

UNITED STATES
NUCLEAR REGULATORY COMMISSION

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

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THURSDAY, JANUARY 18, 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

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

MARGARET DOANE, General Counsel

NRC STAFF:

MARC DAPAS, Director, Office of Nuclear Material

Safety and Safeguards (NMSS)

YOIRA DIAZ-SANABRIA, Chief, Containment, Structural

and Thermal Branch

JACK GIESSNER, Director, Division of Nuclear

Materials Safety, Region III

MICHAEL LAYTON, Director, Division of Spent Fuel

Management, NMSS

VICTOR MCCREE, Executive Director for Operations

JOSEPH NICK, Deputy Director, Division of Nuclear

Materials Safety, Region I

JOHN TAPPERT, Director, Division of Decommissioning,

Uranium Recovery, and Waste Programs, NMSS

BRUCE WATSON, Chief, Reactor Decommissioning Branch,

NMSS

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(9:03 a.m.)

CHAIRMAN SVINICKI: Well, good morning, everyone. It's good to see everyone on this chilly morning.

So the Commission convenes this morning for the purpose of receiving updates and hearing from the staff about all the vast diversity of topics that we carry out under the Decommissioning and Low-Level Waste business line and the Spent Fuel Storage and Transportation business line.

I always derive great value from these business line meetings. I know that they can seem like a rather routine matter. And this one, these topic areas in particular, there is always a broad diversity of somewhat disparate kind of programmatic things going on.

And as hard as we try, there's always so much going on on any given day that you know to maintain current status of all of these things is always difficult to do. So I find great efficiency in today's meeting and I know that it always is a lot of work for the NRC staff to prepare for this. So I appreciate all of the efforts of our presenters and everyone who supported them in being ready to present to the Commission today.

Before we begin, I will ask my colleagues if they have any opening comments.

Okay, hearing none, I will turn the program over to our Executive Director for Operations Victor McCree. Victor, please proceed.

MR. MCCREE: Good morning, Chairman, Commissioners.

1 The purpose of this meeting is to provide you with an
2 update of strategic considerations associated with the
3 Decommissioning and Low-Level Waste and Spent Fuel Storage and
4 Transportation business lines, including programmatic level priorities,
5 current activities, successes, and challenges.

6 The two business lines provide oversight of 20 power
7 reactors in decommissioning, 13 complex materials decommissioning
8 sites, 13 -- excuse me -- 11 uranium recovery facilities, and 79
9 licensed independent spent fuel storage installations, in addition to
10 establishing the national framework for low-level waste disposal.

11 We accomplish our mission with our partners, the
12 Regions, the Office of Nuclear Regulatory Research, the Office of
13 Nuclear Security and Incident Response, as well as our corporate
14 office partners that provide critical infrastructure support for our
15 programs.

16 You'll hear today that the business lines, with the
17 support of our partners, have accomplished much in the last year and
18 have developed effective strategies to address the challenges and
19 opportunities before us.

20 Next slide, please.

21 With respect to the Decommissioning and Low-Level
22 Waste business lines, there are several key things that are common
23 across the broad activities included in the business line and you'll hear
24 about more of them shortly.

25 Specifically, we continue to significantly engage with
26 both the domestic and international stakeholders involving complex
27 issues. We're also effectively responding to change in the industry to

1 include the increase in plants moving into decommissioning. The
2 decommissioning framework is successfully accommodating a new
3 decommissioning business model involving potential use of an
4 experienced decommissioning organization, other than the utility.

5 We're also proactively planning and prioritizing
6 activities to respond to uncertain external environment and we're
7 continuing to review our licensing programs and making any
8 necessary adjustments to ensure efficiency and effectiveness.

9 With me at the table today is Marc Dapas, the
10 Director of the Office of Nuclear Material Safety and Safeguards, or
11 NMSS, who will provide an overview of the business line licensing and
12 oversight successes, as well as challenges.

13 He'll be followed by John Tappert, to my right,
14 Director of the Division of Decommissioning Uranium Recovery and
15 Waste Programs, who will discuss the current uranium recovery and
16 low-level waste environment; and Bruce Watson, to John's right, the
17 Branch Chief of the Reactor Decommissioning Branch within NMSS,
18 who will discuss the current decommissioning licensing environment;
19 and Jack Giessner, to Marc's left, Director of the Region III Division of
20 Nuclear Material Safety, who will discuss the accomplishments and
21 challenges associated with the decommissioning inspection program.

22 So with that brief introduction, I'll turn the presentation
23 over to Marc Dapas.

24 Next slide, please. Marc.

25 MR. DAPAS: Thank you, Vick. Good morning,
26 Chairman Svinicki and Commissioners.

27 As Vic indicated, I'll provide a brief overview of the

1 breadth and scope of the Decommissioning and Low-Level Waste
2 business line and my colleagues will discuss selected topics in more
3 detail during their respective presentations.

4 Next slide, please.

5 The Decommissioning and Low-Level Waste business
6 line is responsible for ensuring the safety of a broad range of activities
7 that includes the licensing and oversight of reactor and material
8 facilities undergoing decommissioning, the oversight of the national
9 low-level waste management program, licensing and oversight of the
10 uranium recovery facilities, and monitoring of certain Department of
11 Energy sites regarding waste incidental to reprocessing activities.

12 With respect to the current business line activities, we
13 are preparing for an increased number of power plants in
14 decommissioning. We are also proactively planning for Wyoming to
15 become an Agreement State, including addressing the impact on our
16 Uranium Recovery Program and the associated licensing fees.

17 We continue to strategically assess changes in the
18 national low-level waste program and, as a result, are implementing
19 several regulatory initiatives to enhance this area.

20 We continue to actively engage the international
21 community. Our decommissioning and waste programs are robust
22 and well-respected internationally and, as such, countries are
23 interested in our program knowledge, experience, and lessons
24 learned.

25 In keeping with the NRC's strategic goals, we view
26 these interactions as opportunities to share our decommissioning
27 experience and to learn from the experience of others so we can

1 improve our program.

2 We continue to maintain an effective working
3 relationship with the Department of Energy regarding our support for
4 the Department's waste incidental to reprocessing activities.

5 We are implementing the Commission's direction with
6 respect to the proposed 10 CFR Part 61 rulemaking, including
7 simplifying and clarifying portions of the rule and associated guidance.

8 This will also involve the continued engagement of stakeholders to
9 ensure accurate and reliable cost and benefits are used to inform the
10 supplemental proposed rule.

11 Next slide, please.

12 We have realized success in several areas, requiring
13 significant internal and external stakeholder interaction. Specifically,
14 we have developed the recommendations on several significant policy
15 matters that will shape our approaches to longstanding and complex
16 issues.

17 For example, we provided our recommendations to
18 the Commission related to interactions with other federal partners and
19 a graded approach to licensing associated with the non-military
20 radium program and are responding to the Commission's direction to
21 implement the staff's recommendations on these policy matters.

22 We also provided recommendations related to the
23 appropriate oversight of financial assurance for radioactive sources.

24 Other examples of successful outcomes through
25 stakeholder interaction include support of significant public and
26 congressional meetings related to the shutdown of nuclear power
27 plants, consistent with our principle of openness.

1 Initiation of several enhancements to our licensing
2 process that will provide for greater efficiency and effectiveness in the
3 future, such as leveraging best practice licensing -- excuse me --
4 leveraging best licensing practices from other offices.

5 I mentioned during the 2016 Commission Briefing on
6 the uranium recovery product line that we had initiated a review of our
7 licensing processes. Since that briefing, we have completed an
8 independent assessment of uranium recovery licensing practices. As
9 a result, ten recommendations were identified and we are focusing on
10 efforts to implement those recommendations.

11 We have seen an improvement in our performance in
12 meeting our licensing timeliness metrics, which can be attributed to
13 the actions we have taken in response to the assessment
14 recommendations.

15 We also completed a limited evaluation of the
16 workload, fees, and organizational structure pertaining to the nuclear
17 materials and waste program areas. From this program and fee class
18 evaluation, which was conducted by a chartered working group, we
19 identified some changes to our organization processes and fee
20 structure to alleviate future budget recovery burdens on smaller fee
21 classes, such as uranium recovery.

22 Additionally, in response to Commission direction, we
23 are building on this initial program evaluation to conduct a more
24 comprehensive review of our organizational budget and fee structures
25 to include consideration of possible mergers of fee classes, business
26 lines or both, which will be completed next month.

27 In addition, the staff continues to make progress in

1 the licensing of new and expanded in-situ uranium recovery facilities,
2 specifically, since the last Commission meeting, we issued licenses for
3 the AUC Reno Creek and Jane Dough facilities, respectively.

4 Next slide, please.

5 We are also addressing some challenging technical,
6 organizational, and regulatory issues. For example, we are
7 developing recommendations for Commission consideration on
8 whether disposal of greater than Class C waste presents a hazard
9 such that the NRC should retain authority over its disposal. John will
10 discuss this and the status of efforts to develop a regulatory basis in
11 more detail during his presentation.

12 Another issue involves ensuring equitable and
13 transparent fees for all fee classes which, as I mentioned earlier, we
14 are addressing through the ongoing review of our organizational
15 budget and fee structure. This challenge is particularly acute for
16 uranium recovery facilities with Wyoming becoming an Agreement
17 State.

18 We are also continuing to engage industry on its
19 plans for submitting licensing action so that we can ensure that
20 resources in the uranium recovery product line are appropriate to
21 support the potential for licensing case work, given current market
22 conditions.

23 Let me now turn it over to John Tappert, which will
24 discuss the current uranium recovery and low-level waste
25 environment.

26 Next slide, please.

27 MR. TAPPERT: Thank you, Marc.

1 Good morning, Chairman, Commissioners. I will
2 focus my portion of the presentation on the priorities, current activities,
3 successes, challenges, and opportunities associated with the low-level
4 waste and uranium recovery aspects of the business line.

5 Next slide, please.

6 The Decommissioning and Low-Level Waste business
7 line continues to support a number of priorities involving a spectrum of
8 stakeholders and licensees. Bruce Watson will discuss the business
9 line priorities specific to the decommissioning area.

10 With respect to the other priorities, we are focused on
11 continuing to proactively refine the national low-level waste framework
12 in response to the changing external environment. This includes
13 updating the regulations in 10 CFR Part 61 and associated guidance
14 documents in response to recent Commission direction, as well as
15 addressing significant national policy issues, such as greater than
16 class C waste disposal.

17 We are also continuing efforts to monitor certain
18 Department of Energy disposal actions, in accordance with the Ronald
19 Reagan National Defense Authorization Act of 2005.

20 And we are continuing to make progress on ensuring
21 the effectiveness and efficiency of our licensing and oversight
22 activities for the uranium recovery facilities, as we plan for Wyoming
23 becoming an Agreement State.

24 Next slide, please.

25 With regards to the low-level waste program, we are
26 focusing on the implementation of the Commission's direction to revise
27 10 CFR Part 61. To that end, we held a public meeting in October

1 and issued a Federal Register notice to gain additional information
2 from stakeholders in the cost and benefits of the implementation of the
3 rule, in order to strengthen the regulatory analysis.

4 We are also currently modifying the proposed rule
5 language, statements of consideration, and associated guidance to
6 reflect Commission direction. We plan to publish the supplemental
7 proposed rule for a 90-day public comment period later this year.

8 Our next major task following the publication of the
9 supplement proposed rule is the development of a regulatory basis to
10 answer a question initially posed by the State of Texas regarding
11 whether an Agreement State can authorize the disposal of greater
12 than Class C in transuranic waste at a near-surface disposal facility.

13 This includes hosting a workshop to receive input
14 from the State of Texas and other interested stakeholders.

15 Consistent with Commission direction, the staff is
16 planning to complete the regulatory basis six months from the date of
17 publication of the Part 61 supplemental proposed rule. We are
18 completing a technical analysis of the main considerations associated
19 with near-surface disposal of this material and we are actively working
20 to draft the regulatory basis.

21 We have two other Part 61 follow-on activities,
22 specifically updating the forms and guidance for the Uniform Waste
23 Manifest to align it with the revised Part 61 requirements. And finally,
24 in response to Commission direction, evaluating whether a revision to
25 the waste classification tables are necessary.

26 Next slide, please.

27 In addition to our Part 61 related activities, we have

1 had a number of accomplishments and are planning for future
2 activities within the low-level waste program. Specifically, we issued
3 the National Report for the Joint Convention on the safety of spent fuel
4 management and radioactive waste management to support the sixth
5 review meeting of the Joint Convention this coming May.

6 Completion of the report was a significant
7 accomplishment, which required extensive coordination with the
8 Department of Energy, the Environmental Protection Agency, and the
9 Department of State.

10 This effort will ensure the United States maintains its
11 leadership in fulfilling the objectives of the Joint Convention to achieve
12 and maintain a high level of safety worldwide in spent fuel and
13 radioactive waste management.

14 We have also completed several milestones in
15 accordance with the monitoring responsibilities under the National
16 Defense Authorization Act. For example, we completed one on-site
17 observation visit at the Idaho National Laboratory Tank Farm Facility
18 located in Idaho and one on-site observation visit at the Savannah
19 River Site Salt Stone Disposal Facility located in South Carolina.

20 In addition, we issued a revised draft guidance
21 document regarding the 10 CFR Part 20.2002 process for public
22 comment. The 20.2002 process permits disposal of low-level waste
23 via alternate procedures not otherwise approved in the regulations.

24 Since 2000, the NRC has received approximately 20
25 requests for 20.2002 alternative disposal authorizations, of which the
26 vast majority were for offsite disposal.

27 The revisions to the guidance documents include

1 clarification of the meaning of disposal relative to 20.2002
2 authorizations, to include conditional recycling and reuse of materials.

3 And I just wanted to emphasize that the guidance update clarifies our
4 current approaches and is not intended to represent a change in
5 policy.

6 Regarding future activities, we plan to obtain
7 stakeholder input as part of a scoping study on the regulatory
8 oversight of very low-level waste. Currently, Part 61 does not
9 establish different regulatory controls for Class A waste, that is, very
10 low concentrations of radioactive material. This waste may currently
11 be approved for disposal at locations other than low-level waste
12 disposal facilities on a case by case basis.

13 Given the expected increase in low-level disposal
14 needs with the anticipated increase in reactor decommissioning, we
15 think it is prudent to reevaluate the appropriate regulatory process
16 level review and approval required for waste that has very low levels
17 of contamination.

18 We plan to issue a Federal Register notice in the near
19 future to obtain additional feedback on this matter.

20 And the last future activity that I will mention is that we
21 are prepared to implement the Commission direction on a rulemaking
22 plan to further evaluate potential changes to 10 CFR Part 30.35
23 regarding financial assurance for sealed sources. This rulemaking
24 plan was developed after considering the result of a scoping study that
25 examined the current financial assurance situation for the disposal of
26 Category 1 and 2 sources.

27 Next slide, please.

1 Now I'd like to briefly turn to the uranium recovery
2 program. We continue to provide oversight for a number of operating
3 uranium recovery sites and are making progress on our current
4 inventory of licensing actions.

5 Specifically, the staff has focused on the licensing and
6 oversight for 11 facilities, six of which are currently operating, with one
7 facility in standby, and making progress on five major licensing
8 actions, including two license renewals and three applications for
9 expansions of existing sites.

10 The other licensing actions are on hold, as requested
11 by the applicants, due to prolonged poor uranium market conditions.

12 As Marc said, one of our more significant
13 accomplishments since last year's Commission brief has been
14 issuance of a new license for the AUC Reno Creek facility and for the
15 Uranerz Jane Dough expansion.

16 And I would further note that the review of the Jane
17 Dough expansion was completed in a very timely manner, which was
18 due in part to the staff's implementation of licensing program
19 improvements.

20 One ongoing challenge for us is forecasting future
21 licensing work, given the uncertainty of market conditions. To
22 address this uncertainty, as Marc mentioned, we continue to
23 communicate with potential applicants on their schedules. We
24 budget for anticipated applications based on letters of intent and
25 historical submission rates, which has been shown to be a good
26 predictor of the number of applications to be submitted. However,
27 recent poor market conditions have caused most new projects to be

1 delayed.

