UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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STRATEGIC PROGRAMMATIC OVERVIEW OF THE

OPERATING REACTORS BUSINESS LINE

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PUBLIC MEETING

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TUESDAY

JUNE 17, 2014

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The Commission met in the Commissioners' Conference Room, 1st Floor, One White Flint North, Rockville, Maryland, at 9:30 a.m., Allison M. Macfarlane, Chairman, presiding.

PRESENT:

ALLISON M. MACFARLANE, Chairman

KRISTINE L. SVINICKI, Commissioner

GEORGE APOSTOLAKIS, Commissioner

WILLIAM D. MAGWOOD, IV, Commissioner

WILLIAM C. OSTENDORFF, Commissioner

NRC STAFF :

MARK SATORIUS, EDO

ERIC LEEDS, NRR

TARA INVERSO, NRR

MEENA KHANNA, NRR

ROBERT TREGONING, RES

JULIO LARA, RIII

KEVIN WILLIAMS, NSIR

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

9:31 a.m.

CHAIRMAN MACFARLANE: All right, good morning. Oh my goodness. Not only do we have seven here and we have this whole litany out there. You guys are prepared, in your uniforms and everything.

All right. I'd like to welcome our staff, members of the public and industry to the meeting this morning. We're going to be discussing the operating reactor's business line, which represents the single largest major program area within the NRC.

This business line covers a broad range of topics which are vitally important to the NRC's safety and security mission regarding operating reactors. The areas I think that we're going to discuss today include rulemaking, licensing, research, oversight and event response, and notably, and maybe more importantly, this is our last Commission meeting with a very important member of the staff, Eric Leeds, who is currently the director of the Office of Nuclear Reactor Regulation.

Eric, thank you very much for your service to the Agency, which has been long and fruitful, and we will miss you very much. We will miss your presence at the RIC. I hope you come back and maybe we'll throw you up on stage anyway. But all the best in future endeavors. So thank you.

MR. LEEDS: Thank you so much, Chairman. Thank you.

CHAIRMAN MACFARLANE: Thank you. Before I go -- we go on and turn it over to staff, let me see if any of my colleagues have any --

COMMISSIONER SVINICKI: Chairman, I just want to say that I'm very pleased that we're conducting one of these overview meetings, where we look at some of our important programmatic activities. We haven't held one of these in a while, but I think it's a key opportunity for the staff and the Commission to engage in just some governance issues and talk about important priority work activities that we have going on.

I also would like to acknowledge Mr. Leeds and all of his work not only to the NRC but to his country. So thank you for your long and distinguished service, and your many contributions to the NRC, which will be very enduring. So thank you.

COMMISSIONER APOSTOLAKIS: Well Eric, I enjoy very much our meetings in my office, and I wish you the best.

COMMISSIONER MAGWOOD: As one who has served in positions kind of sort of similar to what Eric has done leading an office, actually responsible for getting things done and leading people, I recognize the difficulties and the challenges that come with being the guy responsible, the guy

who's got to make sure that people are actually getting things done.

It's much easier from the Commission to say -- we just say "go do that, make it happen," you know. But you have to make sure it happens, and I appreciate the leadership you have provided, since I've been on this Commission.

More than that, I think for many people, partially because you've been in the position for such a long time, but also the way you've conducted yourself, you've actually come to define the position to some degree.

So it's going to be very interesting to see how your successor will be able to fill the shoes that you'll leave behind. But I know we will have good candidates. I know we already have very good candidates to talk about, but you have brought something very special to it, and you'll be missed both inside the agency and outside.

So congratulations on your upcoming retirement, and please stay in touch.

COMMISSIONER OSTENDORFF: Eric, I'm going to miss you. We've had both personally and professionally a very strong relationship. For those that have never heard Eric tell you about his Carl Vinson sea stories, he's got in one in particular has gotten my attention from his past Naval service.

But adding to my colleague's comments,

you've done a superb job here. We're very proud and we're very grateful. Thank you.

MR. LEEDS: Thank you all. It's very humbling and I don't know what else to say. Thank you. I'm very touched. Thank you.

CHAIRMAN MACFARLANE: All right. Well, with that, I'm going to turn it over to Mark Satorius, our Executive Director for Operations.

MR. SATORIUS: Good morning Chairman, good morning Commissioners. As you had mentioned Chairman, the operating reactor's business line is the largest business line within the agency's portfolio. It has a broad scope of technical experts within this business line, and you noticed that a lot of people -- there's a lot of partners associated with this business lines.

All four of the regions, Nuclear Security business line or Nuclear Security is focused and partnered within this business line, as well as New Reactors and the Office of Enforcement, the Office of Investigations. So so many, which demonstrates a cooperative relationship between these offices, to be able to operate this business line effectively.

So we're going to go ahead and move forward, and I'll have Eric introduce his team, and we'll get on to this morning's briefing. Eric.

MR. LEEDS: Mark, thank you so much. As

the Chairman and Mark have noted, it's a huge business line. If you apportion all the corporate offices and what they do into to the business line, the Operating Reactor business line would encompass roughly 50 percent of the agency's resources, and that's a tremendous amount.

Now when I sit back and I reflect on all the accomplishments and challenges facing this business line, and certainly we've had a number of accomplishments that I'm very proud of and the staff's very proud of, and we have plenty of challenges going forward.

But the overarching thought that comes to my mind and that I want to point out here is that we've provided 35 years of successful safety and security oversight of the U.S. fleet of nuclear -- commercial nuclear power plants.

I think that's a wonderful accomplishment. It's something for the NRC staff to be particularly proud of. But now I want to juxtapose that thought with another thought. I've been with this agency for almost 30 years. I've been the Director of NRR, of this office, for over six years.

I have never seen the NRC staff busier than they are today, and they're busy with very safety-significant work, good work. We continue to make improvements in so many areas, in fire protection, in emergency preparedness and ensuring that these plants can withstand whatever natural hazards occur, implementing the Fukushima lessons

learned, incorporating risk insights into our regulatory process.

It's good work, it's safety-significant work, it's important work. So I can truly tell you that the staff is not resting on its laurels. We're not basking in the glow of 35 years of successful oversight. We're working harder today than I've ever seen us work. We're trying to make sure that we provide that umbrella of safety for the American public.

Now befitting a business line this large, we have a number of distinct product lines, and today we intend to focus of five of our largest product lines, and those sitting here at the table with us will contribute to each one of these product lines.

We're going to begin with the rulemaking product line, and Tara Inverso, who's our new branch chief in the Division of Policy and Rulemaking will present. Then we'll go to Licensing, and Meena Khanna here on my right, she's a branch chief in our Division of Operating Reactor Licensing, and she'll provide the details.

Following Meena, we'll have Robert Tregoning, one of our senior level advisors in the Office of Nuclear Regulatory Research, will provide details on how research supports the business line and provides that technical muscle to keep the regulatory process strong.

Following Robert, we have Julio Lara, and Julio is in here from -- he's a branch chief from Region III, and

he will present the reactor oversight process, the inspection arm of the business line that is so important to safety.

Finally last, but just as important as the rest, we have Kevin Williams. Kevin's a branch chief in the Office of Nuclear Security and Incident Response, and he'll discuss the agency's program for event response. With that introduction, let me turn it over to Tara.

MS. INVERSO: Thank you, Eric. Good morning Madam Chairman, good morning, Commissioners. My name is Tara Inverso. I'm the chief of the Rulemaking Branch in the Division of Policy and Rulemaking in the Office of Nuclear Reactor Regulation.

Today I'll be talking about rulemaking, petitions for rulemaking, and several of the ongoing policy work issues that we're dealing with in the rulemaking product line.

On Slide 6 we'll begin with a discussion of rulemaking. Rulemaking is a fundamental task at the NRC. Rulemakings establish the requirements that licensees must meet in order to obtain or maintain their operating licenses, and as such, we think that rulemaking is a cornerstone of the NRC's regulatory activities.

The NRC staff is currently working on 13 high priority rules. For all of these rules, they have a direct nexus to safety and security. One of these rules, the 10 C.F.R. 50.46c emergency core cooling cladding system acceptance

criteria was determined to be necessary to maintain the adequate protection of public health and safety.

For the other rules that we're working on, the staff will develop a regulatory analysis which will be used to make the decision that the requirement is justified in light of the benefit, the security and safety benefit that the proposed requirements would provide.

On Slide 7, I'll talk about some specific rulemaking activities. We have three ongoing activities in response to the March 2011 accident at Fukushima. In SECY-14-0046, the staff proposed to the Commission that two of these activities be consolidated into one rulemaking, and those are the station blackout mitigation strategies rule, and the onsite emergency response capabilities rule.

In addition to those two rules, we also recommended that elements of the Near Term Task Force Recommendations 9, 10 and 11, which are related to emergency preparedness, be incorporated into that. That enclosure provided several benefits of a consolidated rule, and proposed that the proposed consolidated be due to the Commission by December 2014.

The third rule related to the Fukushima events is the filtering strategies rulemaking, and that rulemaking would provide a performance-based approach for filtering strategies with drywall filtration and severe accident management at boiling water reactors, with Mark I

and Mark II containments.

But in addition to those three rules that directly support the Fukushima accident, we also have several other high priority rules that we're developing. We already mentioned the 10 C.F.R. 50.46c rule.

There's a cybersecurity event notification rule, an enhanced weapons rulemaking, a rulemaking to incorporate quality control and quality verification workers under the minimum days off requirements of Part 26, and several other rules that we're developing.

On Slide 8, we'll talk about petitions for rulemaking. The staff is currently evaluating 22 open petitions for rulemaking, and those requests from the public cover such topics as the peak cladding temperature limits in 10 C.F.R. 50.46c, personnel access authorization, environmental qualifications for severe spent fuel pool and reactor accidents.

The NRC staff values the input of the public in the rulemaking process, and I'll point out that three of the rules we're currently developing address petitions for rulemaking. So in those cases, the staff has evaluated the petitions and determined that there is a need for additional rulemaking.

So for instance, the 10 C.F.R. 50.46c rule addresses two petitions for rulemaking, one from NEI, one from a member of the public. The Part 26 rule to cover

quality control and quality verification workers would address three petitions, and another Part 26 rule would address one petition.

We're currently revising the requirements of 10 C.F.R. 2.802, which establishes the requirements for submitting and evaluating petitions for rulemaking. That rule is in the final stage right now, and the purpose of it is to clarify the NRC's practices when it receives and evaluates a petition, and to also improve the communications with the petitioner and the public throughout that process.

