

UNITED STATES
NUCLEAR REGULATORY COMMISSION

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

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TUESDAY,
APRIL 23, 2024

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The Commission met in the Commissioners' Hearing
Room, at 9:00 a.m. EDT, Christopher T. Hanson, Chair, presiding.

COMMISSION MEMBERS:

CHRISTOPHER T. HANSON, Chair

DAVID A. WRIGHT, Commissioner

ANNIE CAPUTO, Commissioner

BRADLEY R. CROWELL, Commissioner

ALSO PRESENT:

TOMAS HERRERA, Acting Secretary of the Commission

BROOKE CLARK, General Counsel

NRC STAFF:

RAYMOND FURSTENAU, Executive Director for Operations

(Acting)

SHANA HELTON, Director, Division of Fuel Management, NMSS

PAULA COOPER, Senior Reactor Inspector, Engineering

Branch 3, Division of Reactor Safety, Region

II

NICOLE COOVERT, Acting Director, Division of

Construction Oversight, Region II

SAMANTHA LAV, Chief, Fuel Facilities Licensing

Branch, Division of Fuel Management, NMSS

EDUARDO SASTRE FUENTE, International Safeguards

Technical Analyst, Material Control and

Accounting Branch, Division of Fuel

Management, NMSS

BERNIE WHITE, Senior Project Manager, Storage and

Transportation Licensing Branch, Division of

Fuel Management, NMSS

JOSH WHITMAN, Reactor Systems Engineer, Fuel and

Source Term Code Development Branch, Division

of Safety Analysis, Office of Nuclear

Regulatory Research

PROCEEDINGS

9:00 a.m.

1 CHAIR HANSON: Good morning, everyone. I convene the
2 Nuclear Regulatory Commission's public meeting for the purpose of discussing
3 the NRC's strategic programmatic considerations associated with the Fuel
4 Facilities and Spent Fuel Storage and Transportation Business Lines.

5 It is very important to keep the public informed of the agency's
6 development in these areas of high interest, so I thank you all for supporting
7 this meeting today and I'm looking forward to a great dialogue.

8 We'll hear from two NRC staff panels: the Fuel Facilities
9 Business Line Panel will present first, then we'll take a short break, and then we
10 will hear from the Spent Fuel Storage and Transportation Panel. With each
11 panel we'll hold questions until the end and then we'll hear questions from the
12 Commissioners to the panels.

13 Before we start I'll ask my colleagues if they have any
14 remarks they'd like to make.

15 Okay. Thank you. So with that, we'll begin with our first
16 panel, which will be introduced by Raymond Furstenau, the NRC's Acting
17 Executive Director for Operations.

18 Ray, the floor is yours.

19 MR. FURSTENAU: Okay. Thank you, Chair and
20 Commissioners. It's our pleasure here to update you on the -- first the fuel
21 facilities and that's what we'll start with.

22 I think to me the fuel facility discussion we'll have today -- it's
23 really essentially when we look at the priorities of the Commission with respect

1 to -- and deployment of accident-tolerant fuel, high-burnup fuel, high-assay LEU
2 fuel, production, and deployment of advanced reactors. What this business line
3 does is really essential for the successful deployment of those technologies.

4 So with that, I'm going to introduce the panel that are
5 protecting me today; I'll put it that way.

6 (Laughter.)

7 MR. FURSTENAU: And Shana Helton, she's going to provide
8 the presentation on the current program overview and priorities. Samantha Lav
9 will discuss adapting to an evolving fuel facility industry and leveraging New
10 Fuels ATLAS Program and the regulatory planner. Eduardo Sastre Fuente will
11 be discussing implementing safeguards for advanced reactors and advanced
12 fuels. And lastly, Nicole Coover will discuss insights on the implementation of
13 the Smarter Fuel Cycle Inspection Program and will provide an update on the
14 oversight program for Category II facilities and new construction oversight.

15 And with that, I'll turn it over to you, Shana. Thanks.

16 MS. HELTON: Thank you, Ray.

17 And good morning, Chair and Commissioners.

18 Before I begin I would like to recognize the recent and very
19 sudden passing of Jenny Tobin, Fuel Facilities Project Manager, who gave 18
20 years of dedicated federal service, not just to the business line, but to the NRC
21 and the public overall. She's held several positions here at the NRC and it's
22 been amazing to see the outpouring of sympathy and support from people all
23 across the agency, as well as people outside of the NRC, and I think that's a
24 testament to what a meaningful impact she had and of what a lasting legacy
25 she leaves behind.

1 For me personally I'll really miss her appreciation of STEM,
2 her love of libraries, science, her family, and her endless well of positivity and
3 joy of life and gratitude for all things. So I know we'll really miss her and my
4 thoughts are with her family: Aaron, and Gavin, and Gabby, and Eva. And I
5 know she loved them dearly because we heard a lot about them while she was
6 here at work. And she had her priorities straight.

7 So, okay. With that, next slide, please?

8 MR. FURSTENAU: Thank you, Shana.

9 MS. HELTON: So remaining on the topic of people, one of
10 our priorities is to promote an organizational culture that focuses on knowledge
11 management, staff training and qualifications, and embraces cross-training
12 programs and career development.

13 We've addressed significant staffing needs through recruiting
14 in venues such as the NRC Hiring Fair held last May, an American Nuclear
15 Society Conference on Probabilistic Safety Assessment and Analysis, a project
16 manager recruitment event that we held in partnership with the Office of
17 Nuclear Reactor Regulation, and the Blacks in Government National Training
18 Institute.

19 This helped us hire approximately 15 people into the business
20 line over the past year. This is a mix of people who are new to the agency or
21 who are moving within the agency. External hires are certainly an important
22 part of our strategy for meeting our hiring goals and giving these developmental
23 opportunities to our existing staff is key to our recruitment and keeping this --
24 retaining this talent within our agency.

25 Qualification and training has been a strong focus as we

1 welcome staff to their new positions. Supervisors ensure staff have mentors,
2 NRC ambassadors, individual development plans, qualification plans, and
3 meaningful work assignments. One success I'd like to highlight in this
4 area is the revamped fuel cycle processes course. We had two offerings of this
5 in the past fiscal year. Both were very well attended. Our first offering was
6 open to internal agency employees and the second offering was attended by
7 our partners in federal, state, and Tribal governments. In addition to these
8 activities we're reviewing our existing qualification processes to identify
9 enhancements for efficiencies and to increase consistency across business
10 lines in the materials arena.

11 Another priority in this business line is to enhance public
12 outreach and inspire stakeholder confidence through development of proactive
13 and transparent communication strategies for fuel cycle decision making
14 processes. We developed a new and improved fuels website to make our
15 regulatory process clearer and more accessible. I'll discuss outreach on the
16 next slide, but first I'd like to highlight a few challenges in this area.

17 For several years we've provided a great deal of transparency
18 on the fuel facilities budget and fees to our external stakeholders, but with less
19 than 10 licensees in this fee class perturbations and workload may significantly
20 impact fees. This is what happened in fiscal year '24 when the uncertainty
21 regarding the HALEU fuel supply suddenly changed licensing plans well after
22 we'd established our budget. We're exploring options to address the volatility of
23 the fuel facilities budget and annual fees and will engage the Commission as
24 appropriate.

25 Lastly, and of course we have business line priority focused

1 on ensuring the safety and security mission for our operating facilities and
2 facilities under construction. And we do this by promoting risk-informed
3 decision making to result in effective management of licensing oversight,
4 research, and rulemaking activities, and development of high-quality regulatory
5 products.

6 I'm very proud of the staff's approach using the Be
7 RiskSMART Framework on a number of issues to assess safety and
8 safeguards risks, and recently we used this to assess oversight requirements
9 that we would need for Cat II facilities. Based on the risk factors we considered
10 we concluded that we do not need to place resident inspectors at the TRISO-X
11 an American Centrifuge plant, or Centrus, at this time.

12 Also I'm pleased to note we completed our first assessment of
13 the oversight program since we implemented the smarter inspection process.
14 You'll hear more about this in Nicole's presentation and a report about this
15 assessment is planned to be completed later this year.

16 And lastly, again to ensure we're poised for effective
17 management in the future we recently stood up a New Fuels Team. This
18 leverages funding we received in the 1A Business Line, which is not the subject
19 of this meeting today, but this team will benefit the Fuel Facilities Business Line
20 by enhancing our focus on accident-tolerant and advanced reactor fuels to
21 ensure we've got the skills, the guidance, the research, the data, and the
22 infrastructure we need to be an effective regulator for novel designs.

23 Next slide, please? We continue engagement with
24 stakeholders, both domestically and internationally. On the international front
25 we've worked with the Canadian Nuclear Safety Commission through bilateral

1 meetings on topics such as information exchanges on operating experience.

2 We participate in a working group on fuel cycle safety under
3 the Committee on the Safety of Nuclear Installations at the IAEA -- I'm sorry, at
4 the NEA, and serve as the U.S. national coordinator for the Joint IAEA and NEA
5 Fuel Incident Notification and Analysis System.

6 We also participate on workshops and consultancy meetings
7 on operational radio protection, chemistry of fuel cycles for molten salt reactors,
8 and aging management for fuel facilities.

9 Domestically we hold biannual public meetings with fuel
10 facility stakeholders and interested members of the public. We work closely
11 with our federal partners to ensure alignment on national priorities. For
12 example, we've got routine communications with the Department of Energy on
13 several topics of shared interest and we've been gaining valuable insights that
14 inform our work planning from the DOE's clean energy demonstrations and the
15 NE-4 offices as we look at issues associated with the domestic supply of
16 uranium.

17 We're following closely the DOE request for proposals for
18 conversion and enrichment that may impact our workload and we're carefully
19 gauging what might be coming our way and when. We're watching for the DOE
20 decisions and selections that will be made in the next months and are
21 coordinating on that. And Eduardo will give a great talk about
22 our interagency collaboration in the area of international safeguards.

23 Before I leave this slide I'd like to note that within the NRC
24 we're very well connected as well amongst our partner offices. We leverage
25 routine interactions that are posted by our colleagues in NRR on accident-

1 tolerant fuels and advanced reactors. We're routine participants in the
2 advanced reactor stakeholders meetings so we benefit from the efforts of our
3 partners across the agency.

4 That concludes my remarks and I'll turn it over to Samantha.
5 Thank you.

6 MS. LAV: Thank you, Shana.

7 Good morning, Chair Hanson and Commissioners. It's a
8 pleasure to be here this morning.

9 We are in a rapidly evolving environment for fuel facilities that
10 can significantly impact the number and scope of licensing actions submitted to
11 the NRC. Five to ten years ago the fuel facility industry was contracting and
12 several licenses terminated their licenses or entered a ready idle status. Over
13 the past few years there's been increased interest in amending current licenses
14 and increasing -- and licensing new fuel facilities to produce HALEU for ATF
15 and advanced reactor fuels.

16 This change is driven by strong bipartisan support for ATF
17 and advanced reactors which are increasingly seen as a tool to reduce the
18 nation's carbon footprint. In addition, geopolitical issues and potential supply
19 chain disruptions have increased focus on enhancing and expanding the
20 domestic fuel cycle.

21 Next slide, please? The NRC's adapting to this evolving
22 environment while continuing to improve our licensing process and make it
23 more transparent. To do so we're implementing the Smarter Fuel Cycle
24 Licensing Program and leveraging lessons learned from other major projects
25 across the agency including advanced reactors and consolidated interim

1 storage facilities.

2 The Smarter Fuel Cycle Licensing Program began in 2019
3 with a holistic assessment of our licensing processes. During this assessment
4 the staff in conjunction with our stakeholders identified 36 process
5 improvement. We fully implemented these improvements before the start of
6 fiscal year 2023.

7 While some process improvements focused on increased efficiency of our
8 reviews, many were focused on transparency and communication. Our
9 stakeholders have provided positive feedback that we are achieving these
10 goals.

11 Together these process improvements have allowed us to
12 complete a significant number of reviews including more complex first-of-a-kind
13 reviews of ATF and advanced reactor fuels while meeting the industry need-by
14 dates. Since 2018 we've completed approximately 300 reviews including 8
15 ATF-related reviews and 5 advanced reactor fuels-related reviews.

16 In our first year of fully implementing the program we completed 45 licensing
17 actions on average within 95 percent of the published schedules. To meet
18 applicants' need-by dates these schedules are typically much more aggressive
19 than the generic NEIMA timelines.

20 I'd like to highlight some recent successes in implementing
21 these changes which has improved transparency, communication, and
22 efficiency.

23 Pictured on this slide is the public-facing dashboard for the
24 TRISO-X new fuel fabrication facility. This is the first time the fuel facility
25 business line has published a public-facing dashboard for a major project. The

1 dashboard increases transparency on the reviews progress and allows
2 stakeholders to access an interpret project information easily. Our stakeholders
3 have commented on its usefulness and we are creating dashboards for other
4 major reviews. Earlier this month we published a dashboard for the LES
5 amendment to increase its enrichment up to 10 weight percent U-235.

6 To streamline our acceptance reviews we're using clarification
7 calls and audits instead of requests for supplemental information when
8 possible. We have also issued acceptance letters with observations from the
9 acceptance review that allow the applicant to address issues early and reduce
10 the number of potential requests for additional information, or RAIs.

11 We used this process to improve the efficiency of our review
12 of the GE indirect transfer of control. This was a complex review that involved
13 six different types of licenses including different types of materials, reactor, and
14 export licenses. By issuing the acceptance letter with observations the
15 applicant addressed the issues early and we did not issue any RAIs.

16 We're also applying lessons learned to subsequent related
17 reviews to increase efficiency and ensure consistent resolution of technical
18 issues. For example, many licensees have used a phased approach to
19 amendments related to ATF with increased enrichment. They first submit their
20 minimum margins of subcriticality for review and then request an amendment to
21 increase enrichment limits. This approach started with the Global Nuclear
22 Fuels Americas request to produce ATF with increased enrichment and is also
23 being applied by LES and Framatome.

24 Next slide, please? As I mentioned, fuel facilities are in a
25 rapidly evolving environment. A strong understanding of the drivers for change,

1 our process improvements, and regular communication with stakeholders help
2 us understand potential workload impacts and adapt.

3 Much of our new workload relates to new fuels. To date
4 we've issued 2 authorizations to begin enrichment operations and 13 licensing
5 actions including licensing the HALEU demonstration at Centrus' American
6 Centrifuge plant, the first amendment to produce ATF and increased
7 enrichment and several nuclear criticality methodology reviews. We have met
8 the need-by dates for all of these actions while performing thorough and
9 transparent safety, security, and environmental reviews.

10 We're also currently reviewing three major licensing actions
11 including the TRISO-X new fuel facility license application and two amendments
12 for enrichment facilities.

13 Over the next three years we anticipate receiving between 11
14 and 14 medium to high-confidence major licensing action submittals. We've
15 also had additional discussions with other potential new applicants to enrich,
16 fabricate, and reprocess fuel. While the number of actions we've completed
17 and anticipate is similar, future actions are expected to be more complex
18 including new facility licenses, major expansions of existing facilities, and new
19 fuel types. As a result we're closely monitoring future licensing actions to
20 ensure we have the necessary skills, research, and guidance in place when
21 needed.

22 Next slide, please? To accomplish this we're leveraging the
23 New Fuels ATLAS introduced at last year's business line briefing. The ATLAS
24 consists of an infographic, public web page, and the regulatory planner. When
25 complete it will help us identify the needed actions and activities to ensure the

1 NRC's continued readiness to regulate new fuels. The infographic and New
2 Fuels website are complete and are intended to enhance our stakeholder
3 communication and public confidence in our abilities to regulate these new fuel
4 technologies effectively. They do so by providing a user-friendly once-stop
5 shop for showing our existing regulatory framework can accommodate new
6 fuels and identifying licensing and state-of-the-industry information.

7 The regulatory planner will consolidate information on what
8 we are doing and what we expect will need to be done. It will cover
9 programmatic areas such as licensing, oversight, and research activities
10 associated with the enrichment, fabrication, and transportation of the different
11 anticipated new fuel technologies.

12 The deployment of the planner is envisioned in distinct
13 phases. The first milestone is a database to identify and consolidate items that
14 may be needed to conduct future NRC actions. We worked with the Center for
15 Nuclear Waste Regulatory Analysis, or the Center, to develop an initial version
16 of this database that includes 100 tasks.

17 Using the planner can help us determine the regulatory route
18 to consider. For example, if we were expecting an application related to
19 fabricating metallic fuel with -- using HALEU, we could look at the potential
20 enrichment licensing activities needed for the applicant to ultimately be able to
21 produce the fuel. In the red box -- or red box highlights these activities and
22 includes 12 discreet activities including licensing actions for enrichment
23 services at higher enrichments such as the LES amendment which we
24 accepted for review this March.

