

UNITED STATES

NUCLEAR REGULATORY COMMISSION

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MEETING ON THE STRATEGIC PROGRAMMING OVERVIEW OF  
THE OPERATING REACTORS BUSINESS LINE

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TUESDAY, OCTOBER 24, 2017

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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 10:00 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:

VICTOR MCCREE, Executive Director of Operations

KATHRYN BROCK, Deputy Director, Division of

Operating Reactor Licensing, Office of

Nuclear Reactor Regulation

PAUL CLIFFORD, Office of Nuclear Reactor

Regulation

BRIAN HOLIAN, Acting Director, Officer of

Nuclear Reactor Regulation

STEVEN LYNCH, Project Manager, Research and Test

Reactors Licensing Branch, Division of

Policy and Rulemaking, Office of Nuclear

Reactor Regulation

SHAKUR WALKER, Chief, Engineering Branch 3,

Division of Reactor Safety, Region II

MICHAEL WATERS, Chief, Instrumentation and

Controls Branch, Division of Engineering,

Office of Nuclear Reactor Regulation

KIMBERLY WEBBER, Deputy Director, Division of

Systems Analysis, Office of Nuclear

Regulatory Research

MICHAEL WEBER, Director, Office of Nuclear

Regulatory Research

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

2 (10:03 a.m.)

3 CHAIRMAN SVINICKI: Well, good morning,  
4 everyone, and welcome to those who have gathered or are watching  
5 online.

6 This morning our Commission meets for a meeting that  
7 has more content than we can fit into a morning, but we will do our best,  
8 but we will be having what we call a business line meeting and this  
9 morning it is a programmatic overview of the operating reactor's  
10 business line.

11 I know as a member of the Commission and now as  
12 Chairman I derive a lot of value from these business line meetings. It's  
13 not as corporate as it sounds.

14 We'll be touching on a lot of technical issues,  
15 programmatic and policy dimensions to the important work that is done  
16 not only by the Office of Nuclear Reactor Regulation, but all of the  
17 offices that work in capacities that support the important work of NRR.

18 So we will hear on a number of topics today from staff  
19 panel only, so it is a little bit of an inward look at what we are working  
20 on and how we are going about it, and I look forward to it.

21 Again, I know we'll have a lot of different terrain that  
22 we'll cover in the questions, but I appreciate the topics that we have  
23 arrived at today and I think we'll hear about some good progress on a  
24 number of fronts.

25 Before we begin though I will ask if my colleagues have

1 any opening remarks they would like to make.

2 (No audible response)

3 CHAIRMAN SVINICKI: No, okay. Then I will turn the  
4 beginning of the staff's panel presentation over to our Executive  
5 Director for Operations, Victor McCree. Victor, good morning.

6 MR. MCCREE: Good morning, Chairman. Good  
7 morning, Commissioners. We are pleased to be with you this morning  
8 to discuss activities associated with the operating reactors business  
9 line, which is the NRC's largest as you know.

10 Our oversight of the safe operation of 99 operating  
11 reactors and 31 research and test reactors is enabled by the collective  
12 effort of nearly half the staff in the Agency.

13 Our presentation this morning will feature just a few of  
14 the activities, but we cannot be successful without each of our partners.

15 For example, our Safety and Security Missions for  
16 Operating Reactors comes together in the Office of Nuclear Security  
17 and Incident Response, and, of course, our corporate offices provide  
18 essential staff through budget staffing information technology and other  
19 key functions.

20 We hope to leave you with a few key messages today  
21 from our presentation. First, we continue to challenge ourselves to be  
22 more effective, efficient, and agile in all of our activities.

23 Secondly, we are enhancing our application of risk  
24 insights across our program and sharpening our focus on safety as we  
25 regulate more efficiently.

1                   And, thirdly, our staff have accomplished much over  
2                   the past year, including addressing all of the Fukushima lessons  
3                   learned for several plants, as described in our first closeout letter for the  
4                   Clinton Station.

5                   Slide 2, please. You'll hear from six other speakers  
6                   this morning. First, Brian Holian, to my immediate right, the Acting  
7                   Director of the Office of Nuclear Reactor Regulation, and Brian will  
8                   share some examples of our safety and efficiency initiatives.

9                   Kathryn Brock, to my immediate left, Deputy Director of  
10                  NRR's Division of Operating Reactor Licensing, will discuss our  
11                  licensing processes, highlighting how we are using risk insights in our  
12                  licensing process.

13                  Shakur Walker, to my far right, Chief of one of the  
14                  engineering branches in Region II, will discuss the ongoing review of  
15                  our ongoing review of our engineering inspections to find deficiencies  
16                  and incorporate risk information.

17                  Slide 3, please. Then, Steve Lynch, to my left, Project  
18                  Manager in NRR's Division of Licensing Projects, will describe how we  
19                  have approached medical isotope facility reviews with agility and  
20                  innovation. Steve Lynch, to my right.

21                  (Laughter)

22                  MR. MCCREE: And then Mike Waters to my left,  
23                  excuse me, a Branch Chief in NRR's Division of Engineering, will  
24                  discuss our success in executing the integrated action plan for licensing  
25                  digital instrumentation and controls.

1                   And, finally, Kim Webber, to my far left, Deputy Director  
2 of the Division of Systems Analysis in the Office of the Nuclear  
3 Regulatory Research, will emphasize the expert services and  
4 collaborative mindset of her office.

5                   With that, we'll begin our presentation with Brian.

6                   MR. HOLIAN: All right, thank you, Vic. Good  
7 morning, Chairman. Good morning Commissioners. I am glad to be  
8 here leading off the team for the operating reactor business line.

9                   I do thank our many partners, like Vic did, some of  
10 whom are at the table, but many of whom have representatives in the  
11 audience should we need help on any particular aspect of the business  
12 line.

13                  I am proud of the business line, the way it tackles the  
14 many issues that we have. Our strength really is in our staff, the  
15 various leadership teams, engineers, scientists, mission support, legal,  
16 administrative staff, across many offices that give input to making sure  
17 that operating reactors are safe and secure.

18                  I'll provide an overview on this Slide 4 here of some of  
19 the business line successes, priorities, and challenges.

20                  Some topics I will only touch on since we have a  
21 representative here at the table who will go deeper, on a couple other  
22 ones I'll go a little deeper myself since we don't have a representative  
23 here at the table.

24                  I just hope that we give you a good cross section of the  
25 many aspects of the business line today. My comments will focus on

1 these general areas and I will move to Slide 5 for the first area.

2 In May of this year you will recall that we had an  
3 important Commission meeting on utilizing risk insights to assist both  
4 licensing and oversight. Our focus on risk insights is appropriate.

5 We do have a large body of operating experience that  
6 we can reference over the years and we're taking advantage of that.  
7 Our risk-informed tools have increased over the years and our guidance  
8 has improved to take advantage of some of this operating experience.

9 We have a variety of risk-informed initiatives ongoing,  
10 some of which you see on the slide. The first one, 10 CFR 50.69, that  
11 regulation was put in place to allow us to modify aspects, the licensees  
12 to modify aspects of their design, testing, procurement, installation, and  
13 reporting using their plant-specific risk insights.

14 We have got seven applications in-house this year with  
15 two more expected this month and we have already had pilot results  
16 and we think we'll be well able to complete these reviews within our  
17 normal 12-month licensing metric.

18 The Risk-Informed Steering Committee is an ongoing  
19 meeting amongst many of our business line partners and we meet  
20 routinely with industry to ensure that we are prioritizing on the right  
21 issues.

22 During a recent meeting we had just two weeks there  
23 were 40 members split between industry and staff in the audience and  
24 we discussed a variety of subjects, 50.69 applications to make sure that  
25 we're following a template that was designed for those applications.

1 Tech Spec Initiative 4(b), which you've heard of, which  
2 allows licensees to extend their tech spec completion times based on  
3 their own risk insights, we discussed that.

4 We discussed PRA Fire Realism, the realism about risk  
5 assumptions that we use in the ROP, Reactor Oversight Process, for  
6 inspection findings. And we also discussed during that meeting a one-  
7 time license amendment we issued last summer, and I'd like to cover  
8 that for a minute here.

9 That risk-informed amendment allowed an extended  
10 time for a Palo Verde diesel to be out of service, up to 62 days. We  
11 have received stakeholder feedback both inside the NRC and external  
12 feedback raising both technical and process questions about the  
13 extension.

14 I believe we appropriately granted that one-time  
15 amendment. There are plant-specific reasons, which include different  
16 risk insights from plants on why we might grant an extension on one  
17 plant and not on another plant.

18 And with that said, you know, we do have some  
19 lessons as we look back on that review and approval. We did use  
20 appropriate guidance for that review, in particular, we have a Reg.  
21 Guide 177 that's even titled "Risk-Informed Decision Making for Tech  
22 Spec Extensions," and we concluded adequate margins existed.

23 But that being said, we have accumulated a variety of  
24 guidance over the years as we move to be more risk informed and some  
25 of that guidance is contradictory when you look at it. So we have a job



1 in front of us to clean up some guidance and make it more consistent  
2 and applicable.

3 Finally, the last quote on that slide, in response to  
4 Commission direction from May we are finalizing this week a  
5 Commission Paper, an Information Paper to come to the Commission  
6 which will include our plans on risk insights and our challenges that we  
7 are facing, so you can look forward to that paper.

8 Slide 6, please. The business line and the regions in  
9 particular, you know, do well on a variety of emerging technical issues,  
10 and I will briefly touch on these four examples.

11 As you are aware in 2012 we issued an NRC bulletin  
12 in response to a design vulnerability in electric power systems.

13 Interim compensatory measures were taken by the  
14 industry on this and NEI submitted an industry-wide initiative in 2013 to  
15 track installation of what we call open phase isolation systems at the  
16 plants to deal with an open phase condition in their electrical designs.

17 Staff already completed an initial inspection to verify  
18 that the interim measures are in place and we'll soon start a second  
19 inspection focused on the final designs being implemented.

20 Regarding cyber security, the Commission in this  
21 business line have led improvements that have ensured that our  
22 licensees are well protected from cyber threats.

23 We had a representative at this table last year during a  
24 business line from NSIR. They talked about that last year, and I'm  
25 updating you now that we've done a consequence-based approach, as

1 we have called it, for cyber.

2 We put a good framework in place, the Milestones 1 to  
3 8 that you've been tracking, and this summer we began our inspections  
4 on the final milestones.

5 You know, as you have seen in the news cyber  
6 challenges continue and will continue. This business line, primarily  
7 through nuclear security instant response, the office, and our cyber  
8 inspectors in each region they continue their excellent work responding  
9 to cyber challenges.

10 I would like to note two items on cyber. One, we used  
11 insights from the operating reactor implementation of cyber as we  
12 coordinated with the Office of Nuclear Material, Safety, and Safeguards  
13 on their fuel cyber rulemaking package that just came to you.

14 And we recently responded to industry. They want us  
15 to continue to do lessons learned as we have been implementing cyber  
16 and we committed to them as we gather those insights that we will  
17 further evaluate the level of oversight in the cyber area.

