

UNITED STATES

NUCLEAR REGULATORY COMMISSION

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MEETING: STRATEGIC PROGRAMMATIC OVERVIEW OF THE  
DECOMMISSIONING AND LOW-LEVEL WASTE AND SPENT FUEL  
STORAGE AND TRANSPORTATION BUSINESS LINES

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THURSDAY,

OCTOBER 11, 2018

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ROCKVILLE, MARYLAND

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The Commission met in the Commissioners' Hearing Room at the Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, at 9:00 a.m., Kristine L. Svinicki, Chairman, presiding.

COMMISSION MEMBERS:

KRISTINE L. SVINICKI, Chairman

JEFF BARAN, Commissioner

STEPHEN G. BURNS, Commissioner

ANNIE CAPUTO, Commissioner

DAVID A. WRIGHT, Commissioner

## ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

MARIAN ZOBLER, General Counsel

## NRC STAFF:

DANIEL DORMAN, Acting EDO

CHRISTIAN ARAGUAS, RES

MARC DAPAS, NMSS

MICHAEL LAYTON, NMSS

CHRIS MCKENNEY, NMSS

JOHN MCKIRGAN, NMSS

JOHN TAPPERT, NMSS

JAMES TRAPP, RI

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

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9:06 a.m.

CHAIRMAN SVINICKI: Good morning, everyone. I call the Commission's meeting to order.

Before I begin, I'd just like to mention that, on behalf of the Commission, I know that we feel for all the people impacted by Hurricane Michael, but I also want to offer thanks on behalf of the Commission for all the hard work of the Agency staff both for this and the prior hurricane and, sadly, throughout the entire hurricane season both here at Headquarters and in the regions that carry out the very systematic process to prepare for and then endure and respond to events such as this. So I know that, as we conduct the meeting this morning, we have folks, a lot of folks here, but at Region II, as well, and in other regions that provide mutual aid and assistance, they're helping each other, as they always do and appreciate their hard work and it takes them outside of routine working hours and other things. So we appreciate their dedication to that important hurricane season work that goes on here every year.

So this morning, the Commission will meet to continue, we've been in a bit of a series of these programmatic overview meetings. Today's will be a programmatic overview of the decommissioning and low-level waste and the spent fuel storage and transportation business lines.

This is a very content-rich area, and, as a result, this one we will actually have two separate staff panels and two separate question-and-answer periods with the staff. There's always a lot to discuss, so it's probably best to get right to it.

Before we do that, do any of my colleagues have any

1 opening remarks? Hearing none, I will begin by turning it over to Dan  
2 Dorman. Dan, please begin the staff's presentation for the first panel.  
3 Thank you.

4 MR. DORMAN: Thank you, Chairman, for those  
5 acknowledgments, and good morning, Chairman Svinicki and  
6 Commissioners. The staff are here this morning, as the Chairman  
7 indicated, to provide you with an update of strategic considerations  
8 associated with the decommissioning and low-level waste and spent fuel  
9 storage and transportation business lines.

10 These two business lines provide licensing and oversight  
11 associated with 21 power reactors in decommissioning, 12 complex  
12 materials decommissioning sites, three uranium recovery sites, two  
13 applications for centralized interim spent-fuel storage, and 79 licensed  
14 independent spent-fuel storage installations, in addition to establishing a  
15 national framework for low-level waste disposal and the monitoring of  
16 Department of Energy sites with regard to waste incidental to reprocessing  
17 activities.

18 These business lines are led by the Office of Nuclear  
19 Material Safety and Safeguards and accomplish our mission with partners in  
20 the regions and Offices of Nuclear Regulatory Research, Nuclear Reactor  
21 Regulation, Nuclear Security and Incident Response, General Counsel, and  
22 our corporate office partners that provide us crucial infrastructure support for  
23 our programs.

24 You'll hear today that these business lines, with the  
25 support of our partners, have accomplished much in the last year and have  
26 developed effective strategies to address the challenges and opportunities

1 before us.

2 Next slide, please. Our first panel will share with you  
3 today some of our licensing and oversight successes and challenges, as  
4 well as provide an update on the current environment for the uranium  
5 recovery decommissioning and low-level waste programs. There are  
6 several key themes that are common across the broad activities included in  
7 the business line. We continue to be a leader in the international arena  
8 through significant support for international treaties, safety committees, and  
9 bilateral interactions.

10 We are effectively implementing strategies to address  
11 changes in the industry. For example, we are responding to the increase in  
12 plants moving into decommissioning and our regulatory framework is  
13 successfully accommodating a new decommissioning business model  
14 involving the use of an experienced decommissioning organization other  
15 than the utility that operated the plant.

16 We have made substantial progress in adjusting our  
17 processes and organization to address the significant reduction in the  
18 number of uranium recovery sites that are regulated by the NRC. And we  
19 are continuing to self-assess our programs and make necessary  
20 adjustments to risk-inform our approaches and to ensure optimal  
21 effectiveness and efficiency.

22 The other members of our team at the table today will be  
23 covering these topics in more detail. With me to my left, your right, is Marc  
24 Dapas, Director of the Office of Nuclear Material Safety and Safeguards, or  
25 NMSS, who will provide an overview of the business line licensing and  
26 oversight successes and challenges. He will be followed by John Tappert

1 on my right, Director of the Decommissioning, Uranium Recovery, and  
2 Waste Programs Division in NMSS who will discuss the current uranium  
3 recovery and decommissioning environment. He will be followed by Chris  
4 McKenney, far right, Branch Chief of the Risk and Technical Analysis Branch  
5 in NMSS who will discuss the low-level waste regulatory program and waste  
6 incidental to reprocessing program. And, finally, Jim Trapp on my far left is  
7 the Director of the Region I Division of Nuclear Material Safety, and Jim will  
8 discuss the accomplishments and challenges associated with the  
9 decommissioning inspection program.

10 So with that brief introduction, I'll turn the presentation over  
11 to Marc Dapas. Next slide, please.

12 MR. DAPAS: Thank you, Dan. Good morning, Chairman  
13 Svinicki and Commissioners. I'll provide a brief overview of the breadth and  
14 scope of the decommissioning and low-level waste business line, as well as  
15 some of the more significant successes and challenges. And my  
16 colleagues will discuss selected topics in more detail during their respective  
17 presentations.

18 As Dan mentioned, the decommissioning and low-level  
19 waste business line has continued to proactively engage in a broad range of  
20 activities. With respect to the current business line activities, we continue to  
21 effectively implement strategies to address the increase in power plants  
22 transitioning into decommissioning status. Since the last business line  
23 meeting, an additional power plant, Fort Calhoun, has transitioned into the  
24 decommissioning program. Seven reactors have shut down in the last five  
25 years, and the licensees for an additional 12 reactors have notified the  
26 Agency that they plan to shut down those reactors by 2025.

1                   We continue to work closely with our partners in the Office  
2 of Nuclear Reactor Regulation to ensure the effective transition of resources  
3 between business lines. We are also ensuring that our infrastructure, such  
4 as licensing and inspection guidance, is updated in order to support this  
5 workload.

6                   We continue to work effectively with the Department of  
7 Energy on activities associated with Waste Incidental to Reprocessing, or  
8 WIR. We have statutory responsibilities at the Savannah River and Idaho  
9 sites, but we are also performing a non-regulatory technical advisory role for  
10 Hanford and West Valley WIR determinations.

11                   We are continuing to strategically respond to changes in  
12 the low-level waste program. This includes development of a supplemental  
13 proposed Part 61 rule as directed by the Commission and developing a  
14 regulatory basis for the disposal of greater than Class C and transuranic  
15 waste through means other than deep geologic disposal consistent with  
16 Commission direction. John Tappert and Chris McKenney will discuss  
17 these efforts in more detail during their presentations.

18                   Next slide, please. We have continued to make  
19 adjustments to our licensing program and processes to enhance them.  
20 Examples include leveraging best licensing practices from other offices. I  
21 mentioned during the January 2018 uranium recovery Commission briefing  
22 that we completed an independent assessment of uranium recovery  
23 licensing practices. As a result, ten recommendations were identified. We  
24 have implemented six of those recommendations, and we are working on the  
25 remaining four. John Tappert will provide additional detail on the  
26 effectiveness of these improvements with respect to our uranium recovery

1           licensing program.

2                           By applying these best practices, we have completed four  
3           major licensing actions over this year.   Specifically, since the last  
4           Commission meeting, we issued license amendments for major expansions  
5           of the Uranium One Ludeman and Crow Butte Marsland sites and issued  
6           both the Kennecott-Sweetwater Conventional Mill and Smith Ranch renewed  
7           licenses.   Additionally, we completed the safety review for the Lost Creek  
8           east expansion.   We consider the completion of these four major licensing  
9           actions to be a significant accomplishment, as it exceeds the number of  
10          completed major licensing actions over the previous three years combined  
11          and is the greatest number of major licensing actions for a single year.

12                           We also completed two evaluations of the business line  
13          programs and fee classes and have proposed changes for Commission  
14          consideration to address fee burden on the shrinking uranium recovery fee  
15          class.   For example, we have evaluated options for changes to the fee  
16          structure for uranium recovery licensees to stabilize the annual fee burden  
17          now that Wyoming has become an agreement state.

18                           Next slide, please.   We have realized success in several  
19          areas requiring significant internal and external stakeholder interaction.  
20          Specifically, we completed the transition of Wyoming to an agreement state,  
21          including right-sizing the uranium recovery program, given the large number  
22          of uranium recovery facilities in that state.   We worked closely with the State  
23          of Wyoming to transition eight licensed-to-operate uranium recovery facilities  
24          and five uranium recovery facilities in decommissioning to Wyoming's  
25          regulatory jurisdiction.   We aligned our licensing schedules, where possible,  
26          to either complete the licensing action or a major milestone of the review to



1 ensure a smooth transition of licensees to the state. We  
2 continue to actively engage the international community. Our  
3 decommissioning and waste programs are robust and well-respected  
4 internationally and, as such, countries are interested in our programmatic  
5 knowledge, experiences and lessons learned. In keeping with the NRC's  
6 strategic goals, we view these interactions as opportunities to share our  
7 decommissioning experience and to learn from the experience of others so  
8 we can enhance our programs.

9 As an example of our engagement with the international  
10 community, we sponsored a foreign assignee from the Korea Institute of  
11 Nuclear Safety for a one-year assignment to the Reactor Decommissioning  
12 Branch, and we plan to send a staff member to France for a year to work in  
13 the decommissioning area.

14 In May of this year, we supported the sixth review meeting  
15 of the Joint Convention on the Safety of Spent Fuel and Radioactive Waste  
16 Management in a highly-effective manner. The NRC staff were  
17 well-represented in various leadership positions at the review meeting, and  
18 the U.S. presentation was a success.

19 I am pleased to report that we have made substantial  
20 progress on investigating properties with potential historic radium  
21 contamination, and we are nearly complete with our non-military radium  
22 program. Specifically, we have dispositioned 45 out of 47 original unique  
23 site-owner properties. For most of these properties, we have not identified  
24 contamination above our proposed action level of 100 millirem per year.

25 Where contamination did exist above the action level, the  
26 site owners have voluntarily established controls. Through application of a

1 risk-informed approach, we have determined that only five sites require  
2 clean-up. One of these five sites has completed clean-up, and the  
3 Environmental Protection Agency has completed characterization at a  
4 second site.

5 This concludes my portion of the presentation, and I will  
6 now turn it over to John Tappert. Next slide please.

7 MR. TAPPERT: Thank you, Marc. Good morning,  
8 Chairman Svinicki, Commissioners. I will focus my portion of the  
9 presentation on how we have adjusted to a changing environment with  
10 respect to the decommissioning and uranium recovery industry.

11 We continue to proactively respond to the uranium  
12 recovery and decommissioning industry as we operate in a dynamic  
13 environment. With respect to the uranium recovery program and Wyoming  
14 becoming an agreement state, as Marc mentioned, eight uranium recovery  
15 sites are no longer under NRC jurisdiction. The three remaining licensed  
16 facilities that are under our regulatory purview are located in Nebraska, New  
17 Mexico, and South Dakota.

18 In response to this reduced workload, we have made  
19 significant progress over the last year in adjusting our staffing levels and  
20 processes to align with the projected workload. We have successfully  
21 reduced staffing from 33 full-time equivalent, or FTE, in fiscal year 2018 to  
22 17.5 FTE in fiscal year 2019. And we expect further reductions in fiscal  
23 year 2020 to be consistent with the anticipated workload. By not filling  
24 vacancies and careful planning to transition staff into positions where  
25 resources were needed, we have transitioned the staffing levels to align with  
26 the budget for the uranium recovery program in fiscal year 2019. In

1 addition, we have completed a reorganization this month which involved  
2 restructuring the division from five to four branches, resulting in the reduction  
3 of one supervisor.

4 With regard to the new business model for  
5 decommissioning that Dan referred to, we are in the final stages of reviewing  
6 the first-of-a-kind request from the licensee for Vermont Yankee involving a  
7 permanent license transfer to a decommissioning company, Northstar, and  
8 expect to complete this activity in the next day or two. Similarly, Oyster  
9 Creek submitted its license transfer amendment in August to allow Holtec to  
10 assume ownership of the facility in order to execute decommissioning  
11 activities. And Pilgrim and Palisades have both announced an intent to  
12 pursue this approach, as well.

13 We're also continuing our technical evaluation of the safety  
14 implications of General Electric's exemption request to exceed the current  
15 six-year time line for completion of decommissioning activities at the  
16 Vallecitos site in order to complete integrated decommissioning of all the site  
17 units. We are assessing groundwater and aging management issues to  
18 determine where the decommissioning time line can be extended safely and  
19 if the criteria for an exemption in 10 CFR 50.12 are satisfied.

20 Next slide, please. We continue to make progress on  
21 enhancing effectiveness and efficiency of our licensing and oversight  
22 processes. Last year, the Commission approved the staff's proposal to  
23 move from a 10 to a 20-year licensing term for future uranium recovery  
24 licensees.

25 Additionally, as Marc mentioned, we completed an  
26 independent assessment of uranium recovery licensing practices. As a

1 result, we are initiating actions based on the ten recommendations identified  
2 in this evaluation to enhance the efficiency and effectiveness of the uranium  
3 recovery program.

4 We have prioritized the actions into near-term, mid-term,  
5 and long-term. The near and mid-term actions have been implemented.  
6 Examples of these actions include more discipline in the planning and  
7 scheduling process and enhancing the guidance for issuance of requests for  
8 additional information to clearly document the request nexus to radiological  
9 safety and security.

10 Since implementing these actions, we have seen an  
11 improvement in meeting the metrics for licensing milestones. Specifically,  
12 we improved our performance from not meeting our licensing timeliness  
13 metric in three of the four quarters last year to meeting the licensing  
14 timeliness metric in all but the first quarter of this year.

15 We have also made adjustments to our inspection  
16 programs to gain efficiencies, and Jim Trapp will discuss these efforts in  
17 more detail during his presentation.

18 Next slide, please. Through implementation of our  
19 decommissioning program, we have made significant progress in the safe  
20 and effective decommissioning of NRC licensed sites. With the license  
21 termination rule having been in place for over 20 years, significant progress  
22 has been made in terms of the number of sites at which decommissioning  
23 has been completed and the associate license terminated. Each year, the  
24 regional offices terminated approximately 100 non-complex materials  
25 licenses. At NMSS, we managed the complex sites, those that have  
26 long-lived radionuclides and have significant technical challenges, such as

1 groundwater contamination.

2                   Since 1997, when the license termination rule was  
3 implemented, a total of 73 NRC licensed complex sites have completed  
4 decommissioning. During this time, we have completed license  
5 terminations for 7 power reactors, 17 research and test reactors, and 49  
6 complex material sites. Of the 49 complex material sites, 22 were legacy  
7 sites that either had financial or technical issues that were preventing site  
8 clean-up and remediation. We have worked with the companies and  
9 trustees to reduce the number of legacy sites from 27 sites in 1998 to 5 sites  
10 today.

11                   Just this year, and really just last month, we terminated the  
12 license for one complex materials facility, the Hematite facility, which, due to  
13 groundwater contamination, had been in decommissioning for almost two  
14 decades. Another complex material site, the Centrus Lead Cascade facility,  
15 the licensee completed all decommissioning activities and submitted a  
16 license termination request in August of this year. Additionally, this year we  
17 terminated the license for the research reactor facility at the State University  
18 of New York at Buffalo, which is shown in the upper picture on the slide.

19                   We continue to make progress in our most challenging  
20 sites. One such site is the American Nuclear Corporation, or ANC, site, a  
21 uranium recovery site in the state of Wyoming. In 2017, the Commission  
22 approved our recommendation for the Agency to maintain oversight of the  
23 site, given that ANC is insolvent and the funds remaining for  
24 decommissioning are insufficient.

25                   Since 1994, Wyoming has been providing stewardship of  
26 the site and we worked with the state to channel the remaining funds from

1 the forfeited surety bond to perform interim stabilization of the remaining  
2 tailings pile. The majority of the interim stabilization work was successfully  
3 completed in June of 2018, and final site stabilization activities will be  
4 completed this fall.

5 Based on feedback from the State of Wyoming and the  
6 Department of Energy regarding funding options, we have developed a  
7 Commission paper with a recommendation regarding how best to proceed to  
8 acquire sufficient funding for the decommissioning of the ANC site.

9 Another challenging site is the FMRI site in Muskogee,  
10 Oklahoma, which is shown in the bottom picture on the slide. The parent  
11 company, Fansteel, declared bankruptcy in 2016. We have worked closely  
12 with the Department of Justice and the Oklahoma Department of  
13 Environmental Quality and obtained a \$700,000 settlement in the bankruptcy  
14 proceeding. While this is insufficient to remediate the site, it does provide  
15 resources to maintain the site while longer-term strategies are pursued.

16 Next slide, please. In closing, I would like to spend just a  
17 few minutes discussing some of our stakeholder engagement activities. We  
18 have engaged a broad range of stakeholders since our last business line  
19 briefing.

