: Going back to comparing them to states or non-tribal local communities, is there a difference in what information they're receiving or the process by which they must receive it?

MR. REGAN: As far as the information, most of it obviously is associated with the transportation routes, transportation logistics, and that information, obviously, the importance is on the first responders because in the unfortunate event that there's an issue, it's the folks that are along that

transportation route that would need to be made aware.

So, that's really a driver for that and I mentioned during the National Transportation Stakeholders Forum the presence of local law enforcement and first responders.

So, those folks should be and would be made aware of transportation through their jurisdictions when the time comes.

COMMISSIONER BARAN: Historically we've had a situation where dry casks of identical design at a site have different certificates of compliance due to different amendments so sites can end up with multiple sets of licensing documentation at a single storage facility, even if all the casks are the same design.

Chris Markley, you talked about a bit about what the graded approach the NRC Staff is taking to address that situation.

Can you tell us more about how the pilot worked and what the results were?

MR. MARKLEY: I'd be happy to. The pilot, we completed the pilot amendment application in August of 2020 and we looked at some of the results and some of the results were pretty standard for an amendment review. In terms of general re-emphasizing, we want to make sure we have realistic expectations in what we're looking at, clearly communicate roles and responsibilities. One thing that did come out of is identifying challenging and cross-cutting issues early on in the review process.

In thinking about the connections of all these different tools we have at our disposal, we have for example the risk tool that we had recently

piloted and bring this discussion and identify those issues.

We agree with NEI, we've made progress in the storage licensing process and there are benefits and it has improved things. We do have three amendment applications in house using this graded approach.

We look at it just as an additional streamlining tool. We use the criteria from the graded approach to revise and simplify certificates of compliance.

Regarding the multiple certificates of compliance at sites, that would be something should industry want to move forward and reduce the number of certificates of compliance, they could come in with applications and we'd be more than willing to review.

And they could use the graded approach to try and simplify as well. Hopefully that helps a little.

COMMISSIONER BARAN: It does and just to that point, I was trying to get a sense of whether these efforts that's going to apply purely to certificates of compliance going forward or whether there's something there that would address the existing disparities in the various licensing documents?

Is that being contemplated, trying to rationalize that a bit or is that just a possibility if someone came through the door with an application along those lines?

MR. MARKLEY: That's definitely a possibility for specific licenses for storage under Part 72 and looking at it under Part 71, I don't see why under transportation, they can apply that as well.

The graded approach uses criteria and if you meet the criteria

you can try and simplify the certificate or the license in the case of specific licenses. I'm not aware of anyone looking to apply that to anything beyond these storage certificates of compliance at this time.

But again, I think that's something we could accommodate.

COMMISSIONER BARAN: I also wanted to ask briefly about advanced reactor fuel. A number of advanced reactor designs contemplate very different fuel types obviously, than we're used to seeing for large light water reactors.

Can someone give us an update on the efforts associated with certifying transportation packages for fresh and spent advanced reactor fuel? The presentation seemed to focus more on ATF. I'm interested in the advanced reactor side.

MR. REGAN: Maybe I'll start off. When we talk about the transportation of ATF, our primary focus in the near term was on fresh fuel.

Would we have or were there certified package designs that were suitable for the transportation of sufficient volumes or quantity of ATF in support of industry's needs?

We had package designs that were certified and licensed for those lead test assemblies. Those were done and looking at the package designs for larger batch loads was an area of focus for us.

In a broad sense, we didn't identify any gaps in our regulatory framework. It's broad enough that we feel confident that we can license what industry might provide to us in those package designs. Amendments or revisions to existing designs are suitable for being able to support that.

What we may see a need for, and I've expanded scope a little bit beyond just ATF, advanced reactor fuels is because of the diversity of the designs, there probably is going to be a need for us to modify or revise our internal review guidance to address some of the particular nuances of the fresh fuel designs that we may actually end up having to license for transportation.

COMMISSIONER BARAN: So, it sounds like on the advanced side there's some work to be done there?

MR. REGAN: Clarity, and again, to make our reviews more effective and perhaps more efficient as we look at the individual nuances of each particular design.

MR. LEWIS: Commissioner, if I could just add one point? As Chris said in his talk, every chance we get we encourage people to come for pre-application meetings and that includes the advanced reactor community.

But they're not at the point where they could propose their fuel design where we could do a fuel package. However, people are coming to us for higher enrichments, which does support advanced reactor as well as ATF.

So, I think in that space, we’re meeting the needs of the industry.

COMMISSIONER BARAN: Thank you.

CHAIRMAN HANSON: Commissioner Wright?

COMMISSIONER WRIGHT: Chris, I'm going to come to you first here.