18 As Vic mentioned on post-Fukushima actions I wanted  
19 to highlight two items, Vic touched on it. We just sent the Commission  
20 an update on the status of that and as you noted in there the first  
21 closeout of all post-Fukushima actions was done at the Clinton Power  
22 Station just a couple months ago and we expect to have similar closeout  
23 at seven other plants this year extending into next year.

24 And, second, as of August of this year all plants are in  
25 compliance with the order on spent fuel pool instrumentation.

1                   Finally on this slide, the last emerging item that I  
2 wanted to highlight was an issue that happened at the LaSalle Station  
3 in February of this year.

4                   LaSalle Unit 2 was in a refueling outage and they were  
5 doing a fill and vent procedure and in the high pressure core spray  
6 system a risk important valve failed.

7                   Valve internals were replaced, they returned it to  
8 operable status, started up. The manufacturer of that particular valve  
9 updated their Part 21 notification.

10                  They had had one previously and they updated it with  
11 guidance based on that failure and the industry continues to learn from  
12 that.

13                  LaSalle Unit 1, the sister plant, shut down in June of  
14 this year and inspected the similar valve at that plant. The valve was  
15 still working but the wedge pin internal to the valve had failed and the  
16 internal showed damage.

17                  Region III is overseeing the plant-specific aspects of  
18 this issue, which included a special inspection and issuance of a design  
19 control violation, and NRR is working on the generic follow-up for other  
20 valves industry wide.

21                  Slide 7. I had to have a picture. I had a picture of an  
22 anchor darling valve, but that wasn't as exciting as this picture so I  
23 replaced that with this.

24                  I didn't highlight on emerging technical issues, the  
25 business line's response to three significant storms that we had,

1           Hurricanes Harvey, Irma, and Maria. That's kind of normal business  
2           for the business lines in the regions.

3                        You know, I became on one of them out of Region IV  
4           of a branch chief who had visiting the plant prior to the hurricane coming  
5           and he decided to stay over that weekend and stay at the plant through  
6           the next week so the residents could take care of their families during  
7           that hurricane, that's one example I wanted to highlight.

8                        But this photo after the hurricane through Puerto Rico,  
9           you see Veronica Rodriguez on the lower right there, she organized  
10          with other members of the business line a food gathering weekend in  
11          D.C. where they got food and water and other supplies over to Puerto  
12          Rico. I just wanted to touch on that to show a little bit of the heart of  
13          the business line.

14                      Slide 8. Besides these technical issues I want to note  
15          that the business line continually evaluates potential improvements and  
16          efficiencies. To start with we're working the decommissioning  
17          rulemaking as you are aware.

18                      It will replace the need for numerous plant-specific  
19          exemptions and the rules on track. In March we published the final reg  
20          basis, or draft reg basis, sorry, and in May we published a preliminary  
21          reg analysis.

22                      We held a two-day public meeting in May to facilitate  
23          public comments and we are right now finalizing the reg basis for  
24          publication in the Federal Register and we are on track for the proposed  
25          rule to the Commission by next May.

1                   The Regions continue to interface sharing resources.  
2           Vic mentioned agility as one of the business line attributes and we want  
3           to live that out. The Region I Pilgrim 95-003 Team had participants  
4           from all the regions.

5                   And another example is routinely on operating  
6           licensing resources, we've done that well over the last several years,  
7           sharing those resources across the regions in responses to surges and  
8           workload.

9                   Within NRR we had a restructuring that was effective  
10          just the beginning of this month and we consolidated functions and we  
11          eliminated four branches.

12                  To highlight just a couple of the changes we merged  
13          the Japanese Lessons Learned Directorate with another division which  
14          is now called the Division of Licensing Projects, and two branches are  
15          being maintained from the JLD to focus on completion of Fukushima  
16          actions.

17                  In license renewal we coupled two divisions together.  
18          They do a lot of materials issues during their license renewal reviews  
19          so we added a couple of materials branches and that new division is  
20          called the Division of Materials and License Renewal.

21                  I also highlight that the old License Renewal Division  
22          just gave the South Texas plant their licenses, which are the 88th and  
23          89th plants for license renewal.

24                  And, finally, on this slide we are working well with new  
25          reactors on early preparations and planning for the merger of the two

1 offices.

2 We have a transition team outreaching to the staff, we  
3 are evaluating organizational structures, and, of course, we are  
4 assessing and prioritizing the combined office guidance, so when that  
5 occurs.

6 Our licensing work also is in general going well, and  
7 Kathryn Brock will spend some time on this. She'll show you some  
8 good metrics.

9 We do get occasional questions from industry still  
10 about our licensing efficiency, how long it takes to complete an  
11 amendment, but I believe we do very well when we have aligned on  
12 priority and the application is well supported.

13 Slide 9. You know, the business line I think is doing  
14 very well but we can also improve, and this slide just highlights a few of  
15 the areas and some high profile focus areas that we have.

16 I have already talked about integration of risk insights,  
17 but we do have a plan with strategic and tactical actions.

18 A strategic example is one of the, the review teams that  
19 we are now putting in place to team up risk reviewers and deterministic  
20 reviewers where possible and that better integrates our safety  
21 evaluations from day one.

22 A tactical example, as I mentioned, is we included in  
23 this risk-informed plan the updated guidance so that we can make sure  
24 our risk guidance is coupled right with our deterministic guidance and  
25 all in one place for the staff.

1                   On communications, I highlight communications, and I  
2 do that, Mike Waters will be talking about the digital I&C plan, and in  
3 particular on that significant focus area for us on digital I&C we have  
4 made it a key point from our leadership team to stress the importance  
5 of the staff telling both sides of the story.

6                   They should be able to communicate industry concerns  
7 and staff concerns in these areas but focus on the next step for  
8 resolving the issue.

9                   On accident-tolerant fuel we do have a plan, we're  
10 collaborating with our federal partners, we're meeting with the industry  
11 on their plans, and we need to make sure we look out far enough ahead  
12 and stay on top of the milestones as we complete that plan.

13                  As I mentioned Kathryn will provide more details on  
14 these last two focus areas, but I want to briefly remark on the  
15 importance of them. Backfit, we've done a lot of work. CRGR is very  
16 active.

17                  We'll take the opportunity this fall to refresh and review  
18 and the important aspects of this process, one with headquarters folks  
19 and with regional inspectors.

20                  On licensing, we're doing a good job on our licensing  
21 reviews. We are estimating actual resources and communicating that  
22 to licensees, but we can continue to look for efficiencies in our reviews.

23                  With that let me turn it over to Kathryn Brock.

24                  MS. BROCK: Thanks, Brian. Good morning,  
25 Chairman and Commissioners. Thank you for the opportunity to

1 provide an update on the operating reactor licensing process, including  
2 a discussion of risk-informed licensing activities.

3 We have a success story to share with you. Our  
4 continued focus on timeliness, communication, and transparency has  
5 resulted in sustained improvements in the licensing process.

6 Since the last time we discussed the licensing program  
7 with the Commission we have continued to improve and optimize the  
8 licensing process through the use of controls and metrics.

9 The inventory of licensing actions greater than one  
10 year old is being maintained low, around 15 at any given time. As  
11 such, we have exceeded our congressionally-reported metrics for the  
12 quantity of licensing actions reviewed annually and the percentage of  
13 actions completed within one year.

14 While we continue to focus on the congressionally-  
15 reported metrics we are placing a greater focus on more detailed  
16 aspects of the licensing process, such as acceptance reviews, resource  
17 estimates, and discipline of schedule.

18 Slide 11, please. Before I discuss the metrics in more  
19 detail I wanted to share this illustration of licensing action closure times.  
20 The graphic shows the success we have achieved in improving the  
21 timeliness of closing licensing actions.

22 As you can see from the Fiscal Year 15 and 16 graphs  
23 the closure times for licensing actions was at about 12 months. The  
24 improvement for Fiscal Year 17 is visible with the peak closure times  
25 for licensing actions at nine to ten months.



1                   In addition, the graph illustrates that many licensing  
2 actions are completed well below nine months.

3                   Slide 12, please. In order to build on our success we  
4 continue to look at metrics that will improve performance. We  
5 designed new metrics that we report to the EDO on a quarterly basis.

6                   These metrics help give us an early warning that there  
7 might be challenges in meeting our congressionally-reported metrics,  
8 and the more detailed metrics have improved our ability to monitor work  
9 and improve predictability both for NRC and the industry.

10                  The graphic on this slide illustrates the status of these  
11 metrics. The three metrics include acceptance review timeliness,  
12 licensing actions completed within 25 percent of forecasted hours, and  
13 licensing actions completed within one month of forecasted schedules.

14                  During an acceptance review we challenged the staff  
15 to make a decision in 25 days. Upon acceptance we project the  
16 number of review hours and total months required to do the review and  
17 we document it to the licensee, then we monitor those estimates and if  
18 we see they are beginning to get off track we discuss how to get them  
19 back on schedule.

20                  We explicitly consider and usually accommodate  
21 licensing need dates, and more importantly we make commitments and  
22 work hard to stick to them.

23                  The top graph illustrates the aggressive goal we set for  
24 ourselves in acceptance review timeliness. It's a new indicator and  
25 though we have improved performance we're not quite where we want

1 to be yet.

2 Slide 13, please. Acceptance review timeliness has  
3 been added as an internal metric because it influences the success in  
4 meeting our overall schedules.

5 As I mentioned earlier, we set a challenging metric for  
6 acceptance reviews and have been focused on initiatives to influence  
7 the success of this metric.

8 We want licensees to submit high quality applications  
9 and for the staff to follow the acceptance review guidance. If they do  
10 then the acceptance reviews can be completed on time, the safety  
11 evaluation can be completed within scheduled resources, and there will  
12 be few requests for additional information, or RAIs.

13 In an acceptance review we decide whether the  
14 applicant has provided the necessary information to enable an efficient  
15 safety review. When the application lacks critical information our  
16 reviewers must then invest the necessary time and resources to request  
17 information and then wait for the applicant's response.

18 By identifying insufficiencies early in the process the  
19 NRC and the licensee both benefit by not expending excessive  
20 resources.

21 By continuing to insist on quality applications and  
22 maintaining more rigor in following the guidance we expect the overall  
23 efficiency to increase.

24 We will also continue to be open with our  
25 communications. We have increased the use of audits to assist staff

1 understanding of the issues and our project managers continue in their  
2 critical role of communicating with the licensee.

3 We are using interdisciplinary review teams and  
4 encourage discussions at all levels which serves to gain early alignment  
5 and therefore improve the timeliness of actions.

6 In addition, we formed a multi-office management level  
7 forum made up of licensing division directors from each business line  
8 to make our licensing process more consistent across the Agency.

9 Slide 14, please. The workload management process  
10 has been effective in identifying difficult actions before we miss our  
11 schedules, raising issues to upper management and encouraging  
12 collaboration.

13 Key to the success of this process are the multiple  
14 discussions about licensing actions each month, including meetings  
15 with NRR office management.

16 As an example, where enhanced communications  
17 resulted in a successful review was Technical Specification Task Force,  
18 or TSTF-542, on reactor pressure vessel water inventory control.

19 This review was challenging technically, many  
20 submittals were expected, and the first reviews had a large number of  
21 review hours.