2 Next slide, please.

3 As I mentioned earlier, we continue to make progress
4 when ensuring the effectiveness and efficiency of our licensing and
5 oversight functions, as we plan for the State of Wyoming to become
6 an Agreement State.

7 As Marc mentioned, we completed an independent
8 assessment of our licensing practices with respect to the uranium
9 recovery program, which included benchmarking with other licensing
10 organizations. We are initiating actions based on the ten
11 recommendations deriving from that assessment to enhance the
12 efficiency and effectiveness of the program. And with the
13 implementation of these recommendations, we are expecting to
14 improve licensing performance, transparency, and accountability.

15 We have continued to look for other opportunities to
16 enhance our licensing and oversight programs. Last summer, we
17 provided a paper to the Commission proposing to increase the length
18 of license term for uranium recovery facilities from 10 to 20 years.
19 The license term has changed over time, going from three years to
20 five years in 1967 and then going from five years to ten years in 1996.

21 After we evaluated our extensive experience with
22 oversight of these facilities and the associated risk, the staff
23 determined that extending the license term from 10 to 20 years would
24 not adverse impact public health and safety and, as such,
25 recommended that future licenses be issued for 20 years.

26 The Commission approved the staff's
27 recommendation and we are currently implementing that direction.

1 We are also continuing to proactively manage the
2 impact of the transition of Wyoming to an Agreement State under the
3 NRC's uranium recovery program.

4 At last year's Commission meeting, we mentioned
5 that we formed a Transition Team to evaluate the staffing and
6 organizational impacts of the significant reduction in the budget
7 associated with Wyoming becoming an Agreement State. Since
8 then, we have completed our evaluation of the expected impact on our
9 budgeted resources and organizational structure and are developing
10 recommendations to address them.

11 We are actively working with Wyoming to ensure a
12 smooth transition of oversight responsibility for licensees to the state.
13 We have aligned a licensing schedule, where possible, to complete
14 the licensing before the transition.

15 I would note that four of the five current major
16 licensing actions involve sites in Wyoming.

17 We have worked extensively with Wyoming to
18 implement the option directed by the Commission for dispositioning
19 and decommissioning uranium recovery sites in the state, which
20 entails the transfer of oversight responsibilities for five of the six
21 decommissioning sites to the state upon approval of its Agreement
22 State application.

23 We are also working with the state to develop options
24 for funding and the one remaining uranium recovery facility and
25 decommissioning, the American Nuclear Corporation's site, that will
26 remain under NRC oversight following the transition.

27 And based on feedback from the state and the

1 Department of Energy regarding decommissioning funding options, we
2 have identified what we think is a viable path forward, which we plan
3 to provide to the Commission for its consideration in a paper in the
4 near future.

5 In summary, the uranium recovery sites located in
6 Wyoming comprise a significant percentage of the sites currently
7 under our regulatory jurisdiction. With the change in our workload
8 due to the assumption of regulatory oversight for those sites by the
9 state represents a significant change that we are managing from a
10 people and programmatic standpoint.

11 Next slide, please.

12 So in closing, I would like to spend just a minute
13 discussing some of our stakeholder engagement activities. As Marc
14 mentioned, we have engaged a broad range of stakeholders.

15 For example, we recently coordinated extensively with
16 the Environmental Protection Agency on two major rules: one which
17 sets the basic regulatory framework for the groundwater protection at
18 uranium in-situ recovery sites, and another one related to the control
19 of radon emissions under the National Emissions Standards for
20 Hazardous Air Pollutants or NESHAPs.

21 We provided comments on both of these rules to the
22 Office of Management and Budget Review Process and we also
23 provided comments on the rule related to groundwater protection
24 during the public comment period which closed on October 16th of last
25 year.

26 We have also engaged extensively with other
27 stakeholders. For example, we held a well-attended technical

1 workshop on radiation protection, a topic of great interest, and we
2 participated in several conferences and meetings.

3 Additionally, consistent with the agency's International
4 Strategic Plan, which focuses on knowledge transfer and international
5 engagement, we hosted a foreign assignee from South Africa in our
6 Uranium Recovery Branch, during which we exchanged information
7 on our regulatory programs.

8 We also supported the development of several
9 International Atomic Energy Agency safety guides and technical
10 reports.

11 And this concludes my portion of the presentation.
12 And I will now turn it over to Bruce Watson.

13 Next slide, please.

14 MR. WATSON: Thank you, John.

15 Good morning Chairman and Commissioners and
16 thank you for the opportunity to speak to you today. My presentation
17 will focus on the decommissioning program environment and
18 challenges.

19 Next slide, please.

20 With respect to the decommissioning program, we are
21 continuing our efforts to support a number of priorities involving the
22 spectrum of stakeholders and licensees. Specifically, we are
23 focusing on the following priorities: performing licensing activities and
24 maintaining effective oversight of reactor decommissioning sites;
25 conducting licensing and oversight activities for complex material
26 sites; and providing oversight at military and non-military sites with
27 radium contamination.

1 Next slide, please.

2 Each year the Regional Offices terminate
3 approximately 100 non-complex material sites. In our office, we
4 manage the complex sites, those that have long-lived radionuclides
5 and have significant technical challenges, such as groundwater
6 contamination.

7 During the approximately 20 years since the license
8 termination rules were implemented in 1997, a total of 71
9 NRC-licensed sites have completed decommissioning. This
10 accomplishment demonstrated the ongoing teamwork between
11 Headquarters and the Regional Offices with our licensing and
12 inspection programs.

13 During this time, we have completed license
14 terminations at seven power reactors, 16 research reactors, and 48
15 complex material sites. Of the 48 complex material sites, 22 are
16 legacy sites. Legacy sites either have financial or technical issues
17 which were preventing cleanup and closure. We have worked with
18 the site owners and, in many cases, the trustees to reduce the total
19 number of legacy sites from 27 in 1998 to the five left today.

20 On this slide, there is a red spike in 2002, designating
21 the year in which the site -- which the staff issued many draft
22 decommissioning guidance documents. We credit the guidance as
23 the major reason for the large number of terminations to date.

24 Next slide, please.

25 Since the last Commission briefing, we have
26 accomplished several major milestones within the reactor
27 decommissioning program. We approved a significant number of

1 license amendments, aligned an emergency plan, and physical
2 security requirements for plants in decommissioning.

3 For example, we approved license amendments for
4 Crystal River that aligned their emergency response requirements and
5 reduced the risk associated with the transfer of spent fuel to dry
6 storage.

7 Additional licensing actions and inspections were
8 completed, including those involving Kewaunee spent fuel transfer.

9 With the Regional Office, we have completed ongoing
10 confirmatory surveys at Humboldt Bay, La Crosse, and Zion. We
11 have supported the completion of the reactor decommissioning
12 rulemaking basis. This is a major rule involving significant effort from
13 several offices. This rule is anticipated to result in efficiencies in
14 the transfer of reactors in the decommissioning and addresses several
15 complex policies issues related to decommissioning. We expect to
16 meet the goal of completing the rulemaking by the end of 2019.

17 We are effectively responding to changes and
18 challenges in the industry, including an increasing inventory of reactor
19 decommissioning sites and a new business model for
20 decommissioning.

21 Since 2013, six units have permanently ceased
22 operation, including Crystal River and Vermont Yankee, which are
23 pictured above. Not pictured are Fort Calhoun and San Onofre Units
24 2 and 3.

25 We are effectively responding to changes and
26 challenges in the industry, including anticipated increase of eight
27 power reactors permanently ceasing operations over the next few

1 years. From a resource standpoint, we believe the increase in
2 reactors entering decommissioning will be offset by the expected
3 license terminations at three research reactors: two at General
4 Atomics and one at the State University of New York at Buffalo; and
5 four license terminations at three power reactors: Humboldt Bay, La
6 Crosse and, of course, Zion 1 and 2. By 2020, we expect those to be
7 completed.

8 For power reactor decommissioning sites, there is a
9 new business model for decommissioning where the license is
10 temporarily transferred from the utility to a decommissioning company
11 to facilitate timely decommissioning. In this business model at the
12 completion of decommissioning, the property and the independent
13 spent fuel storage insulation are returned to the utility. We approved
14 the temporary license transfer for Zion a few years ago and recently
15 approved the license transfer for La Crosse.

16 Currently, we are reviewing a first of a kind request
17 from Vermont Yankee for a permanent license transfer to a company,
18 NorthStar, in responding to the associated hearing requests. At the
19 request of the Vermont Yankee Citizens Nuclear Decommissioning
20 Panel, we participated in a public meeting to discuss the NRC's role in
21 the license transfer process and hear public comments on the
22 proposed licensing action and sale.

23 With regard to our review of the application, we are
24 evaluating the responses provided by Entergy and NorthStar to our
25 Request for Additional Information. We plan to complete our review
26 of the application in the first half of this year.

27 Finally, the staff is evaluating General Electric's

1 exemption request to exceed the current 60-year time line for
2 completion of decommissioning. In assessing the license request,
3 the staff has issued additional requests for information and will be
4 providing the Commission with our recommendations whether this
5 exemption should be approved.

6 Next slide, please.

7 Internationally, we have had significant engagements
8 in the area of decommissioning which have involved both assistance
9 and cooperative technical exchanges. Examples include our support
10 of a reactor decommissioning workshop in Taiwan, supporting
11 technical exchange meeting and hosting a foreign assignee from the
12 Republic of Korea.

13 Pictured above, this past September we worked with
14 Region IV in hosting Korean and Taiwanese regulators to observe a
15 decommissioning inspection at San Onofre.

16 Last year we worked with Region III to host a French
17 delegation on a tour of the Zion Nuclear Power Plant and had bilateral
18 discussions on the decommissioning process.

19 Lastly, we continue to support IAE -- oh, excuse me,
20 International Atomic Energy Agency activities to ensure our
21 decommissioning program remains strategically aligned with the
22 international standards and requirements.

23 Next slide please.

24 We have continued to make progress in the
25 decommissioning of legacy sites. We have quickly secured
26 decommissioning funding for Westinghouse sites when Westinghouse
27 entered Chapter 11 bankruptcy, demonstrating the effectiveness of

1 the enhanced financial assurance requirements we implemented in
2 2012.

3 We issued an order to Fansteel, a company in
4 bankruptcy, to require actions to provide reasonable assurance of
5 adequate protection at its Oklahoma FMRI site.

6 At the American Nuclear Corporation site, we are
7 working with the Wyoming Department of Environmental Quality to
8 ensure the remaining funds from the forfeited surety bond are issued
9 to stabilize the site in a safe, secure configuration.

10 The picture on this slide is Westinghouse's Hematite
11 site, which we continue to work closely with Region III to ensure the
12 site is remediated safely and to allow license termination in the near
13 future.

14 Next slide, please.

15 The staff has interacted extensively with our federal
16 partners on materials decommissioning sites. We continue to have
17 extensive interactions with the Department of Energy and participate
18 in the Navajo Nation five-year plan to address uranium contamination
19 at Uranium Mill Tailings Radiation Material Act sites. Six federal
20 agencies, in coordination with the Navajo Nation have implemented
21 the second five-year plan to address uranium contamination on the
22 Navajo Nation.

23 We participate in several of the plan's cross-cutting
24 strategies, including cleanup of the Northeast Church Rock Mine site,
25 protecting human health and the environment at former mill sites on
26 the Navajo Nation and conducting coordinated outreach and
27 education.

1 At West Valley, significant progress is being made
2 with the demolition of the vitrification facility and the demolition -- the
3 decontamination of the main process plan in preparation for
4 demolition. We continue to work with the Department of Energy, the
5 Environmental Protection Agency, and the State of New York to
6 resolve technical issues and coordinate oversight of the site.

7 In November, the NRC agreed to be a cooperative
8 agency on the supplemental environmental impact statement related
9 to the decommissioning of the site.

10 Pictured is the Homestake site, which has been
11 remediating the groundwater for a few decades. The site is near
12 Grants, New Mexico and Mount Taylor, an important landmark to the
13 Native Americans. We continue to work with the Environmental
14 Protection Agency and the state to ensure clear roles and
15 responsibilities and to avoid dual regulation of the site.

16 Finally, we just signed a memorandum of
17 understanding with the National Park Service with respect to
18 remediation of activities at the Great Kills Park on Staten Island, New
19 York. The National Park Service is conducting remediation activities
20 under the Comprehensive Environmental Response Compensation
21 and Liability Act.

22 The memorandum of understanding describes the
23 monitoring approach.

24 Next slide, please.

25 We have supported a number of significant public and
26 congressional meetings related to reactor decommissioning.
27 Specifically, we held public meetings on the Fort Calhoun

1 post-shutdown decommissioning activities report in the La Crosse
2 license termination plan.

3 We teamed with Region IV to support a San Onofre
4 Citizens Engagement Panel meeting to discuss the decommissioning
5 inspection program.

6 As previously noted, we participated in a Vermont
7 Yankee Nuclear Decommissioning Citizens Advisory Panel meeting
8 on the proposed license transfer of Vermont Yankee.

9 At the request of the New York State Senate and
10 General Assembly, we provided testimony on the NRC's role in the
11 decommissioning process as it relates to the upcoming permanent
12 shutdown of Indian Point.

13 We supported a briefing of Congresswoman Lowey
14 on the announced shutdown at Indian Point and Congressman
15 Carbajal's town hall meeting on the anticipated shutdown of Diablo
16 Canyon Nuclear Power Plant.

17 Over the past few years in support of the Office of
18 Congressional Affairs, we have provided over 30 congressional
19 briefings on reactor decommissioning.

20 The picture in this slide is from the NRC's public
21 meeting in Vermont. And this illustrates the high public interest in
22 decommissioning.

23 Next slide please.

24 While Jack Giessner will be providing a regional
25 perspective on the radium program, to date the staff has made
26 substantial progress in implementing a non-military program. I would
27 like to highlight several key aspects of the program.

1 We are implementing a graded and risk-informed
2 approach. Specifically, we ranked the sites on the likelihood of
3 finding residual radioactive -- radium activity and we are using
4 site-specific information in lieu of generic assumptions in order to
5 determine the need for site cleanup.

6 We are gaining efficiencies and becoming more
7 effective through applying lessons learned. In most instances, we
8 have been able to gather enough information from initial site visits to
9 make a decision on the path forward without having to conduct
10 additional scoping surveys as originally envisioned. We have put
11 controls in place to ensure appropriate oversight of the cleanup
12 activities to ensure a risk-informed approach.

13 We have completed initial site visits at all of the
14 responsive owners' sites. As of November, 33 of the 39 initial site
15 visits have been completed.

16 Fourteen properties have been identified with radium
17 contamination that is above background. Of these 14 properties, four
18 were identified with contamination that exceeded our action levels for
19 recommending access controls, those with radiation equivalents of
20 100 millirem per year.

21 In those cases, we have worked with the site owners
22 to implement voluntary controls. We are also working with the site
23 owners to make progress toward site cleanup, where necessary.

24 Pictured is the Benrus Clock Company in Connecticut,
25 which recently completed cleanup activities at the site and staff
26 conducted confirmatory surveys last week.

27 Next slide, please.

1 We are continuing to address challenges with the
2 non-military radium program. Consistent with the Commission's
3 direction, we are working with the Environmental Protection Agency to
4 explore funding options in instances where there are funding
5 difficulties. For example, we are working with the Environmental
6 Protection Agency to obtain funding for outdoor contamination at
7 Bristol Instrument Gears in Connecticut.

8 In addition, we continue to share lessons learned with
9 involved states and communicate our status of our activities. We are
10 coordinating with the State of Connecticut to obtain cooperation from
11 site owners that are reluctant to allow access for surveys.

12 Lastly, we have been successfully communicating our
13 actions and risk of radium to the public and have received positive
14 feedback from the states, local government, and site owners on our
15 approaches.

