UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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STRATEGIC PROGRAMMATIC OVERVIEW OF THE

NEW REACTORS BUSINESS LINE

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THURSDAY,

SEPTEMBER 24, 2015

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ROCKVILLE, MARYLAND

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The Commission met in the Commissioners' Conference Room at the Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, at 10:00 a.m., Stephen G. Burns, Chairman, presiding.

COMMISSION MEMBERS:

STEPHEN G. BURNS, Chairman

KRISTINE L. SVINICKI, Commissioner

WILLIAM C. OSTENDORFF, Commissioner

JEFF BARAN, Commissioner

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

NRC STAFF:

FRANK AKSTULEWICZ, Director, Division of New Reactor Licensing

MICHAEL CHEOK, Director, Division of Construction Inspection & Operational Programs

LAURA DUDES, Deputy Regional Administrator for Construction, Region II

MICHAEL MAYFIELD, Director, Division of Advanced Reactors and Rulemaking

JOHN MONINGER, Director, Division of Safety Systems and Risk Assessment

MARK SATORIUS, Executive Director for Operations

GLENN M. TRACY, Director, Office of New Reactors

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

9:58 a.m.

CHAIRMAN BURNS: Good morning everyone. Before we start the meeting on the New Reactors programs, we do have an affirmation item to come before us. I'll ask the Secretary to lead us through that.

COMMISSIONER BARAN: On Tennessee Valley Authority, Watts Bar Unit 2, the Commission is being asked to act on a memorandum and order responding to Southern Alliance for Clean Energy's Petition for Review of the Atomic Safety and Licensing Board's decision in Licensing Board Panel 15-14, to deny Southern Alliance for Clean Energy's motion to reopen the record.

The Commission has voted to approve a memorandum and order that denies the Petition for Review. Would you please affirm your votes?

(Chorus of ayes.)

COMMISSIONER BARAN: Thank you.

CHAIRMAN BURNS: Okay, thank you, and we'll ask the staff to come forward and take their seats. Well good morning, welcome to the staff and members of the public who may be here or listening in to today's meeting. The purpose of today's briefing is to provide the Commission with a discussion of strategic considerations associated with the NRC's New Reactors Business Line, including the priorities, near and longer-term projections and trends, emerging focus areas and Project AIM recommendations.

We'll hear from a staff panel consisting of the Executive Director for Operations and representatives of the Office of New Reactors in our Region II Office in Atlanta. I look forward to today's discussion.

But before we move into our business today, I want to note that today is Mark Satorius' last Commission meeting as EDO, unless we call an emergency meeting tomorrow, I suppose. But I want personally thank him for his two years sharing the 17th floor with my office and my predecessor, Allison Macfarlane, and thank him for his more than 25 years of NRC service.

I got to know Mark, I think, in the early 90's when he was in the Office of Enforcement and then the EDO's office, and it's always been a pleasure to work with him. Mark has worn many hats along the way and had many different addresses, including Region IV and Region III, as well as headquarters.

His tenure included working during times of some of the big challenges of the NRC, including the response to the terrorist attacks in 2001, to the Davis-Besse vessel head incident and the Fukushima Dai-ichi accident, as well as things like the shutdown in 2013 and working through that, and the current challenges we have, we're facing and are addressing through Project AIM.

He may not miss having to come into the briefing room here periodically, but I hope he will miss us here in the Commission, and I know he's contributed a lot to the mission of the Agency. So I think we all want to extend him our best for his future plans. So thanks, Mark.

(Applause.)

COMMISSIONER SVINICKI: Could I?

CHAIRMAN BURNS: Yeah, Commissioner Svinicki.

COMMISSIONER SVINICKI: Well I -- thank you, Chairman, and I'd just like to associate myself with your commendation of Mark's long service, both to the NRC and to the United States. Thank you for all that you've contributed and your long tenure in public service.

I want to note as well the Chairman made reference to the fact that we've had a lot of complex issues over your tenure as EDO, and that's certainly true. I want to personally thank you for helping us get such a strong start to the Project AIM efforts, that perhaps while less visible outside the building are a very significant undertaking here inside the NRC.

I think under your leadership, we've begun that very strongly, and it will be carried forward by your successor. So thank you and I wish you all the best.

MR. SATORIUS: Thank you.

COMMISSIONER OSTENDORFF: Mark, I can't pass up a chance to also agree with my colleagues' statements of your dedicated service and leadership here, and the many accomplishments that you ought to be very proud of, the team you've worked with and your leadership efforts have led to.

As a fellow boat school graduate who has chopped in Bancroft Hall, sweated pennies to the wall and executed chow calls, you and I share some common historical experiences.

MR. SATORIUS: Time tide information waits for no man or woman.

COMMISSIONER OSTENDORFF: Absolutely, and we could go on for a long time with that. We will not.

(Laughter.)

COMMISSIONER OSTENDORFF: Glenn's laughing over there, for good reason. But seriously Mark, we're very proud of what you've done here and very grateful for all you've done. Thank you.

MR. SATORIUS: Thank you.

COMMISSIONER BARAN: I was going to say that I agree with all my colleagues for Mark, but I realize I actually understood only about half of what was said. So I don't really want to align myself with that --

(Laughter.)

COMMISSIONER BARAN: I can only assume, Mark, that you've long dreamed of ending your illustrious career at NRC on the high of a business line meeting with the Commission. So congratulations it all worked out for you that way, and you'll be missed and you've earned some time in retirement. So congratulations.

MR. SATORIUS: Thank you, Chairman and Commissioners. I appreciate your kind words, and yes, I'm at that point in my career where I'm -- while this is the last time I am going to fill in the blanks. So this is the last time I'm going to be at a Commission meeting.

I find it's somewhat surreal that I've worked eight, ten, twelve hour days for the last 44 years, and now I find myself faced with slowing down just a little bit. But I think what I'll miss the most are the great people that are in this great agency, like some of the people that are sitting at this table and in this room.

So I will miss the fellowship of seeing them on a daily basis. But I will move on, and I guess apologies to Walter Cronkite, "and that's the way it is, September the 24th, 2015." So with that Commissioner, I'll go ahead and start the Commission meeting.

CHAIRMAN BURNS: Please.

MR. SATORIUS: So welcome Chairman and Commissioners. Staff is here today from the Office of New Reactors as well as Region II, to provide you a status update of the New Reactor Business Line. The New Reactor Program has continued to achieve its goals over the last year, in the midst of continued changes and first time implementation of the oversight of construction under Part 52.

The efforts of our licensing and technical staff and the safety findings by our construction and vendor inspections have had an important and positive impact on the safe licensing and construction of new and advanced reactors in the country.