22 Through collaboration across the organization we  
23 identified an innovative approach to these reviews that has reduced the  
24 number of estimated review hours as we gain experience while also  
25 maintaining the appropriate safety focus.

1 In fact, the engineer who identified the review approach  
2 was recognized with an NRR Division Level Award called the RICE  
3 Innovation Award. RICE stands for Recognition of Innovation and  
4 Creativity Excellence and is meant to incentivize and recognize  
5 innovation.

6 Slide 15, please. We use RAIs as an important tool to  
7 get the information we need to make technical and regulatory  
8 conclusions. However, there have been concerns from staff and  
9 stakeholders regarding the effectiveness of this process.

10 We heard these concerns and we are making  
11 improvements. We conducted an RAI self-assessment where staff  
12 from multiple divisions performed an assessment of a sample of RAIs.

13 We found that adherence to guidance is satisfactory,  
14 the need for second round RAIs is low, and the majority of licensees  
15 responded to RAIs within 30 days.

16 We encouraged staff to use the guidance more  
17 consistently, we have increased training and encourage divisions to use  
18 lower level guidance or job aides to support reviews, and committed to  
19 conduct additional self-assessments periodically.

20 We have also shared this information with other  
21 business lines so they can benefit from our experience.

22 Concurrent with our self-assessment the Government  
23 Accountability Office conducted an audit of the RAI process that  
24 examined the NRC guidance for RAIs, assessed the number of RAIs  
25 issued over the past several years, and identified the strengths and

1 weaknesses of the RAI process.

2                   Though the GAO did not have any specific  
3 recommendations for Agency action the staff will continue to focus on  
4 effective RAI development and will follow through with the  
5 recommendations for the NRC self-assessments.

6                   Slide 16, please. Risk-informed decision making  
7 helps us focus on issues that are important to safety enabling  
8 improvements to both safety and efficiency.

9                   We have been employing risk-informed approaches to  
10 regulations for years and the focus in this area is only increasing.

11                   At an NRR Executive Leadership Team meeting the  
12 managers created a vision for risk-informed decision making that  
13 focused on three main objectives.

14                   First, we wanted to help the staff better understand and  
15 apply risk information. Second, we wanted to refine our processes so  
16 that we can more thoroughly integrate risk information in a manner that  
17 compliments traditional regulatory approaches, and, third, we wanted  
18 to more broadly communicate our plans and successes using risk  
19 information.

20                   In support of this vision and the objectives as well as in  
21 response to a tasking from the NRR Office Director, the staff formed a  
22 working group and drafted an action plan that established a schedule  
23 for completing these actions.

24                   The action plan tasks will evaluate the appropriate use  
25 of risk insights and communicate their implementation to ensure

1 consistency in our reviews.

2 Slide 17, please. We also watching how we use our  
3 probabilistic risk assessment resources as we review the influx of new  
4 risk-informed actions. Therefore, we have modified NRR's main data  
5 tracking tool, the RRPS System, or Reactor Program System, to  
6 separately track risk-informed licensing actions.

7 This enables us to monitor review hours specifically for  
8 risk-informed actions and ensure we are conducting them in an effective  
9 manner. We believe that the resources needed to conduct each of  
10 these reviews will reduce overtime as staff becomes more proficient  
11 with them.

12 We also want to integrate risk into our reviews even if  
13 licensees don't designate a request as risk-informed. For example,  
14 we're developing a risk-informed screening tool that could be used to  
15 adjust the level of detail of the staff review using risk insights and other  
16 criteria.

17 We will also be developing procedures that can be  
18 used to incorporate supplemental risk insights, either qualitative or  
19 quantitative, if the licensees provide them.

20 Slide 18, please. After the accident at Fukushima  
21 Daiichi we issued orders for the mitigation of beyond design basis  
22 external events. Nuclear power plant licensees responded by  
23 developing FLEX strategies.

24 Licensees have installed plant equipment that is  
25 independent of AC power and would survive an external event.

1 Portable equipment is stored onsite that can provide power and water  
2 to the plant through various connection points and the availability of  
3 offsite resources that will be ready within 24 hours of plant notification.

4 Even though these modifications were designed to  
5 support licensees coping capabilities for beyond design basis external  
6 events they can and are being considered as viable mitigation  
7 approaches in other regulatory applications. We call this consideration  
8 Credit for FLEX.

9 Working with the regions FLEX has been credited in  
10 the reactor oversight process and used in the incident response and  
11 notification of enforcement discretion processes.

12 Licensing action review is another area where FLEX  
13 can be credited and we have credited FLEX in several licensing actions  
14 and have a plan to make this approach more efficient.

15 Staff from NRR, the Office New Reactors, and the  
16 Office of Nuclear Security and Incident Response are looking at how  
17 we may leverage our experience to credit FLEX.

18 In addition, our partners in the Office of Nuclear  
19 Regulatory Research are helping us with risk analyses that support,  
20 including FLEX strategies, in licensing and inspection.

21 Slide 19, please. While not unique to licensing, lastly,  
22 I wanted to touch on the status of backfitting activities by the operating  
23 reactor business line.

24 As you know, backfitting is an inherently safety-driven  
25 process. Understanding and maintaining the licensing basis is the

1 critical part of our regulatory infrastructure and controls unimposing  
2 backfits. Thus, the implementation of an appropriate backfitting  
3 process is essential.

4 Based on lessons learned and Commission policy  
5 direction the Agency has a renewed focus on backfitting processes and  
6 is increasing discipline and management oversight.

7 The EDO directed the Committee to review generic  
8 requirements to assess the guidance, training, and knowledge  
9 management that the Agency has on backfitting.

10 The EDO accepted the Committee's  
11 recommendations, added some tasks, and assigned these actions back  
12 to the staff in July. While we work on these actions we are already  
13 employing the Commission direction and the spirit of the EDO tasking  
14 on a daily basis as we make our regulatory decisions.

15 Updates are underway to Management Directive 8.4,  
16 which is our overarching internal guidance document for backfitting, as  
17 well as the associated NUREGs that describe the backfit and cost  
18 analysis processes, and these will be available for Commission review  
19 in April.

20 We are also developing required reset training for NRC  
21 managers and staff. All relevant staff and managers will have  
22 completed the training by the end of January.

23 The training will emphasize the licensing basis  
24 fundamentals, the importance of promptly raising and resolving safety  
25 issues, refresh and reinforce key concepts of backfitting and issue



1 finality, and heighten awareness of recent developments that will result  
2 in changes to guidance for considering backfits.

3 Additional more in-depth training will be held once we  
4 finalize the guidance documents and that training will be critical to  
5 ensure that employees are well versed in the procedures and regulatory  
6 fundamentals necessary to consider novel situations as well as those  
7 they confront in their day-to-day licensing and oversight.

8 This concludes my discussion of our sustained quality  
9 initiatives in the licensing program. I will now turn the presentation  
10 over to Shakur Walker.

11 MR. WALKER: Thank you, Kathryn. Good morning,  
12 Chairman, Commissioners. I appreciate the opportunity to come  
13 before you today and update you in our ongoing efforts to review the  
14 interim inspection program for efficiencies.

15 As a little background, the reactor oversight process  
16 was constructed with a number of baseline inspection procedures that  
17 provide independent verification that structure systems and  
18 components, or SSCs, are operated, modified, and maintained to  
19 ensure that they can perform their intended safety function during the  
20 design basis event.

21 Now recall that independent verification of licensee  
22 design changes is critical because it's the only NRC inspection that  
23 focuses on identifying latent conditions that could potentially  
24 compromise the safety system.

25 Now since the 1990s the NRC has conducted many

1 different types of independent inspections focusing on independent  
2 verification and over time these inspections have shifted from a  
3 verification of original design plant adequacy to an inspection  
4 increasingly focused on the licensee's ability to maintain the facility  
5 within its design and licensing basis.

6 This shift in focus was due in part to the fact that many  
7 of these SSCs had been inspected before.

8 So as nuclear power plants age and more equipment  
9 needs to be replaced the environment in which these SSCs operate  
10 changes and as a result the NRC focused on design verification shifts  
11 to ensure it includes latent design challenges as well as license basis  
12 functionality.

13 In addition, with the enhancement of risk assessment  
14 tools, enhancement tools, this focus has become much more risk-  
15 informed.

16 Slide 21, please. As a response to industry request to  
17 level out the effort over the triennial inspection cycle, in January 2016  
18 the Agency revised its engineering inspections, specifically, it was a  
19 component design basis inspection, the modifications, and the 50.59  
20 inspection.

21 In May 2017 the NRR initiated a working group to  
22 evaluate improving the effectiveness and efficiencies of our engineering  
23 inspection program and to make recommendations to the Commission,  
24 and this was being performed as a biennial review of inspection  
25 procedures and resources that is done as part of the annual ROP self-

1 assessment.

2 Now, specifically, the working group was tasked to  
3 implement transformational and out-of-the-box thinking to identify any  
4 existing gaps and eliminate any potential overlaps within our  
5 engineering inspection program to ensure the inspection program  
6 included aspects such as considerations for operator life extension,  
7 plant aging, and component replacement, as well as improve the overall  
8 effectiveness of our engineering inspections while still maintaining  
9 principles and good regulation.

10 The inspections within the scope of the charter are  
11 those baseline engineering inspections that are being implemented by  
12 region base inspectors which focus heavily on the adequacy of  
13 engineering analysis, compliance with code standards and the licensing  
14 basis, as well as verifying that no latent conditions have been  
15 introduced due to some plant design change.

16 Those inspections include the fire protection  
17 inspection, the design basis assurance inspection, the design basis  
18 assurance focus inspection, 50.59 in-service activities, as well as the  
19 heat sink inspection.

20 Slide 22, please. The working group is implementing  
21 the collaborative process to develop these recommendations with both  
22 internal and external stakeholders consistent with the  
23 recommendations made in the report of the Public Communications  
24 Task Force to the Commission.

25 The pace and schedule for developing options is

1 designed to maximize its collaboration and ensure proper consideration  
2 is given to all stakeholder positions.

3 The working group has made significant progress on  
4 outlining what is critical to consider in making this effort successful as  
5 well as the meaningful strides and our collaboration with stakeholders  
6 in development of recommendations.

7 In addition to establishing what our principle  
8 consideration should be the working group has also identified specific  
9 licensee activities that could potentially introduce latent conditions and  
10 compared those to our current inspection program.

11 The working group has aligned internally on a number  
12 of key points and identified critical topics that require further discussion  
13 with our external stakeholders.

14 Now some of the key points that the working group has  
15 come into internal alignment on are things like considering whether or  
16 not the heat sink and 50.59 triennial inspections could be accomplished  
17 as a focus sample during one of our comprehensive engineering  
18 inspections.

19 Those critical topics that require further discussion with  
20 external stakeholders are items like how should the comprehensive  
21 engineering inspection be modified to ensure that we can maintain and  
22 improve agility, focus, and relevance.

23 Also, what is the correct ROP inspection cycle, is it the  
24 current three years, could it be four years, maybe five years, as well as  
25 how could the proposed industry self-assessments, or how they have

1           been referred to recently as licensee performance verifications, be  
2           utilized within the scope of the ROP.