16 Thank you and I will now turn the presentation over to
17 Jack Giessner.

18 MR. GIESSNER: Thanks, Bruce.

19 Thank you, Chairman and Commissioners for the
20 opportunity share some regional perspectives, successes, and
21 opportunities with you today.

22 Our Reactor Materials Decommissioning Program
23 play a key role in ensuring the safe and secure decommissioning of
24 power reactors and complex sites. Our oversight in this area ensures
25 the protection of public health and safety and it ensures the final
26 condition of the facility meets our requirements for unrestricted
27 release.

1 We risk-inform our activities throughout all phases of
2 our Decommissioning Inspection Program.

3 Next slide, please.

4 We continue to have a clear focus on safety and
5 security as we implement the inspection program for decommissioning
6 power reactors. In the pictures above, in the top left is Kewaunee,
7 which completed its spent fuel offload to the independent spent fuel
8 storage installation pad and is entering SAFSTOR. In the bottom left
9 is La Crosse Station, which is in active decommissioning.

10 Finally, on the right is a picture of both Zion
11 containments, one in the foreground and one in clear view from a
12 couple months ago. That red oval you see is highlighting what used
13 to be the wall between the Aux Building and the Turbine Building.
14 Zion is also in active decommissioning.

15 Next slide, please.

16 Our inspection manual chapter, specifically, IMC 2561
17 addresses all phases of decommissioning, including SAFSTOR,
18 transitions, and active decommissioning. The guidance assists in
19 risk-informing activities to inspect.

20 On the left is a picture of Fort Calhoun in Region IV,
21 showing the power block and containment. The licensee is
22 transitioning the site into SAFSTOR.

23 On the right is a picture also from Region IV,
24 Humboldt Bay, which is in active decommissioning. This picture shows
25 the excavation about 40 feet below grade involving the removal of the
26 concrete, which was used to support the reactor vessel.

27 Our guidance provides the needed flexibility to inspect

1 a wide range of activities depicted here using qualitative risk-informed
2 methods.

3 Next slide, please.

4 Given the number of facilities in various stages of
5 decommissioning, we continue to gain operating experience in all
6 phases of decommissioning. Our experience in this complex,
7 radiological, industrial environment gets shared with all the Regions,
8 as well as Headquarters.

9 In the picture at the left, an inspector observes the
10 removal of Zion's pressurizer relief tank or PRT. The PRT was cut in
11 half along its length, then coated and shipped to a waste disposal
12 facility in Clive, Utah. That's Class A waste.

13 The picture on the right shows the demolition work at
14 Humboldt Bay. This picture depicts half of the Reactor Building
15 during decommissioning, along with the piece of equipment that
16 supports further dismantlement.

17 As you can see, many activities are occurring as part
18 of the decommissioning process that have potential radiological
19 consequences. As such, it is particularly important that the licensee
20 keeps its focus on a healthy safety culture.

21 We focused on this important topic during a session
22 at last year's regulatory information conference. We also issued an
23 educational guide titled Safety Culture in Decommissioning as a
24 licensee resource. In addition, we always discuss safety culture with
25 senior managers during our site visits.

26 Next slide, please.

27 Although the risks during decommissioning is

1 significantly less than the risk of power operations, effective regulatory
2 oversight is still needed. Let me provide a couple of examples where
3 we have assured safe licensee performance of decommissioning
4 operations through our oversight.

5 In early May of last year, Kewaunee experienced a
6 loss of offsite power during its dry fuel storage campaign. Kewaunee
7 still had about 400 spent fuel bundles in the spent fuel pool and also
8 had a canister on the spent fuel pool floor in the process of being
9 welded. Kewaunee was able to start and load their emergency diesel
10 generator within 15 minutes.

11 We dispatched an inspector from the nearby Point
12 Beach site to assess the situation and ensure adequate fuel safety.

13 On the left is a picture of the inspector observing the
14 running diesel generator. Although offsite power was unavailable for
15 over one day, the safety of spent fuel was not jeopardized.

16 Another example to share is the need to ensure that
17 the right programs are in place during the transition to
18 decommissioning. For example, at the San Onofre Nuclear
19 Generating Station, the licensee failed to adequately implement a
20 certified fuel handling training program. Specifically, as changes to
21 the plan occurred, the licensee did not adequately implement a
22 systematic approach to its training program that reflected the
23 modifications to the facility procedures and the quality of documents.

24 Next slide, please.

25 Let me transition to complex material
26 decommissioning sites. Our inspection program also addresses all
27 phases of complex material decommissioning, specifically inspections

1 before dismantlement, inspections during dismantlement and
2 remediation, and inspections after remediation. This includes
3 independent surveys of soil and water.

4 The Hematite fuel facility undergoing
5 decommissioning in Missouri provides a good example of all three
6 phases of decommissioning. Working from the left, the first picture is
7 an aerial view prior to major dismantlement. The 2012 picture shows
8 the start of major remediation. The 2015 picture shows the
9 expansive nature of remediation, digging over 20 feet down to clean
10 up burial pits.

11 The final pictures shows a field remaining after the
12 cleanup activities. We are currently obtaining independent samples
13 and are reviewing the final status surveys.

14 Next slide, please.

15 At complex sites, some major activities deserve more
16 attention than others, based on the potential risk. One such example
17 is evaluating and remediating contamination in groundwater, ponds,
18 and sediments.

19 I present two examples here. On the left, inspectors
20 are collecting samples of sediment under the outfall near the Joachim
21 Creek in Hematite Site. In this case, the activities level were well
22 below the threshold needed to release the area for general use.

23 On the right is a picture of Fansteel FMRI location in
24 Oklahoma. It shows a pond that is partially remediated. Fansteel,
25 when it was in production, extracted tantalum and niobium from
26 uranium and thorium ore. That blue-gray material you see is the
27 waste product of the process that was used to remove the tantalum

1 and niobium from that slag material.

2 The backfield ponds is being excavated and the
3 contents of the pond are being packaged and shipped offsite as
4 funding allows.

5 Next slide, please.

6 I want to share some regional perspectives on the
7 effectiveness of the agency's action related to the non-military radium
8 program. The regions are using a temporary instruction that provides
9 guidance for case by case evaluation for as-found conditions in
10 various location. The initial surveys focus on ensuring public health
11 and safety. If required, scoping surveys are conducted later to gather
12 additional information about the site.

13 The guidance provides quantitative thresholds set to
14 reasonable values to assure actions are properly taken.

15 Lessons learned are being captured in revisions to
16 this temporary instruction, one of which is going to be issued soon.

17 The picture to the left as at a gauge company in
18 Michigan, where we found parts of radium gauges needing controls.

19 In this picture, we are observing a health physicist
20 from the Oak Ridge Associated Universities conducting surveys. The
21 picture on the right is at a salvage yard in Alaska. It shows the state
22 of disrepair we find at some locations.

23 Next slide, please.

24 I can't emphasize enough the great teamwork
25 between the Regions, Headquarters, the Environmental Protection
26 Agency, Oak Ridge Associated Universities, as well as state and local
27 officials. Several sites required very close coordination to accomplish

1 key tasks that involved businesses, government premises, and
2 residential apartments.

3 An excellent example of the coordination was the
4 effort associated with accessing the apartments of private citizens at
5 the Enterprise Apartments in Waterbury, Connecticut. A picture of
6 that site is on the far left of this slide. After extensive discussions with
7 the state, we conducted numerous conference calls with corporate
8 and site management. Communication tools and protocols were
9 shared and coordinated such that site management provided
10 notification to the occupants of the 13-selected apartments.

11 As a result, our team gained access to the apartments
12 without any problems, per an approved schedule. Our site team
13 included a manager, an individual from the Office of Public Affairs, and
14 a bilingual inspector.

15 A representative from Connecticut and a consultant
16 for the property owner observed the surveys which facilitated a
17 common understanding of our initial results.

18 The picture in the middle slide depicts some more
19 activities involving inspectors and health physicists serving a large
20 federal complex in Battle Creek, Michigan. We surveyed hundreds of
21 thousands of square feet of the facility during evenings and a
22 weekend to minimize the impact of that facility.

23 The other two pictures on the right show our
24 inspectors at the Bristol Instrument Gears Company in Connecticut,
25 conducting initial surveys of surface soil and below ground sediment.

26 Next slide, please.

27 Finally, I want to share some things the Regions see

1 as future opportunities. Where do we see the training and
2 qualification of future decommissioning health physics inspectors?
3 First, we want to leverage the work that is occurring in modeling
4 competencies. Inspectors are working with the Office of the Chief
5 Human Capital Officer and other offices to ensure the competency
6 modeling facilitates the identification of the necessary enhancements
7 to our training program.

8 Second, we want to factor in the different phases of
9 decommissioning into our work process. For example, a resident
10 inspector at a reactor site that is transitioning from power operations to
11 SAFSTOR is best suited to oversee the beginning of
12 decommissioning. However, more health physics knowledge is
13 needed later in decommissioning during the long-term storage of fuel.

14 Finally, in active decommissioning, the skills needed
15 are almost exclusively related to the standards needed to comply with
16 a decommissioning plan. In short, the principles of nuclear safety
17 and good regulation are the same between operating reactors and
18 decommissioning reactors but some skill sets are different and need
19 to be addressed.

20 We also want to think more broadly. We can
21 cross-train materials inspectors in decommissioning and independent
22 spent fuel storage installation inspectors. We want to do this when it
23 makes good business sense.

24 The Regions and Headquarters have several forums
25 where these opportunities will be discussed, including counterpart
26 meetings, biweekly phone calls, and our quarterly Decommissioning
27 Board meetings.

1 This concludes my presentation and I will turn it over
2 to Vic.

3 MR. MCCREE: Thank you, Jack.

4 Chairman and Commissioners, as you've heard the
5 Decommissioning and Low-Level Waste business line continues to
6 successfully fulfill its mission and execute its priorities for a number of
7 very challenging and interesting, and complex issues and areas.

8 In the spirit of Project Aim, they are actively engaging
9 stakeholders, both internally and externally. They are effectively
10 responding to change and proactively planning, and prioritizing, and
11 executing activities to prepare for the future.

12 Thank you and we are now ready to respond to your
13 questions.

14 CHAIRMAN SVINICKI: Thank you Victor and all the
15 presenters. In my opening comments I remarked that we were going
16 to hear about a lot of activities and you certainly fulfilled that.

17 We will begin the question and answer period with
18 Commissioner Baran.

19 COMMISSIONER BARAN: Thanks. Well, thank
20 you for presentations and for all your work.

21 I'd like to start with a few questions on the efforts to
22 assess and remediate non-military radium sites that have potential
23 radium contamination. Bruce mentioned that as of November, 33 of
24 the 39 initial site visits have been performed. Is that where things
25 stand today?

26 MR. TAPPERT: Yes, sir.

27 COMMISSIONER BARAN: Okay. And so the total

1 universe of initial surveys that still need to be completed is six.

2 MR. TAPPERT: Right.

3 COMMISSIONER BARAN: Okay. And how many
4 of these six sites involve owners who have been reluctant to allow
5 NRC access to the sites?

6 MR. TAPPERT: So there's a different story for all
7 these folks. And so we got the more proactive people we've already
8 been to and these are the kinds of the tails of the distribution.

9 So I would say of the six, one of them is in an EPA
10 CERCLA site. So we are kind of leveraging that process and that's
11 why we haven't gone out there.

12 The other five are folks who have been reluctant to let
13 us come on-site. One of them we have recently negotiated an
14 agreement to do a site visit. So they went from the reluctant to
15 non-reluctant at this point.

16 And the other four, we are just kind of were continuing
17 to kind of work through. And they all have different circumstances
18 and we're looking at them on a case by a case basis.

19 If you harken back to where this whole list came from,
20 it was from a contractor open literature search of where radium had
21 been known or suspected to have been used. So some of these are
22 known uses and some of are suspected uses. And that's going to
23 help inform how we're going to disposition them.

24 COMMISSIONER BARAN: Okay. And so for the
25 six sites that haven't been surveyed yet, initially, are those all in
26 Connecticut and Michigan?

27 MR. TAPPERT: Yes.

1 COMMISSIONER BARAN: Okay. And I know
2 you're working with the two states to gain access to the site. It
3 sounds like you're having some progress there on one of them.

4 MR. TAPPERT: Yes.

5 COMMISSIONER BARAN: How is that going more
6 broadly? Are you seeing progress made with the two states on
7 gaining access to the sites?

8 MR. TAPPERT: So we have had some preliminary
9 discussions with Connecticut. They're talking to their legal folks to
10 see what kind of mechanisms they might have. So I think that
11 relationship is very good and we're making progress on that.

12 There is really the only one site in Michigan, so it's a
13 much more limited engagement on that one.

14 COMMISSIONER BARAN: Okay. And for the four
15 properties with radium contamination that exceeded the action levels,
16 it sounds like you're making pretty good progress there in getting them
17 remediated. Can you talk about that a little bit, where things stand?
18 Do you feel like we're making progress on all four of them?

19 MR. TAPPERT: Absolutely. I think it's going quite
20 well from my perspective. In fact, in Bruce's presentation, he
21 mentioned that remediation activities have actually been completed at
22 one of the sites. And we did our final status reviews on that. And
23 the work is not done until the paperwork is done, but preliminarily, it
24 looks like it was cleaned up appropriately.

25 So remediation is occurring. On one other site, a
26 contractor has been negotiated to clean up the site. The other two,
27 we're still working with the owners.

1 COMMISSIONER BARAN: Well, it sounds like
2 overall -- oh. Go ahead, Marc.

3 MR. DAPAS: There was just one comment I wanted
4 to make regarding access to the sites. You know there is one site
5 owner that, to date, has not indicated a desire to have us gain access
6 to the site to conduct a survey. And the individual has claimed that
7 the manufacturing process he was involved with, dealing with aircraft
8 engines, did not include instruments.

9 You know we had done a historical review looking at
10 records to determine whether there was suspected radium use at the
11 site and the site owner has indicated that there was no involvement
12 with instrumentation, whereby radium was used. And the state is
13 engaging and feels is that reasonable.

14 And so we have to determine you know what would
15 be the next step. Do we close the record because we have
16 reasonable assurance that radium contamination is not present or are
17 there additional steps we need to take? So we're still evaluating, to
18 some degree, what is the best approach, for example, in that
19 particular circumstance.

20 COMMISSIONER BARAN: Well, it sounds like
21 overall, it's going pretty well. I mean when this started out, it was
22 really just historical records that we had and this research based on
23 that. We didn't really know what we were going to find. It sounds
24 like there haven't been a ton of sites where we have found even
25 above background levels. And in the few sites where it is at action
26 level, things are moving along. There haven't been too many cases
27 where we've had problems accessing sites.

1 Going forward, what do you see as the main
2 challenges here? How do you see this playing out in terms of timing?

3 MR. TAPPERT: So I think you put your finger on it.
4 We have to close the loop on these last few.

5 The State of Michigan gave us some other sites that
6 we're going to look at as well, just kind of develop leads from them.

7 But by and large I think we're probably at the peak
8 right now and I would expect a declining level of effort going forward,
9 as we resolve the identified issues.

10 MR. DAPAS: The only comment I was going to
11 make, I appreciate your characterization indicating that it has gone
12 fairly well. I think it's gone as well as we could have hoped in terms
13 of the degree of engagement with local stakeholders, state,
14 cooperative property owners, identifying contamination, developing a
15 cleanup plan, remediation, and then confirmation, as indicated with
16 the Benrus Clock factory in Connecticut.

17 So you know hopefully we will be able to reach
18 closure with these remaining sites but I do think it has gone as well as
19 we could have expected up to this point in time.

20 COMMISSIONER BARAN: Great.

21 Marc, you mentioned the limited evaluation of the
22 workload fees and organizational structure of the materials and waste
23 program that was performed. I'd like to ask a couple questions or I'd
24 like to ask about a couple of the ideas for potential changes coming
25 out of that initial evaluation.