I highlight especially the agility of the New Reactor Business Line and its clear agency focus, as Glenn and his team have continued to be leaders by example in the alignment of their resources to where the workload was needed; reducing the program by one-third since 2012 and contributing to the Agency's highest priorities, such as Fukushima follow-up, waste confidence and operating reactor licensing, without negatively impacting their ability to meet the business line goals and staff morale.

So now I'll turn the briefing over to Glenn.

MR. TRACY: Thanks Mike, Mark. Slide 3. Good morning, Chairman, Commissioners. I'd like to open by acknowledging the sudden loss of our highly respected colleague, Ralph Landry this week. Ralph's extensive contributions over decades as a senior level advisor and a senior reactor systems engineer were recently displayed during the well-attended NRC-DOE workshop earlier this month.

As he provided his astute perspectives on the NRC's and

the predecessor agencies' licensing and oversight efforts on United States non-light water reactor technologies. Ralph is deeply missed, but the significant impact of his service is enduring.

I would like to acknowledge the important contributions over the last year of our business line partners in Region II, the Advisory Committee for Reactor Safeguards, the Office of General Counsel, NRR, Research, NSIR, Investigations and Enforcement, and of course our important corporate partners. Lastly, I'd like to recognize the New Reactor Business Line executives, supervisors and staff implementing the program's mission in the all-important construction resident inspectors and the vendor inspectors in the field.

Our briefing today will provide an overview of the New Reactors Programs goals, challenges, strategies, the management of our resources and our vision for the future.

Slide 4 please. I'll begin with an overview of the anticipated outcomes we have for the New Reactor Program. With NRR and Region II, we continue to verify the safe construction and start-up of Watts Bar II, and the four AP-1000 units at the Vogtle and V.C. Summer sites, which continue to be our highest priority.

The staff maintains its effective oversight activities, executing construction and vendor program inspections, verifying ITAAC closure and developing and implementing initial testing programs. Since our last briefing, the staff has demonstrated its focused review of two design certifications.

The staff continues to embrace its safe closure and 42 safely initiatives, and we are completing and have completed our review of the

ESBWR design, supported by the mandatory hearing and the first combined license application to reference that design, and issued a combined license to DTE for the Fermi 3 reactor.

Two design certification applications, KHNP's APR1400 and Mitsubishi's U.S. advanced pressurized water reactor are currently under review. The staff has developed and implemented its enhanced licensing review strategies, including both management and peer-reviewed requests for additional information, and the early development of succinct safety evaluation reports guided by OGC training, to facilitate the safe completion of the DC review in 42 months.

Specifically, the NRC accepted the APR1400 DC application for docketing on March 4th of this year, and our enhanced technical review is on schedule.

Slide 5 please. We're proactively engaging our stakeholders for small modular and non-light water reactor technologies. Based on both formal and informal communications with potential applicants, the staff expects to receive two SMR applications in the near term, and anticipates the first application to be received by the end of the calendar year 2016.

The staff is making progress in resolving both technical and policy issues stemming from these innovative designs. The staff continues to make progress in the development of guidance to support these reviews, such as the design specific review standards.

The New Reactor Business Line is taking strategic steps to prepare itself for the future non-light water reactor applications commensurate with the pace of non-light water technology development, maturity, and within

the constraints of our budget. Examples include the NRC-DOE non-light water reactor's public workshop, during which we opened a dialogue between stakeholders and government, regarding pathways for the safe commercialization and licensing of non-light water reactor technology, as well as our leadership in advanced reactor regulatory forums across the globe.

Slide 6 please. This slide portrays a few key program challenges for the New Reactor Business Line. We continue to see fluctuation in the number and timing of applications, as well as the industry's business interests. Several combined license applications have suspended at the request of applicants. Applicants for small modular reactors have in fact been delayed. Technology choices have been revised, and certain applicants have reduced their specific support.

At the same time, certain stakeholders have shown keen interest in emerging small modular and advanced reactor or non-light water reactor technologies. We're experiencing the challenges of implementing oversight to the first plants constructing under Part 52, as well as reviewing applications for new combined license amidst arising issues and design changes.

As the staff continues to implement new aspects of our rule, the staff continues to be open to the identification of process areas for clarification or improvement. New reactor designs currently under review or anticipated include new and advanced features that create technical and policy challenges that must be addressed.

The NRC is considering approaches that could be used within the existing licensing processes under 10 CFR 50 and 52, to provide both small modular and non-light water reactor technologies and designers'

early regulatory feedback prior to their submission of a design or a license application.

As we anticipate receipt of advanced designs for review over the next several years, we're seeking out areas where our staff's skills will need further enhancement.

Slide 7. Here are a few of the strategies we will address the aforementioned challenges. I mentioned previously that the new reactor environment continues to fluctuate, and the New Reactor Business Line must continue to be very agile in the use of its appropriately-declining resources.

We continue to demonstrate that our agency focus, through the execution of our office and business line reductions through attrition, the well-coordinated transfer of staff and the careful recruitment of necessary critical skills are conducted where needed. We carefully manage our resources to align with the projected work, the changes in the industry's plans and other external factors.

As the planning for Project AIM has emerged, we worked to integrate those efforts with the plans that we have into the agency's long range planning project. Because we're implementing a new licensing process, we understand the value of periodically reviewing the effectiveness of our processes and how we can improve them.

As you're aware, NRO previously conducted two formal lessons learned on the activities of Part 52, both licensing and implementation. We're currently completing a formal assessment on the staff's experiences in reviewing design certification applications to date.

At our briefing to you last year, we reported that a transition plan had been developed. The staff continues to implement that plan to

ensure the agency will be prepared for the four AP1000 units transitioning from construction to operation in the 2019-2020 time frame.

The NRO management team has taken initiatives to communicate with its licensees, applicants and future applicants where there are emerging technical or regulatory issues that could impact safe construction or our ongoing design and licensing reviews.

In the area of small and advanced reactors, this proactive engagement ensures that our agency will be prepared to review those applications when they arrive, by having the appropriate infrastructure and processes, as well as the appropriate number of staff with the critical skills.

I've provided an overview of our business line's activities. The rest of today's briefing will expand on the areas I just covered. Members of the program management team will discuss our accomplishments, challenges and strategies in each of the areas. I'll now turn the presentation over to Frank Akstulewicz, who will discuss large light water reactor licensing and completing the work in front of us. Frank.

MR. AKSTULEWICZ: Thank you, Glenn. Slide 8. Good morning Chairman and Commissioners. NRO has been working diligently to complete the work before us. The office recently reorganized, moving the licensing portion of small modular reactor projects into the Division of New Reactor Licensing.

This allows the office to manage the certification and licensing of all new reactors consistently, regardless of whether the application supports a large light water reactor or a small modular reactor design.

Slide 9, please. In fiscal year 2015, NRO completed 32

licensing amendment requests in support of construction activities for Vogtle and Summer. For fiscal year 2016, NRO plans to continue our emphasis on regulatory activities in support of Vogtle and Summer, and we anticipate approximately the same number of license amendment requests in support of those activities.