On Slide 9, we'll begin to talk about ongoing policy work. So one of the priorities to the NRC staff and to the industry is the cumulative effects of regulation initiative and the risk prioritization initiative.

For the risk prioritization initiative, we are currently participating in demonstration pilot exercises of the proposed process that NEI has submitted, and these pilot exercises will demonstrate both a generic characterization portion that will feed into a plant-specific portion, and the staff is observing these pilot exercises because there may be elements that we can glean from this process that we could use to enhance our current policies and practices, and we will provide options for implementing the risk prioritization initiative to the Commission in a follow-on notation vote paper.

In the cumulative effects of regulation area,

we're responding to existing Commission direction in that area. Most recently, we engaged the industry to perform case studies on the accuracy of cost and schedule estimates within regulatory analysis work, and we'll talk more about the results of that a little bit later.

We're also considering whether and how to expand the cumulative effects of regulation process enhancements to other regulatory activities. On Slide 10, we'll talk about SECY-14-0002, which describes several of the staff's planned cost-benefit update work.

That SECY paper described that there would be a two-phased approach to this work. The first phase would harmonize the guidance across the business lines, and focus on administrative type elements, while Phase 2 could propose policy issues for the Commission's consideration.

The staff is developing a Commission paper which is due in July of 2014, that will recommend how qualitative factors should be used in NRC's regulatory analyses, and the staff is also developing a gap analysis which would look at regulatory analysis differences across business lines and also across analyses, and will provide a paper to the Commission in November of 2014 describing its findings on that.

In addition, the staff is working on updating NUREGs that pertain to the dollar per person-rem

conversion factor and also replacement energy costs, and those will be published for comment later this year.

On the next slide, we have two charts that aim to show the differences in rules that have been issued in the past, versus high priority rules that the staff is currently developing and will be provided to the Commission in 2014, 2015, 2016 and 2017.

I'll point out that while in 2005 and 2008 we saw a high volume of rules being issued, the difference that we see in the future is that the rules in 2016 are all very complex.

For example, in 2016, we plan to provide the Commission with the final 10 C.F.R. 50.46c rule, the station blackout mitigation strategy final rule, and the emergency onsite capabilities rule.

All of these span multiple offices. They have many implementation steps, and will have a major impact to Part 50. For all of those three rules I just mentioned, even before the proposed rule was issued for comment, there was a publication seeking early public feedback, and we'll continue that level of public outreach through their final issuance to help identify unintended consequences before they happen and any implementation challenges that may occur.

On Slide 12, that brings us into our first focus area for rulemaking, which is that several technically

complex resource-intensive rules are currently under development. I already mentioned the large scope implementation steps and the multi-office impact, and will continue to address the cumulative effects of regulation throughout these rules.

On Slide 13, I mentioned on the cumulative effects of regulation slide that we engaged the industry to perform a case study on regulatory analysis. The industry did voluntarily participate in the case studies. They looked at three regulatory actions, including the National Fire Protection Association 805 rule, the power reactor security rule, and the 2008 Part 26 rule, but they only focused on the Subpart I fitness for duty requirements.

In all of those cases, they found that the NRC's estimates were low, and they provided three recommendations for the NRC staff to consider during the January 2014 public meeting. So we'll consider all of those recommendations in the planned cost-benefit updates.

In the meantime, we acknowledge that we have had low estimates, and we are engaging with industry and the public, to provide detailed cost information early in the rulemaking process. The focus area for that piece is that in order to incorporate this feedback into the regulatory analysis, which is a public rulemaking decision tool, the information that we receive has to be public, and sometimes the cost information is proprietary.

So the staff will work on obtaining public information to improve estimates in the regulatory analysis. The last focus area pertains to CER and the risk prioritization initiative. The staff will continue to put a high priority focus on both of these initiatives, because we think that they could aid the NRC by focusing NRC and industry resources on the items of highest safety significance at the individual licensees, and we also think that the cumulative effects of regulation process enhancements and the increased public interaction that comes from them is useful in our rulemaking activities.

In COMSECY-14-0014, the staff requested that the deliverables for these two efforts be merged, and that we provide a paper to the Commission in March of 2015. That Commission paper will contain all of the direction on the risk prioritization initiative and the cumulative effects of regulation.

With that, my presentation is concluded, and I'll turn it over to Meena Khanna.

MS. KHANNA: Thank you, Tara. Good morning. My name is Meena Khanna. I'm a branch chief in the Division of Operating Reactor Licensing in the Office of Nuclear Reactor Regulation.

Today, I'll be providing you with a presentation overview of the Licensing program. I will also address the impacts due to the increased Fukushima

workload. I will also provide you with the status of a few of our long-standing technical issues, and then I'll close with our path forward.

I would like to begin my presentation by mentioning that the Licensing program is essential in ensuring the safe and secure operation of nuclear power plants. The licensing program includes license amendments -- the licensing program includes licensing actions and other licensing tasks, which include amendments, relief requests, exemptions, license transfers as well as 2.206 petitions.

The licensing program, in addition to the routine licensing actions, our licensing program also includes complex actions such as extended power uprates and the National Fire Protection Association 805 reviews. We have established goals for completing licensing actions, and these include for normal routine licensing actions our goal is to complete these within one year.

For the extended power uprates, our goal is to complete those within 18 months, and then for the NFPA 805 reviews our goal is to complete those within 24 months. The extended power uprate reviews are considered complex, due to the amount of technical area reviews that are required for those reviews.

There could be up to 25 to 30 technical reviewers associated with each individual technical review

for the extended power uprates. In addition, to add to the complexity, the emergency core cooling system analyses, as well as for the boiling water reactors, the steam dryer reviews, pose challenges to the staff and add to the complexity of those reviews.

With respect to the NFPA 805 reviews, they're considered complex due to the varying probabilistic risk assessment methodologies that are proposed by the licensees, in addition to the inconsistent assumptions with respect to PRA assessments that the licensees propose in their applications as well.

Also, I'm not going to lift these up, but I did want to provide an illustration of the amount of staff effort that's placed on these reviews. For the extended power uprate, the safety evaluation -- thanks Eric. The safety evaluations can range from anywhere from 300 to 400 pages long.

In addition, for the NFPA 805 review, they also require a lot of staff effort and I know the binders are a little bit misleading. But these reviews can go anywhere from 150 to 200 pages long. So that just illustrates the amount of effort that the staff expends on these reviews.

In addition, I talked about the normal routine licensing actions. So we do have simple tech spec amendment changes. However, there is a vast majority of the technical reviews that are associated with the routine

licensing actions that also have some complexity in them, such as the alternate source term reviews.

In addition, we do get some unique one -- first of a kind type of reviews. So that adds to some of the complexity in conducting those reviews as well. As far as the next slide, I just wanted to address the licensing program inventory.

So to date, currently we have 1,500 licensing actions and other licensing tasks as part of our licensing inventory, of which 38 percent are Fukushima-related. I'd like to highlight that for the past five years, we have been successful in meeting our one year and two year timeliness metrics, for both the licensing actions and the other licensing tasks.

I will now address the impacts due to the Fukushima workload. In maintaining the required focus on the high priority Fukushima work, as well as the high priority licensing activities across the business lines, this has resulted in a limited number of resources available to conduct our normal routine licensing actions and other licensing tasks, especially in the critical skill set areas of reactor systems and electrical engineering.

So in order to ensure that we're placing the right focus on the most significant and important safety security issues, we have established a safety focus prioritization scheme that's consistently used across the

business line.

As a result of the additional Fukushima work, the one-year timeliness metrics have been significantly impacted, and will not be met for fiscal year '14. In addition, our two-year timeliness metrics are now being impacted as well.

So if you look at the next slide, what we've got here is a figure that represents the current status of our licensing program with respect to our timeliness and inventory trends. The red line represents our goal of completing the licensing actions within one year, which is 95 percent or greater.

The blue line represents our results in what we've achieved with respect to the timeliness metrics, and what you can see is a downward trend since the summer of 2013. The yellow or gold line represents our inventory, and this displays an increasing trend since 2013.

For the month of May, we had a licensing inventory of 891 actions, and we completed 82 percent of our actions within one year. So currently for fiscal year '14, we're at an average of 86 percent in completing our licensing actions within one year, and the trend shows that we will continue to decline by the end of the fiscal year.

This next figure represents the inventory of Fukushima versus non-Fukushima work. What this does is it shows our normal routine licensing actions, as well as the

Fukushima work, and I'm showing fiscal years '11, '12, '13 and '14 here. So what you can see here is that there's an increasing trend of Fukushima work since fiscal year 2012.

Currently, our inventory includes 62 percent of non-Fukushima licensing actions, and 38 percent of Fukushima work. We expect our fiscal year '14 inventory to be consistent with that of fiscal year '13.

The next figure displays a trend of decreased completed licensing actions and other licensing tasks since fiscal year 2012. The light blue area represents the Fukushima licensing actions and other licensing tasks that were completed, and the dark blue area represents the Fukushima licensing actions that were completed in those fiscal years.

In 2013, you will notice that there was a decline in completed licensing actions and other licensing tasks. However, there was an increase in completed Fukushima licensing work. We expect this trend to continue through the end of fiscal year 2014.

This final chart compares the resources expended on the normal reactor licensing program, and the Fukushima reactor licensing program for fiscal year '12 through the second quarter of fiscal year '14. Note the decline in resources for licensing actions, with the increase in Fukushima work.

Resources have been added to support the

licensing program. Also, if you look at the figure, you will notice a dip in the resources expended on the Fukushima work, and an increase with respect to the increases expended -- sorry, resources expended on the licensing program from the first to second quarters in fiscal year 2014.

This was due to the completion of the mitigation strategy interim staff assessments. However, we do not expect this trend to continue going forward. So there are many actions that have taken place to address the backlog of the licensing work that we have. So we have and continue to obtain additional resources, reallocated resources from the Office of New Reactors.

We have received additional contract funding to support the technical reviews. We also are bringing in rehired annuitants in the project management area, as well as in the technical areas to support the reviews, and we continue to communicate with the industry.

So in June 2013, we did issue a letter to the industry, letting them know that due to the increased Fukushima workload, that our licensing action inventory would be -- you know, it would not be able to meet the one year timeliness metric. That there would be impacts to meeting our timeliness metric.

In addition, we continue to communicate. Eric, the other management, you know, support public meetings. We continue to relay this message. We also

talk with the licensees, to let them know, you know, continue to communicate that we are going to continue with this backlog.