26 One idea was to evaluate the possibility of creating
27 new or revised categorical exclusions. This, presumably, would

1 result in a preparation of fewer environmental assessments under
2 NEPA. If the idea is to expand a list of categorical exclusions purely
3 to save the agency money, that strikes me as problematic.

4 Can someone discuss the thinking behind this
5 potential change in a little bit more detail? Or maybe the status of it
6 because I know this was just an initial look at.

7 MR. TAPPERT: Right. So thanks for the question.

8 So I guess I'd start by saying when we do these
9 reviews looking for efficiency and effectiveness improvements, as a
10 first principle, we need to ensure that the mission -- that the agency is
11 effective at fulfilling its mission. So we're going to ensure that we're
12 going to be effective at protecting people and the environment and
13 that would include faithfully fulfilling our responsibilities under the
14 National Environmental Policy Act.

15 That being said, there may be more efficient ways of
16 doing that. Categorical exclusions are a tool in the toolbox. We use
17 them today. And so the action or the recommendation was to look at
18 the work that we're doing today. And if they are certain types of
19 repetitive licensing actions that we're doing environmental
20 assessments for that have always resulted in a finding of no significant
21 impact, we would ask ourselves can we make a generic determination
22 on that type of licensing action. And if so, would that be appropriate
23 for a categorical exclusion.

24 So that's really what we want to ask ourselves. Do
25 these things exist out there? And then we would put on the green
26 eyeshades to determine how much time are we spending on that
27 versus how much time would it take to reopen the rule and do a

1 rulemaking and then do a cost benefit to see if it's worth pursuing.

2 So that's the thought process behind that
3 recommendation.

4 COMMISSIONER BARAN: And what do you see as
5 the next steps on that?

6 MR. TAPPERT: So we brief -- the NRC has internal
7 NEPA Steering Committee with the various organizations that have
8 equities in environmental reviews. They've been briefed on the
9 approach. They support it. We're forming a working group. We'd
10 expect to do some analysis in the next six months or so and make a
11 judgment about whether it's worth continuing to pursue or not.

12 COMMISSIONER BARAN: Okay. Well, I
13 appreciate the way you framed it in terms of if there's some category
14 of actions where our practice has shown we really think this is an area
15 where we've done a bunch of EAs and, as an agency, we think we're
16 just not getting much out of it, we don't think these are an area where
17 we need EAs, I think that's one thing.

18 If the goal is well, there is some kind of number we're
19 trying to hit of reducing resources and so let's do more categorical
20 exclusions, I would have some concerns if that's the way we were
21 thinking about it. It sounds like we're not thinking about it that way.

22 MR. TAPPERT: We're not thinking about it that way.
23 So it's not trying to hit a budget number. It's how do we fulfill our
24 responsibility as efficiently and effectively as possible.

25 COMMISSIONER BARAN: Okay. One other idea I
26 wanted to ask about was to reduce the frequency of the State Liaison
27 Officers Conference from once every two years to once every three

1 years. I've participated in the last couple of these. I think they're
2 really valuable and we don't really have too many opportunities to
3 bring all the states together like that, the state representatives
4 together at one time. It looks like the potential cost savings of
5 reducing frequency would be pretty minimal.

6 Is this something you're still looking at and is it
7 something that the staff has discussed with the State Liaison Officers?

8 MR. DAPAS: At the last State Liaison Officer
9 meeting, which was this past September -- and I'd agree with your
10 characterization. I think there is a lot of value in conducting those
11 conferences -- we did mention to the State Liaison Officers that were
12 present that we were considering various programmatic changes,
13 provided some context regarding this holistic look at organizational
14 structure, fee classes, merging business lines, the workload, which
15 then can translate to fees.

16 We did talk about potential programmatic changes
17 which would include looking at the periodicity of the State Liaison
18 Officer Conference and going from two to three year periodicity.

19 No decision has been made in that regard. And
20 you're correct, there's not a significant resource savings. The cost for
21 hosting that conference is on the order of \$70,000. But as part of this
22 more holistic review we were looking at are there opportunities to
23 potentially reduce costs but no decision has been made. And we
24 would certainly engage the views of state leadership and the SLOs to
25 get their perspective on the value that they receive.

26 Since we just had the conference, the next
27 conference, if we maintained a two-year periodicity would be in 2019.

1 If we went to three years, it would be 2020. But we have not made
2 that determination at this point in time and, as I said, would engage
3 the stakeholders to get their views and perspectives before finalizing
4 any decision.

5 COMMISSIONER BARAN: Okay. Well, I
6 appreciate that you're talking with them about that before you make
7 any decisions on a change there.

8 Thank you.

9 CHAIRMAN SVINICKI: Thank you, Commissioner
10 Baran.

11 I know recognize Commissioner Burns for his
12 questions.

13 COMMISSIONER BURNS: Thank you, Chairman.
14 And again, I express my appreciation, as well, for the overview in the
15 various aspects of this program. It is very interesting and for me is
16 that some of these names that are mentioned are sort of a trip down
17 memory lane. Some problems go away more slowly than others, let's
18 say. And I actually want to come back to that.

19 I appreciate Commissioner Baran's questions on the
20 radium program because this is one of those inserts we got but I think
21 a good program, given some of the adjustments and jurisdiction that
22 the NRC was given, I guess in the Energy Policy Act, and I appreciate
23 the effort to follow-up on it.

24 My one question on that are is when we went into this
25 and started planning to go forward, as with anything, we probably
26 estimated FTE, resources we might need. Recognizing it's still
27 ongoing, how would you assess what -- you know are we spending

1 more than we thought we would in terms of time and people, or less,
2 or about the same, or it's hard to tell at this point?

3 MR. TAPPERT: I don't have any hard numbers that I
4 can pull up. I think my general sense, it's probably in the ballpark of
5 what we estimated.

6 I would say probably over the last year and a half, two
7 years, there's probably more slanted to the non-military radium sites
8 because we also have similar arrangements that we have with the
9 Department of Defense to do some arbitrary oversight with them. I
10 think when we budgeted we probably budgeted higher in that area
11 than we have been executing and probably the same or maybe a little
12 bit lower in the non-military radium. But I think the envelope is
13 probably close.

14 COMMISSIONER BURNS: Okay, thanks.

15 MR. DAPAS: Just one perspective. From my
16 recollection from going through the various budget formulation
17 processes was that you know we are I think close to executing or
18 expending resources on the order of what we had assumed. One
19 area, though, where we did include additional funds as a planning
20 wedge was the contract we have for confirmatory surveys. And as
21 the Commission communicated to us, make sure we continue to
22 monitor that and ensure the contract expenditures are what is
23 necessary, they are not more, simply because we have budgeted and
24 have an allowance to be able to spend more.

25 So I do think we are maintaining a disciplined
26 approach in terms of the resource expenditures. And what we've
27 expended is reasonable relative to what we had anticipated.

1 COMMISSIONER BURNS: Yes, okay. Thanks,
2 Marc. And I think what I hear you and John saying is we kind of got
3 sort of the estimation, we kind of got it right and there haven't been
4 huge surprises. I mean there are always going to be in these sites
5 you know the particular aspects.

6 One of the things that interests me from the pictures
7 in the slides, I kind of understand the radium sites where you have the
8 contamination in the building. And they are probably like that old
9 apartment building, which was a factory at one time and now in the
10 modern era is a condo. So I understand that's probably some
11 residual stuff in there. There might have been a source.

12 The interesting one was like the ones going if you
13 were going into like a thrift shop or you know like an old Army Navy
14 store and you see all this type of stuff, is that a bigger problem than
15 we might think of in that because you are seeing these gauges and it's
16 like a lot of people like to collect old stuff and things like that? I don't
17 mean to raise this huge specter here but those were quite different
18 than what I would say like my clock factory that has probably
19 contaminated floors and things like that.

20 That just struck me as kind of interesting.

21 MR. TAPPERT: Yes, I think the two primary sources
22 that we're seeing are the clocks in Connecticut because of the historic
23 uses there.

24 COMMISSIONER BURNS: Yes.

25 MR. TAPPERT: And it turns out that Michigan had a
26 very large aircraft gauge thing. So I think we've seen a lot of -- that
27 was probably our biggest -- second biggest contributor to things.

1 The gauges themselves, if the gauges are intact, they
2 are really under a general license --

3 COMMISSIONER BURNS: Okay.

4 MR. TAPPERT: -- and we're not really putting them
5 under that program.

6 COMMISSIONER BURNS: That's a good answer.

7 MR. GIESSNER: If I could answer that?

8 COMMISSIONER BURNS: Yes, sure.

9 MR. GIESSNER: Sometimes when we've gone out,
10 we've heard that a certain museum may have a radium hand warmer
11 or some radium bath salts that existed in the early 1900s and a lot of it
12 was just phony. In other words, you do the survey and there's really
13 nothing there. It's sort of a scam.

14 Other times, we have found that there may have been
15 radium. Of course we would work with the owners to do that.

16 So we have an approach that takes a look at that if
17 we do receive that information.

18 COMMISSIONER BURNS: Yes, that's interesting.
19 And so they were phony back 100 years ago when they were sold.

20 MR. GIESSNER: Right.

21 COMMISSIONER BURNS: Okay. Well, that's why
22 we have regulation in other areas, I suppose.

23 Anyway, I wanted to focus and probably for the rest of
24 my time, sort of the legacy and complex sites. I think I know what it
25 means but it may just help sort of a quick the -- well, there's a
26 differentiation I guess.

27 For a legacy site, we're really talking about something

1 that was pre-NRC licensing. Correct? And so a complex site is,
2 again -- I think Bruce you talked about that. Tell me that again.

3 MR. WATSON: Many of the legacy sites were either
4 sites that were released from regulatory control by the Atomic Energy
5 Commission --

6 COMMISSIONER BURNS: Right.

7 MR. WATSON: -- before the NRC was an entity.
8 And then the current complex material sites are pretty much ones that
9 are under license. So those are under our current program for
10 decommissioning.

11 COMMISSIONER BURNS: Okay. So what makes
12 them complex?

13 MR. WATSON: In many cases, it's just a very large
14 facility with long-lived radionuclides, uranium, thorium, with extensive
15 contamination or areas that have a lot of environmental issues, which
16 then contribute to possibly groundwater contamination.

17 And so when the groundwater -- once we have
18 groundwater contamination, then it's obviously complex site that we'd
19 like the Headquarters will project manage.

20 COMMISSIONER BURNS: Okay. And then --
21 Marc?

22 MR. DAPAS: Just another example might be
23 extensive stakeholder engagement, working with partners,
24 Environmental Protection Agency involvement or, in the case of the
25 Great Kills Park with the National Park Service. So there are other
26 regulatory agencies that are involved that have a role. And the
27 degree of coordination, it makes it more complex that's that you have

1 program office, NMSS project management oversight versus just the
2 Regions conducting oversight of cleanup efforts.

3 COMMISSIONER BURNS: Okay. I think one of my
4 questions on this in terms of -- and again, it's easier for me to get a
5 handle on some of the legacy sites sometimes because of problems
6 that they've had there, a lot of it is prior to basically the funding
7 requirements and things like that. So those I understand. And you
8 know the difficulties of dealing with like Hematite and Fansteel, Atlas
9 Moab in the day, and a number of others.

10 What I'm trying to understand is is there something,
11 for those that we consider complex now because they have some
12 conditions as you described, is there something about the -- have we
13 reflected on to the extent to which regulatory control is satisfactory
14 with respect to either what I would say deterring a site from becoming
15 a more complex site? I mean how -- I guess my questions is: Is
16 there some reflection that we've thought of in terms of whether or not
17 the regulatory control on those sites or on the use of the materials is
18 adequate?

19 MR. WATSON: I think I can give you a little different
20 perspective. I mentioned in my presentation about securing the
21 financial things for Westinghouse. But in that rule we put that was
22 published in 2012, we called it the Decommissioning Planning Rule,
23 and it was specifically designed to prevent legacy sites. So it revised
24 the requirements for subsurface monitoring in close near the potential
25 sources of contamination, so there's early detection which then
26 prevent financial issues when you don't have the money to
27 decommission the site.

1 And so I think we've made some major changes that
2 have resulted in positive things with the licensees in requiring them to
3 do additional monitoring to make sure that they don't create a big
4 problem for themselves and us.

5 COMMISSIONER BURNS: Okay. Okay, good.
6 That's good.

7 Perhaps the last question I'll ask in this area, I think
8 Jack spoke to the issue of looking at cross-training. And one of those
9 -- I thought that was very interesting. And one of the issues is this
10 transition from -- for reactor sites from it being a quote, a reactor site
11 and it turns from the operating status to a point that you are into the
12 decommissioning.

13 Has the staff been doing any thinking about the
14 nature of that transition about when it goes to NMSS versus NRR and
15 those types of things? I'd be interested in what kind of dialogue or
16 thinking because I think your comments on that, the ability to
17 cross-train people, you hear this value. And you know when you hear
18 the arguments over SAFSTOR versus DECON, it's having people who
19 know what the plant was like, where some of the issues are, how to
20 get around it, even our folks in that way.

21 But I'd appreciate hearing more on that.

22 MR. WATSON: Internally, NRR has a procedure on
23 transitioning reactors. Along with our procedure, we have an NMSS
24 and basically it says that when the fuel is all transferred to the spent
25 fuel pool and the defuel tech specs are issued, then it gets transferred
26 to NMSS.

27 So the site has been transferred to what we consider

1 just a material site with fuel storage, at that point.

2 So that takes generally some time by the utility to get
3 that work accomplished. In the meantime, they'll be doing
4 preparation for making the site I'll say safer for decommissioning;
5 draining systems, making it unlikely that there would be any leaks that
6 would go to the environment.

7 On the inspection side, our inspection manual for
8 power reactors talks about the fact that we prefer to keep the resident
9 inspector there for a while. They are already familiar with the plant.
10 They are already in tune with the licensing and the safety and
11 evaluation process that the site uses. And so that adds value to the
12 transitioning process.

13 And along with that, we also will have a handoff from
14 reactor projects to DNMS for the inspection program, when we feel it's
15 appropriate. In the meantime, our decommissioning inspectors will
16 supplement the residents in any decommissioning issues that may
17 come up.

18 So this is all pretty much proceduralized in our
19 program.

20 COMMISSIONER BURNS: Yes, okay.

21 Yes, Marc?

22 MR. DAPAS: While it is proceduralized, we continue
23 to evaluate lessons learned as we gain more experience.

24 And regarding a resident inspector presence, my
25 recollection is we have, by practice, typically maintained the senior
26 resident on-site for up to a year after the site announced their plan to
27 permanently closed, given that corporate knowledge and to ensure

1 effect knowledge transfer.

2 And then we continue to engage with the Regions and
3 leverage the experience they have in looking at are there learnings in
4 terms of how we provided oversight that we then can translate to
5 modifying the procedures and guidance that we have. But it's that
6 continuous improvement aspect that I wanted to highlight --

7 COMMISSIONER BURNS: Okay.

8 MR. DAPAS: -- as we gain more experience with
9 oversight of these plants undergoing decommissioning.

10 COMMISSIONER BURNS: Okay, thanks.

11 Thanks, Chairman.

12 CHAIRMAN SVINICKI: Thank you, Commissioner
13 Burns.

14 This is a good meeting to be doing the final round of
15 questions because I benefit. My colleagues have covered a number
16 of the lines of inquiry that I might have asked about as well. So I
17 appreciate their questions.

18 Maybe I'll just begin with a couple of comments. I
19 think, Bruce, you had a slide about stakeholder engagement. And
20 that caused me to think about, given this diversity of issues that are on
21 the table here, I think that the staff that are working on these programs
22 do engage in a lot of stakeholder engagement and, I think, in areas
23 where there are a lot of strongly-held views.

24 So I thank all of them for that public outreach, which I
25 know likely requires us to patiently build understanding of our role of
26 what we do to maybe hear, even if they fall somewhat outside our
27 jurisdiction, a lot of people's broader concerns about the direction of

1 waste policy, and nuclear waste, and how it's handled in the United
2 States. So I'm grateful for all of our folks on the front lines who are
3 doing that work which is so necessary to, again, continue to build that
4 understanding.