25 The regulatory planners' concepts and framework and the

1 associated research road map have been instrumental in planning and
2 prioritizing research needed to support future licensing actions such as criticality
3 benchmarking for higher enrichments. Josh will talk more about that on the
4 next panel.

5 As we use the planner we will continue to monitor for the new
6 fuels environment. If we see something that we consider an indicator of a shift
7 in a timeline or type of submittals we will look to the planner to see which route
8 we need to consider and sort for the activities that need to be completed. Then
9 we would review and act as we see appropriate.

10 Using the planner is an interactive process. As we continue to develop it and
11 learn from its use we will refine the planner and add functionality.

12 That concludes my remarks and I'll now turn it over to
13 Eduardo Sastre Fuente. Thank you.

14 MR. SASTRE FUENTE: Thanks, Samantha.

15 Good morning, Chair and Commissioners. I'm pleased to
16 present on the topic of international safeguards and its implementation in the
17 United States.

18 Next slide, please? The NRC promotes and supports nuclear
19 nonproliferation through the implementation of international safeguards on the
20 commercial use of nuclear material and technology. The objective of
21 international safeguards is to deter the spread of nuclear weapons through the
22 early detection of the misuse of nuclear material or technology.

23 Specifically the International Atomic Energy Agency uses a
24 set of technical measures that control and account for nuclear material to
25 ensure it is used for peaceful purposes. Since the signature of the

1 Nonproliferation Treaty in 1968 the IAEA has had the responsibility to
2 implement safeguards in its member states through corresponding safeguards
3 agreements.

4 In the case of the United States as a nuclear weapon state
5 the United States signed a voluntary offer agreement which allows IAEA to
6 apply safeguards technical measures on selected nuclear facilities. As part of
7 this agreement every year the United States provides IAEA with a list of nuclear
8 facilities that are eligible for the application of IAEA safeguards.

9 The NRC is in charge of providing the commercial portion of
10 this list. This includes those facilities that have applied for an NRC license to
11 possess or utilize special nuclear material. The complete list is reviewed
12 through an interagency process before submittal to the IAEA. Currently only
13 four NRC licensed commercial facilities are selected by IAEA for limited
14 safeguards measured under the reporting protocol of the agreement. This
15 protocol, as the name implies, is primarily focused on reporting of nuclear
16 material inventory and transaction information with minimal inspection activities
17 by the IAEA.

18 In complement to this agreement the United States has
19 ratified a supplemental protocol known as the Additional Protocol, or AP. The
20 AP was international expansion of safeguards in response to clandestine
21 weapons program that went undetected in Iraq. The AP requires member
22 states to submit additional reports on other aspects of the nuclear fuel cycle
23 which includes manufacturing, research and development, and export of dual-
24 use components, just to name a few. This part of international safeguards
25 applies comprehensively across the nuclear industry, not just on selected

1 facilities.

2 The NRC plays a leading role alongside other Executive
3 Branch agencies to implement safeguards across the U.S. commercial industry.

4 The NRC chairs the Subgroup for the Implementation of IAEA Safeguards in
5 the United States, better known as SISUS. This group facilitates interagency
6 discussion for the resolution of practical issues related to safeguard
7 implementation in the United States at commercial and government facilities.

8 The interagency's collaboration environment and frequent coordination allows
9 the NRC to stay on the pulse of improvement and advancements in safeguards.

10 In complement to IAEA safeguards the NRC participates with
11 the Department of State and the Department of Energy National Nuclear
12 Security Administration in the Nuclear Cooperation Authorities Group, or NCAG.

13 This is a forum with our major nuclear trading partners: Australia, Canada, the
14 European Atomic Energy Committee, Japan, and the United Kingdom. The
15 U.S. maintains bilateral agreements with each of these members and is
16 committed to tracking and reporting source and special nuclear material to
17 receive from our trading partners to ensure that the material remains in use for
18 peaceful purposes.

19 International partnerships and international coordination has
20 ensured that safeguards are reflected in the regulatory framework and
21 effectively deployed across the nuclear industry to meet our international
22 commitments. The NRC has played a pivotal role in ensuring that the
23 commercial nuclear industry addresses global safeguards consideration
24 including in the area of advanced reactors and advanced fuel facility licensing.

25 Next slide, please? The regulatory framework is already in

1 place to support safeguard implementation across the nuclear fuel cycle. The
2 U.S. commitments to the IAEA Safeguards Agreement and its protocols are
3 captured in the Code of Federal Regulations with NRC's regulations articulated
4 in Title 10, Part 75 and additional regulations from the Department of
5 Commerce found in Title 15, Part 781.

6 As mentioned in the previous slide, it has been the policy of
7 the United States to permit the application of IAEA safeguards to nuclear
8 facilities upon selection by the IAEA. Because the core of our Safeguard
9 Agreements is implemented by IAEA on certain selected facilities, NRC
10 regulations establishes that IAEA safeguards requirement apply after
11 notification of selection by the IAEA. This concept of selection-based
12 safeguards is unique to our agreement and it is why safeguards-by-design is
13 not required in our regulations.

14 The IAEA defines safeguards-by-design as an approach
15 whereby early consideration of international safeguards is included in the
16 design process of a nuclear facility allowing informed design choices that are
17 the optimum confluence of economic, operational, safety, and security factors in
18 addition to international safeguards. While safeguards-by-design is not
19 required under NRC regulations the Commission has stated that international
20 safeguards should be considered in the design of advanced facilities.

21 With this in mind the staff actively supports and encourages
22 the concept of strengthening the relationship between safety, security, and
23 safeguards, also called 3S. Staffs from NRR, NSIR, NMSS has been engaged
24 in 3S activities led by the Office of Research. Through improved understanding
25 of this connection 3S can support effectiveness and efficiencies in all three

1 areas.

2 Next slide, please? As the staff engage with different
3 stakeholder the staff understands that IAEA safeguards is a niche topic within
4 the commercial nuclear industry, thus it is advantageous to communicate the
5 nexus between the U.S. domestic regulatory framework and foreign
6 requirements. As facilities supporting an advanced fuel cycle consider
7 international trade NRC understands more than ever the importance of actively
8 engaging industry on this topic to communicate that appropriate safeguards are
9 an important and necessary aspect of regulation nuclear facilities. Furthermore,
10 demonstrating and robust applications of safeguards should strengthen
11 vendors' access to international markets.

12 For years the NRC has presented on this topic in many public
13 meetings, training conference, and other public engagement, however in the
14 last few years the NRC has amplified its safeguards messaging via pre-
15 application meetings and one on one presentation with designers to better tailor
16 the exchange of information. These engagements are mutually beneficial in
17 that the industry in meeting its regulatory requirements while further the
18 agency's mission of promoting common defense and security.

19 Of all the engagement and outreach on safeguard initiative
20 the most important has been NRC's consultation with IAEA on priority
21 safeguards consideration for advanced reactors and the advanced fuel cycle.
22 Working hand in hand with the IAEA and SISUS the NRC is able to inform
23 advanced reactor developers about international safeguards and engage with
24 potential applicants on this topic during pre-application meetings.

25 At the interagency level the NRC participates in many

1 outreach activities led by other agencies. In the case of NNSA the Advanced
2 Reactor International Safeguards Engagement Program, better known as
3 ARISE, works to prepare U.S. advanced reactor vendors and fuel cycle
4 stakeholders to meet international safeguards requirement. For training,
5 workshops, and other types of engagement ARISE teaches the industry about
6 safeguards and the benefits of early adoption of safeguards-by-design principle.

7 NRC fully supports NNSA's efforts and maintains a good working relationship
8 with them.

9 NRC's role in domestic and international safeguard
10 communities allows us to keep abreast of safeguards policies development and
11 to continue to provide efficient safeguards guidance and reviews for advanced
12 reactors and fuel facilities.

13 This concludes my remarks. I will turn it over to Nicole
14 Covert. Thank you.

15 MS. COOVERT: Thank you, Eduardo.

16 Good morning, Chair Hanson, Commissioners. Today I'm
17 pleased to discuss the insights of the implementation of the Fuel Cycle Smarter
18 Inspection Program and the staff's efforts in updating the oversight program
19 guidance for Category II facilities in new construction.

20 Next slide, please? The Smarter Inspection Program, or SIP,
21 is an effective oversight program that ensures the safe and secure use of
22 radioactive materials, prioritizes inspection activities commensurate with the
23 importance of safety, and the lower risk profiles of the fuel facilities and verifies
24 that the facilities are constructed and operated in accordance with their
25 licensing basis requirements.

1 The Inspection Oversight Program continues to provide
2 reasonable assurance of adequate protection that fuel facilities are operated
3 safely, the environment is protected, and the security and safeguards of the
4 facilities are maintained as reflected by existing licensee performance reviews.

5 In 2019, the staff initiated a holistic assessment of the fuel
6 cycle licensing and oversight programs to improve effectiveness and efficiency.

7 Changes made to the SIP included modifications to inspection frequencies and
8 resource estimates associated with the completion of inspection procedures,
9 and revisions to reduce overlap. Most SIP changes were implemented by early
10 calendar year 20221.

11 As a learning organization staff is performing an assessment
12 of the SIP based upon three years of experience using the updated inspection
13 guidance. Specifically, staff is reviewing quantitative data such as direct
14 inspection hours completed for each functional area like operational safety and
15 radiation protection, et cetera, and compares the results with inspection hours
16 listed in the procedures.

17 Staff is also reviewing qualitative data including facility
18 performance and staff's perspectives. The overall assessment results will
19 include a comparison of the several years before and after the SIP was in
20 place. This report is expected to be completed and publicly available in the
21 summer of 2024.

22 This slide shows NRC inspectors who provide daily and
23 programmatic oversight. The top right picture is the senior resident inspector at
24 a nuclear fuel services facility and the lower picture is a regional inspector
25 conducting an emergency preparedness inspection during a drill.

1 Next slide, please? Considering the changing landscape of
2 the nuclear industry including uses of higher material category levels, new
3 technologies, and significantly larger or complex facilities or process lines, the
4 staff reviewed existing inspection guidance to verify if the program continues to
5 provide an adequate oversight framework.

6 In addition to a fuel facility inspection program and oversight
7 process that is agile, scalable, and flexible, the staff looked for opportunities to
8 add clarity, consistency, and transparency including more transparent fee billing
9 records associated with specific inspection procedure usage. Updates to the
10 oversight program for Category II facilities, major modifications for existing
11 licensees, and new construction activities for new applicants and new licensees
12 all continue the SIP philosophy. This effort is in direct response to the
13 industry's plans to construct new fuel cycle facilities and does not represent a
14 new or expanded oversight program.

15 One example of revisions being considered is to ensure
16 inspection guidance is technology-neutral and scalable to accommodate
17 different types and project sizes for new fuel fabrication, uranium enrichment, or
18 uranium conversion facilities licensed and built under 10 CFR Part 70 or Part
19 40.

20 In the past across the NRC business lines inspection
21 guidance was written for the specific construction project occurring at the time.
22 This included fuel facility construction oversight programs for mixed oxide, or
23 MOX, non-power production or utilization facilities, also known as NPUFs, for a
24 SHINE medical isotope facility, and construction reactor oversight process, or
25 cROP, for AP-1000 plants.

1 Additionally, the same set of staff that conducted construction
2 inspections for MOX, Urenco facilities, SHINE, Watts Bar Unit 2, and VC
3 Summer and Vogtle AP-1000 plants are working together with the oversight
4 programs for fuel facilities, NPUFs, and the advanced reactors construction
5 oversight process, or ARCOP, to identify the best practices and lessons learned
6 across the different NRC business lines to develop consistent construction
7 inspection guidance.

8 The staff is implementing a risk-informed philosophy that
9 prioritizes construction inspection activities commensurate with their importance
10 to safety and the lower risk profile of the fuel facilities. This inspection strategy
11 also focuses on construction activities that are unique like first-of-kind
12 technologies, construction techniques or applications, or for safety-significant
13 attributes that are made inaccessible due to the nature of construction like
14 structural rebar and concrete placement.

15 The staff also considered the benefits and risks for making
16 potential inspection guidance applicability including considering how other
17 business lines apply oversight frameworks for new construction activities versus
18 major modifications. For example, inspection oversight for operating reactors
19 performing large and complex modifications like steam generator replacement
20 or extended power uprates are managed through the existing reactor oversight
21 process versus the construction oversight process. As a result the staff made
22 risk-informed recommendations to use the existing framework for operating fuel
23 facilities that can adequately address inspection oversight for large and
24 complex modifications.

25 This slide shows on the left NRC staff during a TRISO-X pilot

1 facility tour at the Oak Ridge National Laboratory. On the right NRC briefed
2 senior Ohio State emergency response managers and staff from the governor's
3 office on the fuel facility licensing inspection oversight for the American
4 Centrifuge plant in addition to arranging a plant tour.

5 Next slide, please? The staff proactively established multiple
6 opportunities for public involvement to ensure proper and transparent regulation
7 of nuclear activities and to inspire stakeholders' confidence in the NRC. Since
8 May of 2023 the staff conducted five public meetings on the Category II and
9 construction oversight program revisions. This included discussions on
10 changes to the operating baseline, inspection hours, and inspection frequencies
11 for Category II facilities, construction lessons learned, at-risk construction, and
12 potential findings identified during the time frame between when the license
13 application or amendment is submitted, and the NRC, if appropriate, approves
14 the licensing action.

15 During the public meeting in January of 2024 the staff
16 provided additional granularity regarding the inspection guidance revisions for
17 construction and major modification activities and solicited feedback on the draft
18 language for consideration as the staff prepares the final inspection guidance.
19 The public meeting was highly successful and the staff received positive
20 feedback from external stakeholders.

21 As discussed previously regarding the collaboration across
22 NRC business lines, the staff is working together to capture and implement best
23 practices for public meeting content and coordination for fuel facility, cROP, and
24 NPUF construction program development. These efforts reflect a holistic
25 agency approach to the inspection oversight of new construction and major

1 modification activities that are occurring across the entire fuel life cycle.

2 This slide highlights several public meetings conducted last
3 year including a construction oversight workshop in Region II and a public
4 meeting for TRISO-X licensing in the local area.

5 This completes my portion of the presentation and I will turn it
6 over to Ray.

7 Next slide, please?

8 MR. FURSTENAU: Thanks, Nicole.

9 And I wanted to thank all the panelists today and the staff that
10 supported preparing for the Commission meeting, and also all the staff at
11 headquarters and the regions who really support this business line every day.

12 So with that, that concludes the presentations and we'll
13 welcome your questions.

14 CHAIR HANSON: Thanks, Ray.

15 Thanks everybody for your presentations. We'll begin
16 questions this morning with Commissioner Caputo.

17 COMMISSIONER CAPUTO: Thank you. Good morning,
18 everyone. Thank you all for being here, but I mostly want to add my
19 condolences to Jenny Tobin's family and friends. It's a tragedy any time we
20 lose someone close to the NRC family or part of the NRC family. It's
21 particularly heartbreaking to know that she leaves behind a husband and small
22 children. So very much appreciate and respect the contributions she made for
23 so many years to the mission of this agency, and it's quite a loss to lose her in
24 her prime. So my deepest sympathy to all of her family.

25 Returning to the topic of the meeting, Shana, you mentioned

1 the challenge of fees and the business line and that there are negative impacts
2 and perturbations in workload that can have a significant impact on fees. So
3 my question is when we budget for work that then doesn't come in, to what
4 extent do those staff resources get applied to other reviews to expedite the
5 work that's already in house because that would mitigate the impact that it has
6 on annual fees?

7 MS. HELTON: Thank you, Commissioner, for your remarks
8 and also the question. And certainly we realize that the topic of fees for this
9 business line is an especially sensitive one since we have to recoup what we
10 budget under NEIMA. Almost 100 percent of what we budget needs to be
11 recouped through fees. And when we can't apply those fees under Part 170 we
12 then have to shift that over to 171.

13 So redirecting -- when work doesn't come in there's a few
14 strategies that we try to take to address that. Depending on where we are on
15 formulation we can adjust the budget, work with our partners and CFO. If the
16 timing isn't right for adjusting the budget, there are limited points where we can
17 even more resources within the materials control point. For example, in fiscal
18 year '24 we're still working through the process, but I think it's fair to say that we
19 were able to shift a little over \$1 million out of the fuel facilities fee class to help
20 mitigate some of the impacts from the unplanned workload.

21 And Samantha and her team I know are working very closely
22 -- what you suggested as a message that we've shared. If there's licensing
23 actions that you've been holding in abeyance to wait for the right time later on
24 down the road. Industry, please go ahead and send us those licensing actions
25 now because then we can be charging to 170 rather than spreading the cost

1 over the industry through the annual fee.