We also want to hear from them what their safety needs and, you know, priority needs as well, and we take those into consideration and we reprioritize our work as needed. So that's basically it as far as what we've done to help out with the backlog.

Okay. I'd like to now address a few of the long-standing technical issues. The staff continues to address several long-standing technical issues, including NFPA 805, generic safety issue 191, degraded voltage relays and tornado/missile protection.

With regards to NFPA 805, the staff has developed a more streamlined review process with respect to the NFPA 805 reviews. To date, we have completed six safety evaluations, of which two are the pilot plants for Oconee and Shearon Harris. We project that we'll complete eight additional safety evaluations by the end of the calendar year.

For Generic Safety Issue 191, three closure letters were issued this year as part of Option 1, the Deterministic Closure Path from SECY-12-0093. We expect to issue two more of these reviews this year.

We also continue to evaluate a risk-informed pilot application from South Texas project. The South

Texas pilot review is scheduled to be completed by 2015, and the follow-on risk-informed reviews are scheduled to be completed by 2017.

I will now address the degraded voltage relays. The grid system supplies power to redundant trains, and any perturbations can impact the redundant safety systems. The degraded voltage relays protect safety-related systems and redundant trains from the degraded grid condition.

Inspection findings have indicated that some licensees have inadequate set points for the protective relays. The staff provided guidelines in RIS 2011-12 Revision 1 to clarify expectations in the standard review plan.

NEI has written a white paper to address this issue, and plans to incorporate clarifications into the Institute of Electrical and Electronics Engineer standard, which is the IEEE standard.

Staff recently provided comments to NEI regarding their paper, and the goal is to issue the IEEE standard by December 2017 to address this issue.

Finally, with regard to tornado missile protection, examples of licensees regarding the compliance with tornado/missile current licensing bases have been reoccurring for many years. Many examples are for structures, systems or components that support the operation of safety-related equipment.

In a few cases, inoperability of the SSCs could result in entering a shutdown track. The staff is addressing the issue with a Regulatory Issue Summary, and coordinating with the Office of Enforcement to develop enforcement discretion for plants entering a technical specification shutdown for non-conformance issues.

As a final comment regarding the slide, I'd like to mention that the staff has confirmed that the plants are safe to operate while these long-standing technical issues are being assessed by the staff.

In closing, I will address our path forward. With competing priorities and limited resources, it is vital that we continue to prioritize our work to support our safety mission, and to continue to communicate with the industry to understand the priorities and needs to ensure our plant safety.

We continue to assess and redefine our priorities in accordance with the safety and security needs, and adjust project schedules to ensure the most effective use of resources.

In addition, we continue to strive to achieve resolution of our long-standing technical issues, and we continue to make it a priority to ensure effective internal and external communications regarding the status of our licensing program.

That completes my presentation, and I will

now turn it over to Robert Tregoning.

MR. TREGONING: Thanks Meena. I'm Rob Tregoning from the Office of Research, and I'm going to be talking about research support for operating reactors.

I'm going to start with talking about key messages, which will summarize the general role that research plays in supporting operating reactors, and in the presentation it's going to focus specifically on highlighting the four principle components of oversight that we're discussing today.

Then I'll end with a discussion of some future focus areas for the Office of Research. On Slide 27, as Eric mentioned, he used the word "technical muscle," and I don't have a word that good. But research supports operating reactors by providing in-depth technical bases that inform regulatory decision-making for significant safety and security issues.

This is what we do as an office. This is 80 percent of our business line, so it's clearly the bulk of what our office does, is provide this support. The offices routinely request this support, either via user need or staff assistant request, for either confirmatory or other independent analyses.

Over the last four years, the office has averaged 15 new user need requests per year pertaining to research for supporting operating reactors. Now when we

talk about research, it includes both structured activities and often entails collaboration with either international and domestic partners.

But research also includes more informal information-sharing on related activities, and activities and information-sharing are fostered within the agency by approximately 100 agreements with over 30 countries and other international organizations.

As far as research products, they include tools such as computer codes, standards, calculational methods. They include research results. But as importantly, they also include the development of staff expertise. All of these tools are used for regulatory oversight of both routine and emergent safety and security issues.

So the next slide, I talk about support for the regulatory framework, and this slide really shows in order the hierarchy of research support, from regulatory framework, from rulemaking through guidance development and then standardization, often through commercial standardization.

With respect to the upper level rulemaking, we helped develop the technical bases supporting a wide array of regulatory actions, including rulemaking, generic communications and guidance development. We lead the Reg Guide development process.

The Office manages 426 Reg Guides, over

78 percent of which have been updated since 2006, and we also lead the agency in codes and standard development. I just wanted to provide a few representative examples of how we support the regulatory framework, and I just want to highlight one.

We've heard a lot about Fukushima. I just want to highlight one example from Fukushima, and this was with respect to the containment venting rulemaking that Tara was talking about.

Research conducted source term and consequence analyses for various venting strategies using state of the art accident analysis tools, and the research was used to provide the tech basis for supporting the agency's order requiring licensees to provide capabilities for venting, to remain functional under severe accident conditions.

Then research was also used to help develop guidance to BWR Mark I and Mark II licensees for complying with the order. Another example that Tara mentioned was the revision of the fuel cladding embrittlement criteria, otherwise known as 10 C.F.R. 50.46c. The office played a critical role in the rulemaking effort.

We conducted experimental activities, both domestically and with international collaboration, to develop the technical basis to revise the performance-based embrittlement criteria, in a manner that will ensure that the behavior of high burnup fuel under LOCA conditions is

appropriately addressed.

Staff also serves on the interagency working group tasked with developing both the proposed and the final rule. Finally, staff has developed three Regulatory Guides to define acceptable approaches to meet performance-based criteria of the proposed rule.

Next slide I will talk about licensing support. Research is used to provide expertise and help assess regulatory implications to support actions such as safety evaluations, exemption requests and plant inspections.

Meena mentioned the NFPA Standard 805 evaluations. Research played a large role in this, and I think there's a briefing Thursday, where you're going to hear more about this particular effort. I did want to touch a little bit on extended power uprates for BWRs, which Meena also discussed.

There was again, quite a lot of research to study the consequences of anticipated transients without scram events that could occur in BWRs under extended power uprate conditions, under high reactor thermal power and reduced reactor core flow.

The consequences to the fuel under these particular conditions can be expected to be exacerbated. Staff performed a series of simulations using state of the art thermohydraulic and fuel thermomechanical computational codes, to study the expected system response, and this work

has provided key insights to assist the office in performing safety evaluations of extended power uprates.

Finally with respect to inspections, staff routinely supports the regions, as well as NRR, in conducting inspections to support licensing actions. Specifically, I wanted to highlight some work where we supported Region II and NRR evaluation of the causes contributing to the failure of non-destructive evaluation, to identify five large axial flaws in the North Anna steam generator hot leg nozzle.

This particular event, along with the research evaluation of the causal factors, identified shortcomings in the qualification program that are currently being addressed by the industry.

On the next slide, the reactor oversight program. The Office maintains tools and methods for the significance determination process, which is really the backbone of the reactor oversight program, at least the quantitative background, and one of the principle tools within the STP is the standardized plant analysis risk model, and this office supports the development and maintenance of that.

The SPAR model provides independent risk tools for the staff, to support event and condition assessment. The SPAR models are capable of evaluating internal events. But recently, we've had an effort to expand the capabilities of those models. So we've been adding

external hazards as well as shutdown models.

Staff's continuing to develop new external model capability yearly as resources allow. The SPAR models are controlled by QA provisions, which is an important consideration, since we use this for regulatory decision-making. We've developed guidance for both creating risk models and then using them in risk assessment.

The staff has gotten good feedback from the regions on the usability of the models, and this is important to make sure that our customers have the tools that they need to provide decisions that they need in real time.

A related effort is the accident sequence precursor program. This evaluates nuclear power plant operating experience, to identify, document and rank operating events that are most likely to lead to an inadequate core cooling, and potentially severe core damage, which are called precursors.

This effort in this program is used to provide feedback, which is used to improve the SPAR models. This program provides performance measures in an annual report to Congress, and we inform the Commission of the results of the program in an annual SECY paper.

The ASP program in contrast to the STP evaluates all potentially significant plant events and degraded conditions, and analyzes concurrent multiple degraded conditions. So sometimes because of that, you

can get different results in the ASP program than you do in the ROP program. One example of this is the Davis Besse upper head corrosion that occurred in 2002.

On the next slide, I want to talk a little bit about support for event response. We support the operations enter and its infrastructure. Staff participate in the reactor safety and protected measure teams, as well as other operational center teams.

I think as importantly, we provided analysis tools and expertise. One important code that I wanted to highlight is the radiological assessment system for consequence analysis or the RASCAL computer code, which is developed by staff, an excellent acronym. I love the RASCAL name.

This code calculates the radiological source term, transports and deposits it and then produces those projections. It's the primary incident response tool that's used by the agency.

It's used during emergencies, incidents, trainings and drills. It's used for emergency planning and response, and it's not just used by NRC staff. It's used by state and local authorities, NRC licensees and other international organizations.

Research is currently participating in domestic and international benchmarking exercises, to identify knowledge gaps and proposed improvements to the

modeling capabilities of RASCAL. Finally, we do more routinely proactive studies that are done not for responding to events, but to help with proactive emergency planning.

On the last slide, I'd like to finish up with a few important focus areas that the Office is working on. We want to continue to improve our understanding of integrated challenges to plant safety and security. We have a pretty good understanding of risk significant independent internal and external events. This has been the focus of much of our past research.

The challenge is really to identify and assess relationships between initiating events and other causal external and internal factors that can affect both plant safety and security. We also want to make sure we maintain an adequate research infrastructure.

A research infrastructure includes both analytical codes and experimental facilities that are needed to be maintained and upgraded as necessary, to ensure that they have the necessary capabilities to address future research needs. Finally, we need to continue to develop staff expertise in emergent research areas.

So not only is it important to identify and support development of new capabilities, we also need to maintain expertise in core technical areas. With that, I'd like to turn it over to Julio Lara, who's going to discuss the regulatory oversight process.

MR. LARA: Chairman and Commissioners, good morning. This morning I will present a status overview of the reactor oversight process, as it relates to the operating reactor business line.

Next slide please. Since the inception of the reactor oversight process in 2000, our inspection staff has undergone significant turnover. Accordingly, the regions have spent a greater amount of effort to train and develop our staff, and integrate them into our inspection work, while ensuring they gain a strong understanding of our safety mission.