3                       As the various options are being developed the  
4           working group will ensure a couple of things. One, that the reactor  
5           oversight process has the appropriate level of independent oversight of  
6           engineering activities.

7                       Two, that the NRC will continue to emphasize industry  
8           challenges and licensee performance. Three, the NRC maintains the  
9           ability to identify latent issues that may have inadvertently been  
10          introduced due to facility changes.

11                      And, lastly, but most importantly, that the NRC  
12          inspection staffing and expertise will remain sufficient to implement the  
13          NRC mission successfully.

14                      Slide 23, please. An initial public meeting was held on  
15          June 6th to discuss our plan for this effort and for external stakeholders  
16          to provide their thoughts on the use of industry self-assessments, again,  
17          now being referred to as licensee performance verifications.

18                      And since that kickoff meeting in June the working  
19          group has been proactively engaging with internal and external  
20          stakeholders on a successful path forward.

21                      On October 11th staff from NRR and all four regions  
22          hosted another public meeting in Region II with industry and external  
23          stakeholders to discuss the status of the working group's efforts as well  
24          as discuss the use of licensee performance verifications within the ROP  
25          baseline inspection program.

1                   And during that meeting it was recognized that  
2 stakeholders were noticeably more in line than in previous meetings,  
3 particularly with respect to early considerations that the working group  
4 had come to internal alignment on.

5                   Additionally, stakeholders, such as the Union of  
6 Concerned Scientists, provided valuable feedback, such as expressing  
7 the importance of independent verification and the oversight from the  
8 NRC on our behalf and how vital the ROP has been in maintaining  
9 safety, identifying latent conditions, and increasing overall licensee  
10 performance.

11                   The working group expects to have additional  
12 engagement with external stakeholders over time. Our next public  
13 meeting with industry is tentatively scheduled for December 12th to  
14 further discuss critical topics as well as discuss any additional  
15 stakeholders prior to developing our options.

16                   We have additional public meetings scheduled to  
17 discuss proposed options, including the pros and the cons, and identify  
18 any specific options that require further refinement.

19                   We will eventually conduct a final public meeting and  
20 present the draft positions to all the stakeholders, discuss the proposed  
21 options, and obtain and document any final feedback to include in our  
22 paper to the Commission.

23                   This concludes my remarks and I thank you for your  
24 time. I will now turn it over to Steve Lynch who will discuss the medical  
25 isotope facility licensing status.

1 MR. LYNCH: Thank you, Shakur. Good morning,  
2 Chairman and Commissioners. Last year the NRC issued a 10 CFR  
3 Part 50 construction permit to SHINE Medical Technologies, or SHINE,  
4 for the production of molybdenum-99 using eight accelerator driven  
5 sub-critical operating facilities and one production facility.

6 Using the interim staff guidance developed for aqueous  
7 homogenous reactors and radioisotope production facilities the NRC  
8 staff, some of whom are pictured in this slide, completed its review of  
9 the SHINE construction permit application in 22 months, two months  
10 ahead of its 24 month goal.

11 Their review demonstrated the NRC staff's ability to  
12 effectively and efficiently review an application for novel technology.

13 Currently the NRC staff is nearing the completion of its  
14 second review of a medical isotope facility construction permit  
15 application submitted by Northwest Medical Isotopes, or Northwest.

16 If granted this construction permit would allow  
17 Northwest to build a production facility for the processing of low-  
18 enriched uranium targets irradiated at existing research reactors.

19 The efficient review with the Northwest construction  
20 permit application was supported by applying lessons learned from the  
21 SHINE review.

22 Using previously developed templates the NRC staff  
23 issued clear, focused requests for additional information and it is on  
24 track to complete its safety evaluation report for this review within 24  
25 months from docketing the application.

1                   In addition to construction permit application reviews  
2                   the NRC staff is also engaged in the review of license amendment  
3                   requests supporting molybdenum-99 production.

4                   In January 2016 the NRC staff issued a license  
5                   amendment to Oregon State University for the irradiation of prototypical  
6                   low-enriched uranium targets at the Oregon State TRIGA reactor.

7                   And in May of this year the University of Missouri-  
8                   Columbia, or MURR, submitted a license amendment request for the  
9                   production of molybdenum-99. If granted this license amendment  
10                  would allow MURR to irradiate two low-enriched uranium targets in the  
11                  reactor reflector.

12                  MURR is expected to submit a second license  
13                  application to support the processing of these low-enriched uranium  
14                  targets and hot cells featuring General Atomic's gaseous extraction  
15                  technology.

16                  Slide 25, please. Looking ahead, the NRC staff  
17                  anticipates receiving operating license applications from SHINE and  
18                  Northwest within the next year, coinciding with the beginning of  
19                  construction of each of these facilities.

20                  While licensee uncertainty and the timing of these  
21                  actions creates potential budget and resource challenges, the NRC  
22                  staff continues to actively prepare for upcoming applications and  
23                  oversight activities to support licensee schedules.

24                  In December 2015 the NRC staff published the  
25                  Inspection Manual Chapter 25.50 establishing a construction inspection



1 program for non-power, production, and utilization facilities designed for  
2 medical isotope production.

3 One of the primary objectives of this construction  
4 inspection program is to verify the effective implementation of a  
5 licensee's quality assurance program with respect to design,  
6 procurement, and construction of the facility.

7 Inspections will be commensurate with the risk of the  
8 facility, focusing on the most safety significant structures systems and  
9 components.

10 In preparation for the review of operating license  
11 applications the NRC staff has considered the need for additional  
12 security measures to apply to the SHINE and Northwest facilities and  
13 has proactively communicated potential security considerations in  
14 closed meetings.

15 The NRC staff has also formed an interoffice task  
16 group to consider updates to its non-power reactor operational  
17 inspection procedures and operator licensing requirements to  
18 accommodate medical isotope facilities.

19 The NRC staff is working to ensure an effective  
20 transition from oversight of construction to oversight during operation.

21 Slide 26, please. The NRC's efforts to license  
22 facilities dedicated to medical isotope production support U.S. national  
23 security interests and nuclear non-proliferation policy objectives by  
24 contributing to the establishment of a domestically available and reliable  
25 supply of molybdenum-99 without the use of highly-enriched uranium.

1                   As part of this effort the NRC staff coordinates its  
2 reviews as necessary with the National Nuclear Security Administration,  
3 which is responsible for the material management and minimization  
4 conversion program dedicated to the conversion of research reactors  
5 and isotope production processes to the use of low-enriched uranium,  
6 fuel, and targets throughout the world.

7                   In addition to coordination with other federal agencies  
8 the review of medical isotope facilities often requires collaboration  
9 across offices within the NRC, which may challenge the availability and  
10 prioritization of resources.

11                   However, through the establishment of the  
12 Molybdenum-99 Working Group the NRC staff demonstrates its agility  
13 by ensuring that the necessary expertise is available to readily respond  
14 to incoming license requests and emerging technical questions.

15                   In addition to the medical isotope reviews conducted in  
16 NRR under 10 CFR Part 50 this interoffice engagement has allowed the  
17 NRC to issue materials licenses out of Region III and also develop  
18 guidance for medical use to applicants and licensees and the Office of  
19 Nuclear Material, Safety, and Safeguards.

20                   NRR staff responsible for licensing medical isotope  
21 facility facilities also participate in the development of new rulemakings  
22 to ensure the appropriate applicability to these facilities.

23                   For example, NRR staff participates on a working  
24 group tasked with development emergency planning requirements for  
25 small modular reactors and other new technologies.

1                   Beyond its immediate licensing responsibilities the  
2 NRC staff actively engages with agreement state representatives to  
3 clarify a regulatory jurisdiction.

4                   Most recently the NRC staff discussed licensing  
5 considerations for a new demonstration project proposed by SHINE  
6 with the Wisconsin Department of Health Services.

7                   Recognizing the role of the United States in  
8 establishing reliable molybdenum-99 production capabilities the NRC  
9 staff participates in internationally-attended conferences, such as the  
10 annual Molybdenum-99 Topical Meeting organized by the National  
11 Nuclear Security Administration. At these meetings the NRC staff  
12 shares the status and best practices of its licensing reviews.

13                   Slide 27, please. The NRC staff's licensing of medical  
14 isotope facilities has demonstrated its ability to apply the existing  
15 regulations and guidance to technologies other than traditional light-  
16 water reactors, such as the Oregon State TRIGA reactor pictured on  
17 this slide.

18                   Based on this experience the NRC staff is working to  
19 create a more responsive and efficient technology-inclusive regulatory  
20 framework to better accommodate current and future licensees.

21                   For example, the NRC staff has developed a proposed  
22 rule to streamline the non-power production or utilization facility license  
23 renewal process, reducing the burden on both licensees and the NRC  
24 staff.

25                   The proposed rule would eliminate license terms for

1 certain classes of licensees, require licensees to submit an updated  
2 final safety analysis report to the NRC every five years, provide an  
3 accident dose criteria of one rem total effect of dose equivalent for non-  
4 power production or utilization facilities other than testing facilities, and  
5 the final rule is expected to be published and fully implemented by 2020.

6 Additionally, lessons learned from the medical isotope  
7 facility reviews is being leveraged to support pre-application  
8 interactions with potential advanced reactor applicants proposing to  
9 construct and operate research reactors.

10 In advance of the upcoming merger NRR staff is  
11 working closely with the Office of New Reactors to identify the need for  
12 guidance to support the licensing of these facilities.

13 I will now turn the presentation over to Mike Waters.

14 MR. WATERS: Good morning, Chairman and  
15 Commissioners. I am happy to be here today to discuss the progress  
16 we have made in improving regulatory predictability and confidence  
17 with the innovative action plan for digital instruments and controls.

18 We have also made good progress in approving new  
19 digital systems for use by our licensees. In a moment I will highlight  
20 some of these activities.

21 First, as background, the U.S. reactor fleet continues  
22 to pursue digital upgrades as a key strategy for addressing obsolescent  
23 issues, improving plant reliability, and reducing maintenance cost.

24 The Commission in SRM-15-0106 directed us to  
25 develop an innovative strategy to modernize the Agency's regulatory

1 infrastructure for digital I&C for both operating and new reactors.

2 The Commission directed the staff to consider broader  
3 context regulatory challenges, including common cause failure, the use  
4 of 50.59 to make certain upgrades of NRC approval, and incorporation  
5 of the Institute of Electrical Electronics Engineers IEEE Standard 603  
6 into regulation.

7 The staff provided their innovative action plan in May  
8 2016. The plan is focused on these areas and other priorities identified  
9 by staff and industry.

10 The Commission also directed us to hold frequent  
11 stakeholder interactions to reach a common understanding of  
12 regulatory challenges, priorities, and potential solutions to address  
13 them.

14 So far we have participated in more than 30 meetings  
15 on these activities. These include meeting for working level  
16 discussions with industry to exchange information and develop draft  
17 guidance documents. Let me now discuss the specific activities.

18 Slide 29, please. The industry has reported that they  
19 continue to make digital upgrades to the non-safety related and balance  
20 of plant systems under 50.59.