20 For example, we recently finalized a memorandum of  
21 understanding with the National Park Service for coordination of response  
22 actions involving radioactive material at the Great Kills park site in Staten  
23 Island, New York, and the Spring Creek Park in Queens, New York. This  
24 memorandum of understanding is a revision to the one finalized in January  
25 of 2018 that was limited to Great Kills Park. The purpose of the  
26 memorandum of understanding is to minimize dual regulation and duplicative

1 regulatory requirements while ensuring the consideration of necessary  
2 standards for health, safety, and the environment.

3 We have coordinated with the Environmental Protection  
4 Agency's Superfund Emergency Planning and Response Branch regarding  
5 radium contamination at the former Sessions Clock Company, which is  
6 currently owned, in part, by Bristol Instrument Gears. The Environmental  
7 Protection Agency has performed characterization activities and has since  
8 informed us that it will be pursuing a removable action for the contaminated  
9 soil identified at this site.

10 We have also held public meetings and participated in  
11 professional conferences to discuss technical issues associated with the  
12 development of regulatory basis for the disposal of greater than Class C  
13 waste and to discuss the very low-level waste scoping study. These  
14 meetings focused on gaining insights from stakeholders on the various  
15 issues that should be considered in the development of a regulatory basis  
16 for greater than Class C waste and on identifying possible options to  
17 enhance the NRC's regulatory framework for the management of very  
18 low-level waste.

19 And this concludes my portion of the presentation. Now  
20 I'll turn it over to Chris McKenney. Next slide, please.

21 MR. MCKENNEY: Thank you, John. Good morning,  
22 Chairman Svinicki and Commissioners, and thank you for the opportunity to  
23 speak to you today. I will be speaking to you for both the Low-Level Waste  
24 Regulatory program and the Waste Incidental Reprocessing program in  
25 terms of how we respond to various challenges in applying risk-informed  
26 approaches to both these programs.

1                   Next slide, please. Of note, all four of our  
2 currently-licensed low-level disposal sites are located in agreement states as  
3 shown in this slide. Therefore, we focus on developing and updating both a  
4 regulatory framework and guidance for generators of waste and for the sites  
5 receiving the waste. We are actively updating our regulations to further  
6 risk-inform our regulatory approaches in the low-level waste area.

7                   Next slide, please. We are in the process of revising 10  
8 CFR Part 61, the regulation that establishes criteria for near-surface land  
9 disposal, to make it more risk-informed and address waste types that were  
10 not considered when the original rule was established, such as large  
11 quantities of depleted uranium. The revision will establish a requirement for  
12 a site-specific performance assessment to permit the consideration of  
13 site-specific factors and to account for unique waste streams not originally  
14 considered.

15                   We are drafting a supplemental proposed Part 61 rule  
16 based on Commission direction to include re-instating a thousand-year  
17 compliance period in a case-by-case grandfathering provision to apply the  
18 new requirements only to facilities that plan to dispose of large quantities of  
19 depleted uranium.

20                   Next slide, please. In addition, we are developing a  
21 regulatory basis for the disposal of greater than Class C waste, GTCC, and  
22 transuranic waste through means of other deep geological disposal,  
23 including near-surface disposal, consistent with Commission direction. The  
24 regulatory basis will analyze whether, in accordance to Section 274(c)(4) of  
25 the Atomic Energy Act, greater than Class C waste disposal presents such a  
26 hazard that the NRC should retain regulatory authority over some or all



1 waste disposal and whether such waste can be disposed of in the  
2 near-surface.

3 Through evaluation of these issues, we are taking a more  
4 risk-informed approach to the disposal of greater than Class C waste by  
5 focusing on the specific risk it poses, rather than by generic classification.

6 Next slide, please. We are engaging stakeholders as we  
7 prepare our draft regulatory basis for greater than Class C waste disposal.  
8 We issued a Federal Register notice in February 2018 and held two public  
9 meetings seeking stakeholder input in identifying the various technical  
10 issues that should be considered in the development of the regulatory basis.

11 We continued to coordinate with the Department of Energy and track  
12 progress on its efforts related to the greater than Class C waste disposal.

13 Given that some of the constructs in the new Part 61 rule  
14 may be used in developing the regulatory basis for greater than Class C  
15 waste disposal, we plan to issue the draft regulatory basis shortly after the  
16 supplemental proposed Part 61 rule is published. Consistent with  
17 Commission direction, we will solicit comments from the State of Texas and  
18 other interested stakeholders through public meetings or workshops.

19 We intend to complete the final regulatory basis within six  
20 months of publishing the supplemental proposed Part 16 rule. If the  
21 regulatory basis supports near-surface disposal, we will then begin  
22 development of a proposed rule that will be issued once the current Part 61  
23 rulemaking is complete.

24 Next slide, please. The Ronald W. Reagan National  
25 Defense Authorization Act for fiscal year 2005, specifically Section 3116,  
26 requires that the Department of Energy consult with the NRC on its

1 incidental waste determinations. Incidental waste determinations are  
2 evaluations of whether waste that is incidental to reprocessing can be  
3 managed differently than high-level waste based on the risk of the material  
4 rather than its origin.

5 The National Defense Authorization Act requires that the  
6 NRC, in coordination with the states of South Carolina and Idaho, monitor  
7 the DOE disposal actions to assess compliance with the performance  
8 objectives of Part 61. Insights from our Waste Incidental to Reprocessing  
9 activities have informed the development of the Part 61 supplemental  
10 proposed rule and associated guidance, as several of the changes in the  
11 proposed rule were approved for Waste Incidental to Reprocessing  
12 evaluations in 2006 by the Commission, including true analyses and use of  
13 modern dosimetry.

14 Next slide, please. We are currently monitoring the  
15 performance of disposal actions by DOE at three of its facilities, namely the  
16 Idaho National Laboratories tank farm facility, Savannah River site's F&H  
17 tank farms, and Savannah River site's Saltstone Disposal facility.

18 Our monitoring strategy for each of these sites is  
19 risk-informed and performance-based, and we continue to make progress in  
20 monitoring DOE disposal actions related to Waste Incidental Reprocessing.  
21 For each of these sites, demonstration that the DOE disposal actions will be  
22 consistent with the performance objectives of 10 CFR Part 61 requires the  
23 development of site-specific risk assessments.

24 Based on our review of these risk assessments, we have  
25 focused monitoring efforts on those aspects that are most risk significant to  
26 the performance of the site. Over the life of the sites, the information about

1 the site can change, for example the type of disposal structures. And  
2 consequently, our site-specific monitoring must evolve with these changes.

3 As an example, the picture on this slide is the Savannah  
4 River site's Saltstone Disposal facility. The first-generation disposal  
5 structures are the rectangular structures in the upper left. The  
6 second-generation disposal structures are the six smaller 150-foot diameter  
7 circular structure shown in the foreground and left. The latest generation is  
8 the 375-foot diameter circular structure shown in the center of the picture.

9 In addition, our site-specific monitoring plans have been  
10 useful to the Department of Energy. DOE has used our plans to prioritize its  
11 development of new modeling and research. The results of the DOE  
12 activities have been used to update the DOE site-specific risk assessments,  
13 and we have modified our monitoring plans accordingly in a risk-informed  
14 and performance-based manner.

15 Outside of Section 3116, DOE is continuing to request our  
16 consultation on waste activities at the Hanford Nuclear Reservation in  
17 Washington State. These consultations are intended to be very similar to  
18 the Section 3116 consultations. However, we do not have a statutory role  
19 or a monitoring requirement. All of these non-section 3116 activities are  
20 performed under interagency agreements with DOE.

21 Next slide, please. We are responding to changes in the  
22 national low-level waste environment, including an anticipated increase in  
23 the amount of low-level waste generated as more facilities transition into  
24 decommissioning status. One example of this is our work on the very  
25 low-level waste scoping study. We are conducting the scoping study to  
26 identify regulatory options for the disposal of anticipated large volumes of

1 very low-level waste associated with the decommissioning of nuclear power  
2 plants and material sites. This includes an evaluation of whether there's  
3 some portion of waste that is currently classified as Class A waste, low-level  
4 waste that can be safely disposed in Resource Conservation and Recovery  
5 Act, or RCRA, disposal sites. Pictured here is the U.S. Ecology Grand  
6 View, Idaho RCRA facility.

7 We have made progress in this initiative by holding public  
8 meetings in February and March 2018 seeking stakeholder input and  
9 perspectives, which we will consider as we develop recommendations for the  
10 Commission. We plan to submit a paper to the Commission with options  
11 and a recommendation by next spring.

12 This concludes my remarks. I will now turn the  
13 presentation over to Jim Trapp to discuss the decommissioning inspection  
14 function. Next slide, please.

15 MR. TRAPP: Thank you, Chris. Good morning,  
16 Chairman Svinicki and Commissioners. I appreciate the opportunity to  
17 share some regional perspective and successes with you today. We  
18 confirm that safety requirements are being met throughout the  
19 decommissioning process by reviewing decommissioning termination plans,  
20 conducting inspections, and monitoring the status of licensee activities. Our  
21 oversight activities have contributed to the safe and secure licensee  
22 performance.

23 In the course of the conduct of our work, we endeavor to  
24 be effective and efficient in the conduct of our programs. Regional  
25 inspectors play a key role in ensuring protection of the health and safety of  
26 workers and the public. We fully recognize that our people are our greatest

1       asset. The regions maintain a strong safety focus on staffing, training, and  
2       knowledge transfer to ensure that we have the inspectors necessary to  
3       successfully fulfill our important mission.

4                   Next slide, please. Our inspection activities related to  
5       decommissioning, as outlined in Inspection Manual Chapter 2561, have a  
6       clear focus on safety and security. In the upper left is a photograph of  
7       Peach Bottom Unit 1, one of our safe storage or safe store sites. Under  
8       safe store, a reactor facility is maintained and monitored in a condition that  
9       allows radioactive decay after which the plant is dismantled. Peach Bottom  
10      Unit 1 was a high-temperature gas-cooled reactor that operated until 1974.  
11      All fuel has been removed from the reactor and shipped to an off-site facility  
12      in Idaho.

13                   During inspections, we reviewed decommissioning  
14      organization staffing and the storage of radioactive material. Our inspectors  
15      also conduct walkdowns to assess the material condition of the facility.

16                   On the right side of the slide is a photograph of Fort  
17      Calhoun. This facility was permanently shut down in 2016. In addition to  
18      routine inspections, the regions also monitor the status of the facility  
19      throughout all phases of decommissioning. Region IV recently monitored  
20      the licensee's response to the Missouri River flooding to ensure compliance  
21      with regulatory requirements.

22                   Inspection Manual 2561 was revised in March 2018 to  
23      allow more efficient uses of inspection resources. For example, at  
24      co-located sites, such as Peach Bottom, the operating unit's procedures  
25      covering radiation protection programs is also used for the decommissioning  
26      site.

1                   Next slide, please. With respect to efficiencies that we  
2                   have gained in the decommissioning inspection program, we are following a  
3                   graded approach and, where appropriate, reducing the base frequency of  
4                   observational site visits at DOE decommissioned mill tailing sites from once  
5                   every five years to once every ten years. The graphic on the lower right  
6                   shows NRC and agreement state regulated uranium recovery sites  
7                   undergoing decommissioning. When possible, we conduct DOE site visits  
8                   in conjunction with other scheduled inspections in the geographic vicinity to  
9                   reduce travel costs and staff time. An example from Region IV was the  
10                  recently conducted home state mining inspection that was done in  
11                  conjunction with an observational visit at the DOE Blue Water  
12                  decommissioning mills tailing site, both of which are located in New Mexico.

13                  Region I combines decommissioning and interim  
14                  spent-fuel storage loading campaign inspections to minimize our travel costs  
15                  at both the Vermont Yankee and the Crystal River sites, as shown on the left  
16                  side of this slide.

17                  Next slide, please. Our inspection oversight at  
18                  decommissioning reactors has a positive impact on safety. This was  
19                  recently demonstrated at the decommissioning La Crosse reactor. In  
20                  December last year, a sample from an environmental monitoring well near  
21                  the reactor building indicated elevated levels of tritium. The positive sample  
22                  result was confirmed in February of this year when one additional well  
23                  sample indicated an increase in tritium concentration.

24                  From its investigation, the licensee identified that a  
25                  temporary ventilation system attached to the reactor building shown in the  
26                  photograph on the left was the likely source of the tritium. The picture on

1 the right shows, as highlighted by circles from left to right, the monitoring  
2 well, the excavated sump, and the temporary ventilation system.

3 Since there was a potential for exposure to site workers,  
4 our inspectors visited the site and verified that the licensee took prompt  
5 actions to stop work and evaluate the causes of the potential airborne  
6 tritium. Licensee corrective actions included bioassaying workers for the  
7 potential intake of tritium and initiating a groundwater monitoring  
8 investigation. Our inspectors monitored the licensee's activities and  
9 performed independent calculations related to the potential exposure and  
10 environmental impacts.

11 Based on the result of our inspection, we determined that  
12 there was minimal health and safety consequences. Our inspectors verified  
13 that a comprehensive evaluation was undertaken and actions were  
14 implemented to address the problem.

15 It's particularly important that our licensees keep a focus  
16 on maintaining a healthy safety culture. As such, we frequently discuss  
17 safety culture with senior managers during our site visits.

18 Next slide, please. Another significant focus of our  
19 inspection program is complex decommissioning sites. Our program  
20 includes all phases of decommissioning inspections before dismantlement,  
21 inspections during dismantlement and remediation, and final soil and water  
22 surveys after remediation. The Hematite fuel facility that recently completed  
23 decommissioning in Missouri provides a good example of all three phases of  
24 decommissioning. For over four decades, ending in 2001, the facility  
25 primarily produced highly-enriched uranium for the government and  
26 low-enriched fuel for the commercial nuclear industry.

1                   In December last year, the licensee submitted an  
2 application to terminate its license. Permission for on-site burials was under  
3 the governance of the Atomic Energy Commission regulations. On-site  
4 burials likely began in the late 50s and continued until 1970. Working from  
5 the left, the picture shows an aerial view prior to the start of dismantlement.  
6 The picture on the lower left shows the start of major remediation, and the  
7 upper right photograph shows the expansive nature of remediation including  
8 removal of legacy material. The final picture shows a current view of the  
9 site.

10                   Coming up on the next slide, I'll show an example of  
11 decommissioning inspection activities that took place at this site. Next  
12 slide, please.

13                   Last fall, our inspectors with the support of our contractors,  
14 Oak Ridge Associated Universities, conducted independent core bore  
15 samplings in two former radioactive material burial pits. The core bore  
16 sampling was undertaken to independently verify the results of the licensee's  
17 final status surveys of these areas for unrestricted radiological release.  
18 This enhanced sampling was in response to inspector concerns over  
19 controls to prevent the recontamination of releasable areas from water and  
20 sediment from adjacent contaminated areas.

21                   With the assistance of Oak Ridge, we surveyed soil from  
22 21 core bore holes. Based on the results of our surveys, we did not identify  
23 any radiological contamination that exceeded the NRC's approved release  
24 concentration limits.

25                   In the image on the left, you can see the two-inch core  
26 samples. On the right, the image shows the radiological logging of these



1 core samples. During the summer of 2018, we reviewed the final status  
2 survey reports and verified that the licensee's groundwater monitoring  
3 program complied with our regulations.

4 The regions had been effectively performing non-military  
5 radium inspections, coordinating closely with the involved states, and  
6 continuing to effectively communicate with property owners. I am pleased  
7 to report that this project is near completion. As Marc mentioned, to date,  
8 we have visited or dispositioned all but two of the unique site owner  
9 properties identified in non-agreement states, and we are working diligently  
10 with the property owners to gain access to the two remaining sites.

11 Shown in this slide is the floor of the former Benrus Clock  
12 Factory, one of several success stories. From our surveys of this building,  
13 we identified radiation levels that exceeded our hundred millirem per year  
14 action limit. The property owner, seeking to re-purpose the building,  
15 contracted with a licensed service provider to perform remediation. Radium  
16 contamination that existed for nearly a century has now been safely removed  
17 and the material appropriately disposed of.

18 Several other facilities are also pursuing remediation  
19 based, in part, of our involvement. We are continuing to work cooperatively  
20 with the property owners to address the remaining radiologic hazards  
21 presented by legacy radium.

22 Next slide, please. Throughout my presentation, it should  
23 be apparent that our greatest asset is our extremely talented and dedicated  
24 inspection staff. You've already heard various examples of value-added  
25 contributions made by our inspectors. The bottom line is we have  
26 highly-capable, knowledgeable individuals in the field every day making

1 significant contributions to radiological safety.

2 In this slide, I'm featuring just one of our many experienced  
3 decommissioning inspectors braving the mud, the cold, the heat of summer  
4 to make a positive contribution to our mission. This slide features Mark  
5 Roberts, one of our more experienced decommissioning inspectors, who  
6 recently earned the meritorious service award for his exceptional  
7 performance in implementing the decommissioning inspection program.  
8 The slide shows him at the Canonsburg DOE uranium mill tailing site, the  
9 University of Buffalo research reactor conducting our final walkdown, and the  
10 Department of Agriculture's low-level radioactive burial site in Beltsville,  
11 Maryland.

12 Next, I will discuss how we are capturing the knowledge of  
13 our experienced inspectors, like Mark, in preparing our next generation of  
14 inspectors. Next slide, please.

15 One of our biggest focus areas is developing the  
16 decommissioning inspection staff for the future. One aspect of our  
17 knowledge transfer program is the formal training obtained externally or in  
18 the technical training and professional development centers. We also  
19 frequently conduct informal training sessions that incorporate recent insights  
20 and operating experience.

21 A key aspect of our development program is teaming up  
22 our more experienced inspectors with our less experienced staff. On the  
23 right of the slide is an image of one of our most experienced inspectors  
24 teamed up with one of our junior inspectors at the nuclear ship Savannah in  
25 Baltimore Harbor. The Savannah is just starting the decommissioning  
26 process.

1                   Our inspectors have been instrumental in developing  
2 decommissioning inspector competency models, and we are looking forward  
3 to incorporating the new strategic workforce planning into our skills  
4 management and succession planning processes.

5                   Lastly, I want to highlight our effort to cross-train technical  
6 staff with experience in operating reactors to transition to decommissioning  
7 roles. This fall, we'll be adding a new inspector to our decommissioning  
8 branch that comes from our resident ranks. She'll be transitioning from the  
9 Oyster Creek reactor site and will provide helpful continuity and experience  
10 in the decommissioning oversight in our region.