Safety and security are the priority for the agency's resident and regional inspectors. Whether the inspector is focused on operations, engineering, radiation protection, emergency preparedness or security, the regional staff at all four regions remain focused and dedicated to conducting independent safety inspections.

In particular, our resident inspectors monitor plant operations on a daily basis, and remain prepared to respond to unanticipated plant events. The agency's operating experience program remains a vital input into the reactor oversight and inspection process, to ensure plant safety.

A prime example is the 2012 Byron open-phase event. NRR utilized a well-proven process through the issuance of a bulletin, to address design vulnerabilities in

the electrical power system, and has worked with the regions extensively in this effort.

Next slide, please. The underlying principles of the ROP, a risk-informed program, is now fully ingrained into the regional culture of our inspectors, and our inspectors are more well-versed in risk considerations than in years past.

Our baseline and supplemental inspections, along with a special and infrequently performed inspections, collectively provide for an independent and effective oversight program. As discussed during the recent agency action review meeting briefing of the Commission, the oversight program can be adjusted to incorporate safety and regulatory changes.

For example, working with NRR, we have revised the baseline inspection program to account for plants operating in the period of extended operations, and improvements in plant safety such as the voluntary transition to NFPA 805.

Similarly, we will be looking for opportunities to further adjust the ROP as the Fukushima Tier 1 activities are completed in the coming years. The ROP has been in existence since 2000, and it is now a mature living and learning process, with plenty of opportunities for staff to improve the program.

Our infrastructure includes a feedback loop to

allow inspectors, agency initiatives and external input to help shape the inspection and assessment programs moving forward.

Next slide, please. In my previous slide, I commented that our infrastructure provides for a feedback loop. As discussed during the recent agency action review meeting, the ROP enhancement project consisted of a fresh look at the ROP from an inspection, assessment and communications standpoint.

We looked at enhancing the baseline inspection program to improve its overall efficiency and effectiveness. This effort included input from all the affected offices, inspectors and external stakeholders. The baseline program review is the first step of the enhancement project.

One central theme coming out of the effort is to provide additional inspector flexibility in the implementation of the inspection procedures. Other examples of these enhancements include updates to the problem identification and resolution inspection program, which reviews the effectiveness of licensees' corrective action programs.

We're also enhancing the review of aging management programs following license renewal, and we're also looking to better integrate operating experience into the inspection program.

The next step in this area is for program and

procedural owners at NRR and the regions to work on evaluating and implementing the appropriate inspection procedure changes. Our goal is to develop inspection procedures, drafts by the end of 2014, with final revisions incorporated by June of 2015. The next phase of the enhancement project focuses on plant assessment.

Next slide, please. The ROP provides appropriate flexibility and guidance to the regions, so that the regions can adjust the inspection effort at our reactor facilities, including those facilities with increased regulatory focus, such as plants that are in Column 4 of the agency action matrix.

In 2013, over 2,100 hours of direct inspection was performed at every site. Direct inspection directly translates to inspectors out in the plant, in the control room observing plant start-ups, shutdowns, walk-downs for fire protection system readiness, radiation protection and security measures, as well as review of engineering design documents.

We can point to examples across all four regions where inspectors demonstrated a strong safety focus. One such example is the senior resident inspector at Monticello, where he identified the licensee's contractor was not performing appropriate non-destructive examination of welds following a loading campaign.

Region III is working closely with the Office of

Nuclear Materials, Safety and Safeguards to reach an appropriate safety and regulatory decision. Similarly, Region III civil and structural engineering inspectors have demonstrated an outstanding safety focus in the review of several complex issues involving the Davis Besse containment shield building.

Next slide, please. The program offices and regions have a number of focus areas in the near and long term. Future focus for the inspection program includes the inspection of equipment performance, as more plants transition to the period of extended operations, and they begin implementation of the aging management programs.

Plant modifications resulting from the Fukushima order will be high priority for NRR and the regions, and we will work to inform the baseline inspection program following implementation of these modifications.

Implementation of cybersecurity inspections necessitates a close working relationship with the Office of Nuclear Security and Incident Response. NSIR has provided great support to the regions in developing inspection guidance, as well as providing short and meaningful rotational assignments for our inspectors, to further enhance the cyber security knowledge base.

Communications with the public and other external stakeholders continues to be high priority for the regions. We fully exercise the options provided within the

ROP framework, to keep the public informed of our regulatory decisions and plant performance assessments.

With input from the public, Office of Public Affairs, we carefully consider the level of public interest in developing the appropriate forum to communicate with the public.

Next slide, please. I'd like to leave you with a snapshot of inspectors out in the plant having direct impact on plant safety, ensuring plant safety and security. In the lower left, there's a period of Elba Sanchez. She's performing an inspection at Quad Cities, following the licensee's repair of a leak in the reactor pressure boundary.

There was a crack in the reactor vessel water level instrumentation nozzle, and she's performing her own inspection of that repair. In the center picture is a picture of David Kern from Region I and Atif Shaikh from Region III, both assisting Region II with an inspection at Browns Ferry, a supplemental inspection 95003.

In the lower right, is a picture of Brian Correll from Region IV inspecting a motor-driven fire pump during the Grand Gulf license renewal inspection. This concludes my remarks. I will now turn it over to Kevin Williams.

MR. WILLIAMS: Good morning. In regards to event response, I'd like to focus it in the areas of a safety message, three key messages, and a focus area.

In regards to the safety message, you know,

through effective management, policies, procedures, we have maintained the headquarters operations centers and the respective regional operations centers in a state of readiness, such that we can respond to any type of event.

We interface effectively and efficiently with the regions, and one such example is the continuity of operation program. Through that, we work collectively and collaboratively to ensure that we maintain the agency's missions and goals and objectives.

That also includes training of the staff. We have a -- we've looked at our opportunities to enhance their knowledge level, such that they can respond, gain information, and that transfers over to our headquarters operations officers, and their ability to receive information and transmit that information in a timely manner.

In regards to the key messages, and we focus on the incident response being vital to the success of the agency, we do that through a series of events. But we focus on conducting exercises. We've conducted hostile action-based exercises, and in those cases we've had the headquarters operations officers have an opportunity to review the licensees' scenario.

We do that for completeness, compatibility with our processes and expectations. We've also done cyber security table top exercises and the annual COOP exercise.

We effectively work with the regions to make sure that we conduct exercises with licensees, headquarters and the regions, and as we transition into the Three White Flint, we conducted four functional exercises for the staff, to ensure that they could acclimate themselves to the operations center, understand the changes that have come about, whether that was from a process perspective or a procedural perspective.

The regions have done -- likewise have conducted exercises with their licensees. Some of them are with headquarters and some are not.

One of the things that I'd like to point out is, you know, there's been nothing domestically that has had us stand up the headquarters operations center, but there have been -- over the past 12 to 16 months, the regions have stood up or gone into monitoring mode for a variety of events.

In Region I, there was a loss of offsite power at Millstone. They stood up the facility, tracked it, looked to see where it was going and there was no issues. The licensee exited that by restoring power and they moved forward.

In Region II, at Watts Bar there were shots fired in the owner control area. Same thing. We monitored that, saw what was going and exited out of that. In Region III, there was a turbine building fire at Quad Cities. In

Region IV, there was an explosion in an auxiliary transformer. We monitored those as well.

Those are just options that maintain the readiness and ability to effectively communicate. We also participate on a number of interagency working groups. Most importantly are two that I'd like to highlight, is the domestic resiliency working group and the National Security Council.

As a result of those things, we've moved into areas of like a principal level exercise, national level exercise and, most importantly for the next couple 12 to 14 months, we're going to be looking at Nuclear Power Plant Exercise 2015, and I'll talk a little bit about that on the last slide.

We're constantly looking at our opportunities to be a learning organization. How can we learn from things, how can we enhance the program? One such thing that we've looked at is we've looked at the results of Hurricane Katrina, Sandy, the results of Fukushima, and what measures can we do to enhance our program.

One such thing that we did is we established the federal coordination team, to better communicate with our partners. I'm actually a member of the federal coordination team. I do get deployed. We've exercised that in a lot of the exercises this year.

We've also looked at how do we increase our communications with states, the states in terms of our ability

to provide them information and status of what's going on. We've created an interim solution in terms of how we're going to focus on increasing or enhancing our communication.

If there's an event, the unaffected event, we've established a regional state liaison officer's hotline, and on that hotline are liaisons. If the existing or affected regional state liaison officer cannot participate, we share that information, so that we can communicate what's going on with the events.

We recognize that there's more work to do, and as we continue to engage stakeholders, we continue to engage and obtain information, those opportunities to enhance our program are going to present themselves, and we'll work effectively with our management, you know, with the Commission of course, to make necessary changes.

As far as our focus area, what we're trying to do is we're trying to capitalize on, you know, after Hurricane Katrina, the federal government stood up and decided we want to have a national response plan, which was subsequently changed to the National Response Framework.

We have a part of that. We look at the National Incident Management System. We also look at the nuclear radiological annex, where we're a part of that. As we build on the maturity of that program, there's an

opportunity to take that program and look at the maturity of the radiological emergency preparedness program, and look at opportunities to enhance that program.

We do that through what's called a whole community approach or an all hazards plan. What we've heard from our stakeholders is that, you know, there should be one -- regardless of the hazard, there should be one response. So the state and the locals and the federal community is moving towards that direction.

So what we're going to do is take those lessons learned, look at how we can apply it to moving forward into products that we produce, such as NUREG-0654, FEMA-REP-1, which is a document that develops and evaluates emergency plans.

We're in the throes of drafting that. We're going to inform that on the principles of the National Incident Management System. We're also going to try to do that in terms of how do we effectively focus on communication and coordination, because that's the whole community approach.

So we're going to look at that piece and we're going to inform hostile action based drills or hostile action based exercises.

Lastly and not least, we're looking at Nuclear Power Plant 2015. That's going to be an exercise at a nuclear power plant as the driver, and then we're going to have the federal response, federal family, and we're going to

see how does that all integrate.

When we have opportunities to enhance our program, we're going to do those types of things. So we're going to continue to interact with our stakeholders, to make sure that the program is in a state of readiness. At this time, I'll turn it back over to Mark Satorius.

MR. SATORIUS: Thanks Kevin, and I'd like to thank the teams for your presentations. We ran a little bit over, Chairman, so why don't we get right to your questions. It is a big business line, so why don't we get right to your questions.

CHAIRMAN MACFARLANE: It is a big business line, and I won't hold a minute and 30 seconds against you all. That's pretty good. That's with an uncertainty. I'll turn it over to Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. Thank you all for your presentations. Very well delivered and a lot of substance there.