21 For example, almost all Korean plants have converted  
22 to digital feedwater systems under this process. However, some  
23 stakeholders have expressed reluctance to pursue upgrades for safety-  
24 related equipment because of the risk of adverse NRC inspection  
25 findings.

1                   The staff has worked to achieve a common  
2 understanding with industry on specific challenges. Some include a  
3 need for clarity on addressing common cause failure likelihood and the  
4 level of detail that is needed for the 50.59 qualitative evaluations.

5                   To address near-term needs the staff this summer  
6 issued a draft supplement to Regulatory Issue Summary 2002-22. The  
7 risk supplement contains the endorsement of NEI 01-01 and provides  
8 clarifying guidance for the use of qualitative assessments.

9                   The guidance is even primarily addressing upgrades  
10 for auxiliary and safety support systems. A few examples of these may  
11 include upgrades of both the regulators and chiller controls.

12                   The staff is currently resolving stakeholder comments  
13 and it anticipates issuing the final risk supplement next month for  
14 immediate use by licensees.

15                   In parallel to this effort the staff is currently reviewing  
16 proposed Appendix D to NEI 96-07, which is NRC guidance for 50.59s.  
17 Appendix D provides an evolved approach from NEI 01-01 guidance,  
18 especially in the areas of screening digital changes and evaluating  
19 malfunction likelihoods against the licensing basis of the plant.

20                   The staff has achieved a general alignment with  
21 industry on these issues and other technical concerns. We anticipate  
22 completing our technical review early next year and then proceeding  
23 with a formal regulatory guide endorsement.

24                   If endorsed, Appendix D will provide durable guidance  
25 with more clarity and flexibility for all types of digital system upgrades.

1 Slide 30, please. In the past year we have approved  
2 several new digital systems. We approved Diablo Canyon for an  
3 updated record protection system and Hope Creek for a new digital  
4 power range monitoring system.

5 We have also approved new digital technologies as  
6 part of our topical review process. This year we approved the  
7 Lockheed Martin field-programmable-gate-array, FPGA, digital platform  
8 and our colleagues at NRO in coordination with NRR have recently  
9 approved the NuScale FPGA platform.

10 Industry stated that there is a need for several more  
11 upgrades to digital protection systems in the coming years. They have  
12 stated that they would submit license amendments once there is greater  
13 confidence and regulatory certainty and efficiency.

14 The staff has also worked to achieve a common  
15 understanding with industry on specific challenges in licensing, some  
16 include the confusion of overlapping regulatory guidance and the  
17 amount of design detail and testing information that is needed before  
18 NRC makes a licensing decision.

19 NRC technical reviewers have also identified areas  
20 where redundancy can be eliminated on review and where the volume  
21 of document submittals can be reduced.

22 To address these challenges the staff has streamlined  
23 our digital license process guidance. In Interim Staff Guidance  
24 Number 6, ISG-06, the staff is working with an industry working group  
25 to develop a revised draft for best guidance for early next year.

1                   The staff anticipates a major digital I&C application will  
2 be submitted later in the year using this draft guidance.

3                   Finally, addressing potential common cause failures  
4 remains the highest technical priority to support upgrades with both the  
5 50.59 and license amendment process.

6                   We are continuing to review industry draft technical  
7 guidance for addressing common cause failure. That guidance is  
8 focused on applying defensive design measures to prevent common  
9 cause failure and determine its likelihood.

10                  The guidance could be used in part to determine the  
11 scope if further defense-in-depth assessment is needed for a digital  
12 system. At the same time we are updating our regulatory position on  
13 common cause failure, including the potential use of graded  
14 approaches.

15                  We are concerned of opposed industry guidance,  
16 current technical knowledge, and operational experience with today's  
17 digital system. We anticipate writing a paper to the Commission on the  
18 common cause failure position by summer of next year.

19                  Slide 31, please. In summary, we will continue to  
20 closely engage stakeholders on regulatory challenges and make  
21 thorough progress to support digital upgrades.

22                  This is an Agency-wide effort with significant  
23 collaboration among our experts at NRR, NRO, research, the regions,  
24 and other offices. The staff will write shortly an annual update paper  
25 to the Commission with the status of all of the IAP activities.



1                   And, finally, the staff is participating in IEEE-603  
2 standard development activities as previously directed by the  
3 Commission. That standard is expected to be finalized by IEEE in mid  
4 to late next year.

5                   As the standard gets closer to completion the staff will  
6 begin to evaluate it for incorporation by reference into a regulation  
7 under 10 CFR 50.55(a).

8                   We will continue to engage the Commission as  
9 appropriate. Thank you. Now I will turn it over to Kimberly.

10                  MS. WEBBER: Thank you, Mike. Good morning,  
11 Chairman Svinicki. Good morning, Commissioners. The Office of  
12 Nuclear Regulatory Research collaborates closely with NRR and our  
13 partner offices to provide the necessary analyses, tools, information,  
14 and expertise.

15                  In light of an uncertain variable and changing  
16 environment we continuously monitor business line priorities to ensure  
17 our work aligns well with regulatory needs.

18                  We work daily to improve our effectiveness, efficiency,  
19 and agility in collaboration with partner offices and our international and  
20 domestic counterparts.

21                  For example, during the last year we have supported  
22 the following licensing activities and oversight activities. The staff have  
23 performed thermal hydraulic reviews for MELLLA+ application, license  
24 applications, allowing licensees to operate safely at higher power  
25 levels.

1                   By performing thermal hydraulic analyses using our  
2 TRACE code as well as full-scale testing we have identified fuel heat  
3 up conditions and are confirming safety during potential power  
4 instabilities.

5                   We have been preparing for future reviews of accident-  
6 tolerant fuels and other new fuel designs. The Office of Research,  
7 NRR, and other business line partners are working together to prepare  
8 the NRC for batch-loading of accident-tolerant fuel, including  
9 considerations associated with fabricating and transporting fresh fuel.

10                  We are also developing agreements with the  
11 Department of Energy and with the Electric Power Research Institute to  
12 leverage data and information that will support our reviews.

13                  We have also been advancing the NRC's use of risk-  
14 informed decision making by collaborating with NRR and the regions to  
15 develop the technical bases needed to incorporate FLEX strategies and  
16 related plant modifications into the Standardized Plant Analysis Risk, or  
17 SPAR, models.

18                  This will better position the NRC to model realistically  
19 the risk of the as-operated plants in our risk informed evaluations while  
20 enhancing the technical bases for evaluating licensee incorporation of  
21 these plant modifications in their risk-informed license submittals.

22                  As we provide the support we also seek to ensure their  
23 analytical capabilities are sustainable by preserving and sharing  
24 knowledge, publishing high quality results, training license reviewers  
25 and equipping them with the tools needed to confirm safety.

1 Slide 33, please. I mentioned previously our focus on  
2 effectiveness, efficiency, and agility. We are making substantial  
3 progress through improved coordination and communication within our  
4 office and with our business line partners.

5 We have strengthened accountability and improved  
6 planning, prioritizing, tracking, and reporting of our research projects.  
7 As you may be aware we have implemented a more transparent and  
8 efficient process for tracking and reporting on our projects in response  
9 to requests from the Congress and from you, from the Commission.

10 One of the key contributions that we make in fulfilling  
11 the mission is providing expertise in analytical capabilities. While we  
12 have been rightsizing our workforce commensurate with our workload  
13 we have been enhancing our expertise and capabilities by conducting  
14 research and placing greater alliance on and developing NRC  
15 employees with this expertise.

16 As directed by the Commission, for example, we have  
17 been advancing the state of the practice in conducting a site-wide Level  
18 III PRA for the local site in cooperation with Southern Nuclear Company.

19 By conducting much of this work in-house we have  
20 enhanced the knowledge and skills of our employees as a key feature  
21 of this project.

22 We are also participating in the pilot on enhanced  
23 strategic workforce planning leveraging core capabilities established by  
24 the Commission for our office nearly 20 years ago.

25 Following the EDOs approval in early July we have

1 already begun the pilot by training our supervisors, identifying and  
2 evaluating core positions, projecting workload, and assessing how this  
3 workload will impact workforce needs for our office.

4 Slide 34, please. In addition to relying on our own  
5 experts we leverage strong partnerships with U.S. research  
6 organizations, such as DOE, the National Institute of Standards and  
7 Technology, U.S. Geological Survey, and EPRI, among others.

8 Through these partnerships we amplify our research  
9 programs ensuring our awareness of cutting edge developments that  
10 are important to nuclear safety and security while reducing unnecessary  
11 duplication of effort.

12 As an example, and is pictured on this slide, we have  
13 been cooperating with NIST in assessing the causes and impacts of  
14 alkali silica reaction in concrete, which emerged several years ago as a  
15 concern at the Seabrook Nuclear Power Station.

16 As another example, we have been exploring with DOE  
17 whether and how we can utilize its nuclear safety codes to augment  
18 NRC's analytical capabilities at a reduced cost.

19 Office of Research staff have been making  
20 arrangements to use DOE's suite of nuclear, thermal hydraulic, and fuel  
21 performance codes developed through the Consortium for Advanced  
22 Simulation of Light-Water Reactors, or CASL, and the Nuclear Energy  
23 Advanced Modeling and Simulation, or NEAMS, programs.

24 This would leverage DOE's investment of hundreds of  
25 millions of dollars in high-performance computing systems, codes, and

1 models, which may help us confirm safety in regulatory applications,  
2 such as licensing of accident-tolerant fuel and advanced non-light-water  
3 reactor designs.

4 Next slide, please. We also rely on and leverage our  
5 well-established relationships with our international counterparts that  
6 support resolution of nuclear safety and security issues.

7 Today, more than 75 percent of nuclear power plant  
8 operation experience is generated outside of the United States.  
9 Tapping into that experience and technical expertise helps us  
10 accomplish the NRC's mission and advances nuclear safety.

11 Through more than 70 implementing agreements with  
12 over 30 countries we gain access to experimental data, plant safety  
13 analysis, and analytical tools and codes.

14 We use this information to refine our reactor safety  
15 codes through multilateral development and sharing of code  
16 modifications while reducing the overall costs to the NRC.

17 As an example, through our international code sharing  
18 program we receive a couple million dollars per year in membership  
19 fees in addition to high quality technical contributions from participating  
20 countries for NRC code validation and development purposes.

21 Additionally, these relationships ensure rapid excess to  
22 experts when incidents or nuclear safety events occur around the world.

23 The Office of Research partners with the Nuclear  
24 Energy Agency on complex research projects. Collaborative research  
25 projects through NEA yield a significant average return of about 10:1 on

1           our investment.

2                           For example, NRC participates in the NEA Halden  
3           Reactor Project which performs research on fuels, materials, human  
4           factors, and digital systems. Our EDO recently gave a keynote  
5           address at a Halden meeting just last month.

6                           Overall this program costs the NRC roughly \$1 million  
7           per year and we obtain benefits of roughly \$18 million worth of  
8           experimental results which are critical to advance, for example, thermal  
9           hydraulics analysis and access peak cladding temperatures in support  
10          of fuel license topical report reviews.