11                   In conclusion, I appreciate the opportunity to have been  
12 able to share regional perspectives, successes, and opportunities with you  
13 today and will now turn the presentation back to Dan.

14                   MR. DORMAN: Thank you, Jim. Chairman Svinicki,  
15 Commissioners, this concludes the staff's presentation in this first panel, and  
16 we welcome your questions.

17                   CHAIRMAN SVINICKI: All right. In the order of  
18 recognition today, I will start us off. So let me begin by thanking each of you  
19 for your presentations and to your teams because I'm aware, in some cases,  
20 you've had folks help you prepare today, so I appreciate their hard work.

21                   Let me begin with just a comment and reaction to you, Jim,  
22 on the knowledge management. I appreciate very much the focus on that.  
23 That's been on my mind lately because of the uncertainty in the new reactor  
24 workload. But we've come through a period where NRC has developed  
25 these really good insights and experiences, and my view is, with that  
26 uncertainty, it almost increases our obligation to kind of capture those

1 insights into the regulatory program, whether or not there might be  
2 substantial activity in the near term, because if we let that go dormant and  
3 then we don't collect it, then we might miss a window there where people  
4 with really fresh experiences on Part 52, maybe even, arguably, Part 50,  
5 would have insights that we could strengthen the regulatory framework for,  
6 you know, for our successors, you know, 15, 20, 30 years from now. I'm  
7 sure they would appreciate if we took the time to do that.

8 So I see that as something that's worth the time and effort  
9 to do. In the case of decommissioning, we do know that that will be a  
10 growing workload. But I think, across the board, I've always been  
11 impressed with NRC's focus on knowledge capture and knowledge  
12 management, so I appreciate that you included that here today.

13 Maybe I'll just have a quick question for Mr. Dapas. You  
14 did present about the establishment of Wyoming as an agreement state that  
15 there was an effort prior to the successful conclusion of that agreement to  
16 align schedules and to do it in the smartest way possible. Is there anything  
17 that remains now, we're partway into October, in terms of just transfer of  
18 analytical work or anything? Are there just a few things outstanding? And  
19 you don't need to list them, but are they kind of well in hand with a date to  
20 be absolutely concluded or did the transfer well and truly occur by October  
21 1? I just don't happen to know which.

22 MR. DAPAS: Staff will correct me if I misspeak here, but  
23 my understanding is we have completed all activities to support the  
24 transition. There were some licensing activities that we hadn't fully  
25 completed. We did reach major milestones. We transitioned those to the  
26 state. We also implemented a memorandum of understanding with

1 Wyoming whereby we capture the efforts we've expended in terms of  
2 decommissioning so that the state doesn't have to re-engage regarding our  
3 regulatory review. Basically, the record stands, and then there are some  
4 activities that remain for the state to conduct. But I'm not aware of any  
5 additional licensing actions that we haven't completed, and we do strive to  
6 minimize the licensing workload that we need to transition to the state, and  
7 that's why we work closely and coordinate with the state and devote the  
8 resources necessary so that the state is starting without a large, you know, a  
9 significant licensing workload.

10 CHAIRMAN SVINICKI: Okay. And my question really  
11 was going to maybe some of the less substantive, just the mechanics of  
12 getting any kind of information or copies of things to them. It sounds like  
13 that was, we did careful preparation, so we were able to execute those parts  
14 of the transfer very readily. So if there's nothing terribly substantive that  
15 sticks out -- I know we obviously didn't complete, anytime you're transferring  
16 a regulatory authority, there's going to be work in process. My  
17 understanding is that we prepared for that, and it's generally complete and  
18 that's kind of how I interpret your answer. There may be a couple of kind of  
19 little administrative matters, but, beyond that, we planned for it, we executed  
20 it, and it is substantively transferred at this point.

21 MR. DAPAS: Yes, ma'am. And we also have indicated  
22 we are available to assist the state in whatever manner they may request as  
23 they go forward, as the state goes forward.

24 CHAIRMAN SVINICKI: Okay. I appreciate that.  
25 Turning to the non-military radium work, I appreciate that both John and Jim  
26 talked about different aspects of this, it was described as we're coming to

1 kind of nearly complete in terms of our responsibilities on non-military radium  
2 issues. I know that in the course of the site surveys and going out with the  
3 initial list that we had scoped there were a few additional locations that  
4 entered into the process because if you're in one area you might have  
5 developed evidence or information that leads you to say we might have to  
6 put a facility on the list.

7 Is the staff at a point, though, with this process that any of  
8 those types of discoveries that were you likely to have you probably had  
9 earlier in the program, and as you move towards completion what does that  
10 actually look like? Is it just kind of putting it into a, you know, a steady state  
11 where if we received information in the future we would activate a similar  
12 process, but we'll go kind of into suspension on any active work? Is that  
13 what it might look like?

14 MR. TAPPERT: Yes, Chairman. I think that's generally a  
15 good characterization. So we use the 47 sites as our metric that we usually  
16 talk about because that was that original population. As you know, there  
17 were a few developed leads as we were going through that process, and  
18 some of the non-agreement states actually volunteered additional sites for  
19 us to investigate. So we're working our way through that population, as  
20 well. It's much smaller.

21 And then once we visit all those sites and assess them,  
22 then I think we're going to be more in a reactive mode. If anything else  
23 pops up, we'll respond as appropriate.

24 CHAIRMAN SVINICKI: Okay. That was the term I  
25 couldn't think of, yes, because it's not a true suspension but you're just  
26 waiting to react to incoming identification of potential additional sites.

1 Another -- oh, yes.

2 MR. DAPAS: Just real quickly, just for clarification, there  
3 were 29 sites that involved 47 unique property owners. I just didn't want to  
4 leave the impression that there were 47 sites.

5 CHAIRMAN SVINICKI: Okay. Thank you for that. In  
6 another topic in the kind of decommissioning area, I think a couple of  
7 presentations touched on what I think of as kind of this 60-year time line for  
8 decommissioning, but we're moving into a maturity of nuclear program in the  
9 United States where I think now we're finding out that, having established  
10 the 60-year time line, there may be sites where there are ongoing activities  
11 that it gets a little more complicated in terms of phasing the  
12 decommissioning of things. I think that GE Vallecitos was mentioned, but I  
13 also think Three Mile Island was mentioned, as well, so maybe that was the  
14 staff had some recent consideration.

15 It's these sites that have a history such that there might  
16 have been something done very early in the atomic energy program of the  
17 United States but then, over time, missions evolved and in the case of power  
18 reactor sites you might have a site that has like a Fermi 1 but has a COL, a  
19 combined license, to maybe have a Fermi 3. So that footprint gets kind of a  
20 very long duration active period, and I would think, you know, if Vogtle 3 and  
21 4 move forward and complete their construction, I don't mean to cast any  
22 doubt on that, I'm just saying that they have to make some continued  
23 demonstrations in order for the regulator to agree that they will move into  
24 commercial operation. But you would look at Vogtle 1 and 2 and if Vogtle 3  
25 and 4 begin operations and operate for, well, I guess the argument would be  
26 at least 80 years, one would think, maybe a hundred. I don't know what the

1 outer bound is, and future commissions will have to address those matters,  
2 but you might have units that would be decommissioned over a long duration  
3 of having operating units nearby.

4 So I do appreciate. I know the staff has looked at the  
5 issue of exceptions to completing decommissioning in 60 years in cases  
6 where uniquenesses exist. It's my observation that I think that the  
7 Commission now and in the future is going to have more and more incidents  
8 of that, and I would just note that the nation, you know, does not yet have a  
9 disposal site for spent nuclear fuel that is in operation and, therefore, there  
10 may be materials at legacy sites for a much longer period than our  
11 predecessors who picked that 60-year number. I think that we may find that  
12 circumstances now and in the future challenge that a little bit.

13 So I just, I just mention that. It doesn't require a response.

14 I just, I think it's an issue of some complexity for the staff to have to take the  
15 circumstances we find ourselves in today and align them with the regulation  
16 that was established, I think, many decades ago.

17 The one last issue I'll raise is, Chris, you talked about the  
18 staff's work on the evaluation and development of a regulatory analysis and  
19 a regulatory basis in response to the state of Texas's query of some years  
20 ago about what we term greater than Class C waste. And the question that  
21 I had is that I was a member of the Commission, as were some others, at the  
22 date at which we established in our direction to the staff a sequencing to say  
23 do this work on Part 61 and then, once you're done with that, you know,  
24 move forward and perhaps have outreach or the establishment of your  
25 regulatory analysis and basis on GTCC. It's my memory of that time period  
26 that I would characterize the Commission did that for workload leveling, and



1 it did not have a true tie of saying you must do this before you do that. It  
2 was more a practical type of direction that said it's probably best for you to  
3 complete work on this and then have a follow-on activity on GTCC.

4 But, nonetheless, if my observation is accurate, some of  
5 the work on Part 61 has, and I acknowledge the Commission's direction is  
6 one of the causes of this, but it is taking a bit longer. So has the staff  
7 considered at all whether or not they would approach the Commission about  
8 lifting the artificial sequencing of that work? It's my understanding that the  
9 staff actually has quite a bit of progress that they've made on the GTCC  
10 question, and I ask the question because I'm worried that we're artificially  
11 holding up public engagement and getting feedback on where the staff  
12 landed on that. Would anyone like to give me just a quick sense is that  
13 something that you're thinking about or you might think about it? Mr.  
14 Tappert, would you like to respond?

15 MR. TAPPERT: Thank you, Chairman. Obviously, there  
16 is a great deal of interest in the greater than Class C waste disposal issue,  
17 and the staff is, as you said, making progress on our assessment and is  
18 preparing their draft regulatory analysis.

19 We still see some value in issuing that, more or less,  
20 contemporaneous with the supplemental proposed rule for Part 61 because,  
21 at least currently, the staff's thinking is we want to rely upon that framework  
22 to inform how the greater than Class C waste analysis can be done. So it  
23 could be decoupled. I mean, it's not necessarily inherently driven, but, at  
24 this point, I think there's value in doing that, and that's the current course  
25 that we're pursuing.

26 CHAIRMAN SVINICKI: And under the staff's notional

1 schedules, when would those both, if they continue to be coupled, what  
2 general time frame would that be?

3 MR. TAPPERT: Well, we're still seeking general final  
4 alignment on the supplemental proposed rule, but we expect --

5 CHAIRMAN SVINICKI: Just even, like, mid what year.

6 MR. TAPPERT: Hopefully, early next year.

7 CHAIRMAN SVINICKI: Okay, all right. Thank you for that. And  
8 I've gone over. I apologize for that. Our next questioning is Commissioner  
9 Baran. Please proceed.

10 COMMISSIONER BARAN: Thanks. Well, thank you all  
11 for your presentations and all your work. I had one follow-up question on  
12 the efforts to assess and remediate non-military sites with potential radium  
13 contamination. Marc and Jim and a couple of times the conversation  
14 mentioned that, of the original 47 properties, the NRC staff still needs to  
15 conduct two initial site visits in Connecticut.

16 Can you describe the challenges that you've had in setting  
17 up those two site visits and what you're doing to try to resolve those issues?

18 MR. TRAPP: Sure. One is probably not very  
19 challenging. We're going to get access. It's just a matter of it was a newer  
20 facility and we just have to work out the details with the owner. So I think  
21 one is fine.

22 The second one, we have information that indicates that  
23 there was radium parts to clocks and watches that a long time ago, 40 years  
24 ago, were dumped down a gopher hole. And the owner is aware of that,  
25 and he, you know, he's not too eager for us to come and do our surveys.  
26 You know, I think his, you know, I mean, these owners, the success of this

1 project is incredible, right, because if you're an owner of these properties,  
2 you know, we come in, we say, hey, you know, you might have radium on  
3 your property, we do our surveys. The first question is, you know, what's  
4 radium? We explain what radium is, and then he says, well, if you find  
5 radium you're going to take it home with you, right? And we say, no, we're  
6 not taking it home with you, and he says, well, what do I do with the radium,  
7 you know, and basically we say, you know, you get a licensed service  
8 provider to come in and the next question out of his mouth is are you paying  
9 for the licensed service provider to come in and take care of it, and we say  
10 no, but the good news is we're not going to make you apply for a license with  
11 the NRC.

12 So, you know, with all that, this one owner has handed us  
13 his lawyer's card, and we're going back and forth. But we think we have a  
14 success path, and we think we're going to bring him around. But, you know,  
15 the charm of our inspection team to get the other 27 people to be willing for  
16 us to come in, and some of these 30 apartments that are being occupied.  
17 You know, we sent guys and gals with survey instruments and we went  
18 through 30 apartments that were occupied apartments.

19 So, you know, I just think they need to be commended for  
20 their efforts, and we will get this one extra.

21 MR. DAPAS: The only thing I would add is we are  
22 coordinating with the state, and the state has various options that they can  
23 pursue in terms of access if they feel there's a public health and safety  
24 standard. So we're working with the state and trying to convey to the  
25 property owner that it would be in his best interest to allow us to conduct the  
26 survey.

1 COMMISSIONER BARAN: All right. Thanks for that  
2 update. I also wanted to ask about the Northeast Church Rock mine, which  
3 is the most contaminated uranium mine around the Navajo nation. It is  
4 proposing that the mine waste be placed above the existing tailings at the  
5 nearby UNC Church Rock mill site. This would require NRC to consider a  
6 license amendment request for the mill site.

7 Can someone give me an update on this project? Is EPA  
8 still preparing an environmental impact statement and what's the latest time  
9 line we think for a license amendment request to be submitted to us?

10 MR. TAPPERT: Thank you, Commissioner. That license  
11 amendment was actually submitted a little less than two weeks ago, so  
12 September 28th. So currently the staff is doing their initial acceptance  
13 review, and then, once that is completed, if it's found to be acceptable, we'll  
14 establish a review schedule and work accordingly.

15 COMMISSIONER BARAN: Okay. And do you have a  
16 sense, I don't know if there have been similar license amendment requests  
17 in the past or if this pretty unique, a sense of the general time line --

18 MR. TAPPERT: This is a unique application and, at least  
19 preliminarily, it's going to require an environmental impact statement which  
20 is, of course, a larger scope of review. So it's probably going to be in the  
21 two to three-year time frame.

22 COMMISSIONER BARAN: Okay. And did EPA end up  
23 preparing an environmental impact statement on this or no?

24 MR. TAPPERT: I don't have that information. I believe  
25 that environmental report was submitted with the license amendment.

26 COMMISSIONER BARAN: All right. Well, thanks for the

1 update on that. Let me ask about the very low-level waste scoping study.  
2 Is this something that the staff has already begun work on, the scoping  
3 study? And I guess then my kind of general question is I'm interested in  
4 hearing a little bit more about how you're evaluating whether there's some  
5 portion of Class A low-level waste that could potentially be safely disposed in  
6 a RCRA facility rather than at a low-level waste disposal facility? How are  
7 you approaching that, and what's kind of the scope of the scoping study?

8 MR. TAPPERT: Thank you for the question,  
9 Commissioner. So the going in premise was that our current regulatory  
10 framework is fully protective of public health and safety, so the questions  
11 that we're trying to ask are, are there opportunities to strengthen that  
12 approach and be more effective and efficient? And the driver for that is the  
13 large number of plants going into decommissioning, it's going to generate  
14 large volumes of very low activity, very low-level waste.

15 So we have started. We issued a Federal Register notice  
16 earlier this year. We received a number of comments from that. We have  
17 had public meetings both here and at Headquarters and the locales to  
18 receive comments. Currently, the staff is digesting that information.  
19 They're, not surprisingly, with anything associated with waste issues there's  
20 wide divergent perspectives on that. So we're currently evaluating that, and  
21 then we'll brief our management and present the results to the Commission  
22 early next year.

23 COMMISSIONER BARAN: Can you give us just a  
24 general sense? I appreciate that you have a lot of different stakeholders  
25 with a lot of different comments at public meetings or in written form. Can  
26 you give us a sense of kind of the nature of the comments? Are there a lot

1 of folks, you know, encouraging us to pursue this or --

2 MR. TAPPERT: Yes and no. So some people, as I said,  
3 think that the current framework is fully protective, you don't need to change  
4 a thing, and any time you undergo, because the ultimate, there's a number  
5 of things that could come out of it. The ultimate would be rulemaking, and  
6 the other side would be status quo, and everything is in the middle, right?  
7 So if you're going to undertake something as significant as a rulemaking, you  
8 really need to have a good value proposition for the end state is worth the  
9 investment to go through that process because it's non-trivial, as we all  
10 know.

11 So some people say it's not worth it. Other people say  
12 that it would increase transparency, it would be more efficient and effective,  
13 and absolutely the agency should go forward. So that's kind of the two  
14 horns of the sides of the argument.

15 MR. DAPAS: I will offer, having attended one of the public  
16 meetings that was conducted out in Phoenix in conjunction with the Waste  
17 Management Symposia, one of the issues is ensuring that stakeholders  
18 understand what it is versus what it is not. It is not an initiative to revisit  
19 below regulatory concern. It is disposal of Class A waste either at a  
20 disposal facility or a RCRA, not releasing the waste. And so it has taken  
21 some effort to ensure that any misconception regarding that is dispelled.

22 COMMISSIONER BARAN: Thanks. I appreciate that.  
23 That's all I have.

24 CHAIRMAN SVINICKI: Before I recognize Commissioner  
25 Burns, I would note that the screens in our meeting room have had the  
26 staff's last slide up, the acronym slide. Typically, in these meetings, we

1 would have a version of the stream, on the web stream of the individual  
2 speakers. Is there an issue? Are we web streaming?

3 MS. VIETTI-COOK: It's web streaming, and it's showing  
4 the Commissioners. But some reason, it's stuck on this inside this room.

5 CHAIRMAN SVINICKI: Okay. So this is not --

6 MS. VIETTI-COOK: We've been talking to them.

7 CHAIRMAN SVINICKI: -- but people on the internet are  
8 able to actually see something beyond the slide. That is a unique problem  
9 to the room?