I want to start out at this end of the table with Kevin. I just wanted to comment that I had a chance last month to participate in the hostile action-based exercise for Diablo Canyon, and I thought the scenario was challenging, but also realistic.

I personally got a lot of training value out of that. I would just want to put a plug in to highlight the importance, I think, of ongoing, challenging exercises for us.

When I talk to our international partners, that's one thing that I think they're continuing to learn from us.

In some countries, they benefit from exercise command and control, Communications strategies, etcetera. So I wanted to thank the team over there in the operations center for a very positive experience.

Julio, I'm going to go to you next. I appreciate your being here to represent the regions. I think the resident inspector program, the regional inspector approach is so important to us, being able to achieve our safety mission.

I wanted to ask you. You mentioned several examples of things that have been added to the plate of inspections, whether it be from a resident inspector portfolio or from the regions. You mentioned cyber, 805, Fukushima issues.

Have you found, whether it be in Region III or elsewhere, the need to ramp back other baseline inspection program efforts to accommodate these other add-ons?

MR. LARA: That question, Commissioner, is one that we always wrestle with. It's an area where we try to look -- every two years we look at the ROP, to make an assessment of the effectiveness of the ROP, and then whether or not we do need to make adjustments to the baseline inspection program, whether it's adjustment of inspection samples, inspection effort in one procedure, and

then increase the effort in other areas.

I suspect when we get to the point of the Fukushima order, the modifications, we'll need to make some adjustments in some of the existing baseline procedures, and make that a continuously living program to adjust accordingly as the years go, get closer to fruition and the completion of those modifications.

So it is an area that we've highlighted to NRR. We've worked with them to try to identify where do we need to make those adjustments, and NRR has been keeping the regions in the loop, informed as to what our ideas might be.

So that -- I think that's the next big priority for us, identify where do we make those adjustments.

COMMISSIONER OSTENDORFF: On your Slide 36, you refer to trying to increase flexibility. Is that increasing flexibility tied to pragmatic steps to manage workload? Is that where -- can you give some examples of where you're -- of what you're thinking about as far as enhanced flexibility?

MR. LARA: Sure. Currently some of our inspection procedures in any particular area may ask us to look at X number of samples, inspection samples in a particular area, maintenance risk assessment for example. It might ask us to look at three work items per quarter, to get an overall number of 12 for the year.

And what our inspectors have fed back to us

is they would like more flexibility to make adjustment to the inspection work on a day-to-day basis. So rather than have quarterly requirements for completion of those activities, maybe make them on an annual basis, and that provides them more flexibility to adjust the workload as issues come up, and not be constrained or concerned about trying to get X number of samples completed by the end of the quarter. So there's more flexibility. That's one concrete example.

COMMISSIONER OSTENDORFF: Okay, thank you. Tara, I'm going to turn to you. I appreciated very much your presentation discussing rulemaking. You mentioned in a comment, a reference to looking at cost estimates and NRC's ability to more accurately predict costs. One area in the cost estimate arena that I wanted to ask you about was how are you able -- how are you able as a team to predict or project a licensee's engineering design cost, the paper work, the quality certification-type efforts?

I want to give you two examples, and I know the other Commissioners have the same experience. It seemed like at one point in time that the spent fuel pool level instrumentation paper work was more complex than people appreciated.

Last week I was at St. Lucie, looking at the emergency diesel generator exhaust, and a very simple -- it looks like a simple modification to redirect the exhaust, these are air cooled EDGs, to redirect that exhaust to prevent a

back pressure from -- a prevailing wind from a certain direction resulting in a loss of cooling.

The modification was basically, you know, putting a bunch of metal up there and redirecting the flow, the same thing on intake. Yet probably this project was $5 million. Probably 80 or 90 percent of it was in the paper work, engineering design piece.

How accurate are you guys able to look into the licensee's engineering design for these kinds of things, and say this is what it takes a process a modification to a plant?

MS. INVERSO: So to answer your latter question first, how accurately are we able to do this, the case studies were the first retrospective review, where we actually looked at the estimated costs versus the actual costs, and in terms of how accurate were we, it ranged from anywhere from two times too low to as many as 19 times too low.

Now how do we come up with our estimates in the first place? When we're developing a rulemaking requirement, typically during the pre-publication of the proposed rule, the working groups will get together and we'll list the requirements that will be added by the proposed action.

So we're looking at the delta between if there is already a current requirement in place, what the proposed requirement will add to that, and we'll list each element.

Typically, the technical experts will be able to provide an estimated level of effort.

Whether that be in hours that can then be transformed into FTE, which can then be transformed into cost. So we get back to the need for the public to comment on these estimates early, because we do know that those estimates aren't always fully accurate, and we think that, especially with the filtering strategies rule, that is an example where we are getting early feedback.

So that will improve the accuracy and that will give the licensees the opportunity to tell us where we are underestimating some of these things. Once we get a baseline of information, we can then apply that to other regulatory actions, regulatory analyses.

For instance, we have a standard number that we use for the effort required for an exemption request, and that's what we apply to all of them. So once we have a good base, I think we'll be able to improve. Right now, it's mostly the technical staff's estimates, working with the cost analysts.

COMMISSIONER OSTENDORFF: I'd encourage you, where the opportunity presents itself, to actually send some people out to work and spend a few days with the licensee’s engineering group, and see actually how they do business. I think you may be doing that already, but I think that's -- that would be time well spent.

Meena, I want to turn to you on licensing actions, and I appreciated your commenting on the prioritization and communications with industry, and the actions you've taken to add additional resources, look at outside contracting, rehired annuitants.

I wanted to ask you maybe a little different question. Given the backlog and given where you are, what steps have y'all taken to look at how you're doing business, the efficiency, the review chains? Has there been a Six Sigma type effort to look at how you're doing business currently? Can you talk about that?

MS. KHANNA: Sure. So I'll answer your question first and I'll add on a few other things that we're doing. So as far as looking at efficiencies and reviews, we're always continuing to look at efficiencies with respect to reviews.

I think we with respect to -- we want to ensure consistency across the board. So we do a lot of knowledge management, knowledge transfer, ensuring that the technical staff understand the most significant issues. We also want to make sure that folks understand that we do review to reasonable assurance. So that's a challenge that we continue to work with our technical staff.

But in many initiatives, for example, the NFPA 805 review. I know that they're looking -- they've implemented a streamlined review process. They're taking

into consideration and utilizing the audit process to be able to respond to RAIs, you know, to have the licensees be able to interact with the staff on site, to be able to address the questions that they have.

So that's also been a big improvement with respect to gaining efficiencies. But in the technical areas like I said, we'll continue to do knowledge transfer. We'll, you know, make sure that we're using folks that are getting ready to retire to communicate with the staff.

Right now, since we are bringing in a lot of new staff, we've transferred a lot of resources from NRO. They're very familiar with Part 52. So now we're training them on Part 50. We've established efficient and effective training programs, because we've got such a large amount of staff coming over, and we just continue, you know, put in efficiencies as we can.

I do want to mention also, we mentioned that we've got all these resources coming on board. What we're feeling right now, especially the management and staff, we've got to train these folks, you know. It takes anywhere from six to eight months to train these folks, to get them qualified.

They need to be either qualified technical reviewers or qualified project managers, and again understanding Part 50, you know, it's a different ball game. So that's requiring a lot of work on our end.

COMMISSIONER OSTENDORFF: Okay. Well, I'm going to run out of time. But just I'd encourage, I know with Mike Weber's task force here, I would not -- I'm not making this as a criticism, but I do think that it would be a tremendous lost opportunity, but I think it's an obligation of the agency to look at how are you doing business, not just the volume of business as you approach this, and I know I'm out of time. Thank you Chairman.

CHAIRMAN MACFARLANE: Great, thank you. Commissioner Ostendorff. All right. So I'm going to start with Tara, and you've just talked with Commissioner Ostendorff a little bit about this. But in terms of the filtering strategies rulemaking, there's some delays with it. I want to know where we're at right now.

I think there was a request to get cost estimates by May 31st. Did they come in? Are we getting the information we need, so that we can keep to schedule or not?

MS. INVERSO: Yes. We did get that cost information that came in from the industry on May 30th, and the staff and the industry are following up that information on Wednesday and Thursday of this week with a public meeting, to discuss that detailed cost information, and it appears that the other request of that letter will be submitted in a timely fashion.

So I would say we are optimistic moving

forward. There were a lot of lessons learned from both the NRC staff and the industry on obtaining that information. We're now going to add some formality to the request in the future, to ensure that the time lines are met.

CHAIRMAN MACFARLANE: Okay, good, good. Yeah. So whatever I can do to help, let me know. All right. So Meena, and this goes to the question that Commissioner Ostendorff was asking about, the licensing action backlog, etcetera. So you are getting more resources.

So what are your projections, then, in terms of when you will catch up? When are you going, you know, be back on target with respect to timeliness and number of actions?

MS. KHANNA: Okay. So right now, based on the data that we have to date, what we're looking at is we're looking for stabilization during the end of fiscal year 2014 and 2015. So both of those years, we're looking to get stabilized, and in the future years, right now we're looking at 2016 or 2017 to be able to get back to meeting our metrics again.

But that obviously is based on the resources that we get, and like I mentioned, again, you know, we need to make sure that we're training folks appropriately to get them back up to speed.

CHAIRMAN MACFARLANE: Sure, sure.

You need folks trained properly. I understand that. I also want to emphasize, as Commissioner Ostendorff did, that don't just do what you're used to doing, but I would strongly suggest that you take a look at the overall process involved. I think that would be very helpful. Sometimes it's good to sit back and have a rethink.

In terms of research, so what specific actions are you guys taking to develop your understanding of emergent issues? In particular, I'm interested in how research integrates information from outside of the agency, from international agencies, international folks and academia, all that kind of thing.

MR. TREGONING: Yeah. Let me touch on the international piece first, because I think -- we just have -- we do extensive collaboration through a variety of means. For instance, we participate, and I'm a member on the NEA CSNI Committee, and this is the committee for -- it's comprised of other international regulatory research support agencies.

One of the fundamental objectives of that agency or that organization is to share operating experience. So I think really through sharing operating experience, as well as research activities. So we try to have an understanding of what's happening, what events are happening in other countries.

We're just networking and

information-sharing through these networks, and collaboration bodies we've developed has really helped us when these emergent issues come up.

CHAIRMAN MACFARLANE: Okay, all right. Julio, nice to see you again.