2 COMMISSIONER CAPUTO: Well, I think it's
3 -- when it comes to workload management, especially in a situation where
4 some stress -- some employees feel stressed about the burden that they have
5 it's very important to manage the work and be agile. Not talking about being
6 agile, but actually be agile, make sure the staff are cross-qualified so they can
7 help when the work that they were otherwise slated for doesn't arrive. So I
8 think that's a pretty essential nature of how we should just fundamentally be
9 managing workload in general.

10 Shana, I've heard both in facility visits and more recently
11 about a situation developing where the staff is considering fuel cycle buildings
12 as items relied on for safety and that this is playing out in licensing reviews. So
13 there have been recent requests for additional information of licensees and
14 applicants documenting the staff's current regulatory positions
15 -- position that buildings are structures that need to be designated as items
16 relied on for safety.

17 So I'd like to know what the basis is for this shift in position
18 because to me our regulations should not be unjustifiably in a state of transition.

19 So I'd like to know what the risk -- what the new risk or safety issue was that
20 was identified and that justifies this shift in position.

21 MS. HELTON: Yes, I'll kick it off. And then I know this is an
22 issue that Samantha has been focused on very closely because we have been
23 sensitive to making sure that we don't backfit our licensees or something
24 approaching backfit as we move forward in the licensing space.

25 One thing that I would like to note is that many of the currently

1 operating facilities began operations prior to the establishment of Subpart H in
2 10 CFR Part 70, which is where the integrated safety assessment comes in to
3 play in the licensing process.

4 All the new facilities are coming in under Subpart H and new amendments are
5 under Subpart H.

6 So one of the things that we look at is -- through that process
7 is what is needed to mitigate a safety or security concern? And following the
8 hazards through that process then that will determine what needs to be an
9 IROFS. With the buildings as IROFS issue there is a history on that.

10 And, Samantha, I'll turn it to you to talk to the details of how
11 we've assessed that through time.

12 MS. LAV: Yes, thank you.

13 So, Commissioner, back when we implemented Subpart H
14 and the ISAs 2003-2004 time frame if there was an existing licensee with an
15 existing facility oftentimes the buildings that already were built were not treated
16 as IROFS, but we did look to make sure that they could withstand natural
17 phenomena hazards, that they had mitigation measures in place, and that they
18 had configuration controls. And that's documented in NUREG-1520 why we did
19 that.

20 But even back at that time for the same licensee if they had a
21 new building coming in -- and there's an example of a licensee that way -- that
22 even back in 2003 the new buildings were required to fully meet Subpart H and
23 be IROFS.

24 So when we have an applicant come in or a licensee come in
25 and they want to do an amendment, we are holding them to the definition of

1 item relied on for safety, which is if you are going to use that structure to
2 mitigate or prevent a consequence of concern in accordance with the
3 performance criteria, that that would need to an item relied on for safety. So
4 that's what we're requiring for new buildings for amendments and then for new
5 facilities.

6 COMMISSIONER CAPUTO: So existing buildings, under our
7 oversight they're considered safe and don't have buildings as IROFS. We have
8 generated a requirement that new buildings going forward will be. So what was
9 the basis for that because that's a shift in regulatory position?

10 MS. LAV: So one of the concerns that we have really comes
11 down to management measures and configuration control. So for the existing
12 buildings that are existing licensees they were able to demonstrate that they
13 had configuration management in place. And so if they were using the fact that
14 they were built to a specific building code as the item relied on for safety as the
15 basis for that, that there was configuration controls in place to make sure that
16 they were not putting a big hole and building -- and a roll-up door that no longer
17 met like the structural requirements of the building code.

18 So really the thing that we're requiring is just the management
19 measures for the configuration control, which we already know are in place for
20 the existing buildings, and we want to make sure that they're in place for new
21 buildings.

22 COMMISSIONER CAPUTO: Well, if this is a matter of
23 configuration control, why do we now make the building an item relied on for
24 safety? Why don't we simply require a configuration control?

25 MS. LAV: So in order to have the management measures

1 apply, including configuration control, the building would need to be an item
2 relied on for safety to fall under the management measure program.

3 COMMISSIONER CAPUTO: So the changing the
4 requirements of the building itself to achieve configuration management. That
5 seems like overreach.

6 MS. HELTON: And if I can try to -- in a different phrasing in a
7 different way when we applied Subpart H for the existing facilities, without
8 calling it an IROFS to get to reasonable assurance, we essentially did most all
9 of the things that we would see when today we call that you're an IROFS,
10 you've got the configuration control and the management measures. So in our
11 eyes we're not really changing the regulatory position, but we're framing how
12 we're meeting our mission under the current terminology of Subpart H.

13 COMMISSIONER CAPUTO: I'm struggling with how we're
14 not changing our regulatory position because we have buildings, fuel cycle
15 facilities, that operate now with a regular industrial building meeting local
16 building codes and we are now going to require the building to be an item relied
17 on for safety. And as I understand it this is going to have ripple effects through
18 construction. The construction workers have to be certified, et cetera. There
19 are aspects of the nature of construction and I expect they're going to be
20 aspects of operation that stem from this requirement that the building itself now
21 be an IROFS. So I'm struggling with how this isn't a change in position.

22 MS. LAV: So one of the things to consider is that how they
23 meet the basic design criteria and how they're designed from a structural
24 standpoint, we're not changing that, right? So if they are choosing to build to a
25 commercial code, right, that's still acceptable as long as they can demonstrate

1 that they can meet the performance criteria and they can meet the basic design
2 criteria for a natural phenomena hazard. So we're not requiring them to do
3 more in that aspect. Really the thing that is of concern to us is making sure that
4 they maintain the fact that they are built to that code and that they continue to
5 have that same level of safety as when we first reviewed it.

6 COMMISSIONER CAPUTO: Well, this is certainly something
7 I'm going to keep an eye on going forward because I don't believe that it's that
8 simple. But thank you and that's it for my questions.

9 CHAIR HANSON: Okay. Thank you.

10 Commissioner Crowell?

11 COMMISSIONER CROWELL: Thank you, Mr. Chair.

12 And before I begin let me just also express my condolences
13 to Jenny's family and all of her colleagues. I didn't have a chance to know
14 Jenny, but I can only imagine how challenging it is to lose your wife and mother
15 at that age and the impact that that has. So my condolences to her friends and
16 family and all of her colleagues.

17 I'm going to give you guys a break. I'll start down here and
18 then go that way.

19 So, Nicole, in talking about the SIP program, the Smarter
20 Inspection Program, you said you're going to do a comparative analysis. For
21 the last three years with -- from several years before you started the program,
22 given that that includes some COVID years, how is that comparison going to
23 work?

24 MS. COOVERT: Thank you, Commissioner, for the question.

25 So as part of the data analysis, both the quantitative and the qualitative

1 analysis that has been pulled, clearly the time frame meant there was more
2 hybrid inspections that were done during COVID and so forth. Those will be
3 taken in perspective. The data has been pulled and that's why it's important to
4 assess the data because data can say a lot of things, but it is absolutely
5 important that we consider the COVID years and how that translates into
6 lessons learned for the future, any types of actions we do in the SIP program.

7 COMMISSIONER CROWELL: Yes, okay. It will be
8 interesting to see what you learn and how that compares and bears out.

9 MS. COOVERT: Thank you.

10 COMMISSIONER CROWELL: Eduardo, I'd benefit from
11 learning a little bit more in a concrete way as to how the staff applies the 3Ss.
12 And relatedly, while I know licensees are not required to consider safeguards in
13 their design they're encouraged to. Does that encouragement -- what does the
14 encouragement manifest? Any actual -- any actions taken by licensees based
15 on that encouragement, or is it in one ear and out the other?

16 MR. SASTRE FUENTE: Thanks for the question. So in our
17 interactions with the different designers and applicants we have seen the whole
18 spectrum, right? There are designers and applicants where their budget is
19 really small so they are not considering doing anything while there are others
20 that are talking to ARISE through NNSA which provides help on doing the
21 assessment from a safeguards perspective. And then we have also
22 interactions with other applicants where they have actually provided the staff
23 with safeguards documents for us to review, voluntarily review. We provide a
24 courtesy review and provide feedback and observation. So in reality we have
25 seen different types, which is encouraging that at least we're getting some of

1 them to come in with documents like that.

2 COMMISSIONER CROWELL: Yes, just so your 3S approach
3 can help inform how heavily or not you encourage licensees to adopt
4 safeguards potentially?

5 MR. SASTRE FUENTE: I mean, from our perspective we -- I
6 mean, we're limited on what we can do. We can -- I mean, we -- the regulation
7 are very specific of what -- when we can apply those regulations and when we -
8 - I can go and ask them for or require them to do certain things. So from our
9 perspective we just go present why we can -- why they should consider early
10 onset for very different reasons.

11 Obviously there's an economic benefit later in the process
12 when the facility is selected or in the -- when it's exported because when you
13 export a design like that and you go to a non-weapons country, the safeguards
14 agreement applies fully on that facility. And we have seen -- we haven't seen it
15 at that space because it's -- they haven't exported, but we have seen how some
16 applicants have gone with NNSA, to IAEA, and IAEA has provided them with a
17 review of their designs. And the IAEA has come back with concerns about how
18 they would be able to apply safeguards on those designs. So we can explain to
19 them with examples like that, but that's all as a regulator we can do.

20 COMMISSIONER CROWELL: But you feel like you're getting
21 -- you have -- you and your team have access to the types of information you
22 need to make a compelling case to a licensee about --

23 (Simultaneous speaking.)

24 MR. SASTRE FUENTE: I think we have and I think -- and
25 just put a plug in for NNSA, their program is providing a lot of information and a

1 lot of help that is helping us in communicating that.

2 COMMISSIONER CROWELL: Great. Okay. Thank you.

3 MR. SASTRE FUENTE: Thank you.

4 COMMISSIONER CROWELL: Coming back down here, let's
5 touch on staffing real quick. And I don't know if, Shana or Samantha, you want
6 to answer this question, but, Shana, you mentioned that you've hired 15 people
7 over the past year.

8 And, Samantha, your presentation highlighted for me the
9 workload you have now and that's coming down the pike.

10 So with regard to those 15 people, just for sake of discussion,
11 were you able to find the right skill sets you were looking for in those 15 or are
12 you hiring more generalists or people who you can then bring on board and
13 then train? Like which is it, or is it both?

14 MS. HELTON: So that's a great question and I'd like to note
15 that the staffing numbers that I presented represent not just from us and the
16 Division of Fuel Management, but also our partners across the business line.
17 So I can speak very well to the hires that we've made in the business line within
18 DFM. But I can say I've also talked quite a bit with our partners about staffing,
19 so I believe my remarks apply likely to their offices as well.

20 There are very talented people available and expressing
21 interest and I think that the intense energy that we've putting into recruiting
22 talent has been paying off. There have been cases where it's been challenging
23 to fill positions because there is a lot of competition out there who are also
24 interested in the talent. But the people who we've been bringing in come with
25 high pedigree, great educations, wonderful work experience. And in a lot of

1 cases training them on how NRC works, our processes, our programs, certainly
2 inspector qualifications are very regimented. But they're eager to learn and
3 quite able to carry out our mission, so I've got full confidence in the new staff.

4 COMMISSIONER CROWELL: Okay. And I'll just reiterate
5 my interest, and I'll throw my colleagues in with me as well that if there's things
6 we can do to help recruit when we're out on the road or otherwise, please
7 leverage us in that regard. More than happy to do it.

8 Samantha, let's talk about the Fuels ATLAS real quick. So it's
9 not public yet. It's been in development for a year-ish. What's the timeline for
10 having that be ready for public or stakeholder unveiling?

11 MS. LAV: So there are aspects of it that are public now. So
12 the infographic and the New Fuels website are already public. And those are
13 available. The regulatory planner, there's part of it that are really internal. They
14 include resource models, standards schedules, our research plans. So we're
15 developing those. We're trying to integrate then more -- I don't, Shana, if you
16 have an idea of which parts will be public and when?

17 MS. HELTON: Yes, one thing that I'd like to add in is as
18 much as we encourage industry to communicate their plans to us, in many
19 cases those plans are proprietary in nature. So there's aspects that won't be fit
20 for public consumption because we want to hold that information protected.

21 With respect to what we can put out public, we're going to
22 have to look at that. I do want to note there is a public website right now with
23 an integrated -- it covers reactors, advanced reactors, and it does cover on the
24 fuels facilities as well. So I think there's a lot that we can leverage there for
25 ensuring that the insights that we're gleaning from the planner for our own

1 internal budgeting, training, staffing purposes and tool development, code
2 development purposes -- that we want to make sure that we're feeding that into
3 the public domain as much as we can because transparency is one of our
4 goals.

5 COMMISSIONER CROWELL: Okay.

6 MS. HELTON: Standing up the New Fuels Team is going to
7 help us focus our efforts on bringing that to fruition, so I anticipate within the
8 coming year we'll have completed Phase 1 of the planner, if you will, and fed
9 that into the public domain.

10 COMMISSIONER CROWELL: And I may be
11 misunderstanding the role of the ATLAS at some level, so correct me if I ask
12 this question incorrectly, but I think you said ultimately it will provide a research
13 road map. Is it already providing a research road
14 map --

15 MS. HELTON: Yes.

16 COMMISSIONER CROWELL: -- or is it -- or will it be, or will
17 is now and will be big and better as we go forward?

18 MS. LAV: So there are -- it is and it will continue to be
19 developed. So we have gone through and started to identify, both with the
20 Center and on our own, what is needed for each type of technology at each
21 stage in the fuel cycle, both on fuel facilities and transportation and storage, and
22 based on when things are coming in, looking at when we'd need that. So for
23 example, in the FY '26 budget formulation we've used that road map to identify
24 what research we would need for confirmatory analyses and to help us make
25 our reviews more efficient and effective.

1 COMMISSIONER CROWELL: So, hopefully both for
2 budgeting purposes and for substantive research purposes, the atlas and the
3 roadmap will be a benefit, yes?

4 MS. LAV: Yes.

5 COMMISSIONER CROWELL: Okay, thank you. Thank you,
6 Mr. Chair.

7 CHAIR HANSON: Thank you, Commissioner Crowell. Shana
8 and Samantha, let me start off with you. I really appreciated your presentation
9 and the way you guys are kind of approaching the increased workload for
10 licensing actions, and new facility licensing, and so on and so forth, and I think
11 we really have learned an interesting set of lessons on the reactor side of the
12 house over time, right?

13 If you think about the lessons learned report that came out of
14 the NuScale review, the lessons that we're gleaning from Kairos and other
15 kinds of things, you know, internally and externally, right, the importance of
16 having kind of a stable design, having the core team approach to licensing
17 reviews, you know, really good pre-application interactions for unique technical
18 aspects, and then leveraging those into kind of an integrated review when we
19 get into the application review itself, you know?

20 For example, if you've kind of already identified a couple of
21 chapters, you don't need to necessarily march through the application chapter
22 one, chapter two, but you can actually start with either the things that you
23 haven't done or really start to take that holistic and integrated look.

24 The other thing that I really was pleased about, I think, in the
25 Hermes, the Kairos Hermes review, was the way we handled requests for

1 additional information, right? We really triaged and kind of focused what really
2 rises to the level of an RAI versus what is maybe a request for confirmatory
3 information or, you know, a simple even email to the applicant that then all of it,
4 of course, goes right on the docket, but that that information gets into the record
5 in kind of a whole variety of ways rather than the, you know, 30-day, 30-day
6 traditional RAI approach to these things.

7 So, I just wanted to give you both kind of an opportunity to
8 talk about how are we applying those kinds of lessons to TRISO-X, the major
9 facility mods that we're looking at coming down the pike, et cetera?

10 MS. HELTON: Thanks for the question, and I'll kick it off and
11 then I'll ask Samantha to fill in any details that, you know, might be relevant to
12 answering the question, but this kind of gives me kind of a good opportunity to
13 brag on what the staff has done to date.

14 So, I thank you for the question because we do -- you know,
15 before I get to process, I'd just like to note that in this business line, also in Part
16 71 and the transportation business line, we have been processing several
17 applications to approve increased enrichment, HALEU, even, you know, TRISO
18 has already been approved for shipment.

19 And we'll talk about that in the next business line, but there's
20 quite a few licensing actions and approvals that the staff has been cranking out
21 kind of quietly, but it has racked up to over, you know, ten approvals within the
22 Part 70 business line that support new fuels.

23 So, one of the other things that I'd like to give kudos to the
24 staff on is many of the things that you discussed are similar to the types of
25 enhancements to our licensing process that we made and began implementing

1 through the smarter licensing process, and we started implementing that back
2 in the 2019-2020 timeline, I believe.

3 So, all of the enhancements that you've discussed, we've
4 been certainly doing similar things within the fuel facilities business line as well,
5 having a lot of focus on enhanced communications, pre-application discussions.