As construction progresses, we are beginning to see the license amendment request change from a more structural nature to requests involving systems, structures and components. In February of 2015, the Commission held a mandatory hearing for the Fermi 3 COL application, and NRO subsequently issued the combined license.

We expect fiscal year 2016 to be a year with multiple mandatory hearings, including hearings for the South Texas Project and PSEG. Pending closure of the AP1000 emergent issues, the staff may also request a mandatory hearing for the Levy COL application. NRO will continue to complete design certification reviews in a manner that assures safety, but also meets scheduled milestones.

Currently, the review of the application for the APR1400 design certification is on schedule, to demonstrate that a 42 month review is feasible. The staff continues to review the Mitsubishi US-APWR application as the resources permit by the applicant.

In anticipation of the NuScale small modular reactor design certification application, the staff will engage the applicant as appropriate, through pre-application meetings and assessments.

Slide 10 please. The staff has been working hard to wrap up the active COL application reviews for the large light water reactors. This month, we will complete the technical review for the South Texas Project, and

will issue the final safety evaluation report.

Subsequently, the staff will be initiating its request for a mandatory hearing. We have completed the technical review for the Lee Station COL application, except for the resolution of the emergent generic issues impacting the AP1000 design center. We have also made substantial progress in completing the technical reviews for the remaining North Anna and Turkey Point COL applications.

NRO continues to make progress on the emergent issues that have lengthened the reviews of the AP1000 COL community, especially the Levy COL application. We hope that by midyear 2016, the staff will have a final safety evaluation that will have received the necessary ACRS review and would permit the staff to request a mandatory hearing.

Closure of these emergent issues would permit the staff to rapidly complete the final safety evaluation for the Lee Station COL application, with a mandatory hearing request shortly thereafter. The staff recently completed the technical review for the PSEG early site permit application, and issued its final safety evaluation report this month.

NRO expects to receive a new early site permit application in January of 2016 from the Tennessee Valley Authority for an undetermined SMR design at the Clinch River site. The staff completed its pre-application readiness assessment interactions this month, and believes TVA is making good progress on its application.

Slide 11, please. As expected, fiscal year 2016 continues to present many challenges to licensing activities. The business line continues to put emphasis on its safe closure process, to focus management attention on safety or environmental matters, to ensure the safe resolution of

these technical issues in a timely manner.

The business line continues to meet the challenge of managing resources effectively in response to its workload. Balancing resources to complete multiple mandatory hearings in fiscal year 2016, while continuing to support the technical reviews of ongoing active combined license and design certification applications will strain our limited resources in certain skill set areas.

The business line continues to use tools such as resource plans, budget formulation to prioritize workload priorities, and to flow critical resources to support review milestones and mandatory hearings.

Slide 12, please. The office continues to resolve regulatory gaps in infrastructure needs, which will be discussed further in the next presentation. The office has effectively engaged with future applicants to conduct the appropriate level of pre-application interactions. The staff uses these actions to identify any issues that would interfere with an application being docketed, or the staff's ability to complete the schedule review of an SMR design certification application in 39 months.

The staff plans to finalize the draft safety review standard for the new scale SMR design in anticipation of the application submittal in fiscal year 2017. NRO will continue to effectively use readiness assessment audits during the pre-application phase, to determine if an application contains the necessary technical information prior to being submitted for an acceptance review.

Slide 13, please. NRO continues to look ahead at the future licensing work for the office in fiscal year 2017 and beyond, so that we can continue to meet our licensing mission. The office will continue its

emphasis on licensee regulatory activities. We expect to see a consistent amount of license amendment requests in support of construction at licensed facilities.

In addition, we expect to have a further wave of mandatory hearings for the remaining active COL applications that will be completing reviews late in fiscal year 2016, including potentially Lee, North Anna and Turkey Point.

Slide 14, please. Looking at fiscal 2017 and beyond, the office expects some growth in its design certification application reviews. NRO plans to continue the review of the KHNP certification application, and will begin the rulemaking process in fiscal year 2017.

We will complete the review of the US-APWR design certification and will begin rulemaking activities for that application as the applicant's resources can support. If docketed, the staff will actively engage in the review of the NuScale SMR DC application, which is expected in December of 2016. It is also possible that AREVA may wish to resume the review of the US-APWR design certification application.

We plan to have early pre-application meetings with Holtec, related to their SMR design review. The staff is awaiting revised applications for the GEH and Toshiba ABWR DC renewals, and expects the Westinghouse AP1000 design certification renewal application.

As the office wraps up the reviews of the pending large light water COL applications, our emphasis will turn to new small modular COL applications. The office anticipates two new SMR COL applications, one from TVA for its Clinch River site, and the other is from the Utah Associated Municipal Power Systems for a proposed plant in the western U.S.

The staff will continue its review of the Clinch River early site permit, and will continue to engage the Blue Castle early site permit applicant to conduct a readiness assessment on it and acceptance review for an application expected to be submitted in fiscal year 2017.

This concludes my portion of the presentation. I now turn it over to Mike Mayfield, who will discuss in more detail the small modular reactor policy and regulatory issues in the advanced reactor program.

MR. MAYFIELD: Thank you, Frank. Good morning Chairman, Commissioners. In the next few minutes I'm going to touch on our efforts to address policy issues affecting small modular reactors, and in broad terms what we're doing to address advanced reactors.

May I have Slide 16, please? In 2010, the staff provided a paper to the Commission that identified technical and policy issues that needed to be resolved to support design certification and combined license reviews for small modular reactors.

In the intervening years, the staff has actively engaged the industry and particularly the SMR vendors to fully define the issues and to explore viable approaches to their resolution. We have briefed the Commission on the issues, and the staff's plans and approach to bring about their resolution.

While we have made good progress, we continue to work with domestic and foreign stakeholders to further refine our approaches. For example, we worked with the International Atomic Energy Agency to develop the SMR regulators forum, and my deputy, Deborah Jackson, co-chairs the forum, which has representatives from nine countries. The forum will develop policy position papers on key issues for suggested revisions to

existing or the development of new IAEA documents.

Bringing the staff's proposal to the Commission using SECY papers as early in the process as possible is a critical step in the overall resolution process. The recent example of a proposed approach to address emergency planning, which was provided to the Commission in SECY-15-0077, demonstrates that early engagement with the industry and the Commission will provide a resolution that will support review of license applications so they can proceed along a well-defined regulatory pathway.

Early engagement with the staff has also led to timely resolution of an issue that was seen by the industry as an impediment to them demonstrating economic viability of SMRs. Input from the industry, coupled with the independent assessments by the staff, resulted in a proposed approach to establishing annual fees for SMRs.