MR. LARA: Thanks. Thank you.

CHAIRMAN MACFARLANE: Okay. So in terms of the inspection program, I'm interested in specific examples of some of the newer areas, so aging plants and the Fukushima Tier 1 activities. I'm interested to understand how you're integrating the resident inspectors into these activities.

Are you polling them for their views? Are you including them in working through the new activities that will go on, etcetera?

MR. LARA: You know, one of the things about the resident inspector program that has kind of been at the core of the program from the inception is being mindful to not overburden the residents with a lot of information. There's a lot of requests, tasks that come from headquarters, from the regions. So we try to monitor that, to not overburden the residents.

Post-Fukushima, one of the things that we try to instill in our residents and our branch chiefs is not to let the Fukushima event overburden or otherwise distract our residents from the day-to-day plant operations safety and

security. So with respect to post-Fukushima, we want to transition the inspector's knowledge to now performing inspections of the modifications.

So what we are planning on doing is working on NRR, begin to integrate them into their site evaluations, their audits for the various Fukushima orders, and begin transitioning their knowledge to incorporate -- to learn the aspects that NRR brings forth, and to start thinking about where we can adjust our inspection procedures to begin looking at those modifications in the coming years.

For Region III, NRR is beginning their audit at D.C. Cook, I believe it's this week, and Byron follows shortly thereafter. So those are the first two examples where our resident inspectors will be working closely with NRR, to share information, help NRR in their task, and at the same time gain some knowledge from the NRR with respect to the intent and purpose of all these modifications. So it's an ongoing work.

CHAIRMAN MACFARLANE: Okay. Onto another topic that's near and dear to my heart, which is communication and public engagement. So anybody who wants to jump in can.

You know, I know we get a lot of input from the public, and I'm interested in understanding and hearing some specific examples of how we incorporate that input, and examples of how we may have changed course and

changed our views, changed inspections from that input.

So can anybody think of anything, or give a general view? I appreciate, Tara, all your examples of, you know, the -- yes, the rulemakings, thank you. But I'm thinking more about just the general operation now.

MR. LARA: If I could, one of the things that we've worked in Region III, and I think it's more so also in Region I and Region IV with the large public interest at some of their facilities, we've tried to create -- come up with different ways to communicate with the public.

We've talked about webinars. We've gone to home and garden shows, to try to reach out to the public and put a face of the resident inspectors to the local officials. We've done quite a bit of government to government meeting, outreaches, to again put a face to the NRC.

But it is a challenge, because what we have is different audiences, and they all have different needs. So while we certainly want to communicate what our mission, our activities, our inspection results and assessments, we can't please everyone.

So for us to then -- we struggle, frankly, with trying to assess the effectiveness. How effective are our communications, because in many cases, we get great feedback. There are some others that may not share that view.

So we're trying to adjust our public forums,

our communications means to a varied audience, and sometimes we do well, sometimes we do not, as the receivers of that information.

CHAIRMAN MACFARLANE: And how do you assess your performance of public engagement?

MR. LARA: I can't say that I have an accurate measure of how effective it is. Again, we get great feedback from a number of the public. But from others, frankly it's not much we can do. I'm not sure that we will meet all their needs frankly.

CHAIRMAN MACFARLANE: Uh-huh. Anybody else want to --

MS. KHANNA: So Chairman Macfarlane, I'll address -- I'll say it generically. I won't be able to give you specifics, but we can always get you specifics later. But with respect to our licensing process, with respect to the license amendments, there is an opportunity for public comment in the process, as well as an opportunity for a hearing.

So with each amendment that goes out, you know, we do notice the review and we allow the public an opportunity to comment. In addition, the state and local officials are also provided an opportunity to comment on the amendments when we've completed that safety evaluation.

So we do take those into consideration, and I can give you one example with respect to Seabrook

alkali-silica reaction issue. I know for a fact, I was involved in -- I've been involved with the region. I know the region has been involved in responding to a lot of public interest questions with respect to Seabrook ASR review.

We've held many public meetings. We do take into consideration any technical issues that they've brought up. You know, we implement them into our review as much as we can, and make sure that we continue to communicate that with them as well.

MR. LEEDS: Thank you all. Chairman, I'll take a crack at it also. It's a very, very difficult issue. I'll give you an example of where I think it was a big success, but I also want to talk about the international community and our work with the internationals.

One of the examples that I'd like to use, and it's old, but I think it's very poignant and very important, is all of our decommissioning funding requirements, those were all generated from external stakeholders, bringing that issue to this agency saying hey, you guys need to make sure that there are funds available to decommission these plants after they retire.

I think that's all -- those rules that are currently in place, it was the public that brought that to our attention. So that's a good example.

Now you asked a couple of questions about how do you measure your effectiveness, and how do you find

out if you're reaching the different audiences you want, and that's a real challenge for us.

We just undertook some work with the Nuclear Energy Agency, where we had Holly Harrington and Eliot Brenner from OPA, working closely with their counterparts from regulatory agencies overseas.

They had a workshop last year, where we brought in NGOs, non-governmental organizations and the public, to ask how can we do a better job. What can we do to further reach out, to provide the information and then get meaningful input from you, and also to come up with metrics. Are there metrics that we can use to measure how effective we are and how we're doing?

You know, it's the beginning of the work. It's just started. It's underway. It's a real challenge, though, because even our external stakeholders, they can't give us ideas of what would be the metric. It can't just be that we heard them, you know. That isn't enough.

CHAIRMAN MACFARLANE: But there's a large literature. I mean there's a lot of people who do measure public effectiveness. Certainly companies who are selling products are interested in that, and they do it all the time. So there's -- people do this all the time. You just have to consult --

MR. LEEDS: I agree with you. There's a wide range of public that get involved. For the nuclear,

typically you're dealing with people who have very strong anti-nuclear feelings. So to be able to measure that against the public as a whole gets very, very difficult for us, you know.

You're hearing from a minority of people. How do you draw in the apathetic majority, and get a better idea of where you stand, and that's part of our problem. Also, how do you satisfy what their requests are if they aren't technically, because we're technical agencies? So it's very challenging. Just a completely different perspective.

CHAIRMAN MACFARLANE: I think it's helpful to, like Tara did, to list examples of where the public gave input, and that was really helpful. So in the future, that would be something to consider. Commissioner Svinicki.

COMMISSIONER SVINICKI: Well, I want to thank you all for your presentations. When the planning for this meeting was underway, Eric expressed to me that it was very, very important that he have a diversity of project managers and branch chiefs and others at the table, and I have to complement you Eric.

I think I can see why you put these wonderful people front and center here, and it is also a reminder to me that as stellar as you and your leadership team are, it's my opinion that branch chiefs, project managers, team leaders, have some of the hardest jobs in this agency, because they are doing on a day-to-day basis more hands-on

management than probably those who rise to higher levels within the SES, and also they're generally still technically managing quite a bit of the work.

So I want to compliment you for giving us a very, very visible reminder of that today, not that we didn't know it already. I also want to compliment a few things. Julio, I really appreciate that you had some photographs, to remind us of these inspections.

I think in many government agencies, inspection audit is a desktop activity. It's a paper work activity. I have visited where I showed up at one construction site, and I think I had a tan jacket, to which our resident inspectors were chuckling amongst themselves. They said they were so caked in dirt the day before, that I clearly didn't look like much of an inspector, and I certainly don't try to pass myself off as one.

When licensees ask me what I thought after a tour, I say these are our experts, not me. I'm not the one here to do inspection. I haven't passed all the necessary qualifications for that.

I also appreciate that we were reminded today that operating reactors is not equal to NRR, that it is a team effort, that there is a lot of activities that go on across the organization.

The other comment I wanted to make, Meena, I appreciate very much you mentioned Michele

Evans, the letter, the communication that she gave to licensees when it began to emerge that some of the licensing metrics were going to be very challenged.

I think, you know, maybe we can be faulted for a lot of things, but we have definitely been very, very forthcoming. It isn't the same as delivering news that makes people happy. But I think, you know, my bottom line has always been if the review of something is going to be impacted, I think that the people who submitted that item for review want to know that, although it's not good news.

I will just mention that I think in the news recently, there's been a sobering reminder of a federal agency that perhaps couldn't meet demands and decided to be less than maybe forthcoming about their inability to get their workload processed and scheduled, and we had some veterans that were affected by that.

So I think again, we have the resources we have. We have the people we have. But our duty, then, is to communicate clearly where things are. So I think Michele took that early action. I was very, very complimentary of that. I know I passed that along to Eric. I'm not sure I passed that along to her directly.

But I thought that was the kind of proactive stance that we need to be taking, and that may continue into future years, if our budgets continue to be constrained. Then the second important element is not just to

communicate it, but what are you doing about it. I appreciate that that was the second part of what you talked about, is what are you doing, how are we shifting resources.

So again, it's not a situation any organization wants to find itself in. But I think that we're doing the two most essential elements, which is to be transparent about it, and then to attempt to put in place whatever adjustments are within our power.

So I wanted to begin with that commentary. I do appreciate, as well, the way this was structured. There was a lot of discussion about rulemaking. I have talked a lot about the discipline of the NRC rulemaking process, and I think it was one of those really pleasant discoveries, to come to NRC and discover all that goes into this, so that at the end of the day, I think we can feel we've well-analyzed things, we've looked at them very, very closely.

Right now, I am working on evaluating a proposal advanced by some on the Commission to institute a requirement for PRA for operating reactors. So to acquaint myself with the history is part of my process in developing a vote.

I've been looking at the staff's recent work on this point, and I didn't have to look very far, because as part of the SECY on Recommendation 1, the working group looked very closely at a plant-specific PRA regulation being required in Part 50.

This was the staff's conclusion. I can show it to you if you want me to, but I'll just read it. It says "The NRC staff believes that a regulation for a site-specific PRA for currently operating reactors, for the purpose of searching for as-yet unrealized cost beneficial risk reduction activities, would not provide benefits commensurate with the substantial cost of developing regulatory compliant PRA models."

It goes on to say "The NRC staff estimates industry costs to upgrade and maintain PRAs at currently operating plants to be between $702 million and $865 million." So this was one of the enclosures to SECY-13-0132 on Recommendation 1.

So my question for you is as I look at this, if the staff were directed to do a rulemaking for a PRA requirement for operating reactors, in the absence of any other changed circumstance or direction, would this still be the staff's conclusion, given that this work was done only last year?

MS. INVERSO: I'll begin with maybe a lower level and possibly two detailed explanations, so feel free to stop me or hurry me along. But if the staff were directed to pursue a rulemaking, we would have the Commission direction. It would get the resources.