6 While we don't usually do topical reports, one thing that we
7 have done in the fuel facilities business line that's really helped to streamline
8 our reviews is for increased enrichment applications, the facilities have come in
9 to seek NRC approval of their criticality calculations, and that has paved the
10 way then for the process change which comes in as a second amendment.

11 And while it's not a generic method, it is a method that they
12 have assurance will work, and then they can come in with a revised, integrated
13 safety assessment, which we'll then review and approve, and that's been
14 working well, as demonstrated by our recent approval of the GNFA amendment
15 for increased enrichment. So, I think with that, if there's any details you'd like to
16 add in with the enhanced focus on process enhancements, Samantha, I'll turn it
17 to you.

18 MS. LAV: Yeah, Shana covered many of the things and I
19 touched on some of them in my presentation as well. One of the things that's
20 also complex for fuel facilities is that much of the material is security related and
21 non-public, so there might be an applicant on a reactor side can say well, what
22 did somebody else submit and, you know, what are the SERs you have to know
23 what's in there, and that's not always the case on fuel facilities.

24 And one example that came up during the TRISO-X review is
25 electrical and I&C. So, if you read the public SER, it's like a paragraph, but in

1 the non-public SERs, it's 30 pages, and so they had questions of well, what
2 type of information do I actually need to include in here like to get to this one
3 paragraph? And so, what we did is we went and created a generic SER for
4 electrical and I&C, both with, you know, safety-related power and not safety-
5 related power, so that we provided that to them so they can see oh, this is what
6 I need because this is what you're going to write up in the SER, and they used
7 that to help develop their submittal that they provided in February. So, we were
8 really trying to think creatively on how we can help them.

9 CHAIR HANSON: Yeah, I think that's great, right? I mean,
10 it's sort of like the advanced reactor content of application, or a technology-
11 inclusive content of application that we see on the reactor side, but again, really
12 focusing that so that we -- it's clear to our applicants what it is exactly that we
13 need to reach a reasonable assurance determination, what it is we're going to
14 put in the SER. So, I think that all sounds really good. Keep going. Keep up
15 the good work and I look forward to hearing more about it, so thank you very
16 much.

17 I want to turn to the \$2.7 billion that Congress just enacted
18 and gave to the Department of Energy, appropriated to the Department of
19 Energy for domestic uranium production and enrichment. It's -- even though it
20 sounds like a tremendous amount of money, my understanding through other
21 sources is that it may be just the down payment on this area, but it still has the
22 potential to represent a lot of work for us.

23 So, maybe we could just talk for a minute about how are we
24 preparing for that? What kind of interactions are we having with DOE? And
25 even in the, what are we at, day 45, or 30, or something from when that bill was

1 enacted, what are we seeing on the licensee side either before or after the
2 enactment of that?

3 MS. HELTON: Yeah, great question. We focus on that
4 routinely ourselves. We've got touch points with our DOE partners, so we keep
5 in close communications with them on where they're headed, who they see
6 coming in. You know, a lot of what you're describing in trying to predict the
7 workload, you know, we try to take the Goldilocks approach.

8 We don't want to over-budget because that then does have
9 the impact on fees that we want to try to avoid, but we also want to be prepared
10 for what's coming our way because we realize that with this issue, it is a very
11 important national priority.

12 We do need to shore up our domestic supply of uranium, and
13 we want to support that priority and be a regulator who is ready to meet the
14 licensees' need and applicants' need to get through a regulatory process. So,
15 you know, we're -- you know, without getting into the proprietary plans that we
16 hear, we're having a lot of drop-ins with potential applicants and licensees with
17 plans for potential expansions.

18 That's very helpful to us, the pre-application discussions that
19 we have, the intel that we get from DOE, and then it's just a matter of seeing
20 what decisions DOE will make in terms of how they spend that money and what
21 that's going to translate to for licensing actions and timelines, but, you know, I
22 come back again to how critical the pre-application discussions are for us so
23 that we can make sure that we're carefully planning for the future.

24 CHAIR HANSON: Great, is that part of that -- Samantha, I
25 think you mentioned like the 11 to 14 kind of in the next three years, which is a

1 lot. Is that kind of what we're talking about in that space?

2 MS. LAV: So, yeah, the 11 to 14 are people who we've had
3 detailed discussions with, some pre-application engagement. They either
4 already have funding or, you know, either government funding or substantial
5 private funding. They're a little bit further on in design and past conceptual
6 phase, so that's the 11 to 14, but there's also a lot of other companies who are
7 coming to us who we just created a company like six months ago or a year ago
8 and, you know, we really want to come in from a blank piece of paper and
9 develop a facility, right? And so, those are things that are not included in the 11
10 to 14, but as we continue working with them and doing pre-application
11 engagement, that might raise up to that level.

12 CHAIR HANSON: Okay, great. Thank you very much. I
13 appreciate it. And just to pick up on, real briefly on something Commissioner
14 Caputo said, I mean, I understand not every application is going to be sensitive
15 to the application of additional resources, but where they can, right, to make
16 progress more efficiently, or expeditiously, or whatever, I think we should be, as
17 we organize these projects and as we closely manage them with the
18 dashboards and other tools that I think you guys are applying in a really robust
19 way, I think that will be important going forward.

20 If I can, Eduardo, I just had one quick question for you. I
21 wasn't clear. You know, we've got four facilities under IAEA safeguards in the
22 U.S. How are those facilities identified? And with the new facilities potentially
23 coming online or major modifications to existing facilities, does IAEA kind of
24 decide that on their own? Is that subject to negotiation between the United
25 States and the Agency? How does that work?

1 MR. SASTRE FUENTE: So, right now we have four facilities.
2 One is an enrichment plant and the other ones are the three fuel fabricators.
3 They're mainly selected for commercial -- so other countries are not in any
4 commercial disadvantage since all of the fuel fabricators around the world are
5 selected for safeguards, IAEA thought that it would be appropriate for those
6 facilities to be selected, the same with the Urenco enrichment facility. All of the
7 Urenco facilities are under safeguard.

8 CHAIR HANSON: Got it.

9 MR. SASTRE FUENTE: Looking into the future, based on
10 our conversations with the IAEA, IAEA is considering selecting facilities that
11 would be, where they would learn something. So, first of a kind designs,
12 designs that are very specific where they haven't been able to apply or there's
13 nothing similar around the world where they can learn to apply safeguards,
14 those facilities will probably be selected, and we communicate that to the
15 licensees, I'm sorry, to applicants so they're aware that designs like that would
16 be probably selected based on the possibility also of those designs being
17 exported.

18 CHAIR HANSON: Thank you, yeah, very helpful. Thanks for
19 the extra time. Commissioner Wright?

20 COMMISSIONER WRIGHT: Thank you, Chair. Good
21 morning and thank you for your presentations this morning. And before I begin,
22 I'd also like to take a moment in memory of and in honor of Jenny. Shana,
23 thank you for your opening remarks before the beginning of the panel staff
24 presentation, and also thank you to my colleagues for their thoughtful remarks
25 as well. I didn't know Jenny as well as many of you, but her reputation for

1 kindness was known far and wide.

2 I do remember meeting her and smiling because she had a
3 very warm and joyful personality. You know, I have two daughters myself.
4 They're both Jenny's age, and I can't imagine what her parents and her friends
5 are going through even though I myself nearly lost my oldest daughter 14 years
6 ago to colon cancer.

7 I know Jenny was experienced. She was savvy. She was
8 hard-working, yes, but her gift was the happiness that she brought to those that
9 worked around her and that she lived with. So, my prayers are with Jenny's
10 family and with her friends, and with her colleagues at this time. And with that,
11 I'm going to move into some questions.

12 So, there's a lot of work going on here, and it's got to be
13 successful because we're going to need fuel for both the current and future
14 plants, right? So, what you're doing is critically important. Nicole, I'm going to
15 come to you first, and this question could be for you or you might want to punt,
16 pass it off, or whatever, but talk to me about oversight during construction of, for
17 example, a fuel fabrication facility.

18 Now, I know that staff has reached the conclusion that
19 residents weren't needed at Category II fuel facilities, but talk to me about the
20 Agency's presence during construction. How does the anticipated level of
21 inspection effort compare to a reactor during construction, and is it the staff's
22 goal that inspections at these facilities will be less resource intensive?

23 MS. COOVERT: Thank you for the question. So, for -- so
24 generically speaking, the fuel facility construction oversight inspection program
25 is fractionally smaller than the large light water reactor construction program,

1 and that is obviously because of the lower safety-significant risk profile of the
2 facilities and also just the smaller footprint in general.

3 As part of the construction inspection oversight at the fuel
4 facilities, it's very targeted during the construction phase, working for areas that
5 are first of a kind, potentially made inaccessible during the construction
6 process, where the bulk of the inspections are done during the operational
7 readiness review, and that is when the licensee is ready to process special
8 nuclear materials and there are some dedicated inspections that are done in
9 certain phases. Is the license, the programs established? Are the operators
10 trained, et cetera, in addition to testing out IROFS, items relied on for safety?

11 Certainly though, just like we did at Vogtle, anything that we
12 can move up forward ahead during the construction projects, and it makes
13 sense to do so, then we're doing that, and in fact, we're doing that even this
14 week with one of the fuel facilities is that division of construction oversight staff
15 is leading an inspection there that would credit operational readiness review
16 inspections later on.

17 So, that's the first thing is that, you know, it is different
18 intentionally, but each site is assessed for the safety significance, the
19 complexity of the systems and so forth, and then a unique inspection plan is
20 developed for that site. So, fuel facility A and fuel facility B may not be exactly
21 the same for different reasons, but much smaller than the large light water
22 reactor.

23 For the resident coverage at each of the sites, that will again
24 be a case by case basis depending on the complexity, the uniqueness, the
25 different inputs to what is the best process for oversight to be the most efficient

1 and effective in doing so during construction.

2 COMMISSIONER WRIGHT: Okay, so you also mentioned
3 potential findings happening after a license or license amendment is submitted,
4 but before the Agency approves the licensing action. Explain to me a little bit
5 more about how this is going to work. What's it going to look like?

6 MS. COOVERT: Okay, well, we've had several public
7 meetings on that topic, and there's two items here. So, for Part 70 facilities,
8 there is a regulatory provision that allows them to construct at risk with some
9 stipulations, and so those activities which is before the license application is
10 approved, the license approved. The application is in.

11 In addition, just as part of any construction project, it is so
12 dynamic that even if approved license is in place and we have staff inspecting
13 activities, there could be a license amendment in progress. That was very --
14 that's not unusual to happen because of the dynamics and the modifications
15 that are happening on a day to day basis.

16 So, one of the key aspects for fuel facilities along with any
17 other construction project is having strong communications from the inspection
18 staff to the license staff to understand what's in progress.

19 If there is items -- so, in some cases, if an application or
20 amendment is not in place, there's no regulatory requirement enforcement
21 action, but if carried over towards to the end, you know, could have safety
22 implications, and so those are the key items for tracking. And at Vogtle, the
23 same at-risk type of construction activities for the preliminary amendment
24 request, they tracked it with the unresolved item.

25 So, it's the same concept as we used at Vogtle, but if there is

1 a challenge that we see, an issue today where as-built does not match design
2 and could have licensing implication, that's another key communication strategy
3 that the inspection staff works with licensing so that they can take follow-up
4 actions if needed like through RAIs and so forth.

5 COMMISSIONER WRIGHT: Right, okay, thank you.

6 MS. COOVERT: Thank you.

7 COMMISSIONER WRIGHT: I'm going to come over to this.
8 I'm going to play a little clean-up on your last -- maybe the questions were
9 asked differently, so I'm going to ask to kind of clean up a couple of things for
10 me. I mean, so Samantha, you know, I believe you and both Shana talked to
11 Chair Hanson about the TRISO-X review a little bit. Is there anything else that
12 you need to share about how this review is going? Is there any additional
13 information that you can share?

14 MS. LAV: Sure, thank you, Commissioner. So, our
15 communication and our professional relationship with the applicant is very
16 good, and there's parts of the review that are going well where we've issued
17 and resolved RAIs and we've developed SER, but there are areas that are
18 going to impact the schedule.

19 For example, our acceptance review and our initial schedule
20 was predicated on receiving that electrical and I&C portion by August 2023. In
21 August, they let us know that it was going to be six months late, and so we
22 didn't get that until February of 2024. There are also several areas where we
23 have concerns with their methodology or programs such as management
24 measures, integrated safety analysis, criticality, and their structural design.

25 So, we've issued RAIs that are really high level in their

1 methodology to them to try and get that resolved. Those are still open. So, the
2 resolution of that is taking longer than anticipated, and it's far-reaching, so, you
3 know, your ISA is kind of the heart of your review, and so if there's an issue with
4 the methodology that now you have to make changes, that promulgates through
5 the whole review and all of the higher ups.

6 And lastly, in January, they let us know that they're going to
7 submit a significant design change and supplement in December 2024, so that
8 is also going to require us to look at the design changes. So, all of that has a
9 potential to impact the schedule, and our plan is to issue a revised schedule
10 letter in the next couple of weeks.

11 COMMISSIONER WRIGHT: Okay, I'm going to stay with you
12 again, and again, Shana, you may -- you all both spoke to this a little bit, and I
13 think, Shana, you added a little bit of clarity to it. So, on the new Fuels Atlas,
14 right, we're kind of using it a little bit now.

15 Maybe we're somewhere in between, but you spoke to
16 phases, distinct phases for deployment, and Shana, I think you mentioned that
17 we would be in phase one until the, for a year maybe. Where exactly are we?
18 What are the phases and where are we really at right now with this thing?

19 MS. HELTON: Yeah, and thank you for the opportunity to talk
20 a little bit more about that. So, and what I mean by phases is I don't think we'll
21 ever truly be done since it's such a dynamic industry, and the information that
22 we get is changing.

23 So, once we have a picture put together, you know, for this
24 technology, we anticipate this application by date certain, and that means we
25 need to have research done by this date, and codes updated by this date, and

1 guidance in place by this date.

2 You know, all of the industry activities we're seeing right now
3 are so dynamic that whatever we put out within the next year for the complete
4 atlas, including the planner, we're going to have to keep it updated to some
5 frequency to reflect those changes and make sure that we are being agile and
6 responsive to the changing landscape that we're seeing.

7 COMMISSIONER WRIGHT: Okay, do you need to add
8 anything?

9 MS. LAV: I think Shana said it very well. All I'd add is that,
10 you know, with respect to the regulatory planner, there are underlying
11 components that we already have information. So, the center helped us identify
12 publicly available information on licensing actions, as well as some research
13 information.

14 We have additional research information. We have -- you
15 know, we're tracking upcoming licensing actions based on our pre-app and our
16 discussion with our federal partners, and we also have, you know, standard
17 schedules and resource models, so all of that exists.

18 You know, there's some additional work, but as I say, it's an
19 iterative process. So, we'll get to a point where the framework is stable, but as
20 Shana said, we'll continue to maintain it and update it as we get new
21 information.

22 COMMISSIONER WRIGHT: Thank you very much. Chair?

23 CHAIR HANSON: Thank you. Thank you, everyone, for your
24 presentations. Before we take a break, I just want to add my voiced
25 condolences to my colleagues, and I appreciate their remarks very much about

1 the loss of Jenny Tobin, and our deep thoughts for her family as they go
2 through the grieving process.

3 I saw Jenny most often in the gym. Suffice to say, she went a
4 lot more than I did, and she had a great, it was a black like I'm a Michigan girl t-
5 shirt which always made me smile, right, just as a Michigan person myself, and
6 she had a smile for everybody, and her enormous contributions to the affinity
7 groups, and the advisory committees, and the agency just across the board, her
8 technical skills and her big heart, so it's a loss. And thank you, Shana, for your
9 remarks, and my colleagues too for their remembrances. With that, why don't
10 we reconvene at 10:30? Thank you.

11 (Whereupon, the above-entitled matter went off the record at
12 10:20 a.m. and resumed at 10:30 a.m.)

13 CHAIR HANSON: Okay, welcome back, everyone. Thank
14 you all for being here. The meeting will recommence now with the second
15 panel on the spent fuel storage and transportation business line. Ray
16 Furstenau will once again kick it off. Ray, over to you.

17 MR. FURSTENAU: Okay, thank you, Chair and
18 Commissioners, and as you mentioned, Chair, we're shifting now to the spent
19 fuel storage and transportation business line, and welcome back, Shana, for
20 this second half here, and you'll provide an overview on the international
21 cooperation on transportation and new fuels licensing, and the progress in
22 certifying transportation packages for accident tolerant fuels and high-assay,
23 low-enriched fuel.

24 And next to me is Bernie White, and everything I ever learned
25 about transportation and packaging comes from Bernie, so thank you for that,

1 Bernie, and he'll talk about the progress on increasing the use of risk insights in
2 dry storage spent fuel licensing and transportable microreactors.