You talked about proactive engagement with vendors and suppliers supporting ATF to ensure they had accounted for the time necessary for licensing actions on transportation package certifications.

So, assuming that the NRC receives a high-quality application, how much time does it take the NRC Staff to review the license applications? And does it vary by fuel design?

MR. REGAN: I don't think it'll vary much by fuel design because we're really looking at the package and the packaging itself. We do have our NEIMA metrics that we communicate with licensees and applicants on what they might expect for license review.

And maybe I'll rely on Chris Markely a little bit to help me out on the specifics, but I think it's on the order of 24 months for a typical transportation licensing review evolution.

I'd like to say we always try and do better but I think that's the metric that we target.

COMMISSIONER WRIGHT: Chris, do you have anything to add to that?

MR. MARKLEY: No, in terms of the transportation, I don't know off the top of my head what the metric is for that. I do know storage is 36 months for what it's worth.

COMMISSIONER WRIGHT: Thank you. Chris, I'm going to stay with you, Markley, how about that? You mentioned spent fuel licensing support for Project Pele and we've had a little discussion surrounding that today but what kind of support is your Branch providing?

And do you need any additional resources to support that effort?

MR. MARKLEY: At the moment, I'm in the Licensing Branch, we have a person dedicated to the NRC team and we put him in meetings.

And at this point, it's still more of an information gathering because again, I don't think they have actually even selected their final choice where someone could be developing a microreactor.

So, there's still a lot of uncertainty, at this point I don't think we need additional resources but if there is something in the future we'll obviously let the Commission know it's needed.

COMMISSIONER WRIGHT: Thank you, I hope you do. Mr. Regan, I'll come back to you. We have a SECY-21-0101, the Staff identified three potential policy issues that may require attention or direction from the Commission related to the NRC's readiness for oversight of large-scale commercial transportation of spent nuclear fuel, and those three were involvement of tribes along the routes, transportation of older spent nuclear fuel that is no longer self-protective and updating the 1984 policy statement on transport of radioactive materials.

Do you have any updates on those issues and when the Staff may seek Commission action on this?

MR. REGAN: I seem to be very popular with the questions this morning.

I'll start off with just an overview of one of the benefits of being as proactive as we were with this transportation regulatory readiness review

is we have time.

The policy issues that were identified, we'll look at those as far as the prioritization goes. A specific timeline of when the Commission might be in receipt of recommendations from the Staff at this time, we don't have a specific schedule.

We looked at some of the recommendations, or at least the outcomes, from that transportation regulatory readiness review and it really was just to set the stage for what we might need to do in the future.

But as far as the implementation plan, that's still something the Staff is assessing on how to work those enhancements and when to engage the Commission on those policy issues.

COMMISSIONER WRIGHT: Lucas, good morning. You mentioned ongoing collaborations with DOE and EPRI on research of high burnup fuel storage. Can you maybe summarize the results of the research? What have we learned?

Is there any particular issue or issues that are critical to a path forward on this storage?

MR. KYRIAZIDIS: The NRC collaborates with EPRI through participation in EPRI's Extended Storage Collaboration Project, and ESCP is broadly a group of organizations that aim to investigate the technical bases to ensure the continued safe and long-term storage of spent nuclear fuel.

So, our interactions with EPRI really look like attending periodic meetings to share research findings, maintain awareness of activities that NRC is directly a part of, like the high burnup demonstration cask project that

you mentioned, and organize and execute special tasks, like the industry-led parts I mentioned earlier and Chris mentioned.

So, all these activities really aim to identify and close technical gaps that are related to dry storage.

And the high burnup demonstration project is one of them, where it's providing additional confirmatory data that will potentially help license or extend dry cask storage systems and facilities.

So, the way we'll use that data is inform the licensing action but also inform our confirmatory codes and validated suite of computer codes like FAST.

COMMISSIONER WRIGHT: Chairman, that's all I've got. Three more minutes until lunch for you all.

CHAIRMAN HANSON: Thank you, Commissioner Wright. Thank you all very, very much for a very good discussion. I think both panels as usual, we see this a lot in NMSS where we cover really a lot of ground on a lot of topics that are of keen interest to the public and I appreciate everyone's presentations. Thank you for the ongoing work of both of these groups in NMSS for thinking ahead, thinking innovatively, deploying new tools, and continuing to protect the public and the environment; it's the foundation of our mission.

And thanks to my colleagues, I think between the three of us again we covered a lot of real estate as well, which is the way it's supposed to work. And I appreciate that very much. So, with that, we're adjourned.

(Whereupon, the above-entitled matter went off the record at

11:35 a.m.)