We would start with a full regulatory basis on that issue. So perhaps it would look into details that weren't

looked into for Recommendation 1 or perhaps it would be the same. But as part of the staff's direction, it would perform a backfit analysis, and that backfit analysis would look at the substantial increases in safety or security.

COMMISSIONER SVINICKI: Well can I -- and that was going to be the second part of my question directed to you specifically, is that the staff plays by the rules but the Commission makes the rules. So when there's a rulemaking direction, we have ways, assuming that the staff looked at all relevant factors previously and backfit could not be met, and there was not -- the cost/benefit wicket could not be passed through, the Commission has some choices there, don't they?

They can deem it a matter of adequate protection; they can -- and the result of that, of course, would be waiving the backfit or the cost/benefit analysis; or they can constrain the cost/benefit analysis in some way. That was going to be my next question for you.

In general, we have internal instructions and directives on doing cost/benefit analysis. I think you, or Meena, talked about updating. You've got a SECY coming, where you're going to look at some changes or enhancements to our cost/benefit estimate.

But as a general matter at NRC, when we do a cost/benefit analysis, do we look at the same action? Meaning that the costs resulting from an action are

compared to the benefits arising from that action? Do we keep an apples to apples comparison, in general?

MS. INVERSO: I would say we keep an apples to apples comparison. Now part of the qualitative factors we'll talk about when the benefit can't be quantified, and we'll propose some recommendations on that.

COMMISSIONER SVINICKI: But there's still the benefits from that action, the proposed action, are they not? I guess what I'm saying is would we routinely conduct a cost/benefit analysis where we said consider only the costs arising from this proposed action, but consider all the benefits, including from things already in existence having nothing to do with the action?

MS. INVERSO: I would say you would have to look at the added benefit from the requirement that's going in place. So the benefits that are already there would remain, and you would just be looking at the incremental benefit provided by the new requirement.

COMMISSIONER SVINICKI: Okay. But if -- in my -- I've been here seven years. The Commission has not in general constrained the staff's benefit analysis with a specific SRM direction, saying do the cost/benefit in exactly this way. I couldn't find any examples of that.

Have either -- are either of you familiar with recent or historic Commission direction, to say consider only these costs, but consider these benefits? Is that routine?

Or generally you have an instruction or directive for how to do that, do you not? Oh, and there's OMB guidelines as well. I don't know if we deviate from those.

MS. INVERSO: Right. I think I'll turn it over to Fred Schofer, who is a senior cost analyst within the Office of Nuclear Reactor Regulation.

MR. SCHOFER: Hello, I'm Fred Schofer. We in Reg Analysis consider all the benefits and all the costs. So when we're analyzing, we're looking at reasonable benefits that can be --

COMMISSIONER SVINICKI: Don't they have to be attributable to the action though? You say "all costs and all benefits," but related to the action that's proposed?

MR. SCHOFER: Related to the action, that is correct. So I mean what we do is we do the incremental analysis. We're looking at the baseline as it currently stands. We're looking at the alternatives that would address the issue or the problem that has been raised, and then we would evaluate both the costs associated with implementing that action, as well as the perceived benefits that could be achieved.

We'd be looking at that both from a quantitative as well as a qualitative perspective.

COMMISSIONER SVINICKI: Okay. But in general, it's attributable to the action. There's been vibrant

debate about this in terms of EPA Clean Air rules on carbon emissions, of whether or not the benefits that are counted are attributable to the action.

So I know it becomes a very complex issue very fast of how you attribute those things. EPA's guidelines allow them to take into account something I believe they call ancillary benefits, which is, I think, a sub-tier of things maybe not directly attributable to. Thank you. I'm over my time but I --

MR. SCHOFER: We do that as well, by the way.

COMMISSIONER SVINICKI: Oh, okay. All right. Thank you very much. Thank you, Chairman.

CHAIRMAN MACFARLANE: Okay. Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: Thank you, Madam Chairman. Well, let's pursue this issue a little bit. I appreciate -- well first of all, I know that a lot of people are complaining about the underestimation of costs. Some people also complain about the underestimation of benefits.

I would be the first one to admit that evaluating the PRA requirement is very difficult, in terms of benefits, because it's not that you're just -- I mean in routine applications, if you can call them that, of cost/benefit analysis, I think it's easier to quantify the benefits, man-rem averted and so on.

Here, you're talking about the methodology. Methodology is not the same as installing filter vents or other things which are hardware oriented. So what are the benefits of using a methodology to regulate? It's very hard, it's very hard.

Up until now, what I have seen, the benefits were limited to the particular action that the staff was considering, but the cost was where, you know, the cost of doing a PRA, which is a big thing.

So clearly, it lost. Although I've talked to experts and they told me that the costs there were actually overestimated. Usually you're accused of being underestimating costs, but this is really overestimation, given the status of the PRA as NEI in fact admitted in a letter several weeks ago.

So -- and the other point I want to make is that in that recent SECY, it was really, I would say, arm waving. We don't believe the benefits are good. We have already found most of the contributors. We don't think, we don't believe. Well, the discussion here this morning tended to be quantitative.

I mean there were recommendations, you know, develop metrics for this, metrics for that. So I think that some more quantitative approach to the benefits would be useful, and the motivation for the initiative that Commissioner Magwood and I took was to stop looking at

the benefits from PRA in a specific context, and look at the totality of benefits that would result by using PRA, okay.

So I have a problem with the costs that were presented. I thought they were exaggerated, and the benefits in the limited actions that you were considering maybe they were too much based on judgment, okay. We don't think, we don't believe.

One thing I learned when I was on the ACRS is never use "think" or “believe." We're talking about facts, right? So that's my thoughts on the issue that Commissioner Svinicki raised.

Ms. Khanna, Meena, you mentioned NFPA 805. Now I became fully aware at the American Nuclear Society meeting, last September I think it was, that there were strong complaints from the industry on the way we conducted the reviews, and then I talked to our staff and there were strong complaints about the quality of the applications.

So I believe even Director Leeds got involved after a while, and there were steering committees and all that. So are things moving more smoothly now, and what is the reason for that? There were technical issues that were resolved, or process issues or both?

MS. KHANNA: I'll defer to our expert, Joe Giitter.

MR. GIITTER: As you know, Commissioner,

we have a Commission meeting on Thursday, and we'll go into a lot more detail. But the NFPA 805 reviews are very complex and very resource-intensive, and we have been making progress. As Meena mentioned, we have been doing a number of things I would describe as process changes, that have made our reviews more efficient, more effective, more focused.

I also would say that the quality of the applications that we receive from industry have been improving. That being said, these are major license amendments. They're essentially going from a very deterministic licensing basis for fire protection, where you look at the number of feet of separation between trains and three hour/one hour fire wrap suppression systems, to looking at dominant risk contributors, based on best insights.

I think the biggest challenge, as you'll hear on Thursday, has been the methods that were jointly developed by industry and the NRC that are in NUREG/CR-6850, a number of licensees/contractors have deviated from those. We've had to do reviews of those methods essentially in parallel to the licensing reviews.

So things are getting better, I believe. I think you'll hear that from industry as well. But it is a big effort. We are making progress, and hopefully at the end of this year we'll be about halfway through.

COMMISSIONER APOSTOLAKIS: So the

technical issues have been resolved Joe, or are there still problems?

MR. GIITTER: There are still some issues we're working through. But a number of the technical issues have been worked through the frequently-asked questions process. But for example, control room abandonment is one of the issues we're still working on.

COMMISSIONER APOSTOLAKIS: Thank you. Mr. Tregoning, good to see you again.

MR. TREGONING: Good to see you.

COMMISSIONER APOSTOLAKIS: I'm sure.

(Laughter.)

COMMISSIONER APOSTOLAKIS: You mentioned the SPAR models and how useful they are and so on. I have a problem with the SPAR models. The human reliability numbers that are being used there were developed a number of years ago, and their basis is questionable. In fact, it was an interesting ACRS meeting recently, where there were some comments about the SPAR model, the HRA and the SPAR model.

At the same time, though, we have major projects in the Office of Research on HRA. We had ATHENA in the past; now we had IDHEAS, and I see there a disconnect. The Commission was briefed by the staff recently on HRA. There is very detailed work going on

there, you know, the cognitive functions and what the -- how the operators think, bah bah.

Yet if go to SPAR, which is the tool we use to interact with the licensees when something happens, we just say oh, it's 10 to the minus 3. Where are these insights from the research that this office is doing? Where are they influencing what we do in SPAR? Or are there any plans perhaps to improve the SPAR models based on the insights we're getting from these major projects?

I think Commissioner Ostendorff remarked once, in another context, that we do these major research projects, but then he fails to see how those -- the results of those projects influenced other parts of the agency.

So are we having a similar situation here, spending hundreds of thousands of dollars developing insights from HRA models, but then when it comes to SPAR, we pull numbers out of people's judgment? Let's put it that way.

MR. TREGONING: Yeah. I'll cover SPAR generally, and I think Chris Hunter is here, he might want to talk about the HRA --

COMMISSIONER APOSTOLAKIS: Somebody's up there. Okay. Please --

MR. TREGONING: I'll turn it over to Chris, I guess.

MR. HUNTER: Okay. Chris Hunter, Office

of Research. I can answer a little bit of some of your question. We'll have to get back to you on some. Essentially, the SPAR models currently use the human error probabilities that are provided with the licensee PRAs. So --

COMMISSIONER APOSTOLAKIS: Oh, so you're not using the table that I have seen?

MR. HUNTER: No, no. I will make aware there's a documentation issue that makes this a little bit complicated. But essentially when the SPAR models are developed, they're benchmarked against the licensee PRAs, and the SPAR model developers basically are through a contract through Idaho National Labs.

What they'll do is they'll take the human error probabilities from the licensee model, and those are essentially what are used currently in the SPAR model.

So they're only -- so there's no new HRA work really done in the SPAR models, and this even includes actions that are considered dependent. Each of these are human failure events that are considered dependent with each other. So that's what's used now.

Now you bring up IDHEAS, which is the methodology currently being constructed within Project and Research. Now if we move forward with trying to implement that within the SPAR models, I think you would -- for that to even be used even for an event assessment, through the SRAs, you would have to implement IDHEAS in the baseline

model.

That's my belief, that you would have to -- for it to be able to be used with the SPAR framework, you would actually have to evaluate all the human failure events with the new IDHEAS method.

COMMISSIONER APOSTOLAKIS: So you will be using IDHEAS at some point?