3 And next to me on the left is Paula Cooper. She'll talk about
4 the effectiveness of the spent fuel safety and security oversight program, and
5 preparing for aging management inspections to ensure safety during extended
6 operations.

7 And finally, to my left twice over is Josh Whitman. He'll talk
8 about the strategic research that is supporting the current and future regulatory
9 needs in this business line. So, that concludes my opening remarks and I'll turn
10 the presentation over to Shana.

11 MS. HELTON: Thank you, Ray, and good morning again.
12 And next year, I look forward to having my new deputy directors have this
13 opportunity so you don't get a double dose of me during the meeting today, but
14 for now I appreciate having the opportunity to discuss the program. Next slide,
15 please?

16 We've worked hard to recruit, hire, qualify, and retain staff in
17 this business line as well. We benefitted from many of the same efforts that I
18 discussed in the prior panel, so I won't repeat myself, but for this business line I
19 will note that we've hired almost 20 staff over the past year across the partner
20 offices and in NMSS, which is quite a good number.

21 With all of this turnover, we do put a strong emphasis on
22 knowledge management activities. In addition to holding seminars, using
23 Nuclepedia, and having the individual mentoring discussions, this business line
24 I think is somewhat unique as we've created caucuses that we affectionately
25 refer to as the Sizzlers, the Leakers, the Dose Busters, and the Grand Criticality

1 Council. These groups have been together for years to share experiences
2 encountered during reviews in the area of thermal, containment, dose
3 assessment, and criticality.

4 I'm excited to see the great amount of talent and intelligence
5 in the staff who we've hired into the business line. I'm glad they have these
6 great caucuses to hear the review experiences and jumpstart as they enter into
7 our new business line activities, and I look forward to seeing what they'll
8 accomplish in the future with their fresh perspectives.

9 One of our focuses is also on public confidence, and we have
10 several staff engaged in this priority. We take part in venues such as the
11 National Transportation Stakeholders Forum, which is a wonderful opportunity
12 to interact with the states and the tribes.

13 We participate in the Electric Power Research Institute's
14 extended storage and collaboration program, a forum that brings together
15 federal agencies, industry, and the international organizations, and we routinely
16 take part in the Nuclear Energy Institute Used Fuel Management Conference.

17 In addition to those activities, within the NRC, we've hosted
18 22 public meetings over the past fiscal year related to license applications,
19 enforcement issues, and other topics, quite a good deal of engagement. Next
20 slide, please?

21 On the workload front, last year we completed 66 licensing
22 reviews of transport package and storage cask designs and facility licenses, in
23 all cases meeting our applicants' need dates. Some of these reviews were
24 related to ATF and HALEU fuels such as the RAJ-II transportation package
25 which we approved last July.

1 We meet our oversight mission through safety inspections of
2 transportation packages, storage cask vendors and fabricators, and ISFSI
3 operations. In the few instances where a licensing basis may be unclear, we've
4 been able to use the very low safety significance issue resolution process to
5 disposition oversight issues without requiring a large expenditure of resources,
6 and where we've discovered a compliance issue, we've used our programmatic
7 experience and risk insights to take appropriate action.

8 We continue to learn and grow in this area. For example, in a
9 recent situation, a cask vendor's violation of NRC's requirements caused
10 multiple non-compliances for general licensees who use that vendor's cask
11 design. In this case, we looked at safety first. We leveraged the dry cask
12 storage risk tool that Bernie will talk about to inform our safety assessment of
13 the issue, and we did conclude that the issue was of very low safety
14 significance.

15 The safety determination memo that we wrote was
16 extraordinarily helpful in streamlining our approach to the subsequent
17 exemption requests that we received from general licensees, and by working
18 closely with our partner offices, we streamlined every phase of the process and
19 we were able to approve the first exemption request in five weeks, which was
20 well before the licensee's need date to support their spent fuel storage loading
21 campaign.

22 And as we've moved forward with our integrated schedule for
23 the number of exemptions that are on our plate, we are continuing to gain
24 efficiencies in the process, and in all cases, we've established schedules that
25 will ensure that this low safety significant issue does not impede spent fuel

1 storage loading operations. Next slide, please?

2 This business line has been thriving in the area of
3 international cooperation. For example, we're working on harmonizing the
4 regulations in 10 CFR Part 71 with Revision 1 of IAEA's transport regulations.

5 Harmonizing our transport requirements with those of the
6 IAEA has been an activity that NRC has completed several times over the
7 years, and this is important to ensure a seamless and safety-focused regulatory
8 framework for international shipments of radioactive material.

9 In addition to establishing consistency in our regulatory
10 requirements, we worked closely with Canada on a shared guidance document,
11 NUREG-1886, for approval of certain transport packages. This guidance
12 facilitates our imports and exports, and limits redundant technical reviews.

13 As we continue our cooperation with Canada on transportable
14 microreactors, which Bernie will discuss in more detail, we'll monitor what
15 updates, if any, we may need to make in our shared guidance to facilitate
16 reviews of those new designs. If we could go back to the slide?

17 This shows our staff in action. We have a lead role in the
18 IAEA's Transport Safety Standards Committee. One of our staff, Dave Pstrak,
19 is pictured as the chair. We also participate heavily in the Packaging and
20 Transportation of Radioactive Materials Symposium, which is directly related to
21 our mission.

22 In addition, our staff has participated in IAEA consultancy
23 meetings, for instance on the preparation of a draft technical report on the
24 design safety and security considerations for floating nuclear power plants.
25 We've participated in the Nuclear Energy Agency workshops on spent nuclear

1 fuel management, and we routinely participate in the NEA's Radioactive Waste
2 Management Committee, the Regulators' Forum, and the Forum on
3 Stakeholder Confidence. Next slide, please?

4 This business line has also been active in new fuels activities.
5 This past year, we authorized the NAC OPTIMUS-L package to transport
6 TRISO fuel particle compacts.

7 We are collaborating with Department of Energy on criticality
8 safety support for commercial scale HALEU fuel cycle and transportation. This
9 effort is congressionally authorized under the Inflation Reduction Act to develop
10 criticality safety data.

11 Staff held a public meeting on this topic earlier this year
12 during which DOE announced their upcoming call for experiments and analysis
13 work packages, which will invite proposals from national labs and their partners
14 for nuclear data measurements and critical experiments. Our staff will support
15 the DOE evaluations of the proposals, and awards will be announced later this
16 year.

17 And as we discussed in the last business line, we leveraged
18 the new fuels atlas tools to enhance our interactions with internal and external
19 stakeholders, and assess our regulatory needs to ensure that we're ready. In
20 particular for this business line, the research planner of the atlas has already
21 been really useful in planning out the timing of our research needs, and are
22 partnering with research on what we're going to need on the back end of the
23 fuel cycle.

24 And lastly, I'd like to mention that this business line supports
25 the increased enrichment rulemaking activity. In this effort, we're assessing

1 whether to change the requirements in 10 CFR 71.55 which limits uranium
2 hexafluoride shipments to five weight percent U-235.

3 We've had substantial public engagement on the regulatory
4 basis and we anticipate sending a proposed rule to the Commission in the
5 coming year. This concludes my remarks and I'll turn it over to Bernie.

6 MR. WHITE: Thank you, Shana. Good morning, Chair
7 Hanson and Commissioners. I'm here today to talk to you about risk informing
8 the spent fuel licensing process and preparation for transportable microreactor
9 package reviews. Next slide, please?

10 Staff in the storage and transportation business line and the
11 Office of Nuclear Regulatory Research developed and are completing our pilot
12 use of the risk tool to be both a catalyst for culture change, for staff to
13 deliberately consider risk in the approval process, and as a knowledge
14 management tool. Today, I want to explain a bit more about how the tool is
15 used within the business line and our future plans for it.

16 The risk tool provides a ranking of components of a dry cask
17 storage system according to three tiers, low, medium, and high. Although
18 qualitative, these rankings are based on quantitative risk analysis documented
19 in the NRC's pilot risk study for dry cask storage, NUREG-1864, and
20 supplemented by staff expertise in performing these reviews.

21 The ranking provide staff with an initial risk ranking, and more
22 importantly, the technical basis assigned for that risk ranking. Staff are
23 expected to consider the risk information with a critical eye. Does it make
24 sense for this amendment? Why or why not? Discussion with other staff on the
25 risk ranking will lead to improved understanding through the division and

1 improve consistency in review depth across different reviewers.

2 For example, an amendment to increase the burnup with the
3 same decay heat per fuel assembly, the reviewer would look at the discussion
4 for the increased burnup in the risk tool document. The risk tool document lists
5 this change as a medium risk and describes its effects on the offsite dose. As a
6 medium risk activity, the reviewer could treat it as a high or low risk depending
7 upon its impact on offsite dose.

8 For example, if the burnup increases by a few percent, but
9 there's a very large margin to the offsite dose limit, the change could be
10 categorized as a low risk. However, if there is a very small margin to the offsite
11 dose, it might be categorized as a high risk and that the staff's review would be
12 expected to require more resources, and could involve independent
13 calculations. The qualitative risk level would assist the reviewer in determining
14 the level of staff resources to spend on the review for this change.

15 Technical basis for the assigned risk ranking is invaluable as
16 a knowledge management tool in that without this tool, it may take a new
17 reviewer years and completion of several similar amendments to understand
18 the effects of changes to gain the knowledge the tool provides.

19 Most of our amendments contain numerous changes. Using
20 the risk tool to understand the significance of storage cask components and
21 content changes to enhance a reviewer's understanding of storage cask
22 performance for knowledge management will foster efficient and effective
23 reviews.

24 During the pilot phase of the risk tool, we were also obtaining
25 staff feedback to improve usage of the risk tool. The risk tool will be updated

1 with new information and improved based on reviewer experience to keep the
2 technical basis current for each of the risk rankings.

3 As a living document, the risk tool is intended to provide
4 flexibility to be revised to improve its usefulness to staff and to change based on
5 industry needs as spent fuel storage systems and approaches continue to
6 evolve. Next slide, please?

7 We are preparing to receive and review transportable
8 microreactor package applications. The first expected for NRC review is the
9 Demonstration Rocket for Agile Cislunar Operations, or DRACO, a nuclear
10 thermal rocket for the Defense Advanced Research Projects Agency, or
11 DARPA. This package application is for an unirradiated fueled microreactor.

12 We anticipate receiving package applications for shipment of
13 spent fuel and a transportable microreactor. If shipped via road, this transport
14 would be a heavy load shipment similar to the shipment of a very large spent
15 fuel package to a rail line, which is depicted on this slide.

16 As part of our preparation to review transportable
17 microreactor package applications, we are coordinating and supporting
18 technical and policy issues across business lines. Staff from our business line
19 supported the Office of Nuclear Reactor Regulation, or NRR, in its Commission
20 paper SECY-24-0008, microreactor licensing and deployment considerations,
21 fuel loading and operational testing at factory, and continue to be engaged in
22 discussions on issues mentioned in this Commission paper.

23 Our support on transportable microreactor packages extends
24 domestically as well as internationally. In addition to the interactions Shana
25 mentioned earlier, staff from our business line are working with both the

1 Canadian Nuclear Safety Commission and the Department of Transportation on
2 transportation of microreactors.

3 In coordination with NRR, we'll be jointly reviewing technical
4 reports under the memorandum of cooperation between the NRC and the
5 Canadian Nuclear Safety Commission. We received one report in April and
6 expect the second report in June.

7 We provide technical support to the U.S. Department of
8 Transportation for its role as chair of an IAEA working group on transportable
9 microreactors. This IAEA working group is evaluating whether transportable
10 microreactors should be regulated under the IAEA safety standards for
11 transportation of radioactive material.

12 We also perform outreach to external stakeholders. For
13 example, we leveraged the advanced reactor stakeholder meeting sponsored
14 by NRR to encourage applicants for transportable microreactor package
15 application approval to engage with the NRC early in their plans for application
16 submittal and to hold pre-application meetings.

17 Separately, we held individual discussions with several
18 transportable microreactor vendors to understand their plans for engagement
19 with the NRC. These discussions provide us helpful information to facilitate our
20 budget formulation and provide an opportunity to explain the NRC budget
21 formulation process to future applicants, including the importance for advanced
22 notice of their submittal plans to inform our resource needs.

23 Pre-application meetings help to ensure a common
24 understanding of their proposed package approval process and discuss
25 whether data gaps exist. With the new fuel types, there may not be the same

1 breadth of testing and data available as for light water fuel reactors. A couple of
2 examples include mechanical testing of TRISO and critical benchmarks for
3 HALEU.

4 So far, most of the testing of TRISO fuel is focused on hidden
5 reactor thermal excursions, not the mechanical impacts that would be involved
6 and occur in a transportation accident. You'll hear a bit more from Josh
7 Whitman about the research activities related to critical benchmarks for HALEU.

8 Next slide, please?

9 Over the course of the last year, we've reviewed the risk-
10 informed methodology developed using the characteristics for the Project Pele
11 demonstration reactor to determine whether it could provide a sufficient
12 technical basis for a package application that requested exemptions. The most
13 common question I get is whether the term Pele is an abbreviation, and I'm
14 here to tell you that it is, and it stands for Portable Energy for Lasting Effects.

15 Our review of the risk-informed methodology leveraged NRC-
16 wide technical support, including NRR and Office of Nuclear Reactor Research,
17 and used risk-informed approaches from other programmatic areas within the
18 agency. We took advantage of the independent review of the risk-informed
19 methodology by the Advisory Committee on Reactor Safeguards.

20 The Strategic Capabilities Office, or SCO, within the
21 Department of Defense, tasked Pacific Northwest National Laboratory, or
22 PNNL, to develop a risk-informed methodology that could be used as an
23 application for package approval.

24 PNNL developed the risk-informed methodology based on
25 characteristics from the Project Pele demonstration reactor to be a TRISO-

1 based, technology-neutral methodology, so that it could be used in a package
2 application for future transportable microreactors deployed by the Department
3 of Defense.

4 Specifically, SCO requested NRC review of the methodology
5 in the event that its future transportable microreactor packages would not be
6 able to meet the dose rate and containment criteria in 10 CFR Part 71 after
7 being evaluated for hypothetical accident conditions.

8 The methodology developed by PNNL is consistent with the
9 licensing modernization project that NRC endorsed for licensing advanced
10 reactors, and the integrated safety analysis used by fuel cycle licensees.

11 The NRC reviewed the methodology based on two shipments,
12 one per year, and determined that the risk-informed methodology outlines and
13 approach that it followed, with additional information or appropriate justification
14 in the application, could be used as a basis for demonstrating safety for
15 shipments of a transportable microreactor.

16 The NRC's review endorsement of the methodology does not
17 mean that a package application that incorporated it will be considered
18 approved. Any application using this methodology must demonstrate that
19 shipment of the package will protect the public health and safety as established
20 by the transportation regulations in 10 CFR Part 71.

21 If the NRC were to approve a package application that uses
22 this risk-informed methodology, it would be a first of a kind package approval
23 that would use flexibilities, namely exemptions, within the existing regulatory
24 framework. Reviewing the risk-informed methodology affirmed to the staff that
25 the transportation regulatory framework in Part 71 provides an adequate safety

1 basis for reviewing transportable microreactor package applications.

2 Finally, we utilized the pre-application engagements with the
3 transportable microreactor designers that I mentioned earlier to determine
4 whether there is a widespread need to use the risk-informed methodology.

5 To date, no other reactor developer has indicated a need for
6 using the methodology. However, we have not had any technical meetings with
7 them on their package applications. This concludes my presentation and I'll
8 turn it over now to Paula Cooper.

9 MS. COOPER: Good morning, Chair and Commissioners.
10 My name is Paula Cooper, and I am a Senior Reactor Inspector for NRC
11 Region II. Today, I will be presenting on the effectiveness of the spent fuel
12 safety and security oversight program and preparing for aging management
13 inspections to ensure safety during extended operations. Next slide, please?

14 One of our main focus areas is to maintain an effective
15 approach to ISFSI inspections. Last year, we conducted a self-assessment of
16 the ISFSI program where we evaluated the changes made by the 2020 ISFSI
17 Enhancement Initiative and the results obtained from operating experience.

18 One of the changes made by the ISFSI Enhancement
19 Initiative that I'm highlighting on this slide is a cross-qualification program.
20 Other changes, such as a risk prioritization tool and the frequency of
21 inspections, will be discussed on later slides.

22 The revised cross-qualification program introduced a
23 streamlined approach to qualify resident and reactor inspectors to conduct
24 ISFSI inspections by eliminating redundancy in the qualification programs while
25 maintaining quality. This mitigated the resource challenges the ISFSI

1 inspection program has had in recent years by quickly adding individuals with
2 the right knowledge and skill sets to perform inspections effectively. For
3 example, I qualified under this process, and last year, three additional
4 individuals were qualified in Region II alone.