5 And whether or not concerns are rooted in
6 fundamental misunderstandings, they are very sincerely arrived at
7 when it's your community and you're just concerned about the future
8 and what's going to happen there. So I appreciate the hard work that
9 all of our NRC experts go out and do week to week and month to
10 month on that topic. And I appreciate that Bruce included that
11 specifically in his presentation.

12 Maybe I'll pull back a little bit on some broader
13 organizational topics. Marc, you have taken over the leadership of
14 NMSS at a time when it's a few years removed from the fundamental
15 merger with FSME, which, for the life of me, has been gone for a while
16 and I don't remember the entire acronym but it was a major office here
17 at NRC in very recent history. So I should be worried that I can't
18 remember. It was Federal and State something. That's the F and
19 the S. The M-E, I'm not sure about. But maybe M was materials. I
20 don't know. We can look it up.

21 But we're still, when I listened to all the presentations
22 today, I'm thinking about how dynamic things continue to be in terms
23 of the regulated entities, the activities they are undertaking.

24 So as you've done some lessons learned, you've
25 looked at different aspects of NMSS, different licensing processes. Is
26 there anything that has been suggested in these reviews in terms of
27 within NMSS restructuring or shifting around of divisions and titles that

1 maybe is not needed today but is likely to be needed as more reactors
2 enter decommissioning and parts of your work are either emphasized
3 or deemphasized? Is that something that you have some preliminary
4 outcomes or you will be undertaking that going forward?

5 MR. DAPAS: Well, I look forward to providing the
6 product that you have requested in February, which represents that
7 holistic review, looking at organizational structure, business lines, fee
8 classes.

9 One of the things in conducting the review we have
10 affirmed is the current way we are organized and conducting business
11 has been effective. You know in looking at is there a compelling
12 reason to change the organizational structure, we are looking at things
13 like should we go from four divisions with a division associated with
14 each business line to perhaps three divisions.

15 We have evaluated within the division of like fuel cycle
16 safety safeguards, environmental review, given the span of control in
17 the branches, does it make sense to collapse a branch.

18 Region II has engaged with us in looking at the
19 Division of Fuel Facility and Inspection. Are there opportunities there
20 to collapse a branch?

21 You know that can result in some incremental
22 reduction in FTE in terms of organizational structure but we have not
23 identified that, to date, a significant change that would be
24 transformational in the context of 10 to 15 FTE as a result of
25 reorganizing there.

26 Like when you reorganized combined divisions, you
27 might have one less deputy division director, you know at that level of

1 management, but you still have the same work and you still have the
2 necessity for a given number of branches. And looking at the span of
3 control, and should that be six to ten, and do you have some branches
4 that are larger? And if we have a smaller branch, you know as I said,
5 you can move staff and consolidate.

6 But we are evaluating the pros and cons. There may
7 be some organizational restructuring that we would offer that we
8 propose but there is a very disciplined process we go through. So in
9 the deliverable that we'll provide in February, we'll talk about some of
10 the considerations with organizational structure but in terms of going
11 forward, we'd want to walk -- go through that process in engagement
12 with the union and our stakeholders, et cetera, which, by design is
13 very structured.

14 So I would offer that there are opportunities here in
15 looking at our organization but we haven't identified a significant, if you
16 will, restructuring. We do think the combining FSME and NMSS was
17 a good decision and has provided for efficiencies. I'll offer from my
18 own experience, it is particularly challenging at the office director level
19 but at lower levels in the organization it has certainly been effective.

20 So the bottom line is that we are trying to be very
21 open-minded and look at is there a true business case in terms of
22 efficiency gains that we would achieve by restructuring.

23 CHAIRMAN SVINICKI: Well it sounds like -- I take
24 from your answer although the admin flow of work is dynamic, the
25 trigger for broader change has to be something that is developed with
26 a strong basis. And it sounds like you keep a fairly constant eye on it,
27 you and your leadership team, and the staff, and NMSS. So I

1 appreciate that.

2 But there is an area that you talked about or touched
3 upon that will experience some very significant change and that will be
4 the uranium recovery area, should the Commission ultimately, in a
5 timely way, approve the Wyoming Agreement State agreement. The
6 Commission has already begun to be queried by the officials that
7 represent states that would remain in that category and there won't be
8 a whole lot of entities remaining in that category. But given our legal
9 requirement to do fee recovery for our work, which of course we must
10 comply with, it's not a secret that it's really mathematics is what it
11 comes down to. And you would have very few licensees having to
12 carry the infrastructure for an entire area. So this isn't anything that
13 we aren't mindful of it or we're not intentional about what we're doing
14 but we'll have to reconcile a number of different constraints on us.

15 I know that you haven't finished your work, that you
16 are engaged with the Chief Financial Officer. Is there anything that
17 you can say today about how we would navigate to that very
18 complicated step change from having Wyoming take so many of the
19 entities in a specific fee category?

20 MR. DAPAS: I would offer this, Chairman, that the
21 first step is to identify what is that necessary infrastructure you need to
22 maintain for oversight of three operating uranium recovery facilities,
23 going to 11 to three with Wyoming becoming an Agreement State and
24 assuming responsibility for oversight of eight of the 11, that would
25 leave three.

26 What is the infrastructure you need to ensure that you
27 are conducting the activities you have responsibility for in a

1 risk-informed manner?

2 Then we are looking at other things and considering,
3 quite frankly, options of should there be activities that are not on the
4 fee base? Is there the opportunity, potentially, for a surcharge? But
5 looking at a number of things under the overarching goal of
6 recognizing that three operating uranium recovery facilities cannot
7 continue -- cannot fund, if you will, the current infrastructure we have
8 in place or the current fee structure. So we've been working very
9 closely with the Office of the Chief Financial Officer and I've had
10 discussions with Maureen about that.

11 CHAIRMAN SVINICKI: And I'm not asking you to
12 talk about anything that we haven't finished our analysis of. The
13 Commission has been asked, though, to maintain just communication
14 with the licensees who will remain and with the officials from those
15 states. And I think that that's a transparency measure that we can at
16 least be indicating to them that we're working on it, the status of
17 reaching any conclusions on that.

18 And I think to the extent -- if we need some sort of
19 congressional relief, I think that the earlier that we can identify that
20 and communicate it, whether or not it would be granted I don't know,
21 but the implications of what we have the discretion to do and what falls
22 outside of our discretion if others would like to at least know the
23 impact and then decide whether or not they support trying to make
24 some adjustment for us. The sooner we can do that, the better.

25 And again, I've looked a little bit at the math, at least
26 at my level, and it's very, very difficult for us to come up with solutions
27 that are equitable and fair. And again, we have the overriding

1 principle of invoicing to those who cause a cost for the agency. We
2 need to allocate that cost to the people who cause that cost.

3 So again, we've got a lot of principles that we've got
4 to balance here and I think we might, at the end of the day, not have
5 unlimited discretion to make adjustments. So I think we need to finish
6 our look at that and if we have preliminary problems, communication
7 those forward to the Commission --

8 MR. DAPAS: Yes, ma'am.

9 CHAIRMAN SVINICKI: -- and then we can decide a
10 path forward from there.

11 So I appreciate you're looking at that.

12 I do want to note that officials from Wyoming have
13 been very complimentary of the productive engagement with NRC
14 staff. So I thank all of you for that.

15 I think that my last question might be you know a
16 number of you touched on guidance and updating guidance, and
17 guidance documents. Right now the Congress is inquiry about how
18 many guidance documents do you have. And so it reminds of how
19 significant of an instrument guidance is for a regulatory agency.
20 Again, it does not set or modify policy, as I think John Tappert said,
21 and it doesn't set requirements but it is of great utility, I think, to
22 regulated entities to have guidance.

23 Does the agency still operate under a directive that
24 guidance has to be looked at on a regular frequency for updating? At
25 one time I think we had a management directive that said every five
26 years you need to look at your guidance. Is that something maybe
27 you all can just let me know that afterwards?

1 But the other thing about changing guidance is that
2 we may view it as beneficial to incorporate lessons learned of the last
3 prior number of years of our regulatory oversight. It can, though, look
4 like there is a lack of stability in the regulatory program.

5 So I think we're trying, again, to balance those two
6 things we've been implementing for X number of years. We have
7 some lessons learned that should be reflected in guidance. But is
8 both resource intensive for us and then for any stakeholders who want
9 to comment on the draft updates to guidance they have to engage in
10 that. I don't know.

11 My question is: Have we looked systematically at the
12 frequency of either looking at guidance for updating or updating it and
13 have we weighed kind of the overall investment in that versus, yes,
14 there's a few potential beneficial lessons learned but it's maybe not
15 efficient to update a whole guidance document?

16 Victor, do you have just a general comment on that?

17 MR. MCCREE: So, yes. And my comment is we
18 will take that for a follow-up response because I can't quote you or cite
19 you the reference that does mandate that requirement and at what
20 frequency.

21 My recollection, however, is similar to yours. That is,
22 we do require, at some frequency, a review of our existing guidance.

23 And no, we have not initiated I guess what you
24 characterize as a systemic look at the health of doing so and how we
25 go about it. And that's something that I will take away as well.

26 CHAIRMAN SVINICKI: Okay. And I do have just
27 one quick question.

1 I think it was John Tappert who mentioned at some
2 point we contemplate hosting a workshop regarding Texas' request
3 with respect to GTCC waste. Your next slide, you talked about an
4 overview of the reg basis and other things that the staff views need to
5 be done in advance of that.

6 But if all of that goes as planned, what would be the
7 notional time frame, like the year of that workshop, or the quarter in
8 the year? Do you have a notional time frame or is that something
9 that you haven't developed yet?

10 MR. TAPPERT: Yes, so we're working to a timetable
11 to complete that regulatory basis within six months after we issue the
12 supplemental proposed rule. So I think that would put that workshop
13 sometime in the summer time frame is what we're notionally looking at
14 right now.

15 CHAIRMAN SVINICKI: Okay.

16 MR. TAPPERT: Summer of this year.

17 CHAIRMAN SVINICKI: This year. Okay, I assume
18 if you don't specify, you mean this year.

19 MR. TAPPERT: I guess in the waste arena, we have
20 to specify the year.

21 CHAIRMAN SVINICKI: Okay. Well, again, thank
22 you all for your presentations.

23 I went over a little bit and there were a lot of topics.
24 Do either of my colleagues have a last question for this panel?

25 COMMISSIONER BURNS: No.

26 COMMISSIONER BARAN: No.

27 CHAIRMAN SVINICKI: Okay. Well, with that then,

1 this panel is excused.

2 And we will take a brief break. Let's try to make that
3 five -- well, we tend to run over. So let's have some truth in setting
4 times for reconvening. We'll do 10:35 and we'll really try to hold to
5 that. Thank you.

6 (Whereupon, the above-entitled matter went off the
7 record at 10:28 a.m. and resumed at 10:37 a.m.)

8 CHAIRMAN SVINICKI: Okay, well we will reconvene
9 now for our second of two panels and this panel will address the
10 Spent Fuel Storage and Transportation business line. We have some
11 of the same presenters but we've been joined by some additional NRC
12 presenters. So, welcome.

13 And I will, once again, turn this over to Victor McCree
14 to lead off the staff's presentation. Thank you.

15 MR. MCCREE: Good morning again, Chairman,
16 Commissioners.

17 We will now discuss activities involving the Spent Fuel
18 Storage and Transportation or SFST business line.

19 As we indicated the last time we briefed the
20 Commission, the workload for this business line is indeed growing,
21 given the increasing number of reactors transitioning to
22 decommissioning before the expiration of their current operating
23 licenses, resulting in additional licensing activities.

24 There is also renewed interest in licensing
25 consolidated interim storage facility or CISF and for the permanent
26 disposal of spent fuel and high-level waste.

27 We finished the initial acceptance review and

1 docketed an application for a CISF license from Waste Control
2 Specialists last January but the review was suspended in May at the
3 applicant's request, also, an application for CISF was submitted by
4 Holtec International last year in March, which is currently in the
5 acceptance review process. Both of these applications have
6 generated high interest from stakeholders.

7 This work is in addition to the steady baseline of work
8 in this business line, which is expected to continue into the future.
9 There also continues to be an increasing level of internal and external
10 stakeholder interest regarding business line activities. In an
11 environment of decreasing resources, we continue to focus on
12 maintaining our mission effectiveness and enhancing our agility.

13 Next slide, please.

14 With me at the table, again, is Marc Dapas, who will
15 provide an overview of the business line to include licensing and
16 oversight successes, challenges, and opportunities. He will be
17 followed by Michael Layton to my right, Director of the Division of
18 Spent Fuel Management and NMSS, who will discuss the current
19 Spent Fuel Storage and Transportation environment, as well as some
20 of the initiatives since the last time we briefed you.

21 Yoira Diaz, to Mike's right, Branch Chief of the
22 Containment, Structural, and Thermal Branch within NMSS, will then
23 discuss current technical challenges in licensing activities for spent
24 fuel management.

25 And lastly, Joe Nick, Joseph Nick, Deputy Director of
26 the Division of Nuclear Material Safety in Region I, will discuss the
27 accomplishments and challenges with respect to the independent

1 spent fuel storage installation or ISFSI inspection program.

2 So with that brief introduction, I'll turn the presentation
3 over to Marc.

4 Next slide, please.

5 MR. DAPAS: Thank you, Vic. Good morning,
6 again, Chairman Svinicki and Commissioners.

7 As Vic indicated, we'll now turn our attention to the
8 SFST business line. Similar to how we approached the staff's
9 presentation with respect to Decommissioning and Low-Level Waste
10 business line, I plan to provide a brief overview of the breadth and
11 scope of the SFST business line. And my colleagues will discuss
12 selected topics in more detail during their individual presentations.

13 Next slide, please.

14 The SFST business line has a multi and varied
15 workload. It includes licensing cask designs for the safe storage and
16 transportation of spent nuclear fuel, certification of radioactive material
17 transportation packages, and preparation for future potential licensing
18 actions involving alternative disposal and reprocessing strategies.

19 I would like to point out that there are more than three
20 million shipments of non-spent fuel radioactive material each year.
21 Now that material is primarily used in medical and industrial
22 applications. Approximately a third of our licensing resources are
23 dedicated to certifying the transportation packages used for these
24 shipments.

25 We continue to effectively accommodate the current
26 workload as well as prepare for future anticipated workload increases.

27

1 As Vic noted, we received an application from Holtec
2 International for a CISF license. Although the acceptance review for
3 that application is progressing, uncertainty remains whether we will be
4 asked to resume the review of the Waste Controls Specialist CISF
5 license application.

6 Although the work associated with alternative
7 strategies for both spent fuel disposal and reprocessing are included
8 in the SFST business line activities, that work continues to diminish
9 and, as such, resources have been reassigned to support other
10 emergent work. However, if there is renewed interest in a permanent
11 repository for high-level waste in connection with Yucca Mountain, this
12 would present a unique agility challenge for us consisting of effectively
13 supporting this emerging work and the existing case work without a
14 permanent increase in staff resources.

15 If Yucca Mountain activities unfold, there may be a
16 future need to reassign staff to support high-level waste activities and
17 develop coping strategies for managing the current workload without
18 permanently expanding the NRC staffing.

19 We are making progress in an effort to improve
20 licensing of dry cask storage by applying risk insights to the
21 regulatory review process. The staff utilized the regulatory issue
22 resolution protocol to collaborate with the industry and the Nuclear
23 Energy Institute to develop and implement a graded approach
24 methodology for a pilot licensing review.

25 The pilot review will support development of technical
26 review guidance to determine the appropriate level of detail required
27 for the certificate of compliance and technical specifications. We

1 expect the effort will make the storage licensing process more efficient
2 by reducing the number of required future license amendments.

3 The SFST business line also includes the
4 independent spent fuel storage installation or ISFISI inspection
5 program, which involves the oversight of ISFISI operations, including
6 loading of spent fuel, transfer of the storage systems to the storage
7 pad, and inspections of the systems while in storage.