Again, active engagement by the staff and the industry is leading to a timely resolution of this issue.

Slide 17, please. We are proactively engaged with the non-light water reactor community to support possible licensing of these technologies in the future. The primary challenge in this area is the perception that the existing regulatory framework may not be applicable to the non-light water reactors.

We believe that the existing framework can be adapted to any of the technologies currently under development. While we're confident in our approach, the non-LWR community is concerned about regulatory uncertainty in terms of cost and timeliness for the reviews, and would prefer to see a process that uses a step-wise process and a process that's stepwise in its nature.

At this stage, we are exploring options and considering what changes could be made to address their concerns. While we're considering these broader change options, we are moving forward to make incremental changes that will provide useful information. For example, we have engaged the Department of Energy in a two-phase process to develop general design criteria applicable to the non-LWR technologies.

In the first phase, DOE worked with the National Laboratories and interested commercial entities to develop a report proposing a set of general design criteria that would be applicable to the non-LWR technologies.

The staff is reviewing that report and will develop regulatory guidance to put forth staff's assessment and appropriate general design criteria. We anticipate publishing a draft of this guidance in early 2016. There's a common perception that the international community is well ahead of the NRC in terms of licensing and operating non-LWRs.

Certainly, a number of countries are supporting non-LWRs. Currently, a number of countries have non-LWRs in operation and looking at various technologies. While there are active programs in other countries, there is limited communication among those regulators about what are appropriate licensing and regulatory criteria for those technologies.

We proposed to the nuclear energy agency an initiative to bring interested regulators together to discuss common interests, practices and problems. As a result, the group on the safety of advanced reactors was formed. The group is co-chaired by Anna Bradford, the chief of the Advanced Reactors and Policy Branch in my division, and by Stephanie Coffin, the deputy director of the Division of Systems Analysis in the Office of

Research.

There are seven countries participating in this group, and in fact they are having their second meeting this week. We have expectations that the resulting reports and discussions from the group will provide insights and approaches that can be used to ensure the safe, secure and environmentally responsible uses of these advanced technologies.

Finally, let me return to the theme of active engagement with stakeholders. We held a workshop on the advanced reactors on September 1st and 2nd of this year. The workshop was attended by over 300 participants, to include technology developers, national laboratories, academia, international participants and vendor capitalists.

We're also working with DOE to consider further workshops to address key issues, such as the fuel cycle that's applicable to these developing technologies. This concludes my remarks and now let me turn to Laura Dudes.

MS. DUDES: Thank you, Michael. Good morning. I will begin with the status of Watts Bar Unit 2, which will likely be the first new nuclear power plant to operate in the United States in nearly 20 years.

The staff has completed the majority of our planned inspections, including recent inspections of hot functional testing, pre-operational testing and an operational readiness assessment inspection.

Once TVA completes a few functional turnovers, the Region II staff will then prepare a memorandum to the director of the Office of Nuclear Reactor Regulation, summarizing Region II's construction inspection activities and providing a recommendation as to the reasonable assurance that the facility has been constructed and will operate in accordance with the license

when issued.

I do want to take a moment to recognize all of the inspectors across all of the regions who have supported the effort, adapted to the changing construction and testing schedules, and I say this, that sometimes they work nights and weekends to get this done, to make sure that NRC was in the right place at the right time.

Slide 19, please. Construction activities are moving forward at the AP1000 sites. On any given day, there are approximately 5,000 or more engineering quality control and craft workers on site. Key milestones include the recent installation of the reactor cavity and steam generator compartment module on each of the leading units, Vogtle Unit 3, Summer Unit 2. Installation of reactor vessel and steam generators for these units is projected in 2016.

As these structures take shape, we should begin to see installation of components such as the passive cooling tanks, pipe beam valve pipe supports, pumps. Assembly of the shield building is in progress and will continue until the passive containment cooling water tank is placed on top of the structure, about a year before fuel load.

The NRC staff has adapted to this dynamic construction environment and is on pace with planned inspections test analysis and acceptance criteria or ITAAC inspections, as well as our programmatic inspections. We've improved our internal processes to identify single points of accountability for inspection scheduling, and that allows our inspectors to focus on technical work.

At this point, we do not anticipate problems with the execution of our ITAAC inspections, and can readily adapt to changing

construction schedules.

Slide 20, please. We continue to conduct high quality value-added inspections at the right time. I would like to highlight a recent inspection by Coleman Abbott, who is our resident inspector at the Vogtle construction site. This finding reflects the high quality, training and performance of all of our inspection staff.

Prior to performing his field observations, Mr. Abbott conducted an in depth review of the construction codes, licensing basis and detailed construction drawings. So out in the field, he was able to identify that there was a failure to correctly translate the licensing basis for the size of a welded connection between structural steel plates and mechanical couplers. These systems are used as part of the overall structural design of the plant. And an example of one of these couplers is pictured in the lower left corner.

Pictured in the lower right corner is one of the largest module lifts to date at the construction site. This module, weighing over 2.4 million pounds, will form the walls for the pressurizer and steam generator rooms. Numerous inspections were conducted of the vendors supplying the submodules, and also of the onsite fit up prior to the transfer into the containment vessel, which that transfer is shown in this photo.

Slide 21, please. We continue to lean forward to understand potential challenges on first-of-a-kind issues, and adapt our approaches accordingly. I'm going to highlight three of these today. First, the initial test program. We've worked closely with the program office to establish inspection procedures for the initial test program and first-of-a-kind testing, and we're incorporating lessons learned from Watts Bar II and international construction projects into these procedures.

I'm going to take a moment to recognize Cynthia Taylor, who's in the well with us today. She is a senior construction project inspector for Region II, and she has the lead for operational programs and first-of-a-kind test planning.

Right now, Cynthia is supporting Tim Steadham and Hyung Je, who are also Region II inspectors, who in cooperation with our regulatory partners in China are on assignment at Sanmen, to observe activities such as local leak rate testing, plant monitoring system testing, passive core and containment pre-operational tests.

We receive weekly updates on our activities, and to date they have suggested several refinements to our inspection and plans and what's very valuable is this is based on our firsthand observations of these tests. Tim and Hyung are pictured with their counterparts in China in the lower left portion of this slide.

The photo in the lower right hand corner is the first course of the prefabricated shield building panels being installed at Summer Unit 2. This is a unique structure and early communications to assure that the constructed building meets the licensing basis will greatly help facilitate our inspection activities.

The staff has conducted two public meetings with the vendor and licensee to establish a common understanding of how the critical parameters will be translated into the construction drawings.

To stay ahead of future resource and first-of-a-kind challenges, and with a shared goal of having high quality, highly trained operators licensed when these plants are ready to load fuel, the staff is working to identify and resolve potential challenges to the time frames

associated with administration of the written exams, simulator operating exams and in-plant job performance evaluations. We do expect to have these issues resolved by the end of this year.