5 The second area reviewed by the self-assessment was the
6 use of data described within the spent fuel storage and transportation operating
7 experience report. We looked into the inspection findings where the biggest
8 outlier identified was the increase in tornado hazard violations. This increase
9 was anticipated as the NRC had proactively identified and initiated actions to
10 address this generic issue through an EGM and associated enforcement
11 discretion.

12 Stemming from the EGM, last year we endorsed NEI 22-02,
13 guidelines for weather-related administrative controls for short-term duration
14 outdoor dry cask storage operations through the issuance of Regulatory Guide
15 3.77. Although the graph shows changes in the number of violations in each
16 category, there were no trends identified that warranted a change in the
17 regulations or the current regulatory processes.

18 Because the self-assessment provided valuable insights into
19 the effectiveness of the spent fuel safety and security oversight program in
20 achieving its program goals, staff recommended within the self-assessment to
21 routinely conduct these reviews at the end of each triennial period. Next slide?

22 Another one of our focus areas is working with counterparts to
23 prepare for aging management inspections. The NRC, storage facility owners,
24 cask vendors, and others in the nuclear community contributed to a three-part
25 integrated approach to guide all aspects of aging management.

1 The first box shows that NRC and NEI created separate but
2 complementary guidance to recommend a methodology to manage the aging of
3 storage casks and storage facilities. The NEI guidance was subsequently
4 endorsed by the NRC through Reg Guide 3.76.

5 The second box shows how we established a technical basis
6 to develop the managing aging process in storage known as the MAP Report.
7 The MAP Report incorporates hundreds of research studies, such as the one
8 developed by Argonne National Laboratory. It includes operating experience,
9 consensus codes and standards such as ACI and ASME, and other guidelines
10 for addressing materials' aging.

11 Lastly, the NRC's standard review plan and the NEI guidance
12 described in the first box recommended continually assessing the effectiveness
13 of aging management activities through operating experience and oversight.
14 One resource used by storage facility owners and cask vendors is the
15 independent spent fuel storage installation Aging Management INPO Database,
16 otherwise known as AMID.

17 This database, and associated guidance as endorsed by the
18 NRC, is utilized to gather and add the latest industry-wide operating experience
19 for the benefit of others. The oversight aspect of this last box will be discussed
20 on the next slide. Next slide, please?

21 At the end of the current triennial cycle, 43 site cask design
22 combinations will be in the period of extended operation, with the oldest cask
23 located at Surry Power Station at 38 years old.

24 Recognizing the need for oversight, in 2018, the NRC
25 performed temporary instruction, TI 2690/11, to gather information on storage

1 facilities' aging management programs, processes, and procedures. This TI
2 was performed at four reactor sites that were specifically chosen based on their
3 cask system, license type, and aging management program approval status.

4 Based on the insights gained from license holders and
5 inspectors during this short-term information gathering effort, the NRC
6 developed a new inspection procedure, IP 60859. A draft version of this
7 inspection procedure was performed at Three Mile Island in 2022.

8 Most recently, NRC staff presented the aging management
9 program procedure concept at the NEI Used Fuel Conference with minimal
10 feedback. Inspections in accordance with the final version of IP 60859 will
11 begin later this year. Next slide, please?

12 This slide demonstrates how we are maintaining a strong
13 focus on safety through risk-informed inspection guidance. The 2020
14 enhancement initiative leveraged PRA insights to develop a risk prioritization
15 tool for the ISFSI inspection program to assist inspectors to identify the most
16 risk-significant activities.

17 Standard inspection activities were prioritized in accordance
18 with the relative risk. Priority level one activities were determined to have the
19 highest amount of risk, while priority level three were determined to have the
20 lowest amount of risk.

21 This slide shows examples of two priority one activities. The
22 first activity, associated with a vertical design, is a heavy lift where the transfer
23 cask is placed for stack up. The second activity, associated with a horizontal
24 design, is a heavy lift where the transfer cask is down ended prior to being
25 transported to the ISFSI pad.

1 The team found that the risk prioritization tool helped focus
2 the inspectors on the more risk-significant activities. Additionally, the updated
3 guidance was found to be more effective in focusing inspectors on more risk-
4 significant activities, with the majority of staff saying they spent 50 to 75 percent
5 of their time on priority level one activities. Next slide?

6 This last slide in my presentation shows how we are
7 maintaining consistency in the inspection frequency to ensure safe operation.
8 Based on recommendations from the 2020 enhancement initiative, the
9 inspection frequency for routine loading campaigns was extended to be
10 performed at least once during the triennial reactor oversight program
11 inspection cycle.

12 Additionally, a quarterly inspection frequency for the longer
13 continuous loading campaigns was also defined. The team found that all
14 loading campaign inspections were completed during the last triennial
15 inspection cycle. Additionally, the quarterly inspection frequency was met at the
16 seven licensee facilities that underwent a continuous offload campaign.

17 The team determined through the previously mentioned self-
18 assessment that the changes to the inspection frequency contributed to
19 improved consistency in the inspections among the regional teams. Overall,
20 the 2020 enhancement initiative and the self-assessment demonstrated that the
21 current ISFSI program is a more risk-informed, comprehensive, and consistent
22 inspection program.

23 This concludes my presentations. I now will turn it over to
24 Josh. Next slide, please?

25 MR. WHITMAN: Good morning, Chair and Commissioners,

1 and thank you for the opportunity to discuss key activities that the Office of
2 Research is performing in support of the spent fuel storage and transportation
3 business line. Next slide, please.

4 So the Office of Research has been hard at work to ensure
5 that the agency is performing efficient licensing reviews related to ATF,
6 including higher burnup and increased enrichment. Parts or phenomena
7 identification ranking tables are one of the main ways we can collect and
8 document expert opinions on new and emerging topics.

9 A PIRT exercise on spent fuel storage and transportation is
10 underway looking at materials, structural and thermal degradation, and failure
11 phenomena. This part will focus on ATF concepts such as chrome-coated and
12 FeCrAl cladding, fuels with 8 weight percent U-235, and fuels with burnups up
13 to 75 gigawatt days per metric ton.

14 It will include a review of data availability and integrity. The
15 expert panel has been selected and it's scheduled to meet next month.

16 So in response to a user need request from NMSS, the Office
17 of Research has supported a a series of assessments of the NRC's SCALE
18 neutronics code for fuels in the ATF program, focusing on key regulatory areas
19 such as decay heat removal and isotopic composition.

20 Code assessment consists of comparing code results to
21 known solutions, either from experiment or reference calculations using higher
22 fidelity codes. We've documented this work in a variety of technical reports,
23 staff trainings, and publicly available NUREGs.

24 One such example is NUREG/CR-7306, which is currently in
25 the publishing process, which documents parametric analyses using SCALE to

1 investigate the effects of higher burnup and increased enrichment on dose rates
2 and burnup credit for dry storage casks and transportation packages.

3 This NUREG provides NMSS staff with qualitative and
4 quantitative insights on how burnup, enrichments, and other fuel assembly and
5 irradiation parameters impact dose rates and burnup credit.

6 So finally I wanted to tie this work back into NMSS reviews.
7 The NUREGs and PIRT reports produced by the Office of Research are
8 essential during the review process. They can inform applicants of areas that
9 are of interest to reviewers.

10 They also provide background knowledge and serve as
11 excellent references for reviewers when developing requests for additional
12 information and for writing safety evaluations. All this can help improve the
13 efficiency and predictability of the regulatory review process. Next slide,
14 please.

15 So next I wanted to speak about how our office leverages our
16 budget to maximize the return on our investment by acquiring key data through
17 our participation in both international and domestic experimental programs.

18 The NRC is a participant in the Studsvik Cladding Integrity
19 Project, or SCIP. SCIP is an experimental research program focusing on spent
20 fuel aging in dry storage, fuel fragmentation relocation and dispersal, and ATF
21 in reactor performance. We use the data collected to assess our confirmatory
22 code, such as the FAST fuel thermal mechanical code.

23 FAST can model the evolution of key spent fuel
24 characteristics during dry storage, such as fission gas release and cladding
25 creep. The new data collected by SCIP can help us improve our confidence in

1 these results and identify biases and uncertainties.

2 SCIP is a successful program, well-represented by many
3 worldwide experts in fuel performance and provides data that is difficult or
4 impossible to obtain from other sources. We get excellent return on our
5 investment, as the total SCIP budget is over 16 times the NRC's contribution.

6 We also have significant collaborations with the Department
7 of Energy through many avenues that are captured in our many memoranda of
8 understanding.

9 DOE's High Burnup Demonstration Cask Project is one
10 example of how these collaborations can provide key data on spent fuel
11 performance during long-term dry storage. This data, collected at no cost to the
12 NRC, is similarly used to benchmark and improve the FAST code.

13 Additionally, a collaboration between the NRC and Sandia
14 National Labs through DOE is providing high quality computational fluid
15 dynamics validation data for the vacuum drying of dry casks. Earlier tests for
16 the same group in Sandia provided data to validate CFD on vertical and
17 horizontal casks during normal operation.

18 This project increases our confidence in our CFD results and
19 allows us to better qualify applicants' use of CFD in similar applications. Next
20 slide, please.

21 An added benefit from the High Burnup Demonstration Cask
22 Project is an access to material left over after post-radiation examinations, or
23 PIE, we completed. We worked with Oak Ridge National Lab, where some of
24 the PIE testing was performed for the project, to perform new, high precision
25 radiochemical assay, or RCA, on portions of the fuel rod that were left over.

1 This process generates precise elemental and isotopic
2 composition data on the spent fuel, which the NRC uses to validate the SCALE
3 neutronics code for spent fuel applications.

4 SCALE predicts the isotopic composition based on power and
5 spectral conditions throughout the lifetime of the fuel and uses it to calculate a
6 number of important figures of merit, such as expected decay heat load and
7 margin of criticality.

8 Having a high fidelity source of data to benchmark SCALE
9 gives us additional confidence in the codes' results and allows us to identify and
10 evaluate underlying uncertainties and safety margins.

11 Using fuel that was already located at Oak Ridge, we were
12 able to access samples that are relevant to our regulatory needs without paying
13 transportation costs, which can represent a substantial fraction of the total costs
14 of experiments involving irradiated fuel.

15 The RCA results were published in NUREG/CR-7303 on the
16 validation of burnup credit for criticality safety analysis. The NUREG is used by
17 NMSS reviewers to focus on the most safety-significant aspects of cask design,
18 facilitating efficient licensing reviews and informing potential requests for
19 additional information.

20 We are also working with Oak Ridge to access additional
21 higher burnup and ATF specimens from commercial lead test assemblies for
22 RCA analysis. The data collected would help to fill important data gaps, as few
23 comparable data are available for higher burnup fuel and almost no isotopic
24 data exists for ATF. Next slide, please.

25 So the Energy Act of 2020 directed the Department of

1 Energy, in consultation with the NRC, to develop criticality benchmark data to
2 assist in the licensing and regulation of HALEU fuel facilities and transportation
3 packages.

4 In response, the offices of Research and NMSS are
5 coordinating with DOE to create a new experimental program conducting
6 criticality benchmark experiments for HALEU fuel, which is cost-free to the
7 NRC.

8 This research aims to fill a gap in criticality benchmarks.
9 Current benchmarks focus on enrichments less than 5% and on LWR fuels.
10 While it is possible to license manufacturing facilities and transportation casks
11 for advanced reactor HALEU fuels using the existing data set, uncertainties in
12 the data result in larger margins to ensure safety.

13 By filling in the gap in benchmark data and by publicly
14 releasing the results, the benefits of this research will be shared with industry
15 and these margins may potentially be reduced safely. This data would directly
16 support licensing and certification reviews of applications for HALEU facilities
17 and transportation packages for non-LWRs and subsequently may be
18 leveraged for spent fuel applications.

19 The data generated under this program will help validate
20 NRC's codes and methods, such as SCALE, by reducing uncertainties in
21 determining biases associated with sparse data sets. One critical mission of
22 the Office of Research is ensuring critical preparedness, which will allow us to
23 respond to requests by NMSS for confirmatory calculations to enhance
24 licensing reviews.

25 When more applicable critical benchmarks are available,

1 analysis of uncertainties becomes simpler and the effort to generate
2 confirmatory analysis is reduced.

3 This concludes my presentation. I'll now turn it back over to
4 Ray for closing remarks. Thank you. Next slide please.

5 MR. FURSTENAU: Thanks, yeah, thank you, Josh. And
6 thanks, everybody at the table, for presenting today and those who helped us
7 prepare for this briefing. Also again, like to thank all the staff in the
8 headquarters and the regional offices that make the spent fuel storage and
9 transportation program successful.

10 And with that, we're happy to answer your questions.

11 CHAIR HANSON: Thanks, Ray. Thanks, everybody, for your
12 presentations.

13 We'll begin again with Commission Caputo.

14 COMMISSIONER CAPUTO: Good morning. Thank you all
15 for your presentations.

16 I'm going to start with Mr. White. Obviously there's a lot of
17 interest in microreactors, and transporting a microreactor that's been fabricated
18 and fueled at the manufacturing facility is a bit novel for us.

19 So to license a container for transport of a microreactor, a
20 licensee is going to have to demonstrate that it's not possible for the container
21 to sustain nuclear fission in a self-supporting chain reaction.

22 So if a transportable microreactor does not sustain nuclear
23 fission, do you feel it's appropriate to have that facility categorized as a
24 utilization facility for the purposes of transportation? Or do you see challenges
25 from a transportation perspective with the licensing, manufacturing reactor with

1 features in place that prevent criticality within the container?

2 MR. WHITE: Thank you for the question. As far as
3 transportation goes and our package approval, whether it's NRR calls it a
4 utilization facility or not is immaterial to us, because we're looking at the
5 package and safety and whether or not it remains subcritical during transport.

6 Where it becomes more important is on the NRR side and
7 whether or not it has to be licensed at a single site. Which if it does, then that
8 would almost obviate transportation.

9 COMMISSIONER CAPUTO: So if it's a utilization facility, and
10 it's on the back of a truck, the drivers have to be licensed as operators?

11 MR. WHITE: I am not prepared to answer that question.
12 That's something I would hand off to our colleagues in NRR. From a
13 transportation perspective --

14 COMMISSIONER CAPUTO: So what discussions -- what
15 level of contribution did your office have into the microreactors paper?

16 MR. WHITE: So we contributed to reviewing and inputting on
17 the features that preclude criticality as they relate to transportation, as well as to
18 the enclosure, the transportation and the storage of spent fuel.

19 COMMISSIONER CAPUTO: Okay, but the nature of the
20 qualifications or certifications for the drivers of the transportation vehicle should
21 have been something you would have had input on, should have been
22 considered. Was it not considered in the scope of this paper?

23 MR. WHITE: It was not considered in the scope of that paper.
24 What we looked at from our transportation perspective was what type of
25 package would it be, what regulations would it apply to in Part 71.

1 COMMISSIONER CAPUTO: Okay, I'm kind of struggling with
2 that. That seems like a gap. Because it certainly seems like the staff should
3 have considered the nature of that within the scope of the microreactor paper.

4 Because that's a nature evolution of how people envision
5 manufacturing these reactors, shipping them to locations, then using them at
6 remote location in some cases. So I'm a little fuzzy.

7 MR. WHITE: Well, there are a number of issues that we
8 didn't provide to the Commission for, you know, policy issues and we didn't
9 consider in that paper, that we're planning on followup issues.

10 COMMISSIONER CAPUTO: And when will those followup
11 issues be provided to the Commission?

12 MR. WHITE: I don't have an answer to that question, I'm
13 sorry.

14 COMMISSIONER CAPUTO: Okay.

15 MS. HELTON: If I may just add in, you know, like Bernie said,
16 we partnered with NRR on the issues in the paper. I think there were some key
17 policy issues that were queued up.

18 NRR does have the staff who are the expertise and the policy
19 experts on the question of what a licensed reactor operator would be. And I
20 think there's some fundamental issues in the paper what once addressed, we'd
21 look at probably the implications of how that plays out.

22 Like you said, there's certification of drivers, that's a shared
23 role between Department of Transportation and NRC. And if there are some
24 implications for how those drivers would have to be certified --

25 COMMISSIONER CAPUTO: Changes the nature of the

1 licensing of the transportation company, because now they're not just a
2 transportation company. Are they an owner operator if they're transportation a
3 utilization facility?

4 Okay, well, that seems like a pretty big gap for the
5 Commission to wrestle with with the microreactors paper that's not considering
6 what's envisioned to be a logical outgrowth of how people anticipate using
7 microreactors. So that certainly seems to be a gap in policy issues that have
8 been presented.