11                          This concludes my brief summary and I will turn the  
12          presentation back to Vic.

13                          MR. MCCREE: Thank you, Kim. Chairman,  
14          Commissioners, as you have heard this morning the people who work  
15          to ensure the safety and security of operating reactors and research  
16          and test reactors are at the heart of the Agency's mission.

17                          As we execute our mission we continue to note your  
18          spirit of effectiveness, efficiency, and agility, and we routinely see  
19          evidence of this ethos in both what we do and how we do it.

20                          We are building on our successes in areas such as the  
21          Fukushima lessons learned and licensing processing improvements  
22          and we're also leveraging risk insights to make well-founded safety-  
23          focused regulatory decisions.

24                          The dedicated people in the operating business reactor  
25          line collaborate across the program and among the business lines to

1 make this possible and I would like to thank them for all of their efforts.

2 This concludes our remarks and we look forward to  
3 your questions. Thank you.

4 CHAIRMAN SVINICKI: Thank you, Victor. And  
5 thank you to each of the presenters on the panel and those who helped  
6 you prepare for today and pull together a lot of information. We begin  
7 the question and answer period today with Commissioner Baran.  
8 Please proceed.

9 COMMISSIONER BARAN: Thank you. Brian, you  
10 mentioned the staff's efforts to prepare for accident-tolerant fuel  
11 applications. Currently NRC's regulations recognize only two types of  
12 fuel cladding for a full core -- Zircaloy and Zirlo. The regulations also  
13 recognize only one type of fuel pallet material, uranium oxide. But  
14 vendors are looking at other cladding and pallet material such as silicon  
15 carbide and uranium-silicide.

16 Because these new materials are not addressed by our  
17 regulations, licensees would need to seek regulatory exemptions to use  
18 them, and that's not very conducive to innovation and fuel design.  
19 There was a draft final rule that would address this issue that has been  
20 pending before the commission for more than a year-and-a-half. I  
21 voted on it 14 months ago. The 50.46(c) rulemaking would move to a  
22 technology-neutral, performance-based approach that would apply to  
23 all cladding materials and fuel designs so applicants would no longer  
24 need to seek regulatory exemptions from the existing requirements.

25 Does the staff agree that finalizing the 50.46(c) rule

1 would better position the agency to handle the expected accent-tolerant  
2 fuel applications for full core loads? Would having technology-neutral  
3 requirements make more sense than having requirements for just two  
4 particular cladding materials and one pallet type?

5 MR. HOLIAN: Well good, that -- that will bring some  
6 back to seven months I spent in research a few years ago. But the  
7 answer, yes, we have looked ahead to see -- exemptions could be used  
8 for that as compared -- compare this to the decommissioning  
9 rulemaking where we are able to apply exemptions and deal with the  
10 technical situation that way. That rulemaking has a piece into it, which  
11 would make it more performance based to -- to enable a variety of fuel  
12 options to come in and pass performance-based criteria. So it would  
13 be conducive to have that generic planning in place -- or, generic review  
14 criteria that applicants would have to satisfy and make that open. That  
15 information is publically available to them now, so they should be able  
16 to utilize that if they were to come in early before that rule was out.

17 COMMISSIONER BARAN: There's also an important  
18 safety component to the 50:46(c) rulemaking. New research findings  
19 from an extensive research program call into question the technical  
20 basis of the existing regulation. The latest science shows that the  
21 combination of temperature and oxidation limits established in the  
22 current regulation are not stringent enough to prevent embrittlement of  
23 the fuel cladding. In addition, the existing regulation does not address  
24 the new degradation mechanisms revealed by the latest research, such  
25 as breakaway oxidation. Is that right?



1 MR. HOLIAN: So, yes that -- there are two parts to  
2 that rulemaking, really. One was clarifying the rule to be open to  
3 different fuel types. And then the second was based on research  
4 done. We thought that this oxidation aspect -- we wanted to clarify  
5 aspects of the technical basis that they would do. So that review was  
6 done as part of that rulemaking package that went up. A look was  
7 done at the plants to look at how much margin they have. But that  
8 research is a piece of that rulemaking that's right.

9 COMMISSIONER BARAN: In the absence of  
10 adequate regulatory requirements the NRC staff has been performing  
11 annual safety assessments of each nuclear power plant in order to  
12 ensure that there is no imminent safety hazard related to the integrity of  
13 the fuel cladding during a design-basis accident. Essentially, the staff  
14 is conducting after-the-fact, backward-looking reviews to see if the fuel  
15 at each plant would have performed safely during an accident in the  
16 prior year. Is that right?

17 MR. HOLIAN: Well, yes and -- yes and no. Let me  
18 answer that with what little I know. And I might need some help on this  
19 from a Tech staff. But in general, when the rule went up -- and my  
20 memory serves me correct that -- looked at this a little bit on turnover -  
21 - we did an assessment then on the rule going forward with what  
22 information we had from Research, did we have a safety issue right  
23 away that need to be addressed?

24 And a technical assessment -- I believe it was back in  
25 2011 -- confirmed with a plant-specific look at each plant that significant

1 margins were in place. They looked at fuel operating history and an  
2 assessment was done. The look back that you referred to is every year  
3 we reaffirm that those margins are still good by looking back at the  
4 operating history. And I know that gets done out of DSS and I don't  
5 know if -- there we go. Paul Clifford is there to help me, thank you.

6 MR. CLIFFORD: Yes, I will -- yes, the initial  
7 assessment was done in 2011 where we worked with the industry by  
8 the PWR Owners Group and the BWR Owners Group to assess plant-  
9 specific safety relative to the three new degradation mechanisms that  
10 were -- identified as a result of the research at Argonne National Labs.

11 And we were able to show positive margin by taking  
12 credit for improvements in cladding performance and improvements in  
13 -- in ECCS evaluation models to show this -- that the plants would  
14 operate in a safe manner. And then every year we -- we reaffirm that,  
15 as was mentioned -- by looking back through all the changes that have  
16 been done for each and every one of the operating power reactors to  
17 reaffirm that margin.

18 COMMISSIONER BARAN: We look at the changes  
19 that the plants made in the preceding year to see if that eroded the  
20 margins and it would cause a safety issue?

21 MR. CLIFFORD: Right. So each time we perform a  
22 safety assessment, it is essentially a snapshot in time. And then -- and  
23 then as time progresses you're moving away from the margins that are  
24 -- that are known. So each year we then reaffirm the margin. So it's  
25 a look back at the previous operating cycle.

1                   COMMISSIONER BARAN: Right. And -- and we  
2 need to do this because the existing regulation would not prevent  
3 licensees from taking actions that would reduce the margins?

4                   MR. CLIFFORD: That is correct. The margins that  
5 are identified in safety assessment are not being tracked by the  
6 licensees. They're not controlled by the tech. specs. So they're not  
7 even documented in the plant's FSAR.

8                   COMMISSIONER BARAN: Okay. And so is this -- is  
9 this kind of oversight approach one we use in other areas? Waiting till  
10 the end of the year and then seeing whether a plant has made a number  
11 of plant changes permitted by the regulations that would put it in an  
12 unsafe condition?

13                  MR. HOLIAN: Well, let me -- let me scratch looking  
14 back at other examples. You know I -- we are provided tools, you  
15 know, rulemaking, orders, generic communication for this -- as I look  
16 back on items and rules -- station blackout rule, you know, brought up  
17 a technical concern about electrical. And we did that via rulemaking  
18 knowing we had a concern about electricity supplies to a plant.  
19 Generic -- so that -- that speaks to the timing of an issue and can you  
20 do an operability that the plants are safe as-is while you do a rulemaking  
21 to come into place? Which I think is the -- the basis of your question.

22                  Generic Safety Issue 191 that we've been wrestling  
23 with for years on some performance. That's a similar issue where we  
24 looked at the margins that we had -- and we continue to do that as we  
25 finalize the issues. We put in bigger strainers as an initial case, but

1 then we had additional technical questions come up. So we are  
2 continuing the Technical staff to assess margins as we take the time we  
3 need to finalize the fix for that. So those are a couple that come to --  
4 come to mind that are similar approaches for dealing with operability  
5 and design issues that take a while.

6 COMMISSIONER BARAN: Okay. Well I -- I  
7 appreciate what the staff is doing here. I know you are not in a great  
8 position because the staff's view is you should address this issue by  
9 rulemaking. That hasn't happened yet. And so you're doing the best  
10 you can to ensure reasonable assurance of adequate protection of  
11 public health and safety. Listening to what we're doing doesn't give me  
12 a lot of confidence that we're really managing that. If this rule is not  
13 issued, is the staff going to consider other regulatory tools to address  
14 the issue such as orders or generic communications?

15 MR. HOLIAN: Well, we can look at that,  
16 Commissioner. The -- you know, it -- the rule was an initial step the  
17 staff thought was appropriate for this issue. If that didn't happen, as I  
18 mentioned, we -- we've seen evidence that the industry -- PWR Owners  
19 Group, BWR Owners Group -- well aware of this issue.

20 So getting that information out, the research out, the  
21 SECY paper out itself -- has shown promises. Our Technical staff gets  
22 that information. We look at that information is being considered when  
23 we do regular reviews, like power uprates, our staff is questioning along  
24 that area. And we've seen evidence that the industry is well aware of  
25 this issue and factors that into their fuel analysis.

1                   So, we can -- we can handle it now. We can handle it  
2 in the future and look at some of our other tools to make sure that that  
3 information's out there at all the licensees and fuel vendors, really.

4                   COMMISSIONER BARAN: All right, well I hope we  
5 will be able to issue the rule in the near term because I think we need  
6 to resolve this issue. I'd like to briefly turn to the engineering  
7 inspections that Shakur discussed earlier. The NRC staff recently held  
8 a public meeting as part of a broad review of ROP baseline engineering  
9 inspections. And in that meeting an industry proposal to replace  
10 portions of the baseline inspection program with licensee self-  
11 assessments was discussed. It was mentioned a little bit during the  
12 presentation today. As I understand it, this would basically turn some  
13 NRC inspections over to licensees to do themselves. Is that your  
14 understanding of this proposal? And is that something the staff is  
15 actively considering as an option?

16                  MR. WALKER: Well, I appreciate the question. It's  
17 very early in the process. The industry -- during that October 11th  
18 meeting the industry just provided a very rough draft of what licensee  
19 performance verifications would look like. But, you know, we  
20 understand and appreciate that we need to have an open, collaborative  
21 dialogue about all of the options and all the recommendations and  
22 positions from the -- from the industry. And this being one of them we  
23 are taking it under consideration. But it is still too early to see how it's  
24 going to work.

25                  Now the industry still has to develop guidance, how it

1 would be implemented, how it would look. You know, they just have a  
2 very rough structure that they presented. We planned for another  
3 public meeting at the middle of December and we're looking forward to  
4 seeing what industry and NEI specifically has to present during that time  
5 on what they're position is for how these licensee performance  
6 verifications would be implemented. And they're also looking to us for  
7 -- to provide input. So it's a very collaborative process to see how that  
8 would be utilized -- if utilized in ROP.