To address the last bullet on this slide, which has to do with resources and the future, Region II has employed a resource management strategic initiative to cross-train staff in various disciplines, including operating reactors, fuel cycle facilities and construction inspection.

We have established training and rotational priorities for all Region II staff who want to broaden their knowledge base. We also support those who want to remain focused in a particular expertise, and encourage them to use that expertise in other mission work such as supporting licensing reviews when needed.

These efforts will assure that all staff are engaged in meaningful work, while we retain our unique expertise if at some time additional construction projects emerge in the future.

Slide 22, please. In 2014, the staff issued an assessment of our readiness to transition from construction to operation. This was the report. This report contains 21 readiness items and corresponding recommendations, to prepare the Agency for the AP1000 transition to operations.

Key items include development of training programs and updating our operational procedures across the offices, to reflect the unique safety features of the AP1000 and the new risk models that may be associated with that. Region II is a key partner in implementing these recommendations, and we're focused on Item 21, which is the training and development of operational staff to become residents at these future sites.

Our plan will be heavily informed by what we are doing at the Watts Bar Unit right now, which involves the construction resident staff transitioning through pre-operational startup testing into plant operations, adding operational skill sets at certain transition points, and then reassigning construction personnel back to other mission work, as the facilities transition into the reactor oversight process.

So that concludes my prepared remarks. I will now turn it over to Michael Cheok.

MR. CHEOK: Thank you, Laura and good morning Chairman, Commissioners. Slide 24, please. The vendor inspection program has continued meeting our objectives. We continue to verify the effective implementation of vendor quality assurance programs, and to verify that design requirements contained in the licensing documents are correctly implemented into engineering, procurement and fabrication activities.

We are verifying that licensees are providing effective oversight of the supply chain, and that the quality of materials, equipment and services supplied by vendors is consistent with regulation.

We have provided timely allegation support at vendor facilities. Our staff had a busy year, completing 39 inspections, with an emphasis on suppliers and on fabrication and test facilities that support the construction at Vogtle and V.C. Summer.

Vendors were selected based on their performance history, the complexity and safety significance of the product or service and targeted reviews of Inspections, Tests, Analysis and Acceptance Criteria or ITAAC. In 2015, we performed 14 inspections of vendors working on ITAAC-related components and services.

The staff identified four findings that must be addressed by the licensees before fuel load. Three or four findings associated with qualification testing. The fourth pertained to improper controls of measuring and test equipment. We also performed several inspections in support of the operating reactor fleet.

We identified several safety issues including the under-irradiation of equipment required for environmental qualification; the failure to identify issues that could cause battery failures; the use of inappropriate materials in safety valves; and the shipment of a faulty power range detector to a site.

The photo in this slide is from an inspection of V.C. Summer reactor vessel at Doosan Heavy Industries in South Korea.

Slide 25, please. At previous Commission meetings, we informed you of several issues with the design and fabrication of components for the AP1000 plants. We have seen progress in each of these areas. The AP1000 uses first-of-a-kind design for squib valves in several safety significant functions.

There were challenges associated with the design validation and qualification of these valves, including issues that were NRC identified. Other concerns included water leakage into the valves and material control issues. As a result, the vendor has implemented design changes and has retested the valves using an augmented test program.

We have observed several of these tests and have reviewed test results and test procedures. With final testing scheduled for next month, it appears that the previously identified issues are coming to resolution.

There were also several challenges associated with the design and manufacture of AP1000 reactor coolant pumps. These included a failure of truss bearings during loss of cooling water test, and a failure of a truss shoe clip during operational testing.

More recently, a small fatigue crack was identified on a pump impeller following endurance testing. The RCP vendor has informed us that they have identified the causes of these failures, and have implemented design changes.

Over the past 15 months, we performed two inspections to observe RCP test activities, and to review the vendors' problem identification and corrective action processes. Our next inspection is planned for January of 2016, during the fabrication and testing of the RCPs that will be shipped to Vogtle and V.C. Summer.

Inspection of safety significant digital instrument and control systems for AP1000 is ongoing. Over the past year, we focused on two issues: the protection and plant monitoring system or PMS, and the integrated system validation for the AP1000 main control room design.

The PMS inspection found that the vendor programs are generally adequate, but we did identify three findings associated with ITAAC, two related to qualification and one related to the safety to non-safety system isolation.

This integrated system validation inspections identified simulator fidelity issues that could affect the ability to train and to test reactor operators. The vendor is actively working to resolve these issues.

As you're aware, the NRC has documented a significant number of issues associated with the AP1000 module fabrication. I have

encouraging news in this area. During our December 2014 inspection at CB&I Lake Charles, we observed improvements in their safety culture. We also noted that the facility's processes are now capable of addressing safety issues, to prevent their recurrence.

We will continue our -- to monitor activities at CB&I Lake Charles, and also other vendors that are fabricating modules. The photos on this slide show inspection activities on the heat treatment reactor coolant system piping, and testing of the AP1000 14 inch squib valves.

You can get a good idea of the uniquely large size of the squib valves by looking at the inspectors. They're standing in the background of the second picture.

Slide 26, please. We have continued to be more risk-informed in selecting facilities for inspection, as well as in our inspection scope. Our inspections are now more technically focused, with emphasis on qualification and testing and on design work, especially those associated with targeted ITAAC.

As discussed in our July Commission briefing on ITAAC, we have implemented a vendor inspection module in the Construction Inspection Program Information Management System. With this module in place, construction inspection and vendor inspection activities are better integrated.

Construction inspectors and ITAAC reviewers now have ready access to all ITAAC information and findings by component. For better efficiency, the NRC continues to participate in joint inspections through bilateral agreements in the Multinational Design Evaluation Program.

In 2015, we participated in seven vendor inspectors involving regulators from Canada, China, France, South Korea and the United

Arab Emirates. The photo on this slide shows inspectors from the NRC and from the Chinese regulator in front of the top portion of the reactor coolant pump.

This bilateral inspection occurred in July, and focused on the results of an RCP endurance test. Johnathon Ortega, sitting behind us today, is a key member of our inspection staff, and he was one of the NRC representatives at this inspection.

Slide 27, please. An important improvement in the vendor inspection program is the implementation of the recommendations from the San Onofre Nuclear Generating Station Lessons Learned Report. We have documented a process to conduct design verification inspections at vendor facilities during the fabrication of safety-related major plant modifications.

We are coordinating with NRR and with the regions to identify situations for these inspections. Yamir Diaz-Castillo, also sitting behind us today, has been instrumental in leading this effort. Earlier Frank Akstulewicz discussed licensing activities related to NuScale and to small modular reactors.