10 MS. VIETTI-COOK: Yes.

11 CHAIRMAN SVINICKI: Okay, all right. And certainly  
12 everyone can hear the audio.

13 COMMISSIONER BARAN: Though the acronyms are  
14 fascinating.

15 CHAIRMAN SVINICKI: Yes, I think there will be a test  
16 later. Okay. Thank you. Please proceed, Commissioner Burns.

17 COMMISSIONER BURNS: Thanks for the presentations  
18 and an interesting scope of work. I'm glad, Mark, you mentioned the below  
19 regulatory concern because that was going to be one of my questions.

20 So obviously, this is maybe a rhetorical question that the  
21 Staff is taking a look at that and how that integrates in to evaluate the very  
22 low-level VLLW, I think it's called, very low-level waste, in terms of -- is there  
23 anything else that you want to comment along those lines?

24 MR. DAPAS: I would just mention that very low-level  
25 waste is a subset of, if you will, Class A waste so it has to be properly  
26 disposed of versus releasing a facility for unrestricted use.

1                   That's not what we're engaging in, we just recognize  
2                   there's a potential large volume. And when you look at Class A waste, it's  
3                   quite a, if you will, spectrum. It's I'll say a large bandwidth.

4                   COMMISSIONER BURNS: Thank you, because I know  
5                   having been here in the early 1990s, it was one of those significant  
6                   emotional issues with BRC at the time. So, thank you for that and I  
7                   appreciate the Staff's conscious addressing of that issue at the time.

8                   The radium decontamination and recovery issues from  
9                   these old sites, which is something we in effect gain with the Energy Policy  
10                  Act of 2005 is very interesting.

11                  Just to make sure I understand, the 29 sites, are these just  
12                  NRC, and in fact, I'll call it NRC states, so non-agreement states, is there  
13                  anything you can share about activities in agreement states at this point?

14                  Are they having some of the same issues or the scope of  
15                  the problems that have been identified?

16                  MR. TAPPERT: Thank you, Commissioner. So, if you  
17                  recall, when we kind of initiated this program a few years ago we identified a  
18                  couple of sites with radium contamination and we weren't sure what the  
19                  scope of that was.

20                  We actually hired a contractor to essentially do an Internet  
21                  survey or open-source record survey of where we might find radium  
22                  contamination. And the focus of that was on the non-agreement states  
23                  where the NRC had jurisdiction and responsibility.

24                  Through that process they had incidental collections of  
25                  sites there were in agreement states. So we provided those to those  
26                  agreement states, in some cases, the agreement states asked us can you



1 give us more information about that and we actually developed those leads a  
2 little bit further and the agreement states are working through those  
3 programs as appropriate within the context of being --

4 MR. DAPAS: If I could just add, we have had various  
5 webinars where agreement states such as Massachusetts have participated  
6 and shared their experience in cleaning up sites that had historic or radium  
7 use, and other agreement states have benefitted from the experience we  
8 have shared here.

9 So we have a general awareness of some of the efforts of  
10 the states but we have not been keeping, if you will, track of the number of  
11 facilities and what is the status of the states' efforts to ensure they identify  
12 contamination and clean it up?

13 COMMISSIONER BURNS: And I would suppose through  
14 the agreement state program and ongoing engagements, the OAS or the  
15 CRCPD may get some of these issues come up and I appreciate that's a  
16 good avenue if there are particular things that come up. And I do  
17 congratulate our inspectors in terms of their even-tempered and even-keeled  
18 and friendly demeanor in terms of engaging in this because when somebody  
19 knocks on your door and says I'm from the Government, I'm here to help  
20 you, and you find these things out, that's not always something you've  
21 exactly wanted to hear.

22 But I do appreciate some of the success we've been able  
23 to have to deal with these legacy issues which, again, are the result of  
24 legislation when we became responsible for discreet sources of radium only  
25 about 13 years ago.

26 And Mark, you mentioned in terms of an international

1 engagements and, of course, this year was an important meeting, the  
2 triangle of the joint convention on radioactive waste and spent fuel.

3 You said in terms of highlights in terms of interest, greater  
4 interest in the U.S. program. Could you give me some examples of what  
5 we're seeing in terms of interests from other countries in terms of our  
6 decommissioning experience or other aspects of the program on waste  
7 management?

8 MR. DAPAS: Sure, an example would be the French  
9 regulator ASN. Last year or I think it was two years ago, ASN regulators  
10 came to the United States and spent some time in Region 3. Cindy  
11 Peterson and I hosted that group.

12 We visited the Zion site, and then I had an opportunity last  
13 year and a reciprocal arrangement to go to France and observe some of the  
14 decommissioning sites.

15 And so we've talked, as an example, with the French  
16 regulators about our program and what has been our experience, and  
17 they've also shared their experiences.

18 And I found it particularly interesting the French efforts  
19 associated with decommissioning one of the gaseous diffusion plants and  
20 the challenges they faced. So that's an example of the exchange, and then  
21 we've had ongoing engagement via the Steering Committee with the Korean  
22 regulator regarding decommissioning experience.

23 So we're learning from the experiences of other countries  
24 and we are sharing ours. And I would offer that the sense I have is we are  
25 considered the premier regulators so the countries are particularly interested  
26 in what has been our experience to date. And we've talked about the new

1 business model and what is the oversight that we provide both in inspection  
2 space and licensing? And what is our clean-up criteria etc.? And then to  
3 what degree do we institute the international standards?

4 So that's just a flavor of some of the exchanges that we've  
5 had. But those are the two examples that come to mind.

6 COMMISSIONER BURNS: Is there anything in terms of  
7 the joint convention, in terms of the questions posed to the United States?

8 And I recognize unlike the convention on nuclear safety  
9 where we're really the lead at the table, the Department of Energy takes that  
10 role at the joint convention.

11 But from the perspective of NRC, were there any particular  
12 questions or issues raised or any of the questions on our country report that  
13 might be kind of interesting?

14 MR. TAPPERT: I would offer that I co-presented that  
15 report along with my DOE counterpart. And there were a number of  
16 questions about the high-level waste as countries talked about and are  
17 wrestling with that consent-based processing versus where do you site a  
18 facility?

19 So we received questions in that area. Regarding  
20 decommissioning, there was the business model here versus a licensee has  
21 to engage in more rubble-ization versus being able to ship larger quantities  
22 of waste if you own the waste disposal facility.

23 So there was discussions about that business  
24 arrangement but mostly questions specific to the country report associated  
25 with high-level waste. And then DOE was a bit limited in what they could  
26 communicate and there was particular interest in some of the lawsuits and

1 liability here with the nuclear waste fund, and that generated a fair amount of  
2 interest.

3 But nothing really significant in the context of  
4 decommissioning other than noting that there appeared to be an increased  
5 number of sites that announced that they were shutting down permanently  
6 before the expiration of their license and we were asked how we are  
7 adjusting to that change and the dynamic.

8 COMMISSIONER BURNS: Thanks, and actually, that  
9 segues to my other question.

10 In terms of what we call the, quote, new model or what  
11 seems to be an emerging model proceeding towards decommissioning fairly  
12 soon after permanent closure, how is that affecting how we assess our  
13 resources and what our projections have been?

14 Because if I sat here 10 years ago, maybe even five years  
15 ago, I might not have expected still a rather not lengthy but a longer period  
16 prior to going into decommissioning.

17 We're seeing that now with the plants that you've  
18 mentioned, Oyster Creek, Pilgrim, Palisades, I think even Indian Point at that  
19 point, which gets into one of those old sites. We've got old Unit 1.

20 How is that starting to shape your thinking about the  
21 resources that you have and how the resources that you might project that  
22 you might need?

23 MR. DORMAN: So, Commissioner, we've recently  
24 initiated an effort in anticipation of the FY21 formulation to look at exactly  
25 that.

26 Because as a plant closes, we have had kind of a set

1 number of down in the operating and reactor up in the decommissioning that  
2 was really focused on the licensing challenges in that transition to  
3 decommissioning and the type of exemptions and things that we hope will be  
4 no longer necessary once we get to the decommissioning rule next year.

5 But now we're looking at licensees and the cask  
6 manufacturer is moving to higher heat loads and earlier offloading from fuel  
7 from the spent fuel pools so you have more activities moving the site more  
8 aggressively into a decommissioning posture.

9 And then when you look at the entities that are coming into  
10 this new business model, they are looking at prompt decommissioning.

11 So, we're anticipating that there will be more activities  
12 engaged earlier in the process so we need to take a closer look at the  
13 project timeline and the level of the activities and the nature of the activities  
14 and where we need to be engaged to do our mission functions.

15 So we've initiated that look as part of our preparation for  
16 the 21 formulation.

17 COMMISSIONER BURNS: I think that's a good idea  
18 because I think this is, as I mentioned, an area where the landscape has  
19 changed in terms of what our engagement is. Thank you, Chairman.

20 CHAIRMAN SVINICKI: Thank you very much. Next we'll  
21 hear from Commissioner Caputo. Please proceed.

22 COMMISSIONER CAPUTO: Good morning. I'd like to  
23 start by commending the Staff for their efforts on the YME agreement state  
24 agreement. And in particular, polishing off to several licensing actions  
25 related to facilities in Wyoming.

26 I think that was an important piece of work that led to a

1 much smoother transition and I appreciate the Staff's work on that.

2 John, you mentioned the uranium recovery team is working  
3 to implement ten recommendations to improve licensing but at this point, we  
4 have three licensees, none of which are operating.

5 So how much licensing work do you anticipate going  
6 forward?

7 MR. TAPPERT: Obviously less I think. That task group  
8 was really put in place about a year or so ago when we still were trying to get  
9 these last ones through.

10 So we would try and benchmark with I would say the more  
11 mature licensing organizations, NRR and NRO, and try to import some of  
12 those best practices. So most of these things have been put in place.

13 We will continue them for the limited licensing actions that  
14 we do have going forward. Even facilities in standby will have some  
15 licensing actions for financial assurity and if they're trying to restore certain  
16 mod units, there are still amendments that are associated with that which  
17 require reviews. And we do have one licensee that still has a proceeding  
18 before the Atomic Safety Licensing Board, and if that's adjudicated then they  
19 may go into operation and there will be more licensing actions associated  
20 with that.

21 So clearly, the level of activity is less but it's not nothing  
22 and I think there are still benefits in trying to lock in the improvements that  
23 we've seen so far and also have some honest investments and guidance  
24 and infrastructure for knowledge management purposes and others going  
25 forward.

26 COMMISSIONER CAPUTO: So have you been able to

1 measure the benefits of those improvements or will it take more licensing  
2 throughput to really get a sense for the benefit?

3 MR. TAPPERT: So I think we do have some sense that  
4 we've been making progress. I mentioned in my remarks that we put in a  
5 new metric a couple years ago to look at how we were executing concise  
6 schedules.

7 We really didn't have a metric that we were tracking  
8 ourselves to before then so all our metrics were green and our  
9 self-assessment was very positive.

10 And yet, I think you would agree that at least some  
11 stakeholders might have had a different perspective of our performance.  
12 And so what we tried to do then was create a new metric to create more  
13 visibility for how we were executing and hold ourselves accountable for that.

14 And our old Executive Director, or former Executive  
15 Director, Vic McCree, would say that red is not necessarily bad. So you  
16 want to have metrics that are challenging and that give you information that  
17 help improve your program.

18 And I don't think we ever said red was good but we did do  
19 that, we were red the first year, we had a red quarter last year but we  
20 continue to improve. So, I think the story is we are seeing measurable  
21 improvement in our performance.

22 I think you can also see it in the time it was taking us to  
23 complete our safety evaluations. Some of the ones that we completed this  
24 year started over five years ago but the ones that we received more recently  
25 we were completing in 13 months, 16 months. So I think there are actual  
26 concrete evidence to show improvement, I think the Wyoming transition was

1 a great achievement for our Office and I'm proud of our contributions to that.

2

3 But part of me is a little bit sad because I think we were  
4 really starting to hit our stride in the licensing standpoint and we don't have  
5 that work going forward.

6 COMMISSIONER CAPUTO: Another question for you,  
7 John, on Part 61, the regulatory analysis for the proposed rule estimates a  
8 one-time undiscounted implementation cost of \$7.5 million and an  
9 undiscounted annual cost estimated for the industry at \$9.3.

10 The regulatory basis, however, does not provide any  
11 quantitative data related to how the new requirements improve safety or  
12 enhance protection of the public health.

13 Yet, the document states that the rules cost us because  
14 the regulatory initiatives enhanced public health and safety by ensuring the  
15 safe disposal of low-level waste that was not analyzed in the original  
16 regulatory basis.

17 How did you reach that conclusion without quantitative  
18 data on the improvement and safety?

19 MR. TAPPERT: So thank you for the question,  
20 Commissioner. So the regulatory analysis, we seek to capture all of the  
21 costs and all the benefits associated with the action and to quantify those to  
22 the maximum extent practicable.

23 And where we can't, we address them qualitatively. So, I  
24 think particularly in Part 61 we were very discreet about the cost, we can talk  
25 about what it takes to change the regulations, what it takes to do some of  
26 this analysis, what it takes for the regulator to reveal that analysis.



1                   The benefits are more to ensure that waste streams that  
2                   were not contemplated when the original rule was put in place are  
3                   appropriately handled and it's hard to put a dollar value on that and so that is  
4                   the struggle that we have.

5                   That's why we have tough jobs, that's why you have tough  
6                   jobs, it's to make those judgments about whether these regulations are  
7                   justified or not. So that is a basis for why we did that.

8                   I would also note that in the Commission's latest direction  
9                   to the Staff, we were tasked with strengthening that regulatory analysis to  
10                  also fully account for past-due cost to generators and processors.

11                  And in response to that, we actually issued a Federal  
12                  Register notice last year and held a public Meeting to get further input on  
13                  that regulatory analysis. That's been updated and will be issued with the  
14                  supplemental proposed rule for additional public comment.

15                  So we do the best we can, we try to quantify as much as  
16                  we can, and then we put all these documents out for public comment to  
17                  allow stakeholders to provide feedback as well.

18                  COMMISSIONER CAPUTO: Has there been this disposal  
19                  of some depleted uranium in the past, though?

20                  MR. TAPPERT: Yes, there has been but not --

21                  COMMISSIONER CAPUTO: Have you had basis for  
22                  comparison and evaluation?

23                  MR. TAPPERT: I think the challenge is the large  
24                  quantities that have been generated by the Department of Energy in their  
25                  arrangement activities so those have yet to be disposed of.

26                  And that was really the fundamental driver for why we

1 started this journey ten years ago.

2 COMMISSIONER CAPUTO: So another question with  
3 Part 61, Staff did not include a backfit provision in moving forward with the  
4 proposed rule. So operating reactors and fuel site facilities do operate  
5 under a backfit rule and have that measure of protection.

6 So we're in a situation here where some classes of  
7 licensees have backfit rule and others do not.

8 So, in making a recommendation and revising a proposed  
9 rule, why didn't the Staff include a recommendation to create that level of  
10 fairness and extend that production to another class of licensee when the  
11 opportunity presented itself?

12 Wouldn't it be fair for all licensees to have that same  
13 measure of protection?

14 MR. TAPPERT: I think certainly the fundamental principle  
15 behind the backfit rule is we want them to have requirements that are well  
16 justified and don't have undue regulatory burden. It's foundational to  
17 everything we do.

18 I don't have a good answer for you about the whether the  
19 provision was considered and discarded or not considered at all. And I  
20 wasn't around during the inception of the thing, of the rulemaking.

21 MR. DAPAS: I could offer the perspective that as you go  
22 through the rulemaking process there you provide a regulatory analysis and  
23 regulatory basis that includes a cost analysis associated with the regulatory  
24 basis to explain why the Staff has concluded that the benefits of the rule are  
25 cost-justified.

26 So there is a cost-benefit analysis associated with that

1 action and as John indicated, we strive to rely to the maximum extent on  
2 quantitative aspects but there times when we have to use qualitative  
3 aspects.

4 So I would offer that Part 61 supplemental proposed rule  
5 does include an analysis of why the Staff has concluded that the  
6 requirements associated with the rule are appropriate and would provide  
7 benefit relative to the cost.

8 COMMISSIONER CAPUTO: But under a backfit rule it  
9 would have to clear a threshold of significant increase in safety which hasn't  
10 been quantified. So it's not really equivalent in terms of the caliber of the  
11 analysis.

12 Would you agree?

13 MR. DAPAS: What I would offer is that there are disposal  
14 facilities there that could accept large quantities of depleted uranium that  
15 was not considered when the original rule was established. And so that's  
16 why the Staff has embarked on a rulemaking to require a site-specific  
17 analysis of that to ensure that public health and safety is not put at risk.

18 And so as I said, the rulemaking action explains why that  
19 rule is necessary versus relying currently on Part 61 which did not consider  
20 mixed-waste streams in large quantities of depleted uranium when it was  
21 constructed back in 1982.

22 MR. TAPPERT: I guess the only other thing I would add  
23 is the Staff is actually undergoing an initiative right now where they're  
24 retraining the Staff on the backfit rule to increase the knowledge base of  
25 everyone here.

26 And in that training, it comes out that there are parts that

1 do not -- some parts have backfit protections and some parts do not.

2 And one of the ones that do not is Part 30 and as a  
3 follow-up to that training, I was directed to actually a Commission paper in  
4 the mid '90s where that issue was explicitly considered of should Part 30  
5 licensees receive backfit projection?

6 And what the Staff recommended and what the  
7 Commission endorsed as the answer was not at the time. They did not  
8 support.

9 And the rationale was partially based on what Mark was  
10 saying was that the regulatory analysis process gave you largely similar  
11 protections.

12 And because of the diversity of those Part 30 licensees,  
13 defining what that substantial safety benefit in a quantitative manner had  
14 practical challenges.

15 So, for those reasons, they opted not to do the Part 30. I  
16 don't know if a similar rationale was involved in Part 61 or not.

17 COMMISSIONER CAPUTO: Thank you.

18 CHAIRMAN SVINICKI: Thank you, now we will hear from  
19 Commissioner Wright. Please proceed.

20 COMMISSIONER WRIGHT: Best for last. Good  
21 morning. So, Marc, I don't have any questions for you per se but I just want  
22 to thank you and the NMSS Staff for all the support you've given me in my  
23 Office over the last four and a half months.