9 COMMISSIONER BARAN: Okay. It sounds like it's  
10 pretty nascent at this point. But these are baseline inspections we are  
11 talking about, right? These are basically the core of NRC's oversight  
12 of reactors. So, you know, I guess we -- part of this process should  
13 really be asking kind of the big-picture question here about -- you know,  
14 what's the role of the safety regulator? What's the role of the operator?  
15 Should we really be considering have licensees inspect themselves  
16 instead of us doing -- conducting baseline inspections? That would be  
17 a really significant change to our inspection approach.

18 MR. McCREE: Commissioner, if I might add, one of  
19 the understandings that we're going into this initiative with is one,  
20 recognizing that this is not a case of first impression. We have history  
21 within the NRC oversight process -- actually, prior to the ROP -- of  
22 allowing what was referred to as licensee self-assessments in the  
23 engineering area. We've done it in service water inspections, they were  
24 called SWPs, and in other areas. So we do have some history in  
25 having licensees perform -- I guess what they're now being called is

1 licensee performance verification activities -- and that NRC would  
2 consider -- actively consider the results of that in deciding the scope,  
3 the resources, the timing of its independent inspections.

4 So we have some history and we're taking advantage  
5 of that as we're considering this current proposal. During Shakur's  
6 presentation I listened in very closely, one of the things he talked about  
7 was that we would ensure happens through this effort as we consider  
8 it, is the appropriate level of independent oversight of engineering  
9 activities that were for specific issues. He also talked about the  
10 importance of NRC maintaining our ability to identify latent issues, et  
11 cetera, et cetera.

12 So I have a sense of confidence that we're doing about  
13 it with the right principles in mind. That there's no intent to divorce or  
14 transfer to our licensees the independent responsibilities that we  
15 maintain. So we will carry that forward and make sure that the  
16 Commission is aware of the results.

17 COMMISSIONER BARAN: Okay, thank you.

18 CHAIRMAN SVINICKI: Thank you. Commissioner  
19 Burns.

20 COMMISSIONER BURNS: Thanks, and I again  
21 thank you all for the presentations. You know, obviously with the  
22 operating reactor business line there's a broad scope of activities of little  
23 reactors, big reactors, international reactors and all that. So all sort of  
24 facetiousness aside, let me -- let me follow-up a little bit on the baseline  
25 inspection issue.

1                   In one respect -- I mean, I can understand there's, you  
2 know, an interesting balance. We can look at the international  
3 framework. Who is responsible for safety? Primarily the operator.  
4 The regulator has to be there to confirm that there were the operator,  
5 the licensee is meeting its goals.

6                   And you know, I know in terms of the inspection  
7 program's change over the years, are there things -- and I don't mean  
8 to put Shakur or Rick or anybody -- Brian -- anybody else on the spot,  
9 but sort of -- maybe even asking the question is if intuitively is there  
10 something we look at now in terms of our -- the inspections and maybe  
11 ask ourselves is there a value added to how we are conducting that  
12 inspection? Are there places where you might pull out -- and you may  
13 have touched on it a bit in your presentation, Shakur, that you would  
14 say are where we sort of question -- we do it because that's the process  
15 and we should follow our processes until we modify them. But where  
16 we sort of ask ourselves about the value added in terms of how we're  
17 doing it?

18                   MR. WALKER: Good question, Commissioner. And  
19 yes, we did have a lot of discussion when we first kicked off this effort  
20 on, hey, let's put everything on the table. Let's look at -- you know,  
21 because again, we're tasked with transformational thinking. Out of the  
22 box. What is it that we do? And let's identify where these existing --  
23 if there are any -- potential gaps or overlap. And so that overlap  
24 section is where we can say, okay, we do this, but is there a more  
25 efficient way? Are we doing something that's redundant? And then,



1 you know, that's being done? Or it could be done better in another one  
2 of our inspection procedures.

3 And some of those things were the heat sink  
4 inspection, for example. We do a tri-annual heat sink inspection that's  
5 done every three years at a site. And we also have a resident  
6 inspector portion of that. But we've discussed, could that be done as  
7 part of a focus sample? As part of one of our comprehensive  
8 engineering inspections as well as the 50.59 inspection? Those are  
9 some of the examples.

10 And we've had that on the -- we've put that out there.  
11 We've had the discussions with the external stakeholders and industry  
12 during our public meetings, and they were in alignment with them.  
13 They thought of some of the same things as far as what are the -- some  
14 of the things that could be done better that we do, but could be done in  
15 a different way? Brian?

16 MR. HOLIAN: Yes, Shakur, thanks. And  
17 Commissioner, I agree with everything Shakur said and I just wanted to  
18 add one point here. It hopefully came out in the beginning of Shakur's  
19 presentation was, this is normal process for us. The ROP demands  
20 that we look back every year or every two years, you know, and take a  
21 look to do kind of what you said. Make an assessment of that.

22 Historically we have looked at items -- do we need to  
23 go out and RAD dose out there if we can -- do we need to walk around  
24 independently, or can we look at data provided by the licensee? Look  
25 at performance indicators and substitute that for inspections? So the

1 ROP calls us to do that. That's what initiated this review was hey, let's  
2 take a look at Engineering. We've done some changes in the past.  
3 Let's look at it again.

4 So it calls for us to self-assess, you know, where  
5 should we be putting our time? License renewal with latent items?  
6 Plants age more, so take a little bit more of those samples and do that  
7 year to year.

8 COMMISSIONER BURNS: Okay, thanks. Actually,  
9 a question I know Vic spoke at -- in Norway at the Halden -- the  
10 celebration there. My question on Halden, and I can't remember from  
11 my NEA days is Halden has been around a while as a facility. Is there  
12 some -- just talk in terms of lifetime. Because I know we do get a lot of  
13 -- you know, not only us, I think as I said that there's a -- you know, in  
14 terms of leveraging, you know, the funds that go in -- that we and others  
15 who participate and then get a lot.

16 So is there -- I don't know if that came up in the  
17 discussion there in terms of looking at the life span of the Halden  
18 Reactor. And if there are other alternatives. I vaguely recall some  
19 project in the south of France that they were looking at. A potential  
20 research-type facility.

21 MR. McCREE: I don't have the dates offhand. Mike,  
22 do you want to speak specifically to that?

23 COMMISSIONER BURNS: Yes, thanks, Mike.

24 MR. McCREE: That subject did come up during the  
25 course of the meeting.

1 COMMISSIONER BURNS: Okay.

2 MR. McCREE: There was an end date or end time  
3 period for the Halden Reactor. And yes, there is some vision of the  
4 project in France at Cadarache, perhaps.

5 (Simultaneous speaking.)

6 COMMISSIONER BURNS: Okay. It was  
7 Cadarache, okay.

8 MR. McCREE: Replacing Halden. But Mike, do you  
9 want to give more detail?

10 MR. WEBBER: Sure. Mike Webber, Director of  
11 Research. You are correct, Commissioner, Halden has been around  
12 since 1958. And we have been one of the longest surveying partners  
13 in the Halden project. They have come up against a license renewal  
14 review, so Norway, as the regulatory authority, is making a  
15 determination about whether to extend the license for the Halden  
16 Reactor.

17 And that's where some of these questions related to  
18 waste management emerge. And so we are in the process of  
19 preparing a paper to send up to the commission to advise before we  
20 would enter the next period of the Halden project. And that begins in  
21 January.

22 COMMISSIONER BURNS: Okay. All right, thanks.  
23 Thanks, Mike. Talking on accident-tolerant fuels -- and are it is  
24 obviously -- in the industry there's a big push in terms of this. And how  
25 do we see the sort of coming together on the research end?

1                   Because I know there is research out there, you know,  
2                   ongoing. We're interested, obviously, in the results. But, you know, I  
3                   am hearing a lot and I am sure -- and I know if I am hearing it, the staff  
4                   is hearing it in terms of timelines and, you know, desired time frames.

5                   But, you know, obviously, you know, research take  
6                   time to ensure its quality, to ensure its usability. So what can you tell  
7                   me on it?

8                   MS. WEBBER: Yes, so we have been working  
9                   collaboratively across the agency to put together a plan. And the focus  
10                  of the plan is really to engage with our external stakeholders to  
11                  understand what research activities they are performing, what their time  
12                  schedules are, to include experimental programs at the Idaho National  
13                  Labs.

14                 There is some longtime horizons for some of the  
15                 research activities. One of the key assumptions in the plan that we are  
16                 developing is that we will need to rely on the National Laboratory  
17                 experimental results to provide some information for our confirmatory  
18                 analytical capabilities, such as our analytical codes. So that's a key  
19                 assumption in our plan at the present time.

20                 As you know, research is expensive. And so we are  
21                 trying to leverage their activities. Another part of the plan is to stay  
22                 very closely connected to what they're doing in terms of when they're  
23                 doing it, what they're doing, where the gaps may be. And then we will  
24                 try to assess the gaps and try to figure out what's the best and most  
25                 cost-effective approach going forward?

1                   COMMISSIONER BURNS: Okay, thanks. Let me  
2 talk -- turn to Steve Lynch. In terms of the SHINE facility, and obviously  
3 we are moving to -- or preparing for construction phase -- have you all  
4 been talking to NRO in terms of lesson -- granted, it's a different scale  
5 and a different type of facility. But have you been talking to NRO  
6 about, you know, lessons learned from a construction inspection  
7 program that might have some value to you all as you prepare -- as the  
8 staff prepares for that phase at SHINE and others?

9                   MR. LYNCH: Yes, we have had those talks with NRO.  
10 NRO actually authored the construction inspection program that we  
11 wrote for the SHINE facility and the Northwest facility. And actually last  
12 year we held a public meeting with SHINE where NRO presented and  
13 shared some of those lessons learned with the Applicant as well -- of  
14 what we've learned from their construction projects. So we've talked  
15 internally and shared some of those thoughts with the Licensee as well.

16                   COMMISSIONER BURNS: Okay. And in terms of  
17 the potential design changes and the implementation of the  
18 demonstration projects -- sort of -- if you can tell me sort of where that  
19 is and what are sort of the next steps up ahead.

20                   MR. LYNCH: Sure. So the demonstration project --  
21 China is essentially planning on conducting some short duration tests  
22 with their -- a prototype of their accelerator and the neutron multiplier.  
23 And based on the material that they will need for that, they will be  
24 completely under an agreement state license for their demonstration  
25 project. So the NRC doesn't have direct involvement in that.

1                   In terms of design changes for the facility, we are  
2                   planning some public meetings with SHINE beginning as early as  
3                   December of this year to start talking about some of their process  
4                   changes with respect to their chemical processing, and also a little bit  
5                   on the administrative side talking about maybe potentially staggering  
6                   construction and beginning operation of some of their operational units.

7                   With respect to how that may impact construction, one  
8                   of the things we will be doing is going out to the site approximately two  
9                   to three months before construction begins -- so, late winter, early  
10                  spring -- to have a table-top exercise with SHINE where we can set  
11                  expectations that the inspectors will have while we're on site. But also  
12                  for SHINE to show us what their design control packages look like.

13                  COMMISSIONER BURNS: Okay.

14                  MR. LYNCH: And this is assuming when we go out  
15                  there that we have not received the final safety analysis report yet.