Our vendor inspectors have already been on site at NuScale, and have inspected their QA program as well as the initial design testing. We have also begun to look at potential inspection issues that may arise during the fabrication of SMRs. Because most fabrication and ITAAC activities will take place at the vendor facility, small modular reactors present a new challenge for vendor inspection.

We are looking into the most effective ways for NRC oversight at these facilities, and we will inform the Commission of potential policy issues in this area. On a related note, the staff is continuing to work

with stakeholders on a set of standardized ITAAC, which could be applied to the upcoming NuScale submittal, as well as to all future design certifications.

Although some differences remain in the formalizing of a standardized list, substantial progress has been made to enhance the clarity and consistency of ITAAC. The photo on this slide shows the NRC staff during our inspection last month at the NuScale integral system test facility.

This scale model will be used to obtain real time integral effects data to support plant transient analysis and computer modeling. This completes my presentation. Glenn Tracy will now talk more about our international activities and about Project AIM.

MR. TRACY: Thank you, Mike. Slide 28. The New Reactor Business Line international mission continues to focus on leveraging our resources and extensive regulatory knowledge with the experience of our regulatory counterparts around the world.

We proactively engage with the international community through mutually beneficial exchanges of information on the regulatory oversight of design, siting and the construction of new reactors.

We engage the broad international community through vendor inspections, strategic bilateral cooperation, the multinational design evaluation program and other multinational venues and activities. The New Reactor Business Line continues to gain important insights for our oversight of the four AP1000 sites under construction in Georgia and South Carolina, through our bilateral interactions with the NRC's Chinese regulatory counterpart, the National Nuclear Safety Administration.

Over the last year, we've held multiple information exchanges through workshops that focus on key areas of mutual interest.

The NRC staff have been and they are on foreign assignment at Sanmen, witnessing ongoing construction, design changes, reactor operator training, licensing and start-up testing.

Next month, NRO and Region II staff will participate in an initial test procedures meeting at Haiyang, which will further NRC staff insights on our regulatory oversight at the AP1000 sites in the United States and our commissioning tests. New Reactor Business Line staff continue to hold key leadership positions in the Multinational Design Evaluation Program, which fosters cooperation among 14 countries in evaluating the designs of new power plants, including the AP1000, the EPR, the APR1400 and the ABWR.

Staff participate in seven working groups and we lead three. We gain valuable insights from the participating countries that are also reviewing similar applications, and overseeing the construction of similar designs. This week, we're leading an AP1000 working group meeting here in headquarters with our colleagues from four other nations.

Another way the New Reactor Business Line leverages its resources is through the Vendor Inspection Cooperating Working Group. The staff uses its participation in the Vendor Inspection Cooperating Working Group to benefit from the results obtained from other regulators' efforts at inspecting vendors, to participate in joint multinational inspection of vendors in accordance with common quality assurance and management requirements, to understand the similarities and differences between regulators' approaches and quality assurance requirements, and to focus vendor attention on the risks of counterfeit, fraudulent and suspect items.

These joint inspections are primarily used for planning and prioritization of the future U.S. NRC inspections. However, if NRC inspectors

should identify issues that need prompt NRC interaction, an NRC vendor inspection will in fact be planned and executed.

Additionally, an NRC inspector is allowed to independently issue inspection reports for issues identified and inspected during these multinational joint inspections. Over the last year, the NRC staff has participated in joint vendor inspections with France, the United Kingdom and South Korea.

These activities provide us a very unique opportunity to enhance our efficiency and effectiveness in global vendor oversight.

Slide 29. Our highlight, as Mike Mayfield mentioned, we're leveraging our regulatory experience in our global engagement on small modular and non-light water reactors, by establishing and in fact leading separately with IAEA and NEA, a regulator's forum for SMRs, and a group on the safety of advanced reactors.

Slide 30, please. The Project AIM recommendations emphasize the proactive planning and agency focus that the New Reactor Business Line staff have been trying to undertake for some time. In addition to contributing to the agency-wide recommendations, the staff is moving forward with implementing two specific recommendations in Project AIM: evaluating the use of Centers of Expertise and developing a transitional plan for the merger of NRO and NRR.

The recommendations to evaluate the effectiveness of our existing Centers of Expertise to determine whether expansion of this organizational model will lead to greater effectiveness, efficiency and agility in accomplishing the Agency's mission. As the Agency's Center of Expertise for vendor inspections and the recipient of effective support from NRR's COE

on electrical engineering, we have considered our experiences and lessons learned to develop with NRR a joint NRR/NRO office instruction.

We have also worked with our partners across the entire agency to develop a definition of COE's for agency-wide use, and to identify and evaluate candidate COEs. The staff is on track to provide to the Commission a paper on this topic in November.

Slide 31. Regarding the transitional plan for a merger of NRR and NRO, we have continued to openly discuss this topic with the entire NRO staff, and we're developing a business case for a potential merger, which will include a description of projected efficiencies, challenges, as well as decision-making targets.

The business case will take into consideration the anticipated future work of the New Reactor Program that you've heard about today, and develop specific milestones considering the lessons learned from the formation of NRO in 2006, as well as the recent merger of NMSS and FSME. The proposed plan will be communicated to the Commission next year.

Slide 32. In summary, we hope our presentation today has in fact demonstrated our high level of engagement and our ability to deliver safe and timely license amendments to support ongoing safe construction, our safety impact on vendor fabrication and onsite construction, our sincere efforts to continually improve and safely complete the current design certification and combined license applications before us, our efforts to prepare for small modular and advanced reactor design applications. This concludes our presentations and we're very happy to respond to your questions. Thank you.

CHAIRMAN BURNS: Thank you, and we'll begin this morning with Commissioner Svinicki.

COMMISSIONER SVINICKI: Well good morning and thank you for your presentations. I always look forward to these business line meetings, because I think that as we're focused a lot on where we're headed under Project AIM, we need a clear view of where we are. I think that these business line meetings, while perhaps a little bit mundane, give us that moment to look at where we are.

I'll blame Mark for this, since he made these eloquent musings on his career. He's made me a little bit kind of nostalgic, and I'm thinking that, as I listen to each of you talk, that my time here substantially overlaps with the existence of NRO. I think you mentioned, Glenn, it was established in '06. I was thinking '07, but maybe that's when it really kind of coalesced and got up to operational tempo.

So when I reflect on the significant achievements over -- for the Agency as a whole over that time, although all of our nuclear safety and security missions is very essential to the country, the really signature high visibility projects have been -- it's been the Office of New Reactors that's had the lead on that during my time here, the Vogtle and Summer activities.

There is really important -- there are really important milestones that are coming up in the next 12, 18, 24 months for again the New Reactors Business Line, where NRO takes the lead there. I know you've got a lot of other organizations to support you and Region II, of course, has a very essential role there.