24 That includes briefings, updates, the books and  
25 background and responses to our questions. So thank you for that.

26 John, it seems like your kind of popular today. So, I

1 appreciate the different initiatives that AGC is taking to increase the  
2 efficiency of our licensing processes.

3 A few weeks ago we heard what the operating reactor  
4 business line is doing and you spoke today about your program's efforts to  
5 leverage licensing best practices and improve reviews.

6 The efforts seem to focus on incremental improvements to  
7 the existing processes. I want to take it a little bit further. Did you consider  
8 any transformational changes and if so, can you speak about that for a  
9 minute?

10 MR. TAPPERT: Thank you, Commissioner. So, we've  
11 had a number of initiatives to try to improve our processes as you know.  
12 We had that benchmarking which I referred to which was just to try and  
13 adopt current best practices.

14 We've also within the last year done some crash programs  
15 to kind of look at everything we're doing to see if there's improvements that  
16 we can make including transformational changes.

17 It's a challenging area for the Staff to do and it's important  
18 and has been reinforced by the Commission and the EDO and the senior  
19 management. And we continue to look for opportunities to think of  
20 innovative ways to accomplish the mission in more effective and efficient  
21 means.

22 We have done some things that we have and my remark is  
23 we made a recommendation which the Commission endorsed by extending  
24 the license terms for recovery facilities. Is that transformational?

25 I'm not sure it reaches that far but certainly, those are the  
26 sorts of things that we're looking at. Are there more efficient ways we can

1 go about conducting our business to achieve the outcomes that we want?

2 MR. DAPAS: If I could just add one comment? We've  
3 had this discussion as a leadership team within NIMSS, what does  
4 transformational mean?

5 And for a number of folks, that means a whole-scale  
6 change in the way you do business and I would offer truth in advertising the  
7 changes that we've looked at have been more incremental, more innovative.

8

9 How can we be more efficient and effective with the  
10 current processes we have in place versus looking at a dramatic new way of  
11 conducting licensing?

12 We have been looking at the scope and level of detail  
13 associated with licensing reviews and what is necessary to reach a  
14 conclusion regarding reasonable assurance of adequate protection but one  
15 could say that's transformative in terms of our typical risk aversion and are  
16 we broadening the aperture here?

17 So for some, given our culture, one could say that's  
18 transformational but others have a different perspective on what does it  
19 mean to be truly transformational?

20 So we haven't looked at it in the context of a whole-scale  
21 change and how we do business, but where can we be more effective,  
22 efficient, and agile?

23 COMMISSIONER WRIGHT: So I understand and  
24 transformations are a hard word, very broad. Modernization is still part of  
25 innovative and transformation so are you working towards modernizing the  
26 way you do business compared to how we've done it over the past three,

1 four, five decades?

2 MR. DAPAS: I think we are and as you'll hear in the next  
3 panel when we talk about spent fuel storage and transportation and the pilot  
4 program with certificate of compliance and technical specifications and level  
5 of detail, I do feel that could be characterized as modernizing our regulation,  
6 which is consistent with the theme and the transformation, quote, unquote,  
7 commission paper.

8 So I do think there are actions that we have in place that  
9 you could characterize as becoming a modern regulator if you will.

10 COMMISSIONER WRIGHT: Thank you very much.  
11 Chris? First, thanks for the update on the low-waste program, low-level  
12 waste. You spoke about the DOE's modernizing strategy at DOE and  
13 specifically Savannah River site.

14 That's where I'm going with this because it is my home  
15 state. Can you expand on the NRC's role with respect to monitoring and  
16 what are our responsibilities in this area?

17 MR. MCKENNEY: In waste and scale-order processing  
18 we have a very limited role with regards to DOE. It is not a licensing role, it  
19 is purely a level of oversight. We provide recommendations while they're  
20 doing their draft waste determination back to the Secretary of Energy.

21 The Secretary of Energy makes the final determination  
22 after considering our recommendations and including them if they choose to.

23 After that, our monitoring program starts and we have a  
24 role to oversee what they're doing at the site limited specifically to disposal  
25 action so that would be we only care about the residuals in the high-level  
26 waste tanks, what is it, the final condition of the tanks.

1 Not how they do bulk waste removal. Bulk waste removal  
2 is not part of our purview or our needs. Even a transfer of liquid from the  
3 tank to the final disposal site, how they do the reduction processing at the  
4 salt waste processing facility which will soon open is outside of our purview.

5 We are concerned about the final disposition but that is  
6 only in oversight. And if we find that we don't have reasonable assurance,  
7 they will be meeting the performance for Part 61, our action is to have a  
8 discussion with Congress and the State of South Carolina in the most  
9 ultimate issue. We have not raised to that, we have done a lot of  
10 discussions about the uncertainties with DOE and the State of South  
11 Carolina to try to work through issues on these either remediations, or the  
12 development of new sites for the salt disposal facility.

13 COMMISSIONER WRIGHT: That's pretty interesting  
14 stuff. I may go offline with you on that later and talk a little bit more, learn a  
15 little bit more about it. So thank you.

16 Mr. Trapp? Thanks for being here today. Your  
17 presentation on the power reactor decommissioning spectrums, thank you  
18 for that.

19 One of the things we've heard from the licensees that have  
20 completed decommissioning under the current rule is that they're concerned  
21 that you may end up with a different end-state under the new rule with  
22 respect to staffing and inspection requirements.

23 I guess my question would be should the Commission  
24 approve the reactor decommissioning rulemaking? If we do, would you  
25 anticipate any changes to the inspection program and if so, what changes  
26 would you anticipate?



1 MR. TRAPP: I could take little pieces of that but I think  
2 the rulemaking would be these guys, not me.

3 But I think our inspection process for decommissioning  
4 reactors is pretty sound as is and I wouldn't expect any changes to the way  
5 we do that business. But the legal aspects would be best for these guys to  
6 talk about.

7 MR. TAPPERT: Yes, I think the impacts we're making are  
8 largely going to be felt in the licensing organizations.

9 It's largely structured to obviate the need for a number of  
10 exemptions and licensing actions which are currently being processed free  
11 to the decommissioning reactors and we'll be setting new requirements that  
12 are associated with the risk at various stages of things which will not require  
13 licensing activities.

14 COMMISSIONER WRIGHT: Thank you. I yield back.

15 CHAIRMAN SVINICKI: All right, well, I thank my  
16 colleagues for their questions and I thank all of the Staff for their  
17 presentations.

18 We are going to take a very quick five minutes here so let's  
19 try to start at 10:43 a.m. or maybe 10:45 a.m. if we're feeling generous.  
20 Thank you.

21 (Whereupon, the above-entitled matter went off the record  
22 at 10:39 a.m. and resumed at 10:45 a.m.)

23 CHAIRMAN SVINICKI: So we will begin with the Staff's  
24 second panel and, Dan, would you please lead us off again?

25 MR. DORMAN: Thank you, Chairman, and good morning  
26 again. The second panel will discuss activities involving the spent fuel

1 storage and transportation or SFST business line.

2 We intend to provide the Commission with a strategic  
3 discussion of the current spent fuel storage and transportation environment  
4 as well as the successes, challenges, and our strategies to address those  
5 challenges.

6 We continue to self-assess our program and make  
7 necessary adjustments to further risk-inform our regulatory approaches and  
8 ensure optimal efficiency and effectiveness.

9 The Office of Nuclear Regulatory Research is a key  
10 partner Office in this business line and it provides applied research and  
11 confirmatory studies for technical improvements and spent fuel storage and  
12 transportation, which then are integrated into the licensing work in the  
13 business line.

14 There's also continued interest in the licensing of  
15 consolidating interim storage facilities. We finished the acceptance review  
16 and docketed an application from Holtec International in February of 2018  
17 and also in June of this year Interim Storage Partners requested us to  
18 resume our review activities for a consolidated interim storage facility in  
19 Texas.

20 Both of these applications are continuing to generate a  
21 high-level of interest from the public and other stakeholders. This work is in  
22 addition to the steady baseline of work in this business line which is  
23 expected to continue into the foreseeable future.

24 In an environment of decreasing resources, we continue to  
25 maintain an appropriate focus on our safety mission while examining ways to  
26 transform how we do our licensing work to enhance our effectiveness,

1 efficiency, and agility.

2 Next slide, please. With me at the table again is Marc  
3 Dapas who will provide an overview of the business line to include licensing  
4 and oversight successes, challenges, and opportunities.

5 He will be followed by Michael Layton to my right, the  
6 Director of the Division of Spent Fuel Management in NMSS who will discuss  
7 the current spent fuel program environment, as well as some of our  
8 initiatives since the last time we briefed the Commission.

9 John McKirgan, to Michael's right, is the Branch Chief of  
10 the Spent Fuel Licensing Branch and he will discuss current licensing  
11 activities for spent fuel management, and then finally, Christian Araguas on  
12 my far left is the Acting Deputy Director for the Division of Systems Analysis  
13 in the Office of Nuclear Regulatory Research, and Christian will discuss  
14 spent fuel research activities.

15 So with that brief introduction, I will turn the presentation  
16 over once again to Mark Dapas. Next slide, please.

17 MR. DAPAS: Thank you, Dan. Good morning again,  
18 Chairman Svinicki and Commissioners.

19 As Dan indicated, we now turn our attention to the spent  
20 fuel storage and transportation or SFST business line and similar to how we  
21 approach the presentations on the decommissioning and low-level waste  
22 business line, I'll provide a brief overview of the breadth and scope of the  
23 business line activities and my colleagues will discuss selected topics in  
24 more detail during their respective presentations.

25 Next slide, please. The SFST business line continues to  
26 proactively engage in a broad range of activities including the licensing of

1 cask designs for the safe storage and transportation for spent nuclear fuel,  
2 certification of radioactive material and transportation packages, and  
3 preparation for future potential licensing actions involved alternative disposal  
4 and reprocessing strategies.

5 I would like to point out that there are more than three  
6 million shipments of non-spent fuel radioactive material each year. That  
7 material is primarily used in medical and industrial applications.

8 Approximately a third of our licensing resources are dedicate to  
9 certifying the transportation packages used for these shipments.

10 We continue to effectively accommodate the current  
11 workload, as well as prepare for future anticipated workload increases.

12 As Dan noted, we are currently reviewing two applications  
13 for consolidated interim storage facilities and four independent spent fuel  
14 storage installation, or ISFSI, license renewals. This is in addition to our  
15 routine licensing actions.

16 The SFST business line also includes the ISFSI inspection  
17 program executed by the regions. This inspection program involves the  
18 oversight of ISFSI operations including the loading of spent fuel, transfer of  
19 the storage systems to the storage pad, and inspections of the systems  
20 while in storage.

21 Also of note, safety culture remains an important focus of  
22 the program and as such, we continue to discuss safety culture with senior  
23 licensee managers during our visits to their sites. We continue to conduct  
24 lessons learned, self-assessment and knowledge management activities as  
25 part of our continuous improvement culture.

26 Past practices for licensing reviews involved a very

1 detailed level of review in determining if reasonable assurance of adequate  
2 protection was provided for in spent fuel storage and transportation  
3 applications.

4 As the licensing program has matured, our efforts are now  
5 focusing on modifying the scope of our licensing reviews to address the  
6 most safety-significant aspects of storage systems and transportation  
7 packages.

8 These efforts have been incremental in nature and have  
9 yielded improvements in the licensing reviews.

10 Next slide, please. As we mentioned in the last SFST  
11 business line Commission briefing in January, we continue to make progress  
12 on several regulatory initiatives.

13 The Managing Aging Processes and Storage or MAPS  
14 report was issued earlier this year for public comment.

15 This document is similar to the generic aging lessons  
16 learned report issued by the Office of Nuclear Reactor Regulation or NRR  
17 and its benefit has already been demonstrated in how vendors and licensees  
18 are using it to develop aging management programs, as well as in assisting  
19 our staff in identifying acceptable aging management approaches in  
20 licensing renewal submittals.

21 We addressed all public comments and the final report is  
22 pending publication later this year. In addition, earlier this year, we issued  
23 for public comment the draft NUREG 2224 on high-burnup spent nuclear  
24 fuel, which provides additional guidance in demonstrating the integrity of  
25 spent fuel cladding under storage and transportation conditions based on a  
26 set of tests performed on spent fuel rod segments. We will be making a

1 presentation on NUREG 2224 to the Advisory Committee on Reactor  
2 Safeguards in the spring of 2019.

3 In addition, the Electric Power Research Institute, the  
4 Department of Energy, and Dominion have entered into a demonstration  
5 project at the North Anna ISFSI of a loaded, high burn-up storage cask that  
6 is instrumented to provide thermal and other data over a ten-year project life.

7 We are gaining early insights on the thermal performance  
8 of the cask to better inform our thermal modeling efforts. We continue to  
9 make progress in our efforts to improve licensing of dry cask storage by  
10 applying risk insights to the regulatory review process.

11 Since the regulatory issue resolution protocol involving a  
12 graded approach to licensing reviews was initiated, we received an  
13 application for a pilot review that will support the appropriate level of detail  
14 required for the Certificate of Compliance and Technical Specifications.

15 We expect this initiative to make the storage licensing  
16 process more effective. This effort would reduce the number of  
17 amendments needing NRC review and approval by adjusting the level of  
18 information included in the technical specifications. We are  
19 also updating our guidance to allow expanded flexibility by the industry in  
20 implementing changes to storage systems and components using the  
21 10CFR 72.48 process, which is the storage equivalent of 10 CFR 50.59.

22 We completed our review of Nuclear Energy Institute  
23 guidance document 1204, entitled Guidelines for 10 CFR 72.48  
24 implementation, Revision 1, and starting working on the draft regulatory  
25 guide that would endorse this guidance document.

26 In conjunction with these initiatives, we planned to gather

1 insights and learnings from transformation efforts involving the operating  
2 power reactor program and will incorporate them into our spent fuel  
3 management, licensing, and oversight programs where appropriate.

4 Let me now turn it over to Michael Layton who will provide  
5 an overview of the current spent fuel environment.

6 Next slide, please.

7 MR. LAYTON: Thank you, Marc. Good morning,  
8 Chairman and Commissioners. The current spent fuel program  
9 environment and the foreseeable workload for our business line is steady, if  
10 not increasing slightly.

11 The new business model for decommissioning power  
12 reactors that John Tappert described earlier has begun to influence the  
13 amendments and applications for spent fuel storage certificates.

14 Next slide, please. The operational benefit and economic  
15 desire to move spent fuel from spent fuel pools to dry storage in shorter time  
16 periods has resulted in licensing action requests for storage systems that  
17 can safely handle the higher heat loads.

18 This is one of the drivers for our anticipated workload  
19 increase. In addition, our support of NRR's activities and accident-tolerant  
20 fuel continues.

21 We are well engaged in the associated working group  
22 activities and are conducting early outreach to licensees for them to consider  
23 how the potential new cladding and fuel designs could impact fresh fuel  
24 transportation as well as spent fuel transportation and storage.

25 Our workload for storage certificates and ISFSI renewals is  
26 expected to increase beginning in 2020 as the number of certificates

1 approach the end of their initial 20-year term.

2 We're also expecting several certificate holders to submit  
3 early renewal applications. These early renewal submittals have not been  
4 included in the budget forecast for 2019, however, we do feel that the  
5 business line can accommodate these additional reviews within the  
6 forecasted 2019 budget by effective management of our technical review  
7 resources and by leveraging contractor expertise.

8 The contract for the Center for Nuclear Waste Regulatory  
9 Analysis, or CNWRA, was renewed in March of this year for both the charter  
10 and non-charter work.

11 Most of the charter work is within our business line for non  
12 Yucca maintain waste-related activities. Leveraging CNWRA expertise  
13 under the renewed contract will help us to effectively manage our technical  
14 review workload including renewals.

15 Next slide, please. We continue to seek opportunities for  
16 continuous improvement in our licensing and oversight processes through  
17 self-assessments, lessons learned, reviews, and knowledge management  
18 activities.

19 As Marc mentioned, we continue to focus our efforts on  
20 risk-informing our licensing process. Our licensing review of the pilot  
21 amendment that we received for applying the graded approach to technical  
22 specifications contained in a storage certificate of compliance is nearing  
23 completion.

24 The desired outcome of this pilot is to retain the more  
25 safety-significant aspects of the design in the technical specifications and  
26 maintain other safety features in the safety analysis report which supports



1 the certificate.

2 We expect that other certificate holders will likely follow  
3 suit with similar amendments, which should ultimately reduce the number of  
4 amendments requested for design modifications.

5 Certificate holders may make appropriate design  
6 modifications to items that are not contained in the technical specifications  
7 by using the change process in 10 CFR 72.48.

8 With increased flexibility in the 10 CFR 72.48 process, we  
9 rely on the key oversight role of the Regions in assuring the spent fuel  
10 storage is conducted safely.

11 Regional inspectors and technical staff from Headquarters  
12 work together when inspectors identify potential design changes that may  
13 not have been appropriate for the 10 CFR 72.48 change process.

14 We continue to identify training, knowledge management activities  
15 to provide for continuous improvement in our licensing and oversight  
16 processes, including seminars on work being conducted by the Office of  
17 Regulatory Research.

18 In addition, research has provided us with insights and  
19 information that has enabled us to resolve various technical issues. For  
20 example, research addressed uncertainties presented by data gaps with  
21 respect to the high burn-up fuel performance.

22 Specifically, the work provided a basis for our Staff to  
23 narrow the impacts of those uncertainties and reduce the need for  
24 consequence analyses for high burn-up fuel in transport by providing better  
25 technical information for both industry and NRC reviewers to make safety  
26 decisions. Christian's presentation will provide other examples of insights

1 obtained from research efforts that can support the resolution of technical  
2 issues in our licensing programs.

3 Let me now turn the presentation over to John McKirgan.

4 MR. MCKIRGAN: Thank you, Mike. It is a busy time in  
5 the SFST business line. There is a heavy licensing caseload and we are  
6 carefully allocating resources to complete the work.

7 Over the next few minutes I'll described our current  
8 licensing activities, discuss some of the strategies we're employing to  
9 successfully address the licensing caseload, and describe some of the  
10 challenges that we have overcome in performing this part of the Agency's  
11 mission.