16                  COMMISSIONER BURNS: Yes.

17                  MR. LYNCH: Because we have set the clear  
18                  expectation that if we do not have the final design when inspectors go  
19                  out on site, they need to have some idea of what they're looking at -- of  
20                  what the current design is.

21                  COMMISSIONER BURNS: So, the design changes,  
22                  would they be assessed as part of the operating license review? Is  
23                  that how it works?

24                  MR. LYNCH: Yes, it's -- yes.

25                  COMMISSIONER BURNS: Okay.

1 (Simultaneous speaking.)

2 MR. LYNCH: We will evaluate the design changes.

3 COMMISSIONER BURNS: So the -- what I will call the  
4 traditional, or the two step?

5 MR. LYNCH: Yes.

6 COMMISSIONER BURNS: Okay. All right.  
7 Thanks, very much.

8 CHAIRMAN SVINICKI: All right, thank you all. I will  
9 just go into some specific questions I think here. Some have been  
10 touched on. I think everyone has mentioned accident-tolerant fuels --  
11 or, I think advanced technology fuels is also being used with the same  
12 acronym.

13 We know that there is interest in the insertion of lead  
14 test assemblies. Some of our licensees are interested in that and have  
15 engaged the agency regarding the broad parameters of how many and  
16 where in the core those could be inserted at different levels of NRC  
17 review and approval, a license amendment versus coming in under  
18 standing provisions that allow the insertion of such items in the core  
19 because of course any -- even the fuels we have now had to be qualified  
20 in some fashion. So in order to qualify fuels you have to begin  
21 somewhere to irradiate and collect data.

22 How is the staff -- have we been successful in  
23 developing the broad criteria to guide the industry before they come in?  
24 Or develop proposals of, again, how many perhaps lead test  
25 assemblies and where -- just to give them some general guidance on

1 what they might be proposing?

2 MR. HOLIAN: I will start. Kathryn, you help me. It's  
3 a timely question. We had a public meeting a few weeks ago on this  
4 subject really with two or three different vendors -- or utilities -- that are  
5 looking at lead test assembly insertions. And quite honestly, you  
6 know, we gave them mixed answers because our history has been  
7 mixed. But from a safety perspective, you know, that's okay. But we  
8 are trying to firm that up.

9 So let me just clarify that in the past lead test  
10 assemblies have gone in historically through the years of operation here  
11 for different fuel assessments and designs. We have reviewed them  
12 in a variety of methods -- inspecting under 50.59 where the licensees  
13 can make those changes. They actually do whole core reloads under  
14 50.59 these days. Historically, they used to come in for license  
15 amendments early on, but they realized they could do that under 50.59.

16 So lead test assemblies, the NEI guidance -- gives  
17 guidance on use of 50.59. Tech specs do touch on lead test  
18 assemblies. So some plants have a tech spec that's either more  
19 specific or less specific. And so some plants have used an existing  
20 tech spec for their lead test assembly applications. And as you  
21 mentioned, license amendments. That's always a possibility to come  
22 in.

23 We are firming up that guidance to utilities on the use.  
24 We're doing that. We've been working with OGC to verify that our  
25 guidance goes out and we are looking at the product to get out. We



1 will get -- we will follow up that meeting with individual licensees so they  
2 are clear that they can come in. Not really a safety issue on the types  
3 of questions we have. Really just a documentation of how we will  
4 affirm our review. Kathryn, anything to add?

5 MS. BROCK: I would say you got just about  
6 everything. But it is important that we will be getting back to the  
7 licensees who have an imminent need -- an information need -- we  
8 promise by the end of this month. So we will start there, but we will  
9 also be looking towards the generic approach and making sure we are  
10 clear in our guidance working with industry.

11 CHAIRMAN SVINICKI: Okay, thank you very much.  
12 Turning to the medical isotope production case. Steve, you presented  
13 an approach at the construction permit stage that was able to take a  
14 regulatory framework perhaps not developed for the specific technology  
15 and adapt the use of that. Do you feel when the staff gets to the  
16 operating license phase, that same approach -- that will still be workable  
17 for you at that phase?

18 MR. LYNCH: Yes. And the one thing we are doing  
19 to make sure that we are staying on top of our regulatory framework is  
20 looking at any new rules that are in development throughout the agency  
21 to make sure that the applicability wouldn't interfere with any of our  
22 licensing activities. For example, emergency planning rulemaking that  
23 I talked about, then also the financial qualification rulemaking that's in  
24 development.

25 CHAIRMAN SVINICKI: Okay, thank you. A lot of our

1 discussion here this morning has been about a -- I think a whole series  
2 of improved processes and things that -- I will say NRR particularly has  
3 taken under development and put in place. There was commission  
4 direction at one point for NRR to do what's called a business process  
5 improvement review. And I was supportive of commission willingness  
6 to modify that direction in light of, again, a rather comprehensive look  
7 at structure and process that went on for this business line and within  
8 NRR.

9 A broad question I might have is where the changes  
10 have had positive results for this business line and for NRR? Victor, is  
11 there any systematic look at recommending those lessons learned and  
12 improved processes in the materials or security area? Other  
13 programmatic elements that could -- could benefit from that?

14 MR. McCREE: Chairman, thanks for your question.  
15 One of the things that we do systematically in our quarterly performance  
16 reviews, quarterly strategic alignment meetings is identify, recognize  
17 areas where a business line or an office has produced good work from  
18 an initiative -- whether it's an effectiveness, efficiency or an agility  
19 initiative. And we consciously ask ourselves about the adaptation of  
20 such an initiative in the other business line -- in many cases already,  
21 what we have seen and realize is that that outreach has already  
22 occurred.

23 Some of which has been chartered by the offices and  
24 sometimes it's not chartered, it just happens, which is I think organically  
25 where we want to -- what we want to achieve is that the effectiveness,

1 efficiency, and agility -- the ethos of Project Aim is occurring  
2 systematically. Whether it's an institutional effort or, again, it's just an  
3 organic effort. And there's specific of that that I can share with you at  
4 some other point comprehensively.

5 But RAIs is an example. The licensing process  
6 improvement -- some of the initiatives in terms of institutional controls  
7 are being considered across the business lines. And there may be  
8 others, Brian, that you can -- do you want to -- Kathryn?

9 MS. BROCK: One example where we have been  
10 talking amongst the business lines is we have gotten together a group  
11 of division directors from each business line to talk about how we have  
12 commonalities in licensing processes, and where we might not be so  
13 common. So we are looking to find ways to be more consistent across  
14 the agency where we can.

15 We might find in some areas, because of the variety of  
16 different types of licensees and how we communicate with them, that  
17 that might be tricky. But for the most part, like Vic said with RAIs,  
18 acceptance reviews, how we communicate with the staff. I think we  
19 can make some good progress there and illustrate commonalities.

20 CHAIRMAN SVINICKI: Thank you for those  
21 examples. And it's good to hear that some of it just occurs more  
22 synergistically. It doesn't need to have its own process for sharing.  
23 We have mentioned that business lines require the participation of a lot  
24 of different organizations. So that might be the -- one of the ways that  
25 it occurs.

1                   But speaking of new tools, the Replacement Reactor  
2 Program System is a very significant new tool that, by my assessment,  
3 gives new capability for work planning and for the monitoring of work in  
4 progress. Some elements of that I think were -- went live more  
5 recently. How is that going? I don't -- Kathryn, maybe you want to  
6 comment on that.

7                   MS. BROCK: The RRPS system is something we  
8 have been using and improving on and really looking forward to  
9 because what we're finding is the more data we have the more certain  
10 we can be about how our performance is and then plan for  
11 improvements in the future. And so I mentioned one of the -- one of  
12 the things we are going to be looking at is specifically risk-informed  
13 reviews. We are going to specifically be tracking the timeline on those  
14 so that we can see are we -- we think we are getting better as we go,  
15 as we have more experience with them, but the data will be able to  
16 show us how we are improving or where we need to focus.

17                  CHAIRMAN SVINICKI: And I appreciate that you  
18 highlight that area covered with the -- a light touch today just because  
19 there was so much material to cover. Were some of the specific  
20 initiatives that this business line is trying in advancing risk-informed  
21 decision making, and it was kind of baked into a lot of different things  
22 that you talked about today.

23                  You had mentioned pairing safety reviewers that were  
24 more deterministic in approach with those who are more risk oriented.  
25 What have been some of the outcomes of doing that? I know there is

1 probably a good transfer of knowledge. But beyond that in terms of  
2 just performance and program execution, have there been specific  
3 outcomes you've observed?

4 MS. BROCK: Well we find when we pair the risk  
5 reviewers along with technical reviewers that we can stay out of those  
6 silos. For example, when we develop safety evaluation -- safety  
7 evaluations, we can be doing it concurrently and they can be talking as  
8 they go so it isn't each technical person, technical reviewer develops  
9 their own material and then it's put together at the end. We can drive  
10 efficiencies and knowledge management by working together as we go.

11 CHAIRMAN SVINICKI: I do, fair or unfair, it's my  
12 observation that, I think given the expansive nature of this business line,  
13 you probably are trying more things in terms of risk-informed decision  
14 making. And you're just touching more licensing items over the course  
15 of any given year. So I do hope in reference to my previous question  
16 that that same kind of synergism is happening with the materials area  
17 and other programmatic areas. In some ways you all, just given the op  
18 tempo of your business line, you're leading the charge on some of this.  
19 So I am glad to hear that there is some synergistic conversations  
20 happening.

21 Just before I close I would like to turn to Kimberly. You  
22 mentioned the Office of Research being a pilot of the Strategic  
23 Workforce Planning Initiative. And so I know that an early step in that  
24 -- and I think you even made reference to it -- was trying to look over  
25 the horizon and identify the core competencies and capabilities that you

1 had to be certain were vibrant and that you were safeguarding those  
2 competencies in-house looking over the horizon. Did you feel that the  
3 knowledge of projected workload and subject matter areas gave your  
4 organization good confidence in identifying those areas at this point?

5 MS. WEBBER: Well so at this point we -- we do have  
6 a strong understanding of what our core competencies are. And we  
7 are still trying to evaluate the work load. We have just started that  
8 initiative. We had a meeting a week or two ago to talk about what the  
9 -- what the work might look like five years from now.

10 And while it is primarily a decline in resources, we do  
11 have to find ways to maintain those core competencies. And so we will  
12 be looking to do that. So our analysis hasn't been completed yet. It's  
13 slated to be completed later -- probably in the early March or early --  
14 late-winter timeframe. So it's still -- we are still going through that right  
15 now.

16 CHAIRMAN SVINICKI: Well I thought it was really  
17 exciting that Research had decided to be one of the pilots. I don't know  
18 if you volunteered or you ended up as one of the pilot offices, but I think  
19 if you can take a high confidence, high fidelity look at this then that  
20 would make me confident that any organizational element should be  
21 able to take this on. So I appreciate you all being willing to be a pilot  
22 on that. And again, I thank everyone for all the information we've  
23 covered today. I would ask if my colleagues have any other  
24 questions?

25 (No audible response.)

1                                   CHAIRMAN SVINICKI: If not, thank you all again and  
2 we are adjourned.

3                                   (Whereupon, the above-entitled matter went off the  
4 record at 11:43 a.m.)