9 MR. FURSTENAU: Commissioner Caputo, I'm sorry, if I
10 may?

11 COMMISSIONER CAPUTO: Go ahead.

12 MR. FURSTENAU: We'll follow up on that. I'm looking at
13 going back and look at the paper and the gap that you asked about and we'll
14 get back to the Commission on that.

15 COMMISSIONER CAPUTO: Okay, thank you.

16 Mr. White, you talked about the use and benefits of the risk
17 tool to inform storage cask reviews. This is the kind of initiative that sounds like
18 it would be a great tool, but it's been underway for four to five years now, right?

19 MR. WHITE: From initiation to development, yes.

20 COMMISSIONER CAPUTO: Development? Yeah, okay.
21 So that's a lot of time and effort into what should be a tool. When is
22 development of the tool going to be complete?

23 How are you going to measure the effectiveness of the tool or
24 measure the efficiency gain? Because that's a sustained effort on the part of the
25 staff that probably represents significant work on someone's part. So what are

1 we actually going to gain from that level of effort?

2 MR. WHITE: So the bulk of the work in the first four or five
3 years was development of the tool itself and the documentation behind the tool.
4 The documentation looks at each component of storage casks and explains its
5 significance to the safe storage of spent fuel.

6 So it provides the staff with feedback on, or not feedback, but
7 information on importance of individual components. For example, the canister
8 shell, the basket lid, the lid. The staff is finishing up its pilot now.

9 Unfortunately, we've, you know, we don't get 30 applications
10 a year, and so it's taking us time to get a number of applications for which we've
11 piloted the tool. We're up to I think eight applications now.

12 Once we finish those eight, generally an application review
13 can take up to about a year. The team that developed the tool will sit down with
14 the staff, talk about the, you know, its usefulness, improvements that can be
15 made for it, how accurate was the, you know, ensuring the information, it was
16 accurate. Is there something that's missing.

17 And then I think the biggest bang for the buck in terms of its
18 usefulness will be bringing new staff up to speed on the risk tool. Or I'm sorry,
19 on dry cask storage importance of components.

20 COMMISSIONER CAPUTO: Okay, well, that's a knowledge
21 management tool. I'm looking to see here what results are we going to see for
22 that application of staff effort.

23 MR. WHITE: Well, I think we would expect to see over the
24 long run some slight decreases in review time. Because where --

25 COMMISSIONER CAPUTO: Are you going to measure for

1 that? How are you going to know?

2 MR. WHITE: I think it's difficult to know, other than looking at
3 the aggregate of review time over all of our cases.

4 COMMISSIONER CAPUTO: So when staff embarked on this
5 effort, was any effort made to project what the cost savings would be of
6 developing such a tool? I mean, there should be a business case.

7 If we spend, you know, 100 hours to save two hours, that's
8 not really best application of our time. There should be some sort of analysis
9 that justifies whether or not the juice is worth the squeeze in having the staff
10 embark on a five-year effort.

11 MS. HELTON: One thing I'd like to add is the tool is done.
12 It's developed, we have a job aid. We actually revised the tool once already
13 based on initial feedback and insights from the first pilot that we did. The first
14 pilot was very limited data. It was only two cases.

15 So to look at, you know, with confidence this is a tool that's
16 going to save us x amount of resources per review, it really wasn't enough data
17 to project what you're talking about in terms of resource savings, which is why
18 we extended the pilot to include more data points so that we could get a better
19 understanding of what benefit we were getting from it.

20 One of the reasons why --

21 COMMISSIONER CAPUTO: Well, but Mr. White, excuse me,
22 but Mr. White is talking about improving or expanding the tool before we even
23 know whether or not it's generating the efficiency or effectiveness that was
24 anticipated when the effort was embarked upon.

25 MS. HELTON: Correct. We are getting feedback as we go

1 through using it. One of the benefits of the tool is to make sure that we're
2 focused on the things that are most important to safety. And that really helped
3 us, and we're gathering data now on some of the exemptions that we've been
4 processing recently.

5 There was a safety review that we did that really looked at the
6 big picture, safety consequences, risk impacts. And I truly believe we would not
7 be making the strides that we are in the exemptions we're processing today if
8 we didn't have the benefit of the insights from the risk tool.

9 COMMISSIONER CAPUTO: Okay. So if you are seeing
10 benefits to the risk tool, are you going to be using this for transportation, or
11 strictly in storage?

12 MS. HELTON: I think right now we're looking at it primarily in
13 the application of storage. The risk tool is based on a probabalistic risk
14 assessment that was conducted for dry storage.

15 So if we wanted to shift that focus of using such a tool into the
16 transportation arena, I think we'd have to look at the cost-benefit of what's the
17 value of that and you know, looking at the risk information that we have on
18 transportation.

19 COMMISSIONER CAPUTO: Okay, but was there a cost-
20 benefit analysis to justify embarking on the risk tool to begin with? It sounds
21 like it wasn't.

22 MS. HELTON: I'd have to get back to you on that question if
23 we had one.

24 COMMISSIONER CAPUTO: Okay. All right, thank you.

25 CHAIR HANSON: Thank you. Commissioner Crowell.

1 COMMISSIONER CROWELL: Thank you. Thank you to all
2 the panelists for their presentations today.

3 I'm going to pick up where Commission Caputo left off, but I'm
4 going to try not to use more than half my time in doing so. And I got some free
5 time there too, so thanks, Carrie.

6 So given that the risk tool's already developed for dry cask
7 storage, I mean, cost-benefit is a little bit in the rear view mirror. It's now
8 available to use and it's a useful tool.

9 Given that, what's your thinking a little bit more on the
10 question that Commission Caputo asked about applying it in other areas, like
11 for transportation or microreactors or things like that? Like is it malleable
12 enough? Is it the kind of risk tool that could be applied to other applications?

13 MR. WHITE: Thank you for the question. I think that for a
14 limited number of transportation package approvals, you know, for example,
15 spent fuel, the risk tool could be -- could be applied in the transportation arena.

16 And unfortunately, when looking at transportation, we have
17 such a wide variety of packages that we approve, everything from radiography
18 cameras, transuranic waste, fresh fuel assembly, spent fuel assemblies. And
19 now considering transport of microreactors.

20 They're all a little different, things about them are all a little
21 different, how they act in drops. The hypothetical accident sequence is they're
22 all a little different. And so in order to truly develop a risk tool for transportation,
23 you have to take all that into consideration in terms of what's important.
24 Because what's important for one package may not be important for other.

25 You know, fresh fuel package, you know, its criticality safety's

1 important. Generally, if it's a type A fissile package, there's no containment, no
2 dose rates. Whereas you'd have dose rates in transuranic waste packages.
3 You'd have containment criteria. Because it's more important there because of
4 the plutonium aspect.

5 COMMISSIONER CROWELL: And then your other point,
6 because that's kind of where I'm going next is within the scope of, you know,
7 microreactors, you mentioned in your presentation that you looked at a package
8 application for unirradiated fueled microreactor, but that you anticipate receiving
9 a package application for shipment of spent fuel in a transportable microreactor.

10 Now, you know, shipping something with unirradiated fuel
11 versus spent fuel is very different. Was the thinking there that the spent fuel
12 transportation of microreactor, is it after its useful life or this fuel's been used,
13 it's being transported back to the manufacturing facility or the storage or
14 disposal facility, is that the idea?

15 MR. WHITE: That's the intent, yes.

16 COMMISSIONER CROWELL: Okay, I'll leave it there for
17 now. Although I would say that if Pele is an acronym, you should capitalize all
18 four letters.

19 Shana, let me stick with you. This joint NEA project wizard
20 that you're in a -- you're going to participate in that, is that correct? Is that
21 something that's new?

22 MS. HELTON: That is a new working group. NEA had a
23 kickoff meeting late March, earlier this year, and there's going to be a followup
24 workshop coming up in May, and I'll be attending that.

25 COMMISSIONER CROWELL: Can you just take a minute, I

1 mean, I'm always very interested in waste management and particularly with
2 new and advanced reactor designs. Can you tell me what the scope of the
3 wizard effort will be, how broad or in-depth?

4 MS. HELTON: No, I cannot. And the reason why I can
5 answer that very plainly is because out of the kickoff meeting late March, the
6 NEA sent a survey to the people who are -- to the entities that are paying to
7 participate in the wizard working group to determine exactly what you're talking
8 about, what's -- and prioritize.

9 Because there are a variety of different designs out there. I
10 think the survey includes tons and tons of different things that could be looked
11 at by the working group.

12 So I think the -- not being able to speak for NEA, but it seems
13 that the intent is to collect information from the participants in the wizard and
14 take that, prioritize it, and determine what the scope will be going forward.

15 COMMISSIONER CROWELL: So you'll get to provide input
16 but you'll -- we'll ultimately see it at some point based on the --everyone's input
17 what the scope will be.

18 MS. HELTON: As an international effort, yeah.

19 COMMISSIONER CROWELL: Okay. I'd be interested to
20 know when that's figured out what the scope is, so.

21 Paula, let me move to you a for a second here and go to one
22 of your slides. I think it's slide 35. And you mention, you know, your table there
23 has some inspection priorities. You know, I think there's, well, there's activities
24 with their related inspection priority level.

25 Those five or six activities are just examples of I guess

1 dozens of potential activities that could be on there, is that correct?

2 MS. COOPER: That's correct.

3 COMMISSIONER CROWELL: Okay, so as we learn about
4 new things with new fuels and aging casks, etc., does that list of activities get
5 longer? I mean, is it -- do you anticipate adding new activities and their
6 associated inspection priority level for things we learn as we go forward?

7 MS. COOPER: I would imagine the, depending on the aging
8 management results inspections that could become a line item on their
9 prioritization, because it will be adopted into the loading operating procedure.

10 However, the actual items on the table are higher level. They
11 are elements within the processing of the spent fuel casks. So I would not
12 expect them to change because they're all tied to the PRA risk insights.

13 So unless we're looking at a completely new design of a
14 canister where a new mechanism or a new process would be introduced, that
15 would have to create its own priority level, and that's where the list would
16 change. But overall, I would imagine that would stay pretty consistent with
17 what's developed currently.

18 COMMISSIONER CROWELL: Okay. And I haven't -- I got to
19 find the table here. You starred the highest priority. Are those the only two on
20 the theoretically longer list that are the highest priority?

21 MS. COOPER: No, so I would say there's at least, I want to
22 say 20 or more priority level one activities. Because it all ties to tech specs. A
23 lot of those priority one activities are usually a tech spec-controlled element. So
24 heavy loads is one because of the nature of a cask drop, right.

25 So observing those activities, making sure they keep those

1 administrative controls. Because a single failure proof cranes are only single
2 failure proof if you manage it in accordance with procedures and maintenance
3 activities. So that's a priority level one.

4 Other activities would be welding to ensure that the canister is
5 properly sealed, so that would be a priority one. The NDE associated with
6 validating the integrity of the weld would be a priority level one.

7 Vacuum drying, making sure it's -- so criticality couldn't be a
8 concern. Backfilling with helium, making sure you have your ultimate heat sink
9 in place would be a priority one level activity. So there's --

10 COMMISSIONER CROWELL: That was the answer I was
11 looking for. So got you, okay.

12 So Josh, turning to, and I'm going to force you to speculate
13 here a little bit. And I encourage you to speak freely. I think Paula said in her
14 presentation said that oldest spent fuel canister out there right now is 38-ish
15 years old. Which in some respects is kind of young, all things considered.

16 As we contemplate the possibility of onsite storage going into
17 the, you know, encroaching on 100 years and maybe well beyond that, what
18 keeps you up at night? What are the couple things that make you most
19 concerned as we look out on that horizon?

20 MR. WHITMAN: So I guess, it's not a question I was
21 anticipating. You know, we participate in a couple different programs that look
22 at the aging of spent fuel and dry cask.

23 I mentioned the SCIP program and the DOE's High Burnup, I
24 forget the full name of it. Those are looking at sort of the normal material
25 property evolution of the fuel as it ages in dry cask storage, and creep and

1 fission gas release are important there. And so those I think have been the
2 items that are identified so far that we need to collect more data on as these
3 timelines go out.

4 But you know, I think the PIRT maybe will come up with some
5 additional information that we think is important. But I don't have a, I don't think
6 I have a succinct answer for you in what the biggest concerns are.

7 COMMISSIONER CROWELL: You're currently not losing
8 sleep, though?

9 MR. WHITMAN: Not for that reason, no. I've got small
10 children, so.

11 COMMISSIONER CROWELL: That I understand. Last quick
12 question, and I'm going to throw this to Ray because you had it easy today, and
13 I don't think I'm going to make it harder with you on this question.

14 But my understanding, on microreactors, my understanding
15 is, you know, I think Commission Caputo makes a good point about, you know,
16 things, you know, maybe a gap in things that we haven't looked at or need to
17 look at going forward. My understanding is that there was the -- there was the
18 INPO paper on microreactors, there's now this policy paper.

19 And this policy paper is one of however many I guess are
20 necessary to address policy issues in the microreactor space that the
21 Commission will receive. Is that correct? So like issues that Kush could have
22 identified or others that are identified could be captured in subsequent policy
23 papers? It's not that they were missed, it's that it's an iterative process?

24 MR. FURSTENAU: Yeah, I think that's right. I think the
25 scenarios like Commissioner Caputo are good to be brought up to ensure that

1 those type of scenarios are thought through in that they're -- I think the
2 microreactor and the whole thought of utilization licenses is an area that we
3 haven't looked at before. And I think the number of scenarios vary as widely as
4 the number of applicants and how they might want to use them.

5 And you know, with the fueled reactors and transporting them
6 might not even be once they get refueled, they may want to transport them
7 midlife as well. You know, it could be a lot of different scenarios there, so.

8 COMMISSIONER CROWELL: Agreed, I think we're going to
9 have to look at all of them based on reasonability and on what we're hearing
10 from vendors and manufacturers about their interest. But so I appreciate that.

11 Thank you, Mr. Chair.

12 CHAIR HANSON: Thank you, Commissioner Crowell. And
13 thanks again, everybody, for being here this morning.

14 Shana, I wanted to pick up on something that you said about
15 an opportunity to use. And I think the phrase that caught my attention on, let's
16 see if I can find it here. I think it's slide 24, We also think the graded approach
17 is an opportunity to ensure the licensing bases are more focused, and we need
18 two things to bring that to fruition, industry interest and a staff that embraces the
19 use of risk insights.

20 So how and what are we doing about that, particularly the
21 staff part? I'll ask a question about the industry interest part in a second. How
22 are we encouraging that, how are we driving that, how are we implementing
23 that?

24 MS. HELTON: Sure, yeah, and the graded approach is an
25 effort that had been brought up I think probably four or five years ago, around

1 the same time that we embarked on the risk tool effort. And the -- what we
2 need is to see that it's something where the return on investment is worthwhile I
3 think.

4 We've got limited use case scenarios where the graded
5 approach has been sought by the industry, and certainly our staff is receptive to
6 using risk.

7 We've got a widespread use of the Be RiskSMART
8 Decisionmaking Framework, the risk tool working group is very active, and staff
9 seminars. And a number of the risk tool working group participates during the
10 kickoff and subsequent discussions for licensing reviews as they come in.

11 We hold our branch chiefs accountable to use of risk insights
12 in decisionmaking in their performance plans. And these are all factors that will
13 contribute to the culture of embracing the use of risk.

14 I think where we can be challenged is when we get into the
15 detail supervising a certificate of compliance or a license, there's certain
16 information that's sort of historically been included in those licensing documents
17 and in the licensing framework. And we really need to challenge ourselves to
18 ensure that we're only including that which we absolutely need for reasonable
19 assurance that we're protecting the public.

20 CHAIR HANSON: Okay, great, thank you. Very helpful. I
21 think having that and using the levers at our disposal to have to -- to build that
22 culture, the staff that embraces the use of risk insights is really important.

23 You mentioned industry interests in that. That's kind of the
24 first part of that sentence. And what does that mean? How is that -- how does
25 that manifest itself?

1 MS. HELTON: Well, to change the licenses, you need an
2 amendment, so industry needs to give us something to look at. And I know
3 there have been many priorities and we've had to focus our resources, all of us.

4 So there were a couple of cases where we had some COC
5 amendments that were withdrawn. And so if the graded approach is something
6 that there's a mutual appetite for, that will have to play out in licensing space.

7 This is an ongoing conversation that we're having with
8 industry. And I know we're working towards a perhaps spring or summertime
9 meeting, I'm not sure of the exact timing, to talk about where we would like to
10 focus our collective energies and enhancements to the licensing process for
11 spent fuel.

12 CHAIR HANSON: Yeah, I think that's great, right. I mean,
13 obviously communicating clearly with our licensees about how we're applying
14 those risk insights to build confidence on both sides of the table is going to be
15 really important. So thank you for that.