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

10 Next slide, please.

11 MR. LAYTON: Thank you, Marc.

12 Good morning, Chairman Svinicki and
13 Commissioners.

14 The photos on this slide represent the activities that
15 we regulate in the SFST business line. On the left is a picture of an
16 ISFISI and associated storage cask. The photo in the middle depicts
17 a spent fuel transportation package. And on the right, is a well
18 logging source being transported.

19 Today, I'll provide you with a brief overview of the
20 spent fuel environment and discuss progress on relevant initiatives
21 since our last Commission briefing on this business line.

22 Next slide, please.

23 In this slide, the forecasted licensing actions and
24 renewals for Spent Fuel Storage and Transportation are expected to
25 increase over the next three years. The chart that is depicted here
26 shows the forecasted renewals for ISFISIs and certificates of
27 compliance or CoCs and typifies increasing workload in this business

1 line.

2 As you can see, there is a peak of activity in the 2020
3 time frame, which represents the anticipation of several licensees and
4 CoC holders requesting renewals, as the term of their licenses or
5 CoCs come to an end.

6 There are other amendments in transportation cask
7 reviews driven by licensee cost considerations that are also increasing
8 but the timing of this increased licensing action workload is not as
9 easily forecast as the renewal workload. To proactively address this
10 challenge, you may recall from our last Commission briefing, we have
11 initiated various actions to better position ourselves to address the
12 anticipated workload.

13 For example, we completed a new draft guidance
14 document that describes generically-applicable Aging Management
15 Programs that an applicant may use to maintain the approved design
16 basis for its storage systems during the period of extended storage.
17 This document will also assist vendors and licensees as they develop
18 their Aging Management Programs.

19 The Managing Aging Processes in Storage or MAPS
20 report was issued earlier this fiscal year for public comment and use.
21 This document is similar to the Generic Aging Lessons Learned
22 Report developed by the Office of Nuclear Reactor Regulation and
23 should streamline the vendors' and licensees' efforts for developing an
24 Aging Management Program. It will also aid NRC staff in identifying
25 acceptable aging management approaches in submitted documents.

26 And as Marc mentioned, although the WCS CISF
27 review was suspended, we used lessons learned from the WCS

1 application review to perform a pre-submittal audit of the Holtec CISF
2 application, which is allowing us to more effectively work through the
3 acceptance review process.

4 In July, Holtec notified the NRC that it would provide
5 responses to Requests for Supplemental Information or RSIs in two
6 parts. And as of December, Holtec has submitted responses to all
7 environmental and safety-related RSIs. We are proceeding with the
8 acceptance review and anticipate a decision on the docketing of the
9 application early this calendar year.

10 Additionally, I would like to discuss in more detail in
11 the next slide, we published a NUREG and are working on developing
12 a staff guidance document that will allow us to more efficiently review
13 applications related to high burnup fuel.

14 Next slide, please.

15 In addition to the anticipated workload increases, we
16 are not certain that WCS will ask us to resume our review of the CISF
17 application. Furthermore, we do not know if the Department of
18 Energy will submit a topical safety analysis report for a CISF.

19 To address this situation, we have initiated several
20 activities to increase our agility to be able to accommodate potential
21 emergent work, while continuing to be effective in our spent fuel
22 licensing and oversight mission. For example, we enhanced our
23 internal workload tracking system utilizing the web-based licensing
24 platform. This was done to more effectively focus on schedules and
25 proactively identify potential challenges to critical path items.

26 As part of the Project Aim initiative to increase
27 efficiency, we are nearing the completion of consolidating four

1 separate standard review plans and several interim staff guidance
2 guides into two documents, a combined transportation standard
3 review plan and a combined storage standard review plan.

4 Although this effort does not result in any new
5 guidance, the consolidation of a number of separate documents into
6 two guidance documents provides enhanced clarity and efficiency to
7 both the NRC technical reviewers, and to the vendors and licensees
8 who use those documents to prepare applications and amendment
9 requests. The intended outcome is to enhance both effectiveness
10 and efficiency in our licensing reviews.

11 At this time, the draft consolidated storage standard
12 review plan, specifically NUREG-2215 has been published for public
13 comment.

14 And lastly, with the help of the Office of Nuclear
15 Regulatory Research, we have also undertaken an effort to conduct
16 experiments and evaluate the potential impact that high burnup fuel
17 may have on cladding integrity and potential cladding degradation.
18 The result of this effort indicate that high burnup fuel does not impact
19 the cladding integrity as much as once believed. These test results
20 were published in NUREG/CR-7198 Revision 1 to help clarify
21 uncertainties and the conservatisms in regards to high burnup fuel
22 performance.

23 In addition, a staff guidance document for reviewing
24 high burnup fuel-related licensing actions is also being developed.

25 I'll now turn our presentation over to Yoira Diaz, who
26 will discuss current technical challenges in licensing activities for spent
27 fuel management.

1 Next slide, please.

2 MS. DIAZ-SANABRIA: Thanks, Mike.

3 Good morning, Chairman Svinicki and
4 Commissioners. I plan to discuss the current technical challenges for
5 spent fuel management due to the increased demands in licensing
6 actions for spent fuel storage and transportation dry casks and ISFISI
7 renewals.

8 Next slide, please.

9 Our current regulatory framework is robust, allowing
10 us to conduct effective technical reviews to support the licensing
11 process for Spent Fuel Storage and Transportation, while we continue
12 to maintain an appropriate focus on safety.

13 Comprehensive technical review processes have
14 been developed with well-established regulatory requirements and
15 acceptance criteria. These processes provide for appropriate
16 treatment of crosscutting issues, as defined in guidance documents
17 ensuring consistency in technical reviews.

18 In addition, to ensure rigorous, consistent and
19 predictable processes, we have established effective teams in which
20 corporate knowledge of technical issues is maintained by the NMSS
21 staff, with support from our partners in Research, the Regions, the
22 Office of the General Counsel, and contractors.

23 Our conclusions are well-documented in safety
24 evaluation reports, which underlie the regulatory and safety basis that
25 support our conclusions for issuing licenses and certificates of
26 compliance.

27 Our assured and well-established a spent fuel

1 management licensing process enable us to complete 63 licensing
2 actions last year and manage about 52 ongoing reviews.

3 Next slide, please.

4 Let me spend a couple of minutes discussing some of
5 the technical challenges we have been facing. The recent demands
6 for storage and transportation license reviews have increased. And
7 as Mike mentioned, this is mostly driven by cost considerations from
8 the licensees and vendors, which have led us to -- which have led to
9 an increased number of design changes to accommodate higher
10 thermal loads and more fuel types.

11 These two diagrams depict typical storage and
12 transportation casks. Some of the design change requests we have
13 recently received involve structural changes to the baskets to allow for
14 larger spent fuel arrangements.

15 Other license amendment requests involve changes
16 to technical specifications for storage casks. For example, licensees
17 have submitted change requests to modify the surveillance frequency
18 for block vents, allowing for different operating conditions with storage
19 casks.

20 Next slide, please.

21 The increased number of design changes have
22 brought additional challenges into the licensing review process. One
23 challenge is the need to reevaluate the technical basis for the
24 allowable peak cladding temperature limit referenced in Interim Staff
25 Guidance ISG-11, titled Cladding Considerations for Transportation
26 and Storage of Spent Fuel.

27 The issue involving increase heat load demands is

1 driving our focus to better understand cladding performance during
2 operations. Consequently, the treatment of analysis uncertainties
3 and the level of conservatism in thermal models is becoming
4 increasingly important as the design margin is reduced.

5 Next slide, please.

6 Although we continue to have confidence in the rigor
7 of our safety review process, we are continuing to evaluate that
8 process to enhance our agility in resolving emerging technical issues.
9 For example, we issued NUREG-2152, which provides best practice
10 guidelines pertaining to computational fluid dynamics for dry cask
11 applications. This guidance documents provides practical advice on
12 the best methods used in computational fluid dynamics to assist in
13 achieving high-quality results.

14 Although NUREG-2152 applies to computational fluid
15 dynamics, it can also be used for other computational methods.

16 Another concept we are embracing is the graded
17 approach to confirmatory analysis. This approach will make the
18 technical review process more efficient, while maintaining its
19 effectiveness on ensuring that the regulatory requirements are met.
20 In addition, it provides for consistency relative to the approach we are
21 exercising for other technical review areas.

22 Lastly, I want to briefly mention that we are also
23 participating in research efforts, specifically with the Electric Power
24 Research Institute and the Department of Energy to develop a best
25 estimate approach for addressing uncertainties in thermal models to
26 facilitate our licensing reviews.

27 As I mentioned before, understanding the treatment of

1 uncertainties, specifically in the thermal area, will help us to better
2 understand the thermal performance of casks. This should also lead
3 us to more robust thermal analyses with a more predictable outcome.

4 Next slide, please.

5 Other efforts we have initiated to address emergent
6 work include, as Mike already mentioned, consolidating the standard
7 review plans for storage and transportation to make our licensing
8 reviews more consistent and efficient.

9 Another area we are focusing on is effective
10 communications with licensees and applicants to expedite the
11 exchange of information and provide clarity of expectations. For
12 example, we enhanced our interactions with the stakeholders to reach
13 a resolution of an issue involving the proposed change to the Nuclear
14 Energy Institute Guidance Document, NEI-1204, titled Guidelines for
15 10 CFR 72.48 implementation.

16 These efforts should result in reaching a common
17 understanding with the industry on how the change process allowed
18 by 10 CFR 72.48 should be implemented and maintaining technical
19 consistency between transportation and storage reviews.

20 Another area of improvement involves reinforcing
21 expectations and providing for effective communications between
22 NRC staff and management. For example, we have exercised
23 greater management oversight to support streamlining the review
24 process in a risk-informed manner, while maintaining an appropriate
25 safety focus on the resolution of technical issues.

26 Lastly, we have continued to provide the necessary
27 technical support and maintain effective communications with our

1 regional staff through the technical assistance request process. This
2 process also provides for synergy between licensing and oversight
3 staff.

4 At this time, I would like to turn over the presentation
5 to Joe Nick, who will discuss accomplishments and challenges within
6 the inspection program for independent spent fuel storage
7 installations.

8 Next slide.

9 MR. NICK: Thank you, Yoira, and good morning,
10 Chairman and Commissioners.

11 As Yoira indicated, the topic of my presentation today
12 is the independent spent fuel storage installation inspection program
13 accomplishments and challenges.

14 Next slide, please.

15 Our independent spent fuel storage installation or
16 ISFISI inspection program plays a key role in ensuring the safe and
17 secure storage of spent fuel and high-level waste. As Jack Giessner
18 mentioned earlier in the panel, safety culture remains an important
19 focus and our inspectors continue to discuss safety culture with senior
20 managers during our visits with all our spent fuel licensees.

21 This morning, I'm going to talk to you about some
22 recent inspection activities involving spent fuel storage and the future
23 outlook of the inspection program.

24 Just to mention, this slide above shows some of the
25 different types of dry cask storage systems that are used by our
26 licensees in the country, specifically, the horizontal and vertical
27 installations.

1 Next slide, please.

2 Our oversight of ISFISIs includes observations of
3 construction activities at the ISFISIs. And you can see from these
4 pictures, which are images from ISFISI construction at the Crystal
5 River Plant in Florida and the Nine Mile Point site in New York.

6 As an example of our activities, I wanted to highlight
7 some of the recent activities identified by our Region III inspectors at
8 the Davis-Besse Nuclear Power Station. The inspectors identified a
9 finding involving the failure of the licensee's design control measures
10 to provide for verification of design adequacy of their Auxiliary Building
11 spent fuel cask crane and the crane support structure elements.
12 They also identified, at the same time, a violation for the failure to
13 maintain sufficient records for ultrasonic testing, which were relied
14 upon to demonstrate that the spent fuel selected for loading was
15 correctly classified as intact.

16 The licensee subsequently initiated corrective actions
17 to restore compliance for these violations and they were classified as
18 minor and low safety significance violations.

19 Next slide, please.

20 Other aspects of our ISFISI oversight program involve
21 resolution of technical issues at the storage sites. For example,
22 regional inspectors performed infield verification to support the license
23 in process.

24 Another aspect of our oversight involves interactions
25 with interested members of the public. For example, the Region I
26 staff has recently supported exchanges with the public on spent fuel
27 storage, which is demonstrated through our involvement in the

1 recently held Vermont Nuclear Decommissioning Citizens Advisory
2 Panel meeting, the Massachusetts Nuclear Decommissioning Citizens
3 Advisory Panel meeting, and the Indian Point Local Unity Task Force
4 meeting, all held in Region I.

5 Next slide, please.

6 This slide just shows the various stages of
7 decommissioning before, during, and after cleanup. And of course,
8 spent fuel is a major part of those phases of cleanup.

9 The total number of reactors entering or planning
10 decommissioning or initiating or expanding the dry storage of spent
11 fuel are increasing and are impacting our future workload.

12 Also a recent trend has been noted where licensees
13 shutdown reactors in a prolonged, nearly continuous loading
14 campaigns to empty their spent fuel pools. And this allows them to
15 transition to a different security structure. They try to do it in an
16 intense short schedule.

17 To ensure adequate oversight of the licensee
18 activities, the extended loading campaigns result in multiple inspection
19 activities on a compressed schedule. And as an example, Crystal
20 River just finished this week loading their last cask in a loading
21 campaign. So all their fuel is now on their storage pad.

22 Next slide, please.

23 This just shows the map of the current ISFISI
24 locations across the country and it includes the ISFISIs operating
25 under general license or specific license. It also includes the three
26 proposed ISFISI sites that we have talked about previously for CISF.

27 And I would like to note that the use of the new

1 vendors and new designs for future loading campaigns requires
2 additional training for our staff performing preoperational and loading
3 inspections.

4 Next slide, please.

5 As licensee applications refer to new technologies
6 and consolidated interim storage facilities are approved, leading to
7 new facility construction and operation, additional inspections are
8 required for the construction and the preoperational activities, as well
9 as the oversight of licensee canister independent inspections before
10 they are transported.

11 Our oversight includes receipt inspections for the
12 storage systems, as well as assessment of the licensee actions to
13 address any identified noncompliances with the canisters or the casks.

14 The images of this slide are just associated with
15 Waste Specialists and the Holtec International CISF sites that we had
16 previously discussed.

17 Next slide, please.

18 So let me briefly mention some of the challenges we
19 are facing from a regional perspective. The first challenge involves
20 accommodating changes in the workload associated with schedule
21 changes for the ISFISI activities. For example, our experience has
22 been that loading campaigns may accelerate at different paces and,
23 as such, we need to be in a position to shift our resources to
24 accommodate these changes.

25 One of the approaches we have utilized to meet this
26 challenge involves sharing inspection resources among the regions.
27 In Region I, we also put an emphasis on ensuring that we have staff

1 qualified to perform these inspections. We proactively pursue
2 knowledge transfer opportunities by having newer inspectors team up
3 with experienced inspectors as a good way to most efficiently train our
4 staff.

5 Having a higher number of qualified staff helps us
6 ensure that maximum flexibility in handling these schedule changes
7 and also prepares us for any staff attrition in the future.

8 This concludes my remarks and I will turn the
9 presentation back to Vic.

10 MR. MCCREE: Thanks, Joe.

11 Chairman, Commissioners, as you've heard Spent
12 Fuel Storage and Transportation business line is operating in an
13 interesting and dynamic environment. We are experiencing growth in
14 our work due to reactor decommissioning with expedited transfer of
15 fuel to dry storage and the coming renewal applications for many dry
16 storage systems.

17 Additionally, we have engaged in the review of
18 consolidated interim storage facility applications and planning for
19 potential work on permanent spent fuel disposal.

20 In short, this provides us an opportunity to
21 demonstrate our agility and use strategic workforce planning to fulfill
22 our safety and security mission.