But Glenn you -- one of the last topics you talked about was Project AIM, and looking at our structuring, our work forecasting going

forward. Whatever happens there, this is again my view, but whatever happens with the Office of New Reactors, the truth of the matter that some of our highest visibility work is going to still be this business line, that is still true, no matter what form.

Organizations, to my mind, are separate and distinct from the important work in front of us, and I couldn't help but reflect on my time at the Department of Energy. Began in their Idaho Operations Office. In my time there, I was personally reorganized three times in five years.

But the one thing that was clear to me that could cause a lot of anxiety if you're an employee, and you know, was a nuclear engineer and I got moved around a lot, but what was made clear to me was not my capabilities and talents, such as they were, had a place in the organization.

So as we look at the future of this business line and the women and men working in the Office of New Reactors, I hope we've provided them that same assurance that their talents and capabilities are needed and are essential to the success of the agency moving forward.

You know, the Office of New Reactors, when we talk agility and responding to circumstances and drivers outside the agencies, I think the Office of New Reactors has felt that the most keenly. Not due to anything under their control, but just under the extremely dynamic nature of energy markets in the U.S.

Our Commission appeared before a Congressional committee earlier this month, and we were asked a lot of questions about clean power plant and what do we project and forecast. The Chairman very capably did an elegant form of, you know, that's really -- we're not in that forecasting business, and he did it better than I'm doing it right now.

But the truth is the one thing we know about the future is that it's going to surprise us, and probably won't be what you and your team have laid out in terms of we're getting this, we're going to do this ESP and these SMRs and things like that. It will probably be different than we think.

But you know, I've been outspoken about my skepticism and concern about Centers in those three reorgs in five years. One of them was what DOE called a matrix organization. As an engineer I was told -- this sounds pejorative, but this was some of the talk at the time is, you know, you felt like you were in a call center and you just like okay, we'll you're just a generic nuclear engineer. We're going to dispatch you today. You're going to do this tomorrow, you're going to do that.

I worry about the Centers of Expertise and I acknowledge you're still looking at it. But I worry about aligning it with some of the culture and values of NRC, and something that I think is a strength historically here of having project managers and continuity on tasks, because I think there's a lot of complexity in what we do.

I hope that we don't kind of go to the shiny object of Centers of Expertise, and that we look at, you know, what it is to be a person here working on a project of long duration. What ended up happening at DOE, to be honest with you, is a lot of us in the matrix pool just ended up getting assigned to long term projects.

So it really, it just kind of didn't make sense for the work that we had underway. So I think we have to look at the work we have. The other thing that, you know, I think that an integrated NRR/NRO makes NRC stronger. I really believe that. Now I know that it is an outgrowth of some dynamic changes outside the agency.

But I wouldn't support it if I didn't think at the end of the day, it made us a stronger and more capable and more agile organization. I want the two organizations to really feel integrated, though, and I'm not accusing you of this. But I don't want people to feel surplused or warehoused or housed in a center somewhere, because I think that we do have a lot of tasks that benefit from long term continuity.

So I look forward to what the staff will send in November. Bill Dean is a very blunt, outspoken man and he sat with me and he's like "You don't like Centers at all." I said well let me explain to you some of my concerns about moving to that as an organizational model.

So I do know that when I got reorganized, there was anxiety. But there was also excitement, because it was kind of like what does DOE see for me next. I hope also that the folks impacted by the business plan that you're developing feel that excitement as well.

Again, I want them to be assured that the direction that the Commission has set and the Project AIM SRM to look at that I think is an outgrowth of believing it makes us stronger and better.

It's not to just deal with some pesky fact of life changes. But I think it's really to the good of the organization. I do want to acknowledge, as Laura said, the hard work of so many inspectors. You go to Watts Bar 2 and you go to Vogtle and Summer, and again that is really the boots on the ground.

I know we use that phrase a lot, but the impressive work that's been done, but also then the licensing piece of license amendment requests and other things that accompany that. I would hate -- whatever the life cycle of the Office of New Reactors here at NRC, I think that there are just

tremendous accomplishments that have occurred that are yet to come, reviews that take tens of thousands of hours of NRC staff resources, you know.

I don't see this as something that it was like oh, the rise and fall of, you know, the nuclear renaissance. I see it as I think when the NRC historian is writing about this period of time, a very, very proud period of time in NRC's longer-term narrative story of all the things that they've achieved.

The other thing that I was looking at in preparation for the meeting today was the tremendous -- if you go back to the Atomic Energy Commission, the really interesting history of how many non-larger light water reactors there were in the origins of the U.S. nuclear program.

Although that was a predecessor agency of the AEC, I think it gives some truth to this notion that it isn't that the U.S. system can't accommodate anything different. I think that another key element of moving forward on an organizational change though is having that kind of agile, ready reaction capability.

It's another, to be honest I'm belaboring the Centers. But that's another concern of mine about the Centers, is I would like us to maintain some very distinct area where we knew that we had that rapid reaction force, should we suddenly in the United States have a strong interest in SMRs or need to have a surge capacity on new reactor thing.

I hope whatever you're looking at for a business case will preserve and have at the ready the opportunity to surge that in the nation's interest should we need to do that. So that was a lot of what I was thinking about. You do a lot of routine reporting, Glenn, on your activities.

So there wasn't a whole lot that I heard today that I had a lot

of questions about. I would offer you or Mark or both of you an opportunity to react to anything I've said.

MR. TRACY: Well, I appreciate those insights and I hope I can assure you. Our heads are not hung low in NRO and the family of NRO, and we are proud of what we have accomplished with our incredible partners. There's no feelings of running for the doors by any stretch of the imagination, despite our openness and transparency of talking about our situation, the legitimacy of being agile and moving resources where they need to go, because it truly is a priority.

I run into our former NRO employees in the elevators in the first building, and there's still an incredible fervor of realizing what they're doing. They miss NRO and they love what they're doing. It's that combination. For the COEs, to get specific, I couldn't agree with you more. The combination of allowing the agility of a COE, but still making sure that those personnel realize that they're actually partners with you directly in your own office, whether they're housed in NRR or wherever they're housed.

I know each of the branch chiefs and unit supervisors and many of their staffs in the COEs currently, from electrical engineering to allegations, I meet with them. They meet with me. We are directly engaged and aware of each other. They attend my meetings. We think about them for their performance appraisal inputs. We think about them when we're thinking about awards.

So there is this personal touch that's quite different than what you had experienced. It's not perfect by any stretch, and there are areas where we can continue to fix ourselves or get organizational development help for areas where we want to improve in the future. There's

not any question about that.

But I would point out to you that I'm enthused by the idea of marrying these concepts in the ones we will propose to you, as well as even further ideas. Since you are a proponent of this ultimate one reactor office, if it's right scope and size and yet able to be agile for your future, the COEs do a tremendous amount of allowing us to be able to move in that area and still feel unified in purpose, in very specific areas like vendor inspection, like electrical, like in allegations, potentially future rulemaking.