12 Next, I'll take some time to discuss the status of the  
13 consolidated interim storage facility license applications, discuss some of our  
14 outreach efforts, and update you on our license renewal activities.

15 Finally, I'll briefly mention the important oversight  
16 inspection activities, particularly in the area of spent fuel storage renewals.  
17 Next slide, please.

18 First, let me describe the licensing caseload in the  
19 business line. There is a continuing steady supply of incoming case work.  
20 To meet this workload in FY19, the budget for licensing case work is 62 full  
21 time equivalent, or FTE, and \$4.35 million in contract dollars.

22 With these resources, we're able to meet the workload  
23 challenges that are before us. An important tool we use to enable agility in  
24 working close to 60 licensing cases simultaneously is good communication  
25 with our stakeholders.

26 Through proactive and regular communication with

1 licensees and certificate holders, we are actively seeking and obtaining  
2 advanced notice of upcoming licensing actions and industry schedule drivers  
3 that inform our workload prioritization.

4 We periodically interact with the industry to discuss  
5 developments and changes in licensees' schedules. This approach has  
6 served us well in enabling the timely completion of a number of emergent  
7 licensing actions meeting industry needs.

8 However, even as our proactive engagement with the  
9 industry, unanticipated schedule changes can and do occur, and we work  
10 diligently to mitigate those challenges.

11 While maintaining our focus on our safety mission, we are  
12 able to dynamically reallocate resources in response to unanticipated  
13 developments such as accelerated reactor decommissioning schedules or  
14 unforeseen amendments to transportation package designs needed to  
15 support the safe shipment of nuclear material like cobalt 60 sources.

16 The current licensing case load has a wide range of  
17 complexity both technically and logistically. In terms of resources, cases  
18 vary from straightforward transportation certificate renewals to complex new  
19 consolidated interim storage facility applications. As discussed at the last  
20 Commission Meeting for this business line, we continue to see a number of  
21 more technically challenging licensing submittals reflecting the industry's  
22 move towards larger capacity storage canisters and higher decay heat limits  
23 in storage and transportation certificates.

24 With the advanced analysis capabilities that Christian will  
25 talk about later and the resources provided, we're able to meet these  
26 challenges and ensure the continued safe storage and transportation of this

1 licensed material.

2 Next slide, please. A major focus area for the SFST  
3 business line has been the review of two consolidated interim storage facility  
4 applications. On the slide depicted in the lower right is a conceptual graphic  
5 of the proposed Waste Control Specialist site.

6 In the lower left is the proposed Holtec facility. You may  
7 recall that waste control specialist application was initially docketed for  
8 review in April of 2016, then in April of 2017 the Applicant requested that we  
9 temporarily suspend our review.

10 The suspension on such a short notice created a challenge  
11 for us but we were able to quickly move to preserve the work products that  
12 had already been developed up to that point and shift our resources to other  
13 important casework.

14 In March 2018, a new joint venture called Interim Storage  
15 Partners was formed between the Waste Control Specialists and Orano, an  
16 international nuclear supplier.

17 By maintaining regular communications with waste control  
18 specialists during the suspension of the application review, we were able to  
19 promptly resume our review activities when the Applicant requested us to  
20 re-initiate our review in June of 2018.

21 With advanced awareness on the timing of the restart, we  
22 were able to reassemble the majority of the review team and find new  
23 reviewers in the new instances where some staff had left the Agency.

24 The detailed safety, security and environmental reviews in  
25 both applications are ongoing. We are currently budgeted with the  
26 resources necessary to conduct both of the consolidated interim storage

1 facility licensing reviews.

2                   These reviews involve 20 to 30 individuals addressing a  
3 broad range of technical disciplines from criticality to seismology. We work  
4 across the Agency to obtain critical skills housed in partner offices.

5                   For example, the Office of Nuclear Security and Incident Response  
6 performs our security and emergency plan reviews, the Office of Nuclear  
7 Reactor Regulation performs our financial reviews, the Office of New  
8 Reactors supports us by providing geotechnical expertise, and the Office of  
9 Nuclear Regulatory Research provides the expertise in the area of  
10 computational fluid dynamics.

11                   Later, Christian will further elaborate on the essential  
12 support being provided by his Office. When appropriate, contractors  
13 supplement our technical resources, for example, environmental reviews for  
14 the consolidated interim storage facility applications are supported by the  
15 Center for Nuclear Waste Regulatory Analysis, which provides access to  
16 national experts with necessary skillsets to perform work-like cultural  
17 resource surveys.

18                   The current schedule for the consolidated interim storage  
19 facility safety, security, and environmental reviews presumes timely and  
20 high-quality responses to requests for additional information.

21                   With timely and high-quality responses, we anticipate being able to  
22 complete the safety and environmental reviews for Holtec by July of 2020  
23 and Interim Storage Partners by December of 2020.

24                   Next slide, please. The work on the consolidated interim  
25 storage facility applications has illustrated the importance of our outreach  
26 and communication activities.

1                   As we implement the NRC's principles of good regulation  
2                   and adhere to our Agency values including openness, we have worked  
3                   diligently to perform our mission efficiently and effectively while  
4                   simultaneously seeking to educate stakeholders about our processes and  
5                   learning from members of the public about their concerns.

6                   As part of the environmental review process, we've  
7                   conducted four public scoping meetings for the Interim Storage Partners  
8                   application, and six public scoping meetings for the Holtec application.

9                   Each meeting was accompanied by an open house where members  
10                  of the community were invited to come and speak to members of our Staff  
11                  and ask questions about the NRC and the proposed consolidated interim  
12                  storage facility projects.

13                 While challenging at times as some stakeholders have  
14                 deeply-held concerns about these projects, I found these meetings to be  
15                 extremely rewarding and critically important to fulfilling the commitment we  
16                 have as an Agency to be open and transparent in how we conduct our  
17                 regulatory processes.

18                 Where necessary, we have augmented our outreach  
19                 activities to accommodate a significantly increased engagement from  
20                 interested parties and external stakeholders for both consolidated interim  
21                 storage facility applications.

22                 Timely responses to written inquiries, additional scoping  
23                 meetings, and government-to-government interactions with the New Mexico  
24                 State legislature are examples of expanded opportunities to discuss the  
25                 Agency's mission and explain our processes.

26                 In response to these inquiries, we have updated our

1 communication tools such as posters and brochures and will continue to  
2 adapt our outreach efforts to address areas of confusion or concern about  
3 the Agency, its mission, and the projects under our review.

4 Next slide, please. Another example where exercising our  
5 agility and response to a dynamic external environment is spent fuel storage  
6 license and certificate renewals.

7 Through our interactions with licensees and certificate  
8 holders, we have good planning information covering the next five to ten  
9 years of planned renewal submittals. This has been the subject of prior  
10 presentations in our business line briefings. We have been working for a  
11 number of years to enhance our review processes in the area of renewals.  
12 As Marc mentioned earlier, we have issued the managing, aging processes  
13 in storage or MAPS report to enhance our renewal guidance and to make  
14 the licensing process more efficient.

15 We are now working through the process to consider  
16 endorsing an industry-proposed format and content guide for aging  
17 management, NEI 14-03. These processes enhancements have already  
18 demonstrated increased efficiencies in the reduction of number of requests  
19 for supplemental or additional information. For example, we've received  
20 three license renewal applications which were accepted and docketed  
21 without any requests for supplemental information.

22 In the area of renewals, business conditions can  
23 sometimes cause unanticipated schedule changes for the business line as  
24 demonstrated by some ISFSI renewal applications being submitted by  
25 licensees much earlier than originally planned.

26 Through continued engagement with renewal Applicants

1 and continued implementation of our enhanced guidance, we anticipate that  
2 we will be able to accommodate these early submittals within our allotted  
3 resources. We will communicate promptly if that outlook should change.

4 We are actively managing the resources through the use  
5 of our scheduling tool, the Storage and Transportation Information  
6 Management System, or STIMS.

7 We continue to improve our workflow management  
8 capabilities to allow frequent checking and adjusting of resources as  
9 including casework demands shift.

10 There are four renewals currently under review, Rancho  
11 Seco, Trojan, Three Mile Island 2, and Humboldt Bay, with the latter three  
12 coming in two to five years earlier than expected.

13 In addition, we are engaging with renewal Applicants early  
14 in the process through pre-application Meetings and leveraging CNWRA  
15 resources to assist the technical reviews of renewal applicants.

16 Turning now to our important oversight role, to date we have  
17 performed the first of five planned inspections under a temporary instruction  
18 to gather information on licensee aging management programs and enable  
19 us to develop a high-quality inspection procedure.

20 We continue to monitor industries' activities including their  
21 inspection techniques and development of an operating experience  
22 database to capture the results of their aging management program  
23 inspections.

24 I'll now turn it over to Christian to discuss the vital support  
25 his Office provides to the business line.

26 Next slide, please.



1                   MR. ARAGUAS: Thank you, John. Good morning,  
2 Chairman. Good morning, Commissioners. Thank you for the opportunity  
3 to discuss with you the important work that the Office of Nuclear Regulatory  
4 Research conducts in support of the spent fuel storage and transportation  
5 business line.

6                   Consistent with our office mission, Research provides  
7 NMSS with the technical advice, tools, and information that helps that office  
8 resolve safety issues, make sound regulatory decisions, and promulgate  
9 regulations and guidance. Next slide, please.

10                  In general, program offices such as NMSS will seek  
11 support in technical areas from Research through the user need process.  
12 Through this process, a technical issue and its regulatory application are  
13 defined. The user need process documents the tasks, deliverables,  
14 estimated resources, and the schedule for the completion of the requested  
15 tasks that are needed to address the technical issue.

16                  The process is intended to ensure effective  
17 communication, coordination, and cooperation between Research and the  
18 requesting office and ensures that the right regulatory research is being  
19 conducted.

20                  Most recently in May of this year, Research accepted a  
21 user need from NMSS which consolidated all research activities being  
22 conducted for the SFST business line through Fiscal Year 2020 in four key  
23 technical areas: thermal performance of dry cask storage system designs,  
24 aging management associated with dry cask storage, renewal reviews, spent  
25 fuel cladding performance and criticality safety.

26                  Resources for the remaining research activities in these

1 four areas are estimated at about 2 FTE and 600,000 for Fiscal Year 2019,  
2 with a slight increase in 2020 and most planned activities wrapping up in  
3 Fiscal Year 2020. This low level of resources has prompted us to look for  
4 opportunities to work with the Department of Energy and industry on  
5 research activities that could enhance our regulatory programs.

6 Now I would like to spend the remainder of my time  
7 discussing the specific research activities, which includes cooperative  
8 research programs underway we are performing for the SFST business line.

9 Next slide, please.

10 During our last SFST business line brief, we highlighted  
11 some of the challenges that innovative cask design concepts and casks with  
12 higher heat loads present when performing the licensing review of spent fuel  
13 casks' thermal performance. Both industry and the NRC staff use advanced  
14 computational tools, including computational fluid dynamics, or CFD, codes  
15 that assess the thermal performance of a storage cask.

16 In some cases, the uniqueness of the design or innovative  
17 features of a cask present us with technical questions, necessitating the  
18 need for a confirmatory analysis of the applicant's thermal analysis. The  
19 figures on this slide depict temperature profiles resulting from a CFD thermal  
20 analysis of a dry shielded canister, and are shown for illustrative purposes of  
21 the staff's capabilities.

22 Calculations using CFD codes are complex and require  
23 highly skilled and experienced users to produce meaningful analysis. We  
24 have technical expertise and the CFD software packages used by most  
25 applicants and designers and perform confirmatory calculations to verify the  
26 applicant's thermal analysis results.

1                   These confirmatory calculations assist us in making the  
2 regulatory determination of reasonable assurance of adequate protection.  
3 This support is the one area of the SFST business line user need that is  
4 expected to continue beyond fiscal year 2020. Next slide, please.

5                   Of note, operating reactor licensees are pursuing higher  
6 spent fuel discharge burnups. We also see an industry trend developing  
7 involving accelerated decommissioning schedules, which result in moving  
8 the fuel from the spent fuel pool into dry cask storage more quickly. Both of  
9 these developments result in the need to store spent fuel with higher thermal  
10 loads.

11                   In the cases where applicants submit storage system  
12 design changes to accommodate these higher thermal loads, the accuracy  
13 of the thermal models' ability to predict cladding temperatures of dry cask  
14 storage system designs is a significant technical issue. This is important  
15 because cladding temperatures are used to evaluate cladding integrity  
16 through the storage cycle.

17                   Carefully measured data sets generated from testing of  
18 full-size casks or smaller cask analogs are widely recognized as vital for  
19 validating thermal models and establishing confidence in the predictive  
20 capability of the model.

21                   Historical data was developed with fuel at lower thermal  
22 loads, resulting in the use of significant safety margins to overcome the  
23 inherent uncertainty in the predictive accuracy of models at these higher  
24 thermal loads. Typically, the technical reviews for these storage  
25 applications would be lengthy and would result in multiple rounds of  
26 questions, which is not very efficient.

1                   Therefore, recognizing the need for improved data, we  
2 entered into a cost-sharing agreement with the Department of Energy to  
3 have Sandia National Laboratory, or SNL, conduct a series of well-controlled  
4 tests using a single prototypic geometry, boiling water reactor fuel assembly  
5 inside of a pressure vessel, an enclosure to mimic the thermal hydraulic  
6 responses of dry storage casks.

7                   The photo on this slide demonstrates the setup that SNL  
8 used to conduct the tests. The data collected is intended to be used for  
9 validation exercises with thermal codes and computational fluid dynamics  
10 simulations. SNL has completed all testing, and the associated draft  
11 NUREG is currently with the Office of Administration for publication.

12                   We are currently conducting the validation studies using  
13 the data generated by Sandia National Laboratory, and we expect to issue a  
14 final report next year. Next slide, please.

15                   In addition to the dry cask simulator testing I described, we  
16 are participating in a thermal modeling program led by the Electric Power  
17 Research Institute, or EPRI, which also includes participation by the  
18 Department of Energy, the U.S. national laboratories, vendors, and utilities.  
19 This program is focused on assessing thermal modeling uncertainties and  
20 ultimately increasing the accuracy of thermal simulation approaches.

21                   The program involves a comparison of submissions from  
22 four modelers and a blind, benchmark study with measured temperature  
23 data coming from the High Burnup Cask Demonstration Project, which used  
24 a TN32B dry storage system instrumented with thermocouples and loaded  
25 with used pressurized water reactor fuel at the North Anna Power Station.

26                   The combination of results from both the SNL dry cask

1 simulator and the EPRI thermal modeling program, along with the validation  
2 exercises being conducted, should enhance the predictive capability of  
3 thermal models used by the applicants and NRC staff, and should help to  
4 identify and quantify uncertainties inherent in these models.

5 With more accurate models and uncertainty quantification,  
6 we will be able to more efficiently complete safety reviews. Applicants will  
7 also be able to reduce unnecessary margins incorporated into their designs.

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

9 MR. DORMAN: Thank you, Christian. Chairman, this  
10 concludes our presentation, and we welcome your questions.

11 CHAIRMAN SVINICKI: All right, once again I will begin  
12 with the question period. Let me begin by saying again thank you to you  
13 and your teams. These are very interesting topics that you've teed up. I  
14 likely have more than the time will allow, but leaves the topics for others.

15 Let me begin by saying I do think that these strategic  
16 programmatic overview meetings are a wonderful opportunity for me to be  
17 reminded of the role of the Office of Nuclear Regulatory Research. I  
18 appreciate, I mean I know well the user needs process and things that  
19 Christian gave us a summary of.

20 But I think it's going on somewhat outside the  
21 Commission's view on a day-to-day basis. But it is a really integral licensing  
22 and research dynamic of going back and forth. So the Commission has not  
23 had a meeting purely on the research program in some years, is the other  
24 thing that was triggering in my mind.

25 I'm sure the Office of Research is now not happy they're  
26 going to be rewarded for their participation in this meeting by me proposing

1 to the Commission that we think about it. And we do receive something  
2 very valuable. The Advisory Committee on Reactor Safeguards of course  
3 looks at the Agency's research program. But I would posit that that is more,  
4 I think, as a body of research work to support the regulatory program.

5 I'm not sure that it would or does, to my knowledge it does  
6 not, explore some of the mechanics of how we organizationally are  
7 approaching the development and the evolving nature of the research as a  
8 body of work going forward. And that would be something more internal to  
9 the NRC that I think in its governance role the Commission might have some  
10 interest in.

11 So it may be that taking that kind of look at it, I'm not going  
12 to say it needs to be done maybe as frequently as these programmatic  
13 reviews, but it might something on an intermittent frequency that would just  
14 allow the Commission to be either convinced that everything's working well,  
15 or perhaps direct the exploration of some new dimensions to the research  
16 program.

17 That being said, I also appreciate, Christian, that you  
18 emphasized a bit that there are opportunities for the NRC research not to  
19 have to all be conducted in a vacuum. You talked about leveraging work at  
20 the national laboratories, the Department of Energy, so other  
21 taxpayer-funded work that is going on.

22 I am of a view that done well, and by being done well I  
23 mean with the regulatory input being part of the plan and design in the  
24 beginning, so we would stipulate our needs of why would we be participating  
25 in this work. And then having the right intrusive oversight of the conduct of  
26 the research and experience, meaning where we can be able to be there

1 and observe and have our experts there.

2 I think it's possible done in that way to preserve the  
3 independence of the safety conclusions that we need to arrive at. I don't  
4 think, and nor do I think there's research resources available for NRC to be  
5 able to conduct all the experiments singularly as the single funding source.

6 And I don't believe that, again, with these kinds of, this  
7 framework of our participation, I don't think it's necessary for purposes of  
8 independence to mean that we have to replicate or redo. The other thing is  
9 that we face a potential futures that would have a lot of technology variation  
10 that we don't confront right now.

11 And so the notion that we would have the time to conduct  
12 a second confirmatory round of all ongoing work is probably not terribly  
13 practical. So I think that you've highlighted something important there, and I  
14 just, I wanted to chime in on that.