23 Thank you and we're now ready for any questions.

24 CHAIRMAN SVINICKI: Thank you, Victor, and thank
25 you to all the presenters on the panel. We will begin questions, once
26 again, with Commissioner Baran.

27 COMMISSIONER BARAN: Thanks. Thank you for

1 your presentations.

2 I'd like to ask a few questions on dry casks. I wanted
3 to refer to slide 47. This slide discusses accommodating higher heat
4 loads and reevaluating a technical basis for the allowable peak
5 cladding temperature limit.

6 I want to make sure I understand the basic issue
7 here. Is it that licensees and vendors are submitting applications for
8 design changes that would involve higher heat loads so that the
9 previously approved temperature limits are being approached?

10 MS. DIAZ-SANABRIA: Yes, that is correct.

11 COMMISSIONER BARAN: And is the staff
12 reevaluating the technical basis for the temperature limits because the
13 staff thinks they are too conservative or not conservative enough?

14 MS. DIAZ-SANABRIA: How I can describe that is as
15 they reach the peak cladding temperature, the allowable peak
16 cladding temperature limit, the increase on heat load is now
17 challenging that temperature limit.

18 COMMISSIONER BARAN: Right.

19 MS. DIAZ-SANABRIA: So they are reducing the
20 design margin of the dry cask.

21 So the staff is looking into how can we can be more
22 predictable in using the thermal models and the uncertainties that
23 those thermal models have to understanding the performance of that
24 fuel cladding performance on the safety issue.

25 So when we challenge the licensees in understanding
26 their thermal models, enters into uncertainties of the thermal model as
27 well. So the better we understand the uncertainty of the thermal

1 model, the more confidence we have that they can predict that peak
2 cladding temperature which equals the basis for the shielding and
3 criticality requirements that they need to meet.

4 COMMISSIONER BARAN: So I just want to make
5 sure I kind of understand the implication of that.

6 So, as you try to better understand the modeling
7 there, is it that we think what we have right now is conservative and
8 there is probably more room to play with as we get closer to the
9 temperature limits or is it a concern that boy, they're getting close?
10 And if this isn't quite as conservative as we thought it was, they are
11 going to hit the limit.

12 MS. DIAZ-SANABRIA: Right.

13 COMMISSIONER BARAN: I mean it is both of those
14 things that you're looking at or is it one or the other?

15 MS. DIAZ-SANABRIA: There is some level of
16 conservatism that the thermal models have. And definitely, the
17 increase of heat loads is merging into that conservatism. So yes, we
18 do see the margin and the conservatisms are being less.

19 COMMISSIONER BARAN: Okay.

20 MR. DAPAS: I'm just going to add my understanding
21 from talking to Yoira and Mike Layton on this issue is that as the heat
22 load increases, you are closer in approaching the peak centerline
23 temperature limit but you still have to ensure that you are accounting
24 for uncertainty and there is sufficient margin. We are not changing
25 the temperature limit but you want to ensure that that uncertainty is
26 bounded.

27 And so by refining the model, you're reducing the

1 uncertainty which, even though you may have a reduction in margin, if
2 the uncertainty is reduced because you have a greater understanding
3 of the modeling there then you're not impacting safety, if you will.

4 COMMISSIONER BARAN: And that's really, you're
5 kind of leading to my question. One thing I want to understand is
6 whether, when we're talking about design margin is being reduced,
7 does that mean that we're seeing safety margins reduced?

8 MR. DAPAS: I would offer this. The design margin
9 is being reduced when you assume the same uncertainty. If you
10 reduce the uncertainty, then does that offset for the fact that there is a
11 higher heat load, such that you're maintaining an appropriate design
12 margin?

13 MS. DIAZ-SANABRIA: Yes, that is correct.

14 So part of the discussions that we had was what is
15 the acceptance criteria that ISG-11, the cladding performance interim
16 staff guidance, has? And it specifically speaks to the margin
17 associated with that thermal model.

18 COMMISSIONER BARAN: And what is your -- I
19 mean we don't want to get too into the weeds. But what is your
20 assessment of the likelihood that those uncertainties can be reduced,
21 such that we wouldn't have a concern about this approach to the
22 temperature limit? Is that viewed as something that's likely? Is there
23 a lot of room for reducing uncertainties there? Where are we in that
24 process of reducing uncertainties?

25 MS. DIAZ-SANABRIA: Yes, part of my presentation I
26 mentioned that we are engaging with EPRI and DOE on the best
27 estimate approach for thermal modeling.

1 Right now what we are conducting is a round robin.
2 So basically, we have participants NRC, DOE working together to
3 identify what is the importance of the uncertainties and conservatisms
4 in a thermal model. So we can arrive to a collaborative approach into
5 what is the amount of significance that conservatisms have on thermal
6 models.

7 So we can have more predictable results when we
8 receive applications and we see thermal models saying my amount of
9 uncertainty is X. Now we have a better understanding and more
10 confidence that what the applicants are submitting is more consistent
11 with what we've seen in this best estimates approach experiment.

12 COMMISSIONER BARAN: Are there cases -- Mike,
13 I'm going to come back to you.

14 Are there cases where the staff has rejected
15 applications for designs or design changes because the uncertainty
16 was such that we were -- the staff was concerned it was bumping up
17 against the limit?

18 MR. LAYTON: Yes, I can address that there. We
19 have come up against challenges in certain designs that have been
20 presented to us, just for that issue.

21 And have worked with the applicants to either have
22 them withdraw the application, revise it and resubmit it so that we
23 would have a better confidence on what the safety margin would be as
24 they move forward with that.

25 The one aspect about the EPRI modeling that I
26 wanted to also bring forward, is that EPRI, with the help of Dominion

1 and North Anna, has a very highly instrumented cask in which they
2 have just loaded. And the purpose of that instrumentation, over a ten
3 year period, is to actually get real data on what the thermal loads are
4 shortly after loading and through the course of the next ten years
5 within that, as that cask sits there.

6 So those data are starting to come forward. EPRI is
7 sharing those data with various folks, us included.

8 And there's what we call a, kind of a blind round robin.
9 Where we're using our computational fluid dynamics model, others
10 are using other models.

11 Models are both stochastic and deterministic. And
12 seeing how modeling assumptions play into best representing those
13 uncertainties and comparing it back to data as they're being collected
14 in that cask load.

15 MR. DAPAS: Just offer one example. When we're
16 trying to ensure an appropriate focus on safety, we have modeling that
17 we can use to independently validate that the peak centerline
18 temperature will be X. And the licensee's thermal model may indicate
19 its Y.

20 And even though from our independent review we
21 say, we conclude that the temperature limit, given the heat load is not
22 going to approach the peak centerline temperature limit, we still need
23 to understand why is the licensee's model yielding a different result,
24 because in the future, the licensee could submit a license amendment
25 and reference their model is that baseline.

26 So that would be an example of where we want to

1 ensure there is fidelity in the model that's using, even though we've
2 already determined that what the independent modeling we use, that
3 you're not approaching the peak centerline temperature limit with an
4 undo margin.

5 COMMISSIONER BARAN: Well, thanks for that, I
6 appreciate that you are focusing on this issue. When I take a step
7 back and think more broadly, typically with new technology and
8 designs, we see a trend towards improved safety and improved
9 margins.

10 And if we're seeing the opposite trend here with
11 newer designs or design changes resulting in ever reduced margins, I
12 think that's something we should, as an agency, be focused on. It
13 sounds like you are focused on that and you're treating that seriously.

14 Can someone just briefly talk a little bit about the state
15 of the art on dry cask monitoring and surveillance, the types of
16 potential degradation that can be detected, the types of potential
17 degradation that can't be and where that stands? I know that's a lot
18 to ask in a minute, but just a brief discussion of that?

19 MS. DIAZ-SANABRIA: So, dry cask will undergo,
20 may undergo, aging service. And aging effects relevant to dry
21 storage systems include localized corrosion, pitting, chloride induced
22 stress corrosion will be one of those examples.

23 So, the system may have abrasions in the other
24 physical scarring from loading on transport operations. We perform
25 inspections on these systems that are visual examinations to identify
26 the relations that exist in the dry cask.

1 The visual inspection methods can detect heating
2 corrosion, for example, or physical damage. There is some
3 technology using robotic crawlers to see these different inaccessible
4 areas that can detect aging mechanisms and aging degradation.

5 There is eddy current testing on ultrasonic testing that
6 has been developed as well for characterizing the crack growth or
7 pitting and degradation pits located near to the canister welds. And
8 manufactures also have developed inspection ring system that can
9 utilize a variety of nondestructive examinations, methods, including
10 visual and eddy current ultrasonic testing.

11 Basically, there is numerous of inspection activities to
12 detect aging mechanisms that can impact the cask.

13 COMMISSIONER BARAN: Do you want to jump in,
14 Mike?

15 MR. LAYTON: Yes. In addition, I'll give you a little
16 bit of perspective of kind of where we are in the state of the art.

17 The technology is evolving and it's getting better all
18 the time. And licensees are developing these monitoring technics.

19 You heard robot crawlers that can come down inside
20 the air vents of the cask and do a complete survey around the side.
21 Other nondestructive methods.

22 Last year we had our annual Reg Con where
23 presentations came forward from Industry and EPRI, and I was
24 pleasantly surprised to see how well the technology is advancing and
25 how sensitive they're getting, particularly with the visual inspections.

26 Because the designs are very unique, each vendor

1 has their own special way of doing something, the techniques that are
2 applied are going to be very non-generic, but be site specific to each
3 cask. Some of them may involve crawlers, some of them, for
4 example, the horizontal casks may have a eddy current ring that they
5 setup and then withdraw the cask out and do the testing and put it
6 back in.

7 So, all of that is in the mix and licensees are taking
8 that very eagerly. Particularly as their systems progress in their
9 licensing age and move into the extended licensing for aging
10 management. So, it is an evolving one, evolving area, and we're
11 expecting to see some good things coming out of licensees' efforts in
12 that.

13 MR. DAPAS: The only thing I was going to add is
14 that when a licensee requests for renewal, they have to submit their
15 aging management programs that would describe what is their
16 ongoing program for surveillance to ensure these degradation
17 mechanisms are not resulting in degradation of the cask that is
18 beyond what was assumed in the analysis.

19 So it's important that we understand these state of the
20 art technics that are being used and reached an independent
21 conclusion that they were acceptable in terms of being able to fully
22 understand the cask condition as it continues to age.

23 COMMISSIONER BARAN: Thank you very much.

24 CHAIRMAN SVINICKI: Thank you. Commissioner
25 Burns.

26 COMMISSIONER BURNS: Again, thank you for the

1 presentations this morning on this aspect of our work. Let me focus a
2 few questions on the consolidated interim storage type facilities or
3 concept.

4 There are a couple of things. One question I had,
5 and I think it's referenced in, Mike, when you talked, I think around
6 Slide 43, about some uncertainties. We don't know at this point, for
7 example, whether or not WCS will renew efforts on its application.
8 You still have the Holtec one under review.

9 But there is a reference to a topical, a DOE topical
10 report, and I'm trying to understand, what's the significance of that and
11 what impact that has. I guess I'm not really familiar with it or what its
12 significance is.

13 MR. LAYTON: No, thank you, I do appreciate the
14 question and a chance to clarify. The topical safety analysis report is
15 something that DOE contracted and is in the last stages of completing,
16 I guess their review analysis, of the contractor's report.

17 And as we move toward moving spent fuel off of
18 decommission sites, active sites and also standalone ISFSIs, DOE will
19 be the entity responsible for moving it off of NRC licensed facilities
20 because they'll take ownership of the spent fuel. And either to a
21 permanent repository or now we have the aspect of a centralized
22 interim storage facility.

23 So there's various aspects of that storage and
24 transportation that DOE is going to address in that topical report.
25 Some of the items, for example, in our regulations under Part 72, that
26 covers storage, under Part 71, that covers transportation.

1 When those regulations were originally crafted, we
2 really didn't have had any concept of a centralized storage. It would
3 be, DOE would pick it up from the site and take it to a disposal facility.

4 Now with a centralized interim storage, we have
5 movement from one regulatory environment in storage, into
6 transportation and then back into storage regulatory environment.
7 So, we're working very diligently in looking at those transitions and
8 making sure that we're going to be having a consistent regulatory
9 environment as those canisters and casks move through that system.
10 And that's a lot of what the topical report will address.

11 Now, the impact of it is, when we started our
12 budgeting formulation cycle a couple of years ago, we looked at really
13 two major reviews that would be coming in two CISF applications. At
14 the time, we didn't have any visibility that we might also receive a
15 topical report from DOE, which is going to be a significant effort.

16 And as you're aware, timing is everything. So we are
17 resourced to deal with two CISF applications.

18 As timing progresses, if WSC chooses to restart for
19 us, we would have a smooth transition from where we are now into
20 reviewing the application. And I also anticipate that there may be
21 some time that WCS may want to take a pause and re-review
22 everything that they have taken.

23 So, if DOE submits a topical report for us and it
24 overlaps the work that we have with two CISF applications, we'll
25 certainly have to re-prioritize resources and see how we can manage
26 those efforts.

1 COMMISSIONER BURNS: Go ahead, Marc.

2 MR. DAPAS: I just was going to offer this
3 perspective, Commissioner. As you're aware, the Department of
4 Energy has included in their budget submittal for 2018, funds for
5 Yucca Mountain. Should that not come to pass with appropriations
6 decisions?

7 My understanding is the Department of Energy would
8 be looking at temporary storage in a interim storage facility. And the
9 topical safety analysis report is a means to achieve that end by
10 addressing various issues. And then that would be submitted to NRC
11 for review.

12 That's my understanding of the nexus between that.
13 And right now, the reason they haven't come forward with that is
14 because they don't know whether there will be the need for that.
15 That's the degree of uncertainty with scheduling.

16 COMMISSIONER BURNS: Yes.

17 MR. DAPAS: That's my understanding.

18 COMMISSIONER BURNS: What I'm trying to
19 understand is, what issues are different. I understand there are
20 things about, that I'll call more jurisdictional legal issues.

21 Like when you take it, when you pick it up from Maine
22 Yankee or -- I'm naming one that's probably wishful thinking -- you
23 pick it up from Maine Yankee it becomes then within the possession
24 DOE title. It's, right, exactly, as the Chairman said, it's a title transfer.

25 What are the technical, what technical issues are
26 there, that's what I'm trying to understand.

1 MR. LAYTON: Yes. And as I alluded to, that
2 difference moving from the regulatory environment of Part 72 to 71 to
3 72, in some of these casks that have been sitting out there for quite a
4 while and have gone through aging management, one of the issues,
5 technical issues may be, how well will some of those older canisters --

6 COMMISSIONER BURNS: Okay.

7 MR. LAYTON: -- work through transportation.

8 And as it's received at a potential CISF facility, will it
9 be adequate to still store it there for a period of time or if there is a
10 difficulty with a canister, does it go back to the facility of origin or is
11 there a repackaging that needs to be done. Those are the types of
12 technical issues that have to be looked at and brought forward.

13 COMMISSIONER BURNS: Okay. Well, even apart
14 of, this actually will fall into my next question, even apart from where
15 the Department of Energy becomes engaged in the take title, et
16 cetera, this goes to my question, what's the difference between a
17 regular ISFSI and the consolidated interim source?

18 I mean, I'll sort of play naive here, there are both
19 places where we're storing spent fuel, or used fuel. They all, you
20 know, my understanding, and I think my understanding is, it's not
21 essentially different.

22 So what is the different aspect of the regulatory
23 review or regulatory concern on the consolidated storage versus the
24 storage continuing at Maine Yankee or at North Anna or the like. I
25 mean, some of you it, you may have touched on it. One is, you may
26 have to track the casks better.

1 You know it's a Maine Yankee cask which is, let's say
2 a 20-year-old cask at this point versus a brand new top of the line
3 modern X, Y, Z cask. So, I mean, help me understand what the
4 difference focus is on these reviews, would --

5 MR. LAYTON: Actually, for us, whether it's a
6 centralized interim storage facility as an ISFSI or whether it's an ISFSI
7 at a power reactor, it's no difference to us. We use the same
8 regulatory requirements, the same safety guides for, and standard
9 review plans, that we do for any ISFSI.