MR. HUNTER: That is a decision above me. I can't answer that.

COMMISSIONER APOSTOLAKIS: That's a technical decision?

MR. HUNTER: Well, the problem is IDHEAS -- the method is not completed as of yet.

COMMISSIONER APOSTOLAKIS: I understand that. But there were a lot of insights that were developed, and you have ATHENA in the past. I'm sorry, Chairman. I'll finish. We have ATHENA that also developed a lot of insights. I mean when the licensee gives you a number, do our staff say well gee, you know, ATHENA said that or IDHEAS said that. Maybe that number is reasonable, it's not reasonable.

MR. HUNTER: Currently no.

COMMISSIONER APOSTOLAKIS: Okay, thank you, thank you.

CHAIRMAN MACFARLANE: Commissioner Magwood.

COMMISSIONER MAGWOOD: Thank you, Chairman. Let me begin by echoing Commissioner Svinicki's commentary about the panel. I think this is a fantastic panel. I think you all did a great job in a very short period of time. So I really very much appreciate the diversity of the panel, as well as the quality of the panel.

Before -- since Commissioner Apostolakis brought this up, I was going to ask this very general question about the SPAR model program. How often are the models updated? Is this a continuous process of updating?

MR. TREGONING: It's a continual process. I think, you know, depending on resource constraints, we pick about four or five a year that we do a complete review and update on, and then there's another 20 or so that we get feedback on.

So it's about a third a year at least gets some sort of review and evaluation, and again, it's on a rotating basis. So you're trying to do continual improvement as you go in the program.

MR. HUNTER: Just to clarify, typically on average, we do a regular update of the SPAR models, about 12 per year. Recently, due to budget constraints for fiscal year 2014, it's been about six models. But that's also into the additional efforts of looking at fire and other external events, new reactor SPAR models. So there's other activities ongoing --

COMMISSIONER MAGWOOD: And as you go -- as you go through the updates, you're also adding some external events as well?

MR. HUNTER: Well, the regular essentially yearly updates will just be on internal events. It goes on a -- we evaluate the process. For example, we've recently completed NFPA 805 fire, essentially models for the SPAR model. That was done for D.C. Cook and Shearon Harris, and we've also looked at additional all hazards models for Vogtle and V.C. Summer.

So that's kind of done more on an evaluate, where the licensees are in their process, and where we can essentially tag along to get the information we need to implement it into the SPAR models.

COMMISSIONER MAGWOOD: Okay. I appreciate that. Thank you. Rob, just another question for you. I think you highlighted the fuel cladding embrittlement rulemaking, which was one of the more technically challenging packages that I think we've seen. From a scientific standpoint, there's a lot of interesting background associated with that package.

I thought it reflected a very good role for the Office of Research, in that this was not an issue that was generated through a user request from NRR; it was the result of people looking at the scientific information that was out there, asking questions, conducting research.

I think, and I think Brian and I have had conversations about this in the past. But the one thing I do worry about is whether we're looking at these longer range issues enough. This being an excellent example, where Research looked down the road, saw an issue, was able to translate that into a need that became a rulemaking proposal.

Are there areas where you feel that we ought to be looking further down the road? Brian, if you want to hop into this, feel free? But where are we missing? Where are we missing the opportunity to look down range at issues like this?

MR. TREGONING: Yeah. I'll say generically we're always looking down range for issues. One program that we have that I think asks the agency to do that, in some sense, is the long term research program, where we solicit ideas, not just from the Office of Research but agency-wide, and the idea is to look for future challenges from a regulatory perspective, that might be coming down the road five years or so from now, that we’re not in a position to support from a technical basis.

So that's a program that we've been implementing over the last few years, to try to address that question in a more formal way. But we're always trying to plan and look and forecast. The problem that we run into, I think, is that, you know, we're an agency that dispositions

what the industry is going to do in a certain area.

So if you asked us to look down the road ten years ago, we would have said decommissioning was probably the number one thing. If you asked us five years ago or seven years ago, we would have said new reactors.

So we're always looking and postulating and planning. But one of the challenges that we continually face is the future sometimes is -- not only is it out of our control but it's, you know, it's even further out of our control, because it's dependent on what industry decides to do in a number of areas.

So that's a challenge that we always face with trying to identify emergent needs and issues that need technical support. So I don't know if Brian.

COMMISSIONER MAGWOOD: Brian please.

MR. TREGONING: He'll want to correct me, I'm sure.

MR. SHERON: Brian Sheron, Director of the Office of Nuclear Regulatory Research. Just to add on to what Rob said is that we do try to look forward as much as we can, and particularly like with new technologies that we see coming down the road.

Ones I always worry about are like fiber optics, you know. I look at, you know, for example with license renewal and so forth, and what are things that

licensees are going to be faced with. They have aging cables, okay.

So the question is are they going to replace cables, or would they use something different to address that, and is that something that we need to start to look at now and understand what are the safety implications, if there are any, with moving to a different type of technology.

So that's always the challenge, is trying to identify that. We try to work with our customer offices, to make sure that they also agree that, you know, this is a worthwhile area to pursue, and if they do and we have the resources, we try to look forward, you know, and identify what those are.

MR. LEEDS: If I can add an example, because Brian's also leading everybody's focus forward. But Brian also looks backwards, and very specifically he's working with NEA to find what more we can glean from the Fukushima accident.

When the Japanese start tearing apart those plants what -- did the bolts really stretch and allow the hydrogen release off of that containment? Let's go take a look at that. What was the impact of all that salt that they put into the reactor vessel? Let's go take a look at that.

Brian has really been the leader on that over at the NEA, pushing that work and trying to get the internationals involved with the Japanese, to get some of that

research done. It's a look backwards; it may help us going forward.

MR. TREGONING: One final thing if I could add. In certain fundamental areas, we also have research plans, in digital I&C as well as seismic and other areas, where we meet not just with the Office of Research but also all of our customers, and try to project what those needs are going to be.

So that's another formal effort that we have, that tries to address the question that you raised.

COMMISSIONER MAGWOOD: Okay, thank you. I wanted to echo something that Commissioner Ostendorff mentioned. Commissioner Ostendorff was the executive in the Diablo Canyon hostile action drill a while back. I was actually at the plant during that, and had -- was able to get that perspective.

It was -- I agree with him entirely. It was a very challenging exercise, very complex, a lot of players involved, and I think you'll find, as you mentioned, some lessons learned. I found it very interesting in that as I traveled from the control room to one of the staging areas to the EOF, it was amazing to see how information degraded as I traveled along those lines.

I knew more traveling by car than people were getting by email and telephone. So it was really an interesting experience to see that firsthand. But again, I

thought it was an excellent exercise. I think it was a very good example of the value of the program, and adding the hostile action component, I think, has proven to be very effective.

Julio, just a question for you. You know, I appreciate your commentary about the role of the inspectors. But you know, as I talk to inspectors at various plants and see the insights they gain about the licensees that they are observing, I often wonder how effective we are in taking insights they gain at specific plants, to make sure that that's fed back to the regions and back to headquarters, to have other inspectors, you know, where there may not be a major problem but just an interesting observation?

How good are we at making sure that that information feeds back to all the other inspectors?

MR. LARA: You know, one of the things that -- we focus on two particular areas. One is knowledge transfer, at Region III and I know at the other regions as well.

We try to come up with different unique methods to share either historical or recent plant experiences, operating experience, and share that with the inspectors, and use senior inspectors or branch chiefs to communicate, roll out that information, to share their perspectives and knowledge in those particular areas.

The other area is at our inspector seminars, which we hold every six months. We provide opportunities

to not only have presenters from NRR, Research and other offices communicate what's going on in their offices; we also hold kind of operating experience open forums.

We just did on at Region III a couple of weeks ago, where we discussed issues at various facilities across the country, and we have an open forum where all the inspectors shared their thoughts and ideas, either a critical review of their particular event, or either from the technical aspect or from inspection techniques to share, particularly with our younger and newer inspectors, who are just getting out to the sites.

One of the things that I realized is that our job as supervisors, it's never done with respect to training our newer folks. We disseminate information, we train them, we get them qualified, and they progress throughout their career. But it's an ongoing opportunity for new inspectors to get out there. So that learning process is just continuous for those in the regions.

COMMISSIONER MAGWOOD: Eric, Mark, I think --

MR. SATORIUS: Yeah. I was going add, one thing that I think all the regions do, I know Region III did, is to have periodic either quarterly newsletters, and a lot of times they'll be "catch of the week" or "catch of the month," and it will be a description of an inspection finding, and how the inspector used his skills, his or her skills to make this

identification.

Eric, the same thing within your organization. You have an inspector newsletter.

MR. LEEDS: Newsletter that we put out every couple of months, where we get input from all the different regions. It's wonderful when an inspector gets to write something that's a story, and it can be a lot of fun to read, about how they pulled the thread and found something very -- particularly safety-significant, and there's a lot of learnings in there that other inspectors can gain from.

COMMISSIONER MAGWOOD: So if an inspector at D.C. Cook finds something interesting, there's an inspector in St. Lucie that if it's something that rises to that point, there's a good chance that that person will have read about that and heard about it.

MR. LEEDS: Exactly.

COMMISSIONER MAGWOOD: Excellent.

MR. TREGONING: If I can add, I can tell you in the Materials area, we also have calls every six weeks between the Office of Research, the New Reactor Office, NRR, as well as representatives from all of the regions, to identify emergent materials issues that maybe come up in inspections, or inspection challenges related to materials that we want to do knowledge transfer on. So that's another mechanism we use to --

COMMISSIONER MAGWOOD: Jennifer,

I'm over my time. Just make it really fast.

MS. UHLE: Yeah, it's really fast. This is Jennifer Uhle, Deputy Director of NRR, and I would point to all of this information that the inspectors do gather on operability issues or failures of systems goes into the Ops experience databases that gets shared. They're accessible by all the resident inspectors, as well as everyone in the region, as well as headquarters.

So we have a formal process, and that is very robust and we found very successful. So things that get identified that are of significance get out there very quickly.

COMMISSIONER MAGWOOD: Excellent. I appreciate that. Thank you very much.

CHAIRMAN MACFARLANE: Any further comments, questions? No. All right. Thank you all very much. It was a pleasure having a discussion this morning and hearing from all of you, and from all the rest of you who participated as well, I think it reflects very well on your folks, Eric and Mark.

Thank you again Eric, and all the very best. So we are now adjourned.

(Whereupon, at 11:27 a.m., the meeting was concluded.)