16 Bernie, I was really intrigued by this process that we, on
17 Project Pele, that we had going with Pacific Northwest National Lab. And you
18 talked about developing a kind of, almost kind of a generic approach on these
19 things. Or I guess PNNL kind of developed a generic approach.

20 And as you're talking about approving a package application
21 that uses that risk-informed methodology, I just want to get my arms around
22 kind of what's the envelope that we're talking about here, right? I mean, we
23 talked about approving a, kind of a generic reactor that's fueled with TRISO.
24 Great. But how do we kind of set the boundaries on that, that overall
25 approach?

1 MR. WHITE: So the risk-informed methodology was a
2 50,000-foot level look at a package application. You know, typically when we
3 do package reviews, they're subject to hypothetical accident conditions.
4 There's dose rate and containment criteria as well as criticality safety that
5 comes after that.

6 In the event that an application couldn't meet that containment
7 dose rate criteria, the methodology developed the PRA to look at actual acts
8 accidents during transport. The results of those accidents, meaning damage to
9 the fuel, what gets out. And then dose to the maximum exposed individual.

10 And then used a frequency consequence curve to, like the
11 licensing modernization project, where it ingrained safety analysis in Part 70, to
12 bound where they fall within that, and now call it the acceptable/unacceptable
13 range. But there's a lot more to it than that sensitivity analysis, etc., etc.

14 CHAIR HANSON: Yeah, if I can kind of ask a confirmatory
15 question, then if I understand what you're saying then, source term is as
16 important for kind of a probabalistic informed methodology on transportation as
17 it is for kind of onsite consequence analysis.

18 MR. WHITE: Absolutely, it's probably the most important.

19 CHAIR HANSON: Okay, okay. So that -- so source term
20 then is going to kind of be the -- it's kind of going to define the envelope then as
21 we talk about transporting these.

22 MR. WHITE: Right. Just because we approved a
23 methodology, if too much gets out and there's too much dose to an individual,
24 the package, the application wouldn't be approved.

25 CHAIR HANSON: Okay, great. Thank you very much. I got

1 one other question for you. You know, Samantha gave a kind of good, really
2 good discussion of the fuels atlas. And I know that one of the columns on that
3 fuel atlas was storage and transportation. And so but we didn't really talk about
4 it in this part of the -- in this part of the presentation.

5 So can you kind of talk about how what you're doing and the
6 kind of body of information that you're accumulating in the transportation and
7 storage area is being integrated into that fuels atlas, etc.?

8 MS. HELTON: Yeah, it's we didn't talk about it as this
9 business line because it's very much the same story, and we didn't want to be
10 repetitive. So the new fuels team, which we recently established, they're
11 looking at all of the phases of the fuel cycle.

12 So everything that Samantha discussed while, you know, her
13 remarks were more certainly focused on the fuel facilities in the front end, that
14 applies to transportation, fresh fuel storage, transportation of spent fuel as well.

15 CHAIR HANSON: Yeah, great, thank you. Just wanted to
16 confirm.

17 Okay, Paula, over to you. Since Commissioner Crowell
18 passed on the public communication/public engagement question, I have a
19 strong interest in this. But let me start by asking what determines the period of
20 extended operation for a cask design/cask combination kind of setup on the
21 site?

22 MS. COOPER: Sure, so my understanding is it's just the
23 initial license. The initial license was a 20-year license. The moment that they
24 cross over that first license, they are now considered into the period of
25 extended operation.

1 CHAIR HANSON: Okay. Well, you know, of the various
2 things that the public's concerned about, whether at operating reactors or
3 decommissioning reactors, right, spent fuel storage is like, is probably at the top
4 of the list. So how are we communicating about what extended operations
5 means, about how we are -- about the kinds of analysis that we're doing.

6 About in Josh's area, right, how we're bringing in research
7 data, about how we're building that body of information that gives the public
8 confidence that I hope that this storage of spent fuel is safe. That we don't
9 have, what is it, sizzlers, leakers, and these other things, right. I mean, it's
10 almost overly descriptive, but right.

11 I mean, so how are we doing that when we go out and either -
12 - and what are the venues that we're using to communicate to the public about
13 that?

14 MS. COOPER: So I have to defer to Shana on the program
15 office outreach, but I can speak to the region. So the region, we have are end-
16 of-cycle, mid-cycle public meetings, in which a lot of the public do come and
17 some of the questions are directed at the spent fuel storage.

18 We do answer and we respond to those comments during
19 that time. But our Office of Public Affairs also gets independent questions from
20 the public asking about our ISFSI inspection and the aging management and
21 the scope of those aging management inspections.

22 So through those mechanisms, we feed back to the public
23 why we have confidence in the current status of those casks, as well as
24 informing them of even the traditional oversight that currently occurs for those
25 ISFSI casks, that they have daily monitoring.

1 They have to either do a walkdown or they have to perform
2 temperature checks to verify every day that those ISFSI canisters are meeting
3 the intent and the regulations of safe storage.

4 So but beyond that public confidence in terms of the program
5 office, Shana, can you speak to that?

6 MS. HELTON: Yeah, and I think Paula, that was a great
7 answer. Certainly there's close coordination between headquarters and the
8 regions to ensure that we have consistent messaging as an agency and we
9 know, you know, where it is that the public concerns are.

10 The public's not shy to write in when they do have a concern,
11 so we do have quite a bit of correspondence where we have the opportunity to
12 tell our good safety story.

13 We operate as transparently as we can when we talk about
14 program enhancements, where we're going with use of risk. Even some
15 enforcement actions. Licensing reviews that we do. That's all that led into our
16 22 public meetings that we held over just the past year alone. So we do try to
17 operate very transparently to the public because we know what a high interest
18 area that is.

19 And I'll have to say, in addition to what Paula said, a lot of the
20 ISFSIs are located at operating reactors. And I give a lot of credit to the
21 communications that our resident inspectors have on a day-to-day basis.
22 Because they certainly know a whole lot about the safety of the site where
23 they're stationed.

24 CHAIR HANSON: Yeah. Great, thank you. Yeah, I just think
25 this area, as we get into, get further into subsequent license renewal and we

1 start talking about the deployment of new reactors, you know, we have the, you
2 know, enhancing or increasing public confidence and public trust. And honing
3 our communications strategies and approaches around this will be really
4 important, so thank you.

5 Commissioner Wright.

6 COMMISSIONER WRIGHT: Thank you, Chair. Thank you
7 for your presentations. And as usually happens again, you know, and I think it's
8 probably a testament to how well our staff's kind of communicating and working
9 together too, because we're asking a lot of the same questions or prepared to
10 anyway, and then we have to ask them a different way because of the
11 information that we're getting. So I'm going to adjust on the fly here.

12 So earlier, we had a conversation. I was going to actually ask
13 a question earlier, but it got asked pretty much. You know, what kind of work
14 you were doing to support the transport of microreactors and what challenge did
15 you see outside the paper that we need to be preparing for.

16 And then you had a conversation with Commissioner Caputo
17 and with Commissioner Crowell about some of those things and Bernie,
18 specifically things that weren't in the paper that could be policy issues. And
19 there was some, there was talk about the gap and some of the gaps that
20 Commissioner Caputo referred to.

21 And Ray, you mentioned that you would get back with that
22 information. I was interested in knowing as well what those followup policy
23 issues are that weren't in the paper and maybe why they weren't included.

24 And you know, so is that something that could be provided to
25 the Commission as well, Ray, maybe when, Shana, when you all get back to

1 the Commission with Commissioner Caputo's concerns?

2 MR. FURSTENAU: Yes, that can be part of that, sure.

3 COMMISSIONER WRIGHT: Because it might help us in the
4 paper that we're looking at now, right. Okay, thank you so much for that.

5 Shana, I'm going to come to you. Something that hasn't been
6 talked to, so talking about the experience that we recently had with Holtec,
7 okay. You know, where we issued a violation that trickled down to the general
8 licensees. What did the staff learn from this experience, and are there any
9 changes you might make moving forward?

10 MS. HELTON: Thanks for the question. That has been one
11 of the most high profile issues that we've been working on in these past few
12 months. And my biggest lesson learned is things are most efficient when
13 licensees and certificate holders follow our regulations. So that's kind of the
14 first thing.

15 With that said, I think that one of my lessons learned is that
16 the risk tool which we developed for licensing, we applied in the context of
17 enforcement.

18 There was a benefit to using it in that context, it was part of
19 our decisionmaking that led us from where we were when we first held the pre-
20 enforcement conference and we were evaluating the issue, is this severity level
21 three?

22 And we really applied a broader look at the overall safety
23 significance of the issue. That helped us to determine that the issue was a
24 severity level four, a very low safety significance. And that sort of carved our
25 path forward from there.

1 So I think that's a great lesson learned for us to make sure
2 that we carry forward using those risk insights and the tools we have, even in
3 venues where they might not have been created specifically for that use.

4 I think there are some insights that -- we looked closely with
5 our partners in Enforcement to see where we fit within the enforcement policy
6 when we were looking at options and how to address the multiple
7 noncompliances that existed at the general licensees. And it really highlighted
8 some nuances of the Part 72 framework and how that interfaces with the
9 enforcement policy.

10 So ideally, well, you know, if you kind of come back to meet
11 the regulations, that's the best case scenario for everybody involved. If there is
12 a future similar situation, what changes can we look at. OE and NMSS have
13 been partnering to look at potential actions the staff could take or recommend to
14 the Commission.

15 COMMISSIONER WRIGHT: I know you all are on that right
16 now. Will there be a recommendation coming to us?

17 MS. HELTON: Right now, I can't say. I think we have some
18 internal alignment to do and look at the existing enforcement policy and see
19 where we can go within that. But that's certainly something that we're keeping
20 at the forefront of our minds, is whether there's something to bring to the
21 Commission.

22 COMMISSIONER WRIGHT: Okay, all right. Thank you for
23 that. So I'm going to go back again to something, I had a question I was going
24 to ask about risk insights and your quote about embracing risk insights.

25 And you had a conversation with Chair Hanson about this.

1 Especially some of the things that historically aren't included, or are included
2 but may not be necessary to establish reasonable assurance of adequate
3 protection, right.

4 So the culture change is important, and you spoke a little bit
5 to it. But what exactly is being done to drive that culture change? I mean, you
6 spoke to programs and things like that, but how are you driving that? How are
7 you utilizing that?

8 I mean, that's kind of what we really need to get to, right?
9 What is actively happening every day, right?

10 MS. HELTON: Yeah, great question. And I think everybody
11 knows culture change is a process that takes place over time. So part of the
12 culture change is having the conversations, making sure that we have good
13 mentors in place.

14 And personally I'm very thankful we have a senior-level
15 scientist within the division who's very well-versed in use of risk. And he
16 spends a great deal of time working with the review teams and with staff. And I
17 see a lot of benefit from those conversations that's not quantifiable but it is
18 certainly moving the culture in the right direction.

19 We have a great number of discussions on the management
20 team. Whenever we're addressing an issue, we push the use of the Be Risk
21 Smart Framework or right up front we're looking at what is the problem we're
22 trying to solve. What can go right, what can go wrong. How can we mitigate it.

23

24 And risk insights are a part of that framework, so we push for
25 that on the day to day as well.

1 COMMISSIONER WRIGHT: What type of pushback are you
2 getting?

3 MS. HELTON: That is a tough question. First, I have a great
4 deal of respect for the staff who work on these technical issues. They have
5 such wonderful intelligence and integrity.

6 There are a lot of detailed issues that come up and what we
7 need for reasonable assurance, what level of detail we need to get to, what
8 level of information we need in a licensing document to make that finding of
9 reasonable assurance is a continued conversation.

10 COMMISSIONER WRIGHT: Okay, thank you for that. Thank
11 you for your answer, because I know it's a difficult thing, right? And when you
12 speak to historically what we've gone after but it might not necessarily be what
13 we need today, you know, that's a change just in itself right there.

14 So I'd be really interested in following up with you later to see
15 how you're -- how that drive to change is going. So thank you so much.

16 And with the time I got left, I'm going to come over to you,
17 Paula. Good morning, and thank you for getting here.

18 You mentioned that the self-assessment of the ISFSI program
19 completed last year provided valuable insights, right. Can you give me a flavor
20 as to what some of those insights were?

21 MS. COOPER: Sure, absolutely. So the biggest insights
22 came from soliciting feedback from all of the supervisors and regional and
23 headquarters inspectors in the effectiveness of the program.

24 And some of those were presented in the slides today as to in
25 your professional opinion, did the cross-qualification program assist the

1 program in being effective? In your professional opinion, did the change in the
2 inspection frequency assist?

3 And all those came back predominantly positive with
4 resounding yeses. But in that same poll, there was one more column of, out of
5 all the questions, is there anything else that you want to provide in terms of
6 insights from the changes to the ISFSI enhancement program.

7 And there was an inspector who was very insightful. He did
8 recognize that this is a first time this past ROP cycle, in which all the regions
9 are aligned in how we executed the ISFSI program.

10 And what we notice is that we all have the same challenges
11 and we all have the same staffing concerns, the same niche expertise. For
12 instance, in Region II, we have reactor inspectors doing the ISFSI. Whereas in
13 Region I, they have health physicists.

14 So what we're recognizing is that we do have differences in
15 who is performing the inspections because ISFSI is a very broad inspection
16 area in which every topic between emergency preparedness, fire protection and
17 welding, NDE, leak rate testing criticality, heavy loads. There's a lot of
18 disciplines that are under the ISFSI program.

19 And having one person with all that knowledge just doesn't
20 generally exist. So what we're recognizing as a Phase 2 approach is the idea
21 that since we're doing it all the same, we can now cross-pollinate. Now Region
22 I will be able to accompany a Region II and we'll be able to share our own sets
23 and KMKT across all the other programs and the way that we execute these
24 inspections.

25 So that's the biggest I think insights in terms of really

1 increasing our oversight, knowledge, and skills of the ISFSI program.

2 COMMISSIONER WRIGHT: Very good, thank you for that.

3 Because I know that that is an issue when you're out talking to people, right, in
4 the plants, to our people.

5 So I'm going to ask you one more question. For the aging
6 management methodology, I'm curious about I'm curious about the process that
7 got us to where we are. And when you talked about how the NRC created its
8 own guidance but ultimately endorsed NEI's guidance in 3.76 as well.

9 So tell me a little more about why we have two separate
10 guidance documents addressing the same issue, and do we need both.

11 MS. COOPER: Yes, that's a great question. So the two
12 guidance documents relate to two different audiences. So the standard review
13 plan is direction to the staff on how to perform the review.

14 Whereas the NEI guidance is a direction to industry on how to
15 prepare the package for NRC review. They are very complementary in that
16 regard, but the focus is different.

17 So for example, in the standard review plan, staff is directed
18 to look at an aging management program and to validate that the program is
19 incorporating both site and industry operating experience. So it'll be a very
20 generic bullet item to look at that particular item.

21 Whereas if you look at the NEI guidance, it'll direct the
22 licensees or the general license holders to go look at the INPO database and
23 how to scrub that database for all the operating experience that is relevant to
24 your site to incorporate into your program. It's one method, and that's the one
25 thing that we do emphasize, that although we've endorsed it, it's just a method.

1 The licensee can choose any number of different ways in
2 order to collect that operating experience. But we've endorsed that particular
3 method as an acceptable way to collect operating experience for the -- for the
4 application.

5 COMMISSIONER WRIGHT: That's a very good answer,
6 thank you.

7 Chair.

8 CHAIR HANSON: Thank you, Commissioner Wright.

9 Thank you all again for being here. This was a very good
10 conversation, both panels really.

11 I think if I were going to pick up on kind of two themes, maybe
12 the most prominent one was about the use of risk insights and the various ways
13 in which that's happening in both licensing reviews and in the storage and
14 transportation business line and so on and so forth. I was really encouraged to
15 hear more about that and the application of quantitative and other kinds of tools
16 to this.

17 And I think there's a big interest in this on the part of the
18 Commission, and we're drilling down and figuring out how that really works. But
19 I'm glad to have that kind of discussion with the Commission here.

20 The other one that was I think of sprinkled throughout was
21 implied in a bunch of places but maybe not brought to the surface was about
22 knowledge management and the use of some of these tools in knowledge
23 management for educating kind of the next group of folks who are coming into
24 the agency, whether from other parts of the agency or whether from the outside.

25 And whether that was the risk tool itself, whether it's the fuel

1 atlas, whether it's obviously Nuclepedia is a big go-to, but also mentoring and
2 other kinds of person-to-person connections that we're having here and was
3 really encouraged to see the diversity of approaches to tackling that issue.
4 That's obviously been a big concern on the part of the Commission as well, and
5 I think will continue to be going forward.

6 So thank you all very, very much for your time and attention,
7 and with that, we are adjourned.

8 (Whereupon, the above-entitled matter went off the record at
9 11:53 a.m.)