10 COMMISSIONER BURNS: Okay.

11 MR. LAYTON: To do the licensing. So, the
12 transportation issues don't enter into our licensing aspect for the CISF.

13 But the ability for that CISF to store different types of canisters that
14 may have, may have had challenges as they were in transport, does
15 enter into it for the CISF. That's the essential technical difference.

16 And how we address that in our review is that the
17 applicant has to propose a methodology for them to be able to test
18 and receive those canisters as it comes into the facility.

19 COMMISSIONER BURNS: Okay.

20 MR. LAYTON: And we review that to find out if that
21 is acceptable under the regulations that we look at under Part 72.

22 COMMISSIONER BURNS: And so the difference, as
23 I understand it, is because, like when we talk transport, now, we're
24 really not talking about long distance transport, we're talking about
25 driving a couple hundred yards, maybe, at a site versus driving from,
26 as I say, Wiscasset, Maine to Waco or your path --

1 MR. LAYTON: Yes.

2 COMMISSIONER BURNS: -- I forget where, to the
3 New Mexico-Texas border.

4 MR. LAYTON: Right. Right. As an example, the
5 past campaigns that we've seen, and this is probably, I mean, close to
6 ten years ago or even longer, at the time the operator Progress
7 Energy was moving spent fuel from one of its facilities to another,
8 because one facility didn't have dry cask storage, so they wanted to
9 even out the pool loads.

10 So over a three year period, they went through a rail
11 campaign of moving casks. That's probably the most recent
12 experience that we've had in seeing that kind of extended campaign.

13 Others are really fuel returns from international that
14 we assist DOE with looking at those.

15 COMMISSIONER BURNS: Oh, okay.

16 MR. LAYTON: I mean, you're right, others are simply
17 within a site moving stuff around.

18 COMMISSIONER BURNS: Yes. I'm thinking of like,
19 well, I'm thinking of Zion. Having been out at Zion as a
20 decommissioning site it's a matter of a couple hundred yards. A
21 couple hundred yards, okay.

22 MR. DAPAS: I think that's the main difference,
23 Commissioner.

24 COMMISSIONER BURNS: Yes.

25 MR. DAPAS: You're transporting the fuel from the
26 spent fuel pool to the ISFSI. It's a difference when you're transporting

1 across states. And the length of time that you're in transportation.

2 And so the licensee that is, once operate,
3 consolidated interim storage facility, there has to be allowances for
4 verifying that the cask, when it arrives, is in the same condition that is
5 associated with the cask that was assumed in the licensing basis.

6 And while we will be certifying that transportation
7 packages are safe, et cetera, as a contingency, if there was a problem
8 that developed before that fuel can be accepted, the licensee that
9 operates the CISF has to ensure that the cask is in a certain condition.
10 Consistent with the assumption in the licensing basis. That's my
11 understanding.

12 COMMISSIONER BURNS: Yes. Okay, good. If I
13 could, one last question, hopefully fairly short answer.

14 You talk, and like, again, on the chart you see a peak
15 in applications coming in around 2020 and if you just very quickly tell
16 me, what are you all doing now to anticipate that peak and sort of
17 spread resources, inject resources or the like?

18 MR. LAYTON: Yes. And we saw that peak coming
19 for quite some time. And we have reached out to licensees and
20 certificate holders to encourage them to perhaps submit applications
21 earlier to take some of the pressure off of that peak.

22 Some certificate holders and licensees said that they
23 would do that, that's in their interest. But honestly, when you look at
24 an incentive to do that for a passive system that's sitting there, it's not
25 like a power reactor where there is an incentive to come in for early
26 license renewal, there just isn't that incentive for spent fuel.

1 COMMISSIONER BURNS: Okay.

2 MR. DAPAS: One thing I would add to that is, that
3 we are communicating to the industry high quality submittals such that
4 has an impact on the review time that's necessary, request for
5 additional information.

6 If we have a quality submittal, the licensing review
7 process is shortened, therefore you can devote those resources to
8 other licensing application or reviews.

9 COMMISSIONER BURNS: Okay, thank you.
10 Thank you, Chairman.

11 CHAIRMAN SVINICKI: All right. Well, thank you all
12 for your presentations. At the risk of talking more about the topical
13 report that may or may not be submitted, I appreciate, Marc, that
14 you've described the programmatic and funding uncertainty at the
15 Department of Energy that causes there to be some uncertainty about
16 this. My question is a little different.

17 We do have an application that has been submitted to
18 us, has the applicant prepared that application reliant upon the
19 analysis in this topical report?

20 Meaning, if the topical report from DOE is not
21 submitted, would the applicant have to substantially supplement their
22 application that they submitted had they submitted with a reliance on
23 the fact that DOE would analyze the matters that you've just
24 described?

25 MR. LAYTON: Yes, that's a very good question. At
26 this point, what's in the applications are procedures for acceptance of

1 cask after their shipped.

2 The applicants do have in mind that this topical report
3 is hanging out there. I would have to verify with the applicants of how
4 much they have had discussions with DOE on that.

5 We have not had a great deal of detailed information
6 coming from DOE on what they see in that topical report.

7 CHAIRMAN SVINICKI: Okay.

8 MR. LAYTON: So there is a potential, yes, that as
9 the topical report is issued, that there may be some need for the
10 applicants, or depending on the timing, they may be licensees --

11 CHAIRMAN SVINICKI: Okay.

12 MR. LAYTON: -- to take those into account. And
13 those would have to be license amendments.

14 MR. DAPAS: My understanding is that we are
15 looking at the application to determine if the design of the facility is
16 acceptable and would ensure that when the fuel is there during that
17 interim period, it can be stored safely, through assumption regarding
18 the condition of the fuel in the cask when it arrives.

19 Now there are procedures that would verify that, but
20 the topical safety analysis report that DOE is generating I thought also
21 was looking at transportation between where the fuel currently resides
22 and to wherever that commercially operated CISF would be located.

23 So I don't see, and we'll verify this, that the TSAR
24 completion, you know, our review of the license application is
25 contingent upon that because it assumes that the fuel is in a safe
26 condition and confined appropriately when it arrives. Licensee or

1 applicant verifies that.

2 And then we're looking at the construction of the
3 facility, is it a safe design. That's my understanding.

4 CHAIRMAN SVINICKI: Okay. Well, that's helpful
5 because that certainly is a fairly typical way that applicants address
6 something. They make a set of assumptions.

7 And then of course you would have confirmatory
8 procedures that would, if the facility operated, you would need to verify
9 that that was indeed the condition of incoming materials.

10 So that is a way also that this topical report then could
11 be pursued somewhat independently of our review. I just wanted to
12 know if there was a strong link there that would impact some of the
13 indications we've given about our ability to proceed with the review on
14 a schedule that we will affix at the appropriate time.

15 This is something that really hasn't been referred to
16 but I think has come up over the time of my service on this
17 Commission, in meetings of the Commission on these topics. There
18 have at times in the United States been somewhat mini crisis of the
19 scarcity of available certified packaging for various types of nuclear
20 materials as packaging.

21 Ages, the development of new packaging is of course
22 an expensive undertaking. It has to go as certification.

23 So, there has been an inclination to extend the
24 certificate of compliance on existing packaging. I don't know the
25 current state of that, it may be that there's not a lot of nuclear
26 materials or maybe there is not a lot of activity right now, but I think

1 there has been a little bit of a dynamic tension about the need to, at
2 some point, develop new packaging as opposed to continuing to
3 assess and extend the lifetime of current packing.

4 Is there anyone who can give a very high-level
5 characterization of how that looks right now? And Mr. Layton is doing
6 the most thinking about this so I think he is going to weigh in.

7 MR. LAYTON: I'm not sure that this will fully address
8 your question. The terms for certificates of compliance, whether
9 they're done in the U.S. or whether they're done overseas, we work
10 very closely with the international atomic energy agency to make sure
11 that there isn't --

12 CHAIRMAN SVINICKI: That it's more harmonized
13 and --

14 MR. LAYTON: Yes, that it's harmonized, there isn't
15 any inconsistency because some of the packages that we certify are
16 utilized overseas and likewise.

17 Currently, the term for the CoCs that IAEA has put out
18 in their safety standards is five years. And we recently underwent an
19 audit by the IG that ask us, so what is the basis of that term. And
20 that's a takeaway that we have on a recommendation from the IG to
21 examine that. We're just in the early stages of doing that right now.

22 MR. DAPAS: But not in the context of extending that
23 or a different period of time, simply, what is your basis for five years
24 being the length of the current certificate and where is that
25 documented, what's the safety basis?

26 CHAIRMAN SVINICKI: So, we had adopted it

1 basically because it's an international standard and the IG suggests
2 that the record is not complete for us because we have not
3 documented our own --

4 MR. DAPAS: Yes, ma'am.

5 CHAIRMAN SVINICKI: -- analysis of that as a basis?

6 MR. DAPAS: Yes, ma'am.

7 CHAIRMAN SVINICKI: Okay, I appreciate that. But
8 it sounds like right now we're not aware of some sort of scarcity in the
9 availability of packaging, we're not hearing that?

10 MR. DAPAS: We aren't. And I'll follow-up on that,
11 but I'm not aware of that.

12 CHAIRMAN SVINICKI: Okay, thank you. And then
13 there's been a lot of discussion about ISFSIs and I think that when we
14 reflect on areas that we're going to continue to need to have good
15 confirmatory research, good surveillance, good inspection programs, it
16 is likely to be, oh, I shouldn't say likely, it is potentially the long-term
17 dry cask storage in the United States, so it posed a question in mind,
18 hearing your answers to my colleagues and your representation about
19 North Anna embarking on a highly instrumented cask, things like this I
20 think had been talked about years ago but maybe there was
21 uncertainty about whether or not we would need it if there was timely
22 progress on disposal or perhaps even consolidated interim storage,
23 but that being said, it's looking like a very, very long-term endeavor.

24 So I appreciate also that you've commented on the
25 advancements in robotics. I think I had heard tell about something
26 that could kind of crawl around inside, but I know that there are

1 significant advancements in microrobotics and things like that.

2 But if the staff were to step back and think about
3 when the early ISFSIs were evaluated versus what we know today,
4 based on surveillance and monitoring, have dry cask storage
5 technologies generally performed on a materials basis, the aging
6 phenomenology, have they generally performed as predicted when
7 they were initially analyzed or are there phenomenology and
8 degradation mechanisms significantly different?

9 And I'll maybe offer you one other option for your
10 answer, which is, the question isn't highly meaningful because we
11 have the kind of very active management and surveillance all along
12 the way so we always intended to be taking a very careful eye at the
13 performance of the packaging. So whether or not our models were
14 correct, just like models for everything else we do, the thermal models
15 and other things, we're constantly taking data, updating the models
16 and therefore increasing our confidence in the models.

17 MR. LAYTON: From the perspective of some of the
18 older casks that have been out there for a while in performance, we've
19 had briefings from some operators, particularly the decommissioning
20 plant coalition, that's the folks that the Yankees and everybody else,
21 that have indicated that those packages have really performed well
22 over time, even beyond what the original intended time frame was
23 expecting that DOE pick them up and took them down to a repository.

24 What we've also been seeing on some of the casks
25 that are now moving into the beyond 20 year phase where they're
26 starting to do some very active visual inspections, those casks also

1 degradation mechanisms and those types of things, are not showing
2 up in those packages.

3 And again, I appreciate your perspective in
4 recognition that we're taking a very proactive view in making sure that
5 we're not waiting to see degradation but we're watching to see
6 precursors of the degradation.

7 CHAIRMAN SVINICKI: Well, and the reason I think I
8 framed this up, and I appreciate your responses, I'm asking this
9 retrospectively. But as an agency in terms of our confidence and
10 conclusions over, frankly we've analyzed hundreds of years now, so
11 we're asked, well, how can you know that because it's 100 years or
12 300 years.

13 But the truth is, if we continue to look at it
14 systematically the way we have and we have authority to compel, up
15 to and including repackaging, whatever, we have all the regulatory
16 instruments needed to require the actions of licensees to address
17 whatever we find in terms of aging phenomena, all of those things are
18 part of the substantiation of the conclusions we've reached over very
19 long periods of time that we've analyzed for these systems.

20 But I'll draw a connection, too, because I think this is
21 coming back to Commissioners Baran's questions about margin,
22 which I thought were really thoughtful that got me thinking about the
23 fact that the -- well, we're saying the Yankees, that sounds so glib --
24 but the very old ISFSIs at sites that really, but for having an ISFSI,
25 would be a greenfield site.

26 We have to think about that population of fuel, and

1 this gets back to these analyses about heat loads. Okay, some of
2 those reactors weren't operated for very long.

3 As a universe of fuel to be stored, the stuff being
4 irradiated today is generally a much higher burn. So then you've got
5 the uncertainty and confidence step to say, our conclusion about the
6 performance of storage systems is based on having a population of
7 fuel to be stored that was irradiated in very difference conditions.

8 And I'm generalizing of course. There is different
9 circumstances here. So we also have to challenge ourselves to say,
10 those conclusions, now we have to analyze them, we have to have
11 improved thermal models and look at the uncertainties there because
12 we have to try to draw conclusions going forward for fuel that is hotter,
13 for casks that might have more assemblies per cask.

14 And I think that there will continue to be a dynamic of
15 pressure to have storage technologies that can be more and more
16 efficiency, which colloquially means you can pack more and more stuff
17 in there that was more highly irradiated. And that's how the cost
18 efficiency for the licensee is generated, but we have to have
19 confidence going forward.

20 But then the last conclusion that I'll share is that
21 Commissioner Baran's questions also had me thinking about how
22 difficult it is for the agency to talk about this, is the classic risk
23 communication, margin has a relation to safety, but is not safety itself.

24 So, this is something that, and I sat here actually listening to the back
25 and forth going, I don't know.

26 This is so hard, sometimes we get tripped up over this

1 that how we would ever expect people in communities near these
2 facilities to understand it, when it tests our ability to communicate well.

3 But when you were storing a population of fuel not as
4 highly irradiated, I can absolutely see, reflecting on my career as a
5 nuclear engineer, that I would have engaged with the licensee and we
6 would have just set a thermal limit much, much lower because we had
7 no need to analyze out to much higher heat loads because the fuel to
8 be stored was not going to give that kind of a thermal loading.

9 So margin sometimes was just a kind of like, let's call
10 it good, you know, it was a convenience thing like, let's have all this
11 thermal margin because we're not storing anything that would ever get
12 close to that.

13 So some of the erosion of margin I think comes about,
14 or the request for us to accept a lesser margin as the regulator, comes
15 about because, well, now we confront a different technical challenge
16 and so we're being asked to say, could some of that be yielded back
17 for greater packing efficiency or higher thermal loading or things like
18 that.

19 And that's why at the end of the day the staff's use of
20 expert judgement is something that becomes so important. Because
21 this is the individual expertise of safety reviewers here, their
22 confidence.

23 And so as we move the agency on risk informed
24 applications, this is kind of where the rubber meets the road. Is
25 independent, you know, the individual expert judgment that needs to
26 be, I know we have models and calculations out to many, many

1 decimal places, but as an engineer I'm comfortable that in all
2 disciplines there is some exercising of engineering judgment that
3 needs absolutely to be done here.

4 So, I leave this discussion very impressed with all of
5 you are doing to stay on top of that, to continue to look at, yes, margin
6 is reduced, how is that effecting safety and my confidence overall
7 about the long-term performance of something that may sit on a
8 concrete pad for a very long period of time. And so I appreciate the
9 care and attention you're giving to that.

10 There is rising national interests as more sites
11 decommission in this, so, again, thank you for your work on that. And
12 I've gone over quite a bit so I'll ask my colleagues if they have any
13 final questions? Okay, if not, I'll thank you all and we are adjourned.

14 (Whereupon, the above-entitled matter went off the
15 record at 11:49 a.m.)

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