So I'm hoping that you've challenged us all here, and not just my own family of NRO, to realize that we have to stay focused on what you presented, but it's in our mind.

COMMISSIONER SVINICKI: Okay, thank you. Mark, did you --

MR. SATORIUS: Just to -- Glenn did a very, very good job in describing some of my thoughts as well. I wrote down some of the things you said. Don't warehouse our staff, and that kind of resonated with me and reminds me, one thing I'm going to pass along to Vic when he gets here next Monday is that there is that concern.

We need to keep the welfare of our most precious resource, our people, in mind as we maneuver through the AIM process, and consider whether we move, how we move forward or make a recommendation to the Commission on how we move forward as far as Centers of Expertise are concerned, and don't warehouse people. Don't make them assets sitting on a shelf that you go pick up and apply and then put them back on the shelf, because that's not what our history has been and shouldn't be what our future would be.

COMMISSIONER SVINICKI: Okay, thank you. Thank you, Chairman.

CHAIRMAN BURNS: Thank you. Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. Thank you all for your presentations. Glenn, I want to thank you and your entire NRO team for the continued safe closure successes and your hard work in those areas across the board, and for the responsible stewardship of agency resources in a thoughtful humanistic way. So thank you for -- and your colleagues for that effort.

Let me start with Mike Mayfield, and I may surprise, you huh?

(Laughter.)

MR. MAYFIELD: Commissioner, you always surprise me.

COMMISSIONER OSTENDORFF: So I had a chance to sit in on a little bit of the DOE-NRC workshop earlier this month, and I heard the Chairman's comments and Glenn's comments and Mr. Kelly and Mr. Kotek from the Department of Energy. I thought that's a very important topic.

So I thank you all for putting that together, and I wanted to get into this non-light water reactor technology license preparation piece as to, you know, we have license fees that we really had to be careful about what we do work on that's not chargeable appropriately to an account on an hourly basis.

We have considerations under Project AIM. Our resources are somewhat constrained in this area. So from a financial standpoint, I understand that there's some limitations on what we can do in advance of the

non-light water reactor application, to actually do some preparation of the battlefield, so to speak.

Do you have any particular thoughts in that area? You mentioned step-wise processes, and I'm curious if you've -- I know you've given this area some thought, but can you share anything with us sir?

MR. MAYFIELD: Yes sir. Gary Holahan and I have had a wonderful time yelling at one another about this. Good spirited, but sometimes it gets loud. The notion that -- what the non-LWR community is seeking is actually two things.

One, they would like a readiness review or licensability review for their technology. So they don't have a complete design, they don't have something that's ready to submit for -- whether it's a CPOL review or a design certification review. But they're close enough that they would like to have us look at it and say do you think this could even be licensable? That gets them the first step in the door with the venture capitalists.

Then they would like to have a process where they bring us pieces of the design to have a review, recognizing they're not going to get a license based on that piece. But if they successfully get through the door with the first piece, then they get the next increment in capital to pursue the design.

What we have been thinking about is, in terms of a readiness review, and this is obviously something as our thoughts would mature, we're going to come back and share with the Commission. But the first thought was well, maybe it's a variant on the sort of readiness audits, readiness reviews we do now for the light water reactors, where before they submit the design cert, we go out, look through the application, are you guys

ready to send this in, yes or no, and provide the vendor that insight?

So is there some variant on that we could develop, that we could provide some unofficial insight back to them about you need to address the following ten items, and oh by the way, you're dead in the water on your fundamental design, or no, this looks like something the staff could work with.

From that, the thought was a variant on what we do with topical reports, where the vendor could prepare, probably using the SRP as a guideline in either a chapter or chapters wrapped up in a topical report, submit that for the staff to review and prepare a safety evaluation on.

It doesn't get them a license, but it gives them more certainty on the pieces that they submitted, assuming they successfully get through that review. Then they can step through the SRP in that process. Eventually they will get to the point where they could wrap up a complete application and submit it.

But the notion of successfully getting through a topical report gives them that increment that they could go back to the venture capitalists and get the next increment in funding. It's something like that, where we wouldn't -- we're not looking at developing Part 50X of the regulations. That's just not tenable at this point.

However, can we do something by subtle modifications to the existing processes that would support their interest? Again, we're starting to put together some ideas. We need to vet them back with senior management and then up through the Commission. I think this is something where we would want to go and have a chat with the ACRS, and get their insights as we go.

But it's things like that that can be relatively low budget, and

still get the community a process that they're seeking.

COMMISSIONER OSTENDORFF: That's very helpful. I appreciate that Mike, and I think that this is a critical area, looking to the future, and I would just encourage the staff, as you're looking at this, you recognize there are constraints. But perhaps in an ideal world, the Commission has recently asked at a hearing would you do it with your king or queen for a day, as far as changing into legislation, when we testified a few weeks ago before the House Energy and Commerce Committee.

I encourage you to also think, you know, if you were redesigning the world in a fee basis approach under our appropriations limitations, if we had a different way of looking at this that saw the resource piece, how might that also optimize maybe a fresh approach that we haven't considered? Thank you.

MR. MAYFIELD: Yes sir.

COMMISSIONER OSTENDORFF: Frank, I wanted to ask you a quick question here. In the context of NuScale, do you anticipate there being any NuScale-specific policy issues that would need to come to the Commission prior to their submission of a design certification?

MR. AKSTULEWICZ: At the moment, the NuScale applicant submitted what they describe as regulatory gaps, where there was some question from a process standpoint about whether it was a policy matter that required Commission action, or it was something that was within the scope of the staff to resolve.

Based on our review of those issues to date, we've not identified any that would arise to the level requiring Commission attention.

COMMISSIONER OSTENDORFF: Okay, thank you. I

also want to thank you and your teams for all the work you've done on license amendment requests and preliminary amendment requests. I think you've got a very well-oiled machine working in that area.

MR. AKSTULEWICZ: Thanks.

COMMISSIONER OSTENDORFF: Thank you. Laura, let me turn to you. I want to add my thanks to that of Commissioner Svinicki for all the work done by the construction inspectors. While I'm saying it, also Mike to your group for the vendor inspectors. I think those are very good news stories. I know that I look at the people here in the audience behind you.

When we have a chance as Commissioners to speak to industry or the international groups, we are very pleased and it's very easy for us to brag about the work that you and your colleagues do, because it's so important and it's so professionally executed. So thank you all and your colleagues who are not here today, both in the construction as well as the vendor inspection programs. It's a very good news story here.

You mentioned very briefly, Laura, Watts Bar 2 licensing. I know that there's things that TVA is still working on. Are there any significant regulatory questions or processes that are under review or of concern?

MS. DUDES