15 I've got a number of topics here, but something that was  
16 spread in some of the presentations, which I think you weren't really  
17 highlighting but it caught my mind is the use, that we do have emergent work  
18 that comes forward that we weren't planning on. You mentioned some of  
19 the license renewals were coming in earlier than you thought. I'd be curious  
20 to what you might attribute that. I don't know, maybe it's just changed  
21 planning by the licensees.

22 But in some instances, the mitigating measure that we  
23 have available to us was contractors to supplement. Now, I'm not in any  
24 way startled that we use contractors. It's well known, and there's nothing  
25 different or novel about that. Commissioner Caputo, I will commend her.  
26 She's been taking some detailed looks at some of our funding and budget

1 execution.

2 And she pointed out to me something, and I appreciate her  
3 diligence on this. Is that because we get our budgets late, or not this year  
4 but in previous years, sometimes they've been quite into the fiscal years,  
5 sometimes nearly halfway through or more than that before we have a final  
6 budget determination.

7 As a result, you know, there are a number of  
8 forward-funded support contractors. Could I ask, is the, so can you use the  
9 mechanism of that then, if they are significantly forward-funded and they are  
10 a technical contractor that does safety evaluation work for us, is that a  
11 mechanism through which you can be assured that you could accommodate  
12 emergent work, or?

13 MR. DORMAN: So I'll good with my good lawyer answer.  
14 It depends. So as long as it aligns with the purposes for which the contract  
15 was let, we have that flexibility. I would note that the forward-funding is not  
16 just for the presumption that we won't get a budget until four or six months  
17 into the year.

18 Forward-funding accommodates the, a number of different  
19 attributes of various different types of contracts, but it also addresses even  
20 when we have a budget on time from the Congress and the President, by the  
21 time that is then allocated to the Agency and then distributed to the  
22 allowances and then gets out to the contract. So it provides --

23 CHAIRMAN SVINICKI: Well, and that may be clear --

24 MR. DORMAN: It provides some flexibility for all of that.

25 But --

26 CHAIRMAN SVINICKI: I was, appreciate that correction,



1           because it's a fact to not cause. I didn't mean to depict it as a cause, but in  
2           my time here, it has been true that an observation of CFOs and others has  
3           been that in the absence of a final enacted level, this is the phraseology that  
4           was used early in my time here is there's a tendency in execution to take  
5           your foot off the gas.

6                         Okay, so I meant it as an effect. I'm not saying it's any  
7           way kind of a notion that we withhold. But you don't have your final enacted  
8           level, so your propensity to lean in to full 100% execution is diminished, and  
9           I think that's just human nature. And there's probably some prudence in  
10          that as well, because we don't want to have a deficiency.

11                        With that being said, I wondered, you know, does this  
12          allow you, is it one of the mechanisms through which again, and some of our  
13          support contractors are fairly general. They help with safety analyses of a  
14          kind.

15                        MR. DORMAN: Right.

16                        CHAIRMAN SVINICKI: So if we have more work in that  
17          area, it would, as you note, for the purpose for which the contract was let  
18          and the money was appropriated.

19                        MR. DORMAN: And so yes, that's an option, and we  
20          would address that the way we would address any add/shed/defer process  
21          looking at the priorities of the work that was already on our plate relative to  
22          the unexpected work and allocating resources accordingly.

23                        CHAIRMAN SVINICKI: One thing that is clear by the  
24          presentations we have been working on for a while, and even I, I don't know  
25          that I would have seen the broad expansion into higher burnup fuels and  
26          consequently the amount of work there.

1 I know we have a longstanding colleague here in the  
2 audience that I worked with technically on this issue early in my career.  
3 And so there's been an effort to explore all dimensions of the possible safety  
4 consequences of moving to higher burnup fuel.

5 That being said, we're seeing, I think, an interest in it  
6 beyond even what I might have predicted years ago. So I think that that is  
7 important. And again, I've forgotten more of my technical background than I  
8 can remember at this point in time, but back when I did real work, you know,  
9 it is very challenging.

10 I look at the timeframes within which now licensees and  
11 others want to move things out of the pool, spent fuel out of the pool and into  
12 dry storage technology. I mean, for whatever we may think about pool  
13 storage, it allows a superior or a very, very confidence-raising level of  
14 cooling of these things.

15 So it is a materials challenge, and I think that that materials  
16 work in research space and to draw safety conclusions, often you want to  
17 run experiments of some level of duration in order to have the confidence to  
18 make those determinations. So I appreciate, it looked like the  
19 consequences of moving to high burnup fuel were kind of spread all across  
20 the programs that you talked about today, and I appreciate that we're taking  
21 that head on.

22 I think I'll just close with one kind of stray issue. In the  
23 Commission's last meeting on these topics, which was the, our SRM was in  
24 February of this year, there was Commission guidance, which I understand  
25 the staff will be responding to in December.

26 But it said, Staff should look at the frequency for updating

1 guidance documents and consider how best to balance the value of  
2 incorporating lessons learned in periodic updates with maintaining the  
3 stability of the program, as well as consideration of the resources required  
4 from both staff and stakeholders.

5 I understand you are looking at that, and we will be  
6 receiving something soon. But as I sit and hear the briefings of this panel  
7 and the panel before, it does remind me how one of our principles of good  
8 regulation is that the regulatory framework in general should be stable  
9 unless there is a need, a substantive need for us to be modifying something.

10 So I look forward to what the staff will bring forward on that point.

11 Did you want to make some comment on that?

12 MR. DORMAN: Just a brief note that the staff, in their  
13 efforts to address that SRM, that SRM came in the context of this business  
14 line. But we also had that discussion, in the nuclear materials users  
15 business line Commission meeting, we had that discussion in the context of  
16 operating reactors in the Agency action review meeting.

17 So the staff is looking at that issue across the enterprise,  
18 not just for this business line.

19 CHAIRMAN SVINICKI: Okay, thank you very much.  
20 Commissioner Baran.

21 COMMISSIONER BARAN: Thanks, thank you for your  
22 presentations. I appreciated the detailed discussion of the staff's efforts to  
23 reevaluate the technical basis for the allowable peak cladding temperature  
24 limit for dry casks.

25 Christian, you explained the staff's looking at this because  
26 licensees and vendors are submitting applications for design changes that

1 would involve higher heat loads that approach the previously approved  
2 temperature limits. And you talked about the work that staff's doing with  
3 Sandia and EPRI to refine the thermal modeling in order to reduce  
4 uncertainties.

5 Based on the work that's been done so far, I know this is  
6 all ongoing and there are different elements of it, do you have a sense at this  
7 point of how feasible it will be to achieve this goal of significantly reducing  
8 the modeling uncertainties?

9 MR. ARAGUAS: Yes, thank you for your question,  
10 Commissioner Baran. So let me focus it on the dry cask simulator  
11 experiment that we conducted with, in partnership with the Department of  
12 Energy and Sandia, because I think in that experiment, the focus was to try  
13 and capture a number of the design features of the applications that we see  
14 coming in.

15 So it looked at or simulated above-ground systems, it  
16 simulated the temperatures seen in below-ground systems much like the  
17 Holtec system used at SONGS. And I think if you were to ask the staff,  
18 they'd tell you that the data that's coming out of there is of high quality and  
19 should help to refine our modeling capabilities.

20 But more importantly, I think the focus is to enhance our  
21 guidance, our tools and instructions for how to conduct or how to develop a  
22 model, such that the industry can enhance their modeling capabilities to  
23 impart more realism, and ultimately what they submit to us, such that we  
24 have confidence when we do our reviews that the temperatures we're seeing  
25 are realistic and as seen through the experiments that were conducted.

26 COMMISSIONER BARAN: And it sounds like for the

1 Sandia piece, the final report on that's expected next year.

2 MR. ARAGUAS: So we had the, so it's two parts to it.

3 COMMISSIONER BARAN: Okay.

4 MR. ARAGUAS: The actual data that was generated from  
5 the experiment is in a NUREG currently that's awaiting publication. So we  
6 think that's any time now that should go out. The next step will be to do the  
7 actual validation studies and to document that.

8 I think the staff's plan is to document that in their CFD best  
9 practices guidelines, so it'll discuss the validation exercises as well as refine  
10 the instruction set that both the industry and the staff would use for  
11 enhancing its modeling capabilities.

12 COMMISSIONER BARAN: Okay, and another piece of  
13 this you talked about is the high burnup cask demonstration project at North  
14 Anna, and how that plays into this effort. What's the timeframe there for the  
15 completion of the EPRI study that will use the data from the instrumented dry  
16 cask at North Anna?

17 MR. ARAGUAS: So we have been, I think, we have been  
18 going, we have a copy of a draft report from EPRI that we've been working to  
19 resolve comments on. So I think we're nearing resolution of the staff's  
20 comments on those, so I would expect before the end of the calendar year  
21 that we would see the results of that experiment.

22 COMMISSIONER BARAN: Okay, and not just a question  
23 of time but just to understand the sequence of all this, when do you think  
24 you're going to be in a position to pull it all together then to quantify and  
25 reduce the uncertainties with thermal modeling?

26 MR. ARAGUAS: So I would go back to my earlier

1 response. I think we'll start to see the benefits in reducing the uncertainties  
2 once the staff has completed its validation and made available the data. So  
3 I would anticipate that we would start to see changes in modeling  
4 capabilities that we would see through applicant submittals by the end of the  
5 fiscal year.

6 COMMISSIONER BARAN: Okay.

7 MR. ARAGUAS: Once we have the information out.

8 COMMISSIONER BARAN: Did you want to add  
9 something?

10 MR. DAPAS: Yeah, just one thing to add, Commissioner.

11 I had the opportunity of course to see the cask demonstration project at  
12 North Anna, along with our South Korean regulators. And then attend a  
13 Used Fuel Working Group meeting where there were, a presentation was  
14 provided that showed that the thermal models are conservative when you  
15 look at the comparison of what that model predicts relative to the actual  
16 parameters, the temperature measurements you're seeing at the  
17 demonstration project.

18 At least the industry's view was that the models have a fair  
19 amount of conservatism here. And so it's with a positive outlook that we're  
20 going to be able to reduce the uncertainties here in using the models, which  
21 will facilitate more efficient reviews of the licensing actions.

22 COMMISSIONER BARAN: Okay, thanks. I also wanted  
23 to ask about NRC's materials inspections of independent spent fuel storage  
24 installations. Some way, maybe Jim Trapp would be the person to have,  
25 oh, he's even getting up. Well, I was just going to ask, you know, whoever  
26 wants to jump, if Marc or Jim, can someone briefly describe the inspections

1 that are currently performed at ISFSIs? Just a general overview of that.

2 MR. TRAPP: You know, there's different varieties of  
3 ISFSIs. Some that are far away from the reactor, some that are associated  
4 with the reactor. I think the ones you're most concerned about is like the,  
5 probably the Yankee Rose, Connecticut Yankee, Maine Yankee.

6 And basically our inspection process would be once every  
7 other year, we make a trip up through New England, usually in the fall when  
8 the leaves are out, and we hit one unit per day. So we will take two  
9 inspectors, possibly a security for being a third, and we'll do one site a day,  
10 making our way up through Maine and then back down.

11 COMMISSIONER BARAN: Okay. And can you just talk,  
12 I mean, in a general sense what's the, what are we looking for in the  
13 inspections, what's the purpose of the inspections?

14 MR. TRAPP: Yeah, you know, a lot of it is, as you're  
15 probably well aware, there's a lot of public anxiety over spent fuel storage.  
16 So I think the ultimate goal is to have an inspection program that we can rely  
17 on that we can tell our public stakeholders you know that hey, we're there,  
18 we're looking at it.

19 But specifically what we would look at is radiation  
20 protection for the site workers. You know, security and the site workers at  
21 the site. We'd be looking for any type of offsite radiation monitoring that  
22 they do, so any water, any offsite monitoring.

23 And we also look at the condition of the ISFSI pad. You  
24 know, I don't know if you've been to Connecticut Yankee, but there's some  
25 delamination of the some of the surface of that concrete. So you know,  
26 we'll follow those type of actions through their corrective action program.

1 COMMISSIONER BARAN: Did you want to add  
2 anything?

3 MR. DAPAS: I think we also look at the fire protection  
4 aspect.

5 UNIDENTIFIED SPEAKER: Absolutely.

6 MR. DAPAS: And I would offer from a security standpoint  
7 with the standalone ISFSIs, you do evaluate the ability to detect, assess,  
8 and respond and reliance. You have memorandums of understanding with  
9 local law enforcement. I'm talking about the away from reactor ISFSIs.

10 COMMISSIONER BARAN: How different is the inspection  
11 regime if it's onsite of an operating reactor?

12 MR. TRAPP: You know, if it's an operating reactor, we  
13 would do less, because the radiation protection programs are already in  
14 place, so we'd already be looking at that.

15 COMMISSIONER BARAN: Got you.

16 MR. TRAPP: So we could take advantage, we leverage  
17 that.

18 MR. DAPAS: We do observe the cask loading operations,  
19 though. We, and there are aspects where we have specialized inspectors  
20 from the region, and then there are times where we rely on the Resident  
21 Inspectors. But you know, it's not every loading operation, but we do look at  
22 enough to develop a comfort level that the licensee is following their  
23 procedures.

24 MR. TRAPP: That would be every other year for about a  
25 week.

26 COMMISSIONER BARAN: Sounds like it's not very labor



1 intensive.

2 MR. TRAPP: It's not.

3 COMMISSIONER BARAN: Is the most labor intensive  
4 part of it the loading inspection?

5 MR. TRAPP: I would say the most labor intensive is  
6 probably when they're pouring concrete, doing the first part, doing the pre-op  
7 testing for the ISFSI. So the first time through, that would be the most labor  
8 intensive. And that could be like a couple inspectors, three inspectors for  
9 up to three weeks.

10 COMMISSIONER BARAN: Okay.

11 MR. TRAPP: When they're doing the initial loading.

12 COMMISSIONER BARAN: And in his presentation, Mike  
13 discussed how increased design modification flexibility for the dry cask  
14 licensees will kind of increase our reliance on oversight to make sure that  
15 any design changes are appropriate. How do the inspections we're talking  
16 about here play into that?

17 MR. LAYTON: You know, the way the program is set up,  
18 the licensees will submit summaries of all of their 72.48 analyses to us here  
19 in headquarters and we do a screening of those. And based on the  
20 screening, if there's something that does look like it is questionable, we do  
21 reach out to the Region.

22 And whenever they plan to do their next 72.48 inspection,  
23 that's something that's highlighted in the inspection planning to go out and  
24 examine that.

25 Also, when the inspectors go out on their routine  
26 inspections to look at 72.48s, oftentimes there may be some of those

1 analyses that are much more technically involved than the inspectors are  
2 readily prepared to examine onsite. And that's when they get to reach back  
3 into our technical reviewers and able to determine whether, what the  
4 licensee did or what the vendor did was appropriate or not.

5 So it's very much of a cooperative effort on those types of  
6 inspections for those flexibilities.

7 MR. DAPAS: I'd just like to add we're looking at increased  
8 flexibility with the use of the 72.48 process. You know, we're looking at  
9 endorsing the industry guidance document NEI, I think it's 12-04. And  
10 we've had a lot of engagement with the industry regarding method of  
11 evaluation here.

12 So I would offer initially with that increased flexibility, we  
13 would want to conduct additional inspection sampling to validate  
14 independently that that 72.48 guidance is using as, is being used as  
15 expected. You know, that we have a shared understanding of how that  
16 guidance should be applied.

17 So I would expect some degree of increased inspection in  
18 that area, but, you know, I wouldn't expect a continued increase in inspection  
19 activity as we gain additional operating experience, if you will, with the use of  
20 the revised guidance. And it's like the reactor oversight process in the  
21 context of a smart sample. Some changes are more involved than others,  
22 and some changes do require NRC review and approval.

23 COMMISSIONER BARAN: And it sounds like just taking  
24 a step back, I mean this may be a situation where, you know, oversight,  
25 NRC oversight has several elements. You know, there's the licensing side,  
26 there's the inspection side.

1                   If we have more flexibility on the licensing side, if folks  
2                   don't have to come in for a license amendment to make certain design  
3                   changes per the provisions, we're kind of leaning a bit more of that on the  
4                   inspection side to make sure that, you know, anything that's happened there  
5                   is safe. Is that a fair way to think about?

6                   MR. DAPAS: I would agree with that. I do want to make  
7                   sure, though, wouldn't want to leave you with the impression that, you know,  
8                   we're speaking out of both sides of our mouth here in terms of, you know,  
9                   more efficient in licensing space and we compensate for that in inspection  
10                  space, you know.

11                  The inspection oversight, you know, what is the  
12                  appropriate level there, you know. So I just want to make sure we're not  
13                  leaving you with the impression that we are looking at maintaining to the  
14                  same degree of you know, regulatory oversight here between licensing and  
15                  inspection.

16                  Where there's opportunities for increased efficiencies in  
17                  inspections, we'll implement those. Where there's opportunities for  
18                  efficiencies in licensing, and I do think these initiatives do present  
19                  opportunities to exercise increased flexibility with the licensing function.

20                  MR. LAYTON: I would also offer that anytime that there's  
21                  adjustments in a program, whether it's licensing or oversight, in the near  
22                  term, in the near field, there's always going to be some run time that needs  
23                  to happen, both with staff and with vendors and licensees, for them to  
24                  understand what's going to be appropriate for them to implement those  
25                  programs.

26                  And that's where our outreach in our regulatory

1 conferences and other meetings in providing our insights and essentially our  
2 understanding in a training kind of manner can help out with this to keep  
3 from having, lack of a better term, expansion of oversight hours.

4 COMMISSIONER BARAN: All right, well, thank you for  
5 the discussion.

6 CHAIRMAN SVINICKI: Thank you. Commissioner  
7 Burns, please proceed.

8 COMMISSIONER BURNS: Thank you again for the  
9 presentations. I want to signal my agreement with the Chairman's  
10 comments in terms of the research program, looking for opportunities to  
11 leverage cooperatively while, you know, preserving, you know, our equities  
12 and our interests. And I think it's a good thing, and I think that this has been  
13 a good discussion on a couple areas here.

14 I know we also, reminds me I think in the last business line  
15 meeting on operating reactors, you were here too in terms of it's another  
16 area where we're able to leverage either, you know, through the international  
17 cooperation or other aspects. So I think looking for those opportunities will  
18 certainly help us as we go along.

19 I may come back to the 72.48 issue, few questions in  
20 terms of that. But maybe the first, I want to try to understand, talked about  
21 the early, quote, early renewals or early requests for renewal. And I'm  
22 trying to get a handle on that. How are they early?

23 I know for example, with the, you know, with the operating  
24 reactor you can come in 20 years before. Now, they're 40 years licenses,  
25 and I think it's, what is it, 20 years prior for a renewal? So I'm trying to  
26 understand the landscape here, because I just, I don't really have sort of the

1 details.

2 So why is it two to five year, quote, early? And what's,  
3 and from what you all understand, what's driving that?

4 MR. McKIRGAN: So let me start. So we do interact with  
5 the applicants and we do, we had planning information. There are actually  
6 two populations that we're talking about there, the ISFSI renewals, and then  
7 there's the certificate renewals.

8 COMMISSIONER BURNS: Okay.

9 MR. McKIRGAN: And there are provisions on what  
10 constitutes timely renewal. And so you have to come in an appropriate  
11 time. It's two years and 30 days, if I'm not mistaken. So there's two  
12 populations there on renewals, and we had laid, we actually cut from this  
13 presentation a slide that we had provided in the prior presentations on the  
14 bow wave.

15 I'm not sure if you reflect back in 2020, there were a  
16 number. And so through our planning, and this is the information we had  
17 used in our budget formulation, and it was that recognition of that spike in  
18 2020 of renewals that really helped motivate us to get our guidance in place.

19 And my predecessors in years past worked aggressively to get the  
20 guidance in place, because we really recognized that that was going to be a  
21 challenging time.

22 So we had laid all that out, and now we have discovered  
23 that we have had a few renewals, and so I think both we and the industry are  
24 gaining experience in this process. And it's been my discussions with some  
25 of the counterparts that they're recognizing some of the lead time they need  
26 to implement their parts of the program.

1                   And they have other kind of business decisions and  
2 follow-on activities that they need to work out. For example, with the  
3 vendors, they have to work with their general licensees to put procedures in  
4 place and programs. And so I think they are seeing that amount of work  
5 and bringing some of their applications in sooner than even they had  
6 originally anticipated.

7                   Recognizing that there is a fair bit of work on the back end  
8 to implement the aging management program, just getting the procedures  
9 and then the other items in place.

10                  So I think there is a variety of business interests  
11 associated with these decisions. But in general, we are seeing them come  
12 in earlier than we had originally envisioned. And Mike, I'll let you.

13                  MR. LAYTON: And I would offer it's almost each case is  
14 unique unto itself. For example, there's one site that's undergoing  
15 decommissioning wanted to come in early with their renewal for the ISFSI  
16 simply as a matter of convenience, where they could utilize the staff that they  
17 already had onsite doing the decommissioning to help with this.

18                  So there was an operational consideration for them to  
19 come in early to better utilize their own staff resources.

20                  Another one involves a canister or a COC coming in early  
21 to support a licensee's desire to enter into aging management earlier for the  
22 COCs that they have onsite to meet some commitments that were made with  
23 State and local governments to do aging management before the term of the  
24 COC came up. So again, each one is almost unique.

25                  COMMISSIONER BURNS: Okay, okay. Is it, I think from  
26 what John is saying is that as a, quote, legal matter is it certificates of

1 compliance? It's only a 30-day prior? So it's the classic APA timely  
2 renewal provision.

3 MR. McKIRGAN: But this, the ISFSI license is two years.  
4 So there's two different --

5 COMMISSIONER BURNS: But it's two, they have to be in  
6 two years. It's sort of like, yeah, it's sort of like with operating reactors  
7 again. They have be in, I think, what, five years, yeah, something like that.  
8 It's adjustment. Okay. That helps.

9 I want to go back to the 72.48 and some of the issues you  
10 talked about in terms of making the licensing more efficient. And I think  
11 some of the questions Commissioner Baran raised sort of touch on this.  
12 But can you give me maybe an example or two of how in effect reforming  
13 some of the license provisions that shifts more to the 72.48-type process,  
14 what some examples might be.

15 Because I know, I mean we have this, you know, this issue  
16 with, the 50.59 provision is you know, long, I think as AEC era. And it  
17 again, it helps, it is, the idea is to balance between where we need a real  
18 regulatory footprint. Well, not so much footprint, but regulatory touch on  
19 changes, versus those things where licensees can make the change.

20 Because frankly, it's an economy in some respects  
21 because we can't look at everything. We don't have the resources, we  
22 never expect to. And we shouldn't expect to look at those things that are  
23 less significant. So with that preface, I'd be interested in knowing what are  
24 some specific examples and how that's made the process from your  
25 perspective more efficient.

26 MR. LAYTON: No, I appreciate that, thank you. The one

1 aspect that comes to mind is over time, practices have evolved, both on the  
2 licensee's side and the reviewing staff side, to put an awful lot of information  
3 in the technical specifications. Some of that may not be the most safety  
4 significant part of the design.

5 In other aspects, much more prescriptive requirements on  
6 the design may have been put into the technical specification. It may not  
7 have been needed in there. As an example, there's a table called the Fuel  
8 Qualifications Table that outlines what the decay heat and various other  
9 parameters of the spent fuel are. Very prescriptive table.

10 There are some certificates that have that embedded into  
11 the certificate, into the technical specifications themselves. Others do not.  
12 So we look very closely at that in trying to challenge ourselves in  
13 understanding what's the safety significance of that particular table, and why  
14 did it need to be in the technical specifications.

15 And where we're coming out with that is that certain  
16 operating parameters, and John will have to help me with some of those, the  
17 radiation decay heat and others that can be outlined as parameters solely in  
18 the technical specifications and not to the specificity of the fuel allocation or  
19 the Fuel Qualifications Table.

20 So the Fuel Qualifications Table can be placed in the SAR,  
21 and if the licensee wishes to do some changes to loading patterns or things  
22 like that need a modification to the Fuel Qualifications Table, they can do  
23 that on their own and not come in for an amendment. Because as long as  
24 those changes don't go outside the bounds of the parameters that are laid  
25 out in the technical specifications, that could be conceivably accomplished  
26 by the 72.48.



1 So it's that type of detail that we're looking at adjusting.

2 MR. DAPAS: So in addition to the degree of specificity  
3 and the technical specifications in the certificate of compliance, because with  
4 that degree of specificity, right, the licensee wants to make a change but it's  
5 captioned in the technical specifications, then there's needs to be a licensing  
6 action.

7 COMMISSIONER BURNS: Right.

8 MR. DAPAS: There's the aspect of in conducting a 72.48,  
9 what are the things you consider. And method of evaluation is an area.  
10 For example, previously there could be a change to a calculational  
11 parameter or assumption that would necessitate a licensing action. And is  
12 that truly what was intended with the 72.48 process, you know.

13 So, what, you know, regarding method of evaluation, we've  
14 had significant engagement with the industry to reach alignment on what is  
15 allowed, if you will, within the context of 72.48. I think in the past we've had  
16 a rather conservative approach to that, and based on engagement with the  
17 industry, we've reached alignment, as reflected in the NEI 12-04 and then in  
18 the subsequent NUREG that we'll use to endorse that document, you know.

19 It defines how you can approach the 72.48 and the things  
20 you need to consider. So you couple that with less prescriptiveness in the  
21 technical specifications in the certificate of compliance. Over all, give you  
22 increased flexibility, less engagement with the regulator, it addresses the  
23 workload. And we're still, you know, we'll look at on a sampling basis the  
24 inspection process to ensure that that 72.48 is being implemented correctly  
25 and as intended.

26 But overall, it will result in less regulatory effort as a result.

1 COMMISSIONER BURNS: Okay, and my time's up, and  
2 sort of closing on that, as I say, the 72.48 and 50.59 processes are a  
3 balancing between those things where you need the, you know, basically the  
4 regulators', you know, imprimatur on particular changes. And I think from  
5 what I heard you from Mike say is one of the things I think the feedback loop  
6 that is important is our evaluation.

7 What are our findings one 72.48, what types of things are  
8 we seeing, how does that feed back in terms of -- because the flexibility's  
9 one thing. Ultimately we want to, you know, we need that assurance, safety  
10 assurance that comes. And agree, it's a balancing act, and that's what  
11 we've done historically. Thanks.

12 CHAIRMAN SVINICKI: Thank you very much.  
13 Commissioner Caputo, please proceed.

14 COMMISSIONER CAPUTO: Mr. Layton, I'd like to start  
15 with a question on accident-tolerant fuel. I think in looking at the industry's  
16 approach on lead test assemblies, there were some questions about the  
17 availability of transportation packages that were certified for advanced, for  
18 accident-tolerant fuel.

19 Where do we stand with that? Are there an adequate  
20 number of designs out there that are certified, or is that a work, is that chunk  
21 of work that we're working our way through, or can you give me a status on  
22 that?

23 MR. LAYTON: Yeah, thank you for that question. Much  
24 of that is going to be contingent on what the type of cladding material is and  
25 also the design of the fuel pellet. There are some proposed fuels and  
26 claddings, that is, we're looking at them. There are packages available for

1 the transportation of the fresh fuel.

2 Others where we haven't had the experience with the  
3 cladding material, and I'm thinking largely with the iron chromium aluminum,  
4 there were concerns about being able to demonstrate the fuel integrity with  
5 that cladding under certain transportation accident conditions. And that  
6 required a little bit of extra work, both on the fuel vendor's part and for us to  
7 identify whether safety and criticality and containment could be maintained.

8 But by and large, where there are accident-tolerate fuels  
9 that we are familiar with, with the cladding and also the fuel pellet design, we  
10 think that there are packages available for those.

11 COMMISSIONER CAPUTO: Okay, so with regard to the  
12 iron chromium aluminum technology, how long do you think it will be until we  
13 have an answer on that, and does that support the industry's schedule for  
14 deployment?

15 MR. LAYTON: Yeah, and I think John has the thumb on  
16 that.

17 MR. McKIRGAN: So if I could thank you for the question,  
18 Commissioner. And so that is an ongoing review, so I wouldn't want to  
19 presuppose the outcome of that.

20 But we have been in very good dialog and having  
21 appropriate regulatory engagement with the vendor on that issue. And I  
22 think we have a very good success path identified. We are awaiting some  
23 additional information from the vendor to complete that demonstration of  
24 safety on the part of the application.

25 A nuance to that that I'd like to offer is that, you know, the  
26 regulations are appropriate in that they provide performance criteria, and

1 there are a number of ways to demonstrate safety under the regulations in  
2 Part 71. It was a feature of the initial application that was provided by the  
3 applicant to rely on very specifically the performance to demonstrate safety  
4 of that material.

5 There were other ways to demonstrate safety that would  
6 not rely on that specific data that wasn't available at that time. And so we  
7 don't consult with the industry, but we do often explain the regulatory  
8 landscape and explain what options are available for that demonstration and  
9 what the staff would find acceptable.

10 And through that very productive dialog, we were able to  
11 offer the industry a different way to demonstrate safety, and that's what  
12 they're pursuing now. Again, that review is ongoing, but I think we are on a  
13 good path there.

14 COMMISSIONER CAPUTO: Okay, thank you. So we  
15 had a lot of discussion today about how the licensing processes for dry cask  
16 storage and transportation have been enhanced. How ultimately will you  
17 evaluate whether or not these changes are successful? How are you going  
18 to measure success?

19 MR. LAYTON: We see some indications of that now,  
20 particularly with renewals that are coming in. And that's being  
21 demonstrated in both the quality of the applications that are coming in and  
22 the review time, the less review time that we have to spend on those  
23 applications.

24 As an example, in the past, some of the renewals took as  
25 much as four years to complete. In 2017, we completed one rather  
26 significant and sophisticated renewal in about 16 months. And much of that

1 is, we attribute that to the better guidance in the renewal guidance, early  
2 outreach with applicants to explain what our review processes are and what  
3 are going to be the points that really have to be addressed in the application.

4 And also what Marc mentioned, the managing aging  
5 processes and storage. That document in itself has provided a great deal  
6 of clarity, not only to the NRC staff, but to the license community, on how to  
7 adequately prepare an aging management process. So we're seeing those  
8 kind of indications early on.

9 For transportation packages and COC storage certificates,  
10 it's going to take a little bit more effort to see how those enhancements and  
11 clarity are going to play out with those types of reviews, particularly because  
12 we're seeing changes in the designs as they come in.

13 And it's going to be a little bit difficult for us to really glean  
14 out in the short term how the impact of our improvements versus some of the  
15 extra effort resulting from changes in designs are going to counterbalance  
16 each other.

17 So we're going to be looking at that particularly in timing  
18 the number of RAI responses in clarity that we get from those responses that  
19 we provide back to the applicant. So it'll take a little bit of time for those  
20 types of efforts to, I think, really show that we've made some progress with it.

21 COMMISSIONER CAPUTO: And do you anticipate  
22 resources savings in reflection of that effort?

23 MR. LAYTON: Yeah, and I would, I use the model of what  
24 I just talked about in the renewal efforts. Those result in resource savings  
25 for us. Those result in resource savings for the applicants also.

26 And as we move forward with particularly the descriptions

1 of the high burnup fuel work, I would see those as resulting in ultimately  
2 resource savings for the applicants and us as we review those changes to  
3 COCs that are coming in for transportation.

4 COMMISSIONER CAPUTO: Thank you.

5 MR. DAPAS: Can I offer just a quick perspective. I think  
6 in showing that we are disciplined in the request for additional information, is  
7 there a clear nexus to safety. Even if it is a new design, is the question  
8 we're asking, is the information necessary to reach a safety conclusion here.

9 And conceptually, if our licensing reviews are conducted  
10 more efficiently, that does translate to less of a workload here. So, you  
11 know, we would anticipate less resource use. If we have to issue three  
12 requests for additional information, to what degree does a licensee take  
13 advantage of a pre-audit, pre-submittal audit opportunity, which we have  
14 done successfully with some licensees.

15 Others chose not to take advantage of that opportunity,  
16 submitted a licensing action, which necessitated a couple rounds of requests  
17 for supplemental information before we could even complete the acceptance  
18 review. So ultimately, if we are successful in implementing those  
19 efficiencies, which I would offer it would translate to less resource utilization  
20 by us.

21 COMMISSIONER CAPUTO: Thank you, no further.

22 CHAIRMAN SVINICKI: Thank you. Commissioner  
23 Wright.

24 COMMISSIONER WRIGHT: Thank you. I'm between  
25 you and lunch. I'm not going to take very long here at all. I just, Mike, you  
26 just had a question asked about accident-tolerant fuels and you got into

1 transportation about that a little bit. Am I hearing you say that there is a  
2 clear licensing path for the transportation of accident-tolerant fuels?

3 MR. LAYTON: From what we've see and understand of  
4 what's being proposed, I believe there is, particularly on those designs that  
5 we have familiarity with, cladding that we've worked with for decades, and  
6 also, you know, the pellet designs.

7 Others, it may take some work, but I don't see anything as  
8 being insurmountable with accident-tolerant fuel from both fresh fuel  
9 transportation, and also on the spent fuel transportation and storage.

10 COMMISSIONER WRIGHT: So our current framework,  
11 our regulatory framework would support and accomplish it -- I mean if, do  
12 you see any changes that we might need to make?

13 MR. LAYTON: At this time, I don't. And I'll pass it to  
14 John, because he sees it more on a day-to-day basis. But I really don't see  
15 any necessary changes in Part 72 or Part 71 that would require us to go  
16 back to rulemaking or anything.

17 MR. McKIRGAN: Certainly I echo that. Thank you,  
18 Commissioner, for the question. And I would, I echo that, I think the  
19 regulatory framework is sound, it is in place. I think we have a continuing  
20 need to make sure we're communicating clearly the expectations. I think  
21 we're having very good dialog with the industry on some data needs.

22 These aren't regulatory framework changes, but they are  
23 identification of data gaps that may exist to support the safety basis, and I  
24 think we're having very good discussions with the industry on that.

25 I do differentiate the accident-tolerant fuel programs from  
26 other advanced reactor fuels that are somewhat more exotic, and I think

1 those may represent different challenges.

2 From what I've seen so far, I still think the regulatory  
3 framework is sound, but there certainly will be some additional data needs,  
4 and I think the continued interaction with industry is key to the success of  
5 those efforts.

6 COMMISSIONER WRIGHT: Thank you for that  
7 clarification. And I've got one last question, and I'm going down to  
8 Christian. So I appreciate the discussion on research into the potential  
9 aging relating degradation mechanisms for the fuel cask. It's my  
10 understanding that industry's exploring several repair and mitigation  
11 techniques, you know, as well as the use of robotics for inspection.

12 To what extent have you engaged the industry in these  
13 matters, and what's been the outcome of that?

14 MR. ARAGUAS: So thank you for that question. So  
15 what I can tell you is we've been engaged with the industry, specifically with  
16 EPRI, through their ESCP program, this is extended storage and  
17 collaborative programs. And under that program they have a number of  
18 subcommittees, one of which talks about aging management and NDE  
19 techniques.

20 And they've been in front of trying to develop techniques to  
21 be able to inspect, you know, casks in service. So we've been plugged into  
22 that, I think in lockstep with the industry to develop understanding how  
23 they're progressing in those initiatives.

24 Separately, we do have a contract with PNNL, one of the  
25 DOE laboratories, to set up a mockup of a cask to collaborate with EPRI to  
26 actually see how the robotics, how these tools are resulting in the



1 inspections to actually assess and see, can they detect the flaws, can they  
2 understand and characterize the flaws.

3 So I think it's progressing well, I think we have confidence  
4 in the industry and the direction they're going to be able to inspect these in  
5 the future.

6 COMMISSIONER WRIGHT: Thank you. I yield back.

7 CHAIRMAN SVINICKI: All right, well, once again I want to  
8 thank all the staff who have presented at the table and the teams that  
9 supported them in doing that.

10 And again, my thanks for all the hard work that's going on  
11 in this area and all the public outreach, which I think is, poses some unique  
12 communications challenges. So thank you for your extra diligence on that.  
13 And with that, we are adjourned. Thank you.

14 (Whereupon, the above-entitled matter went off the record  
15 at 12:05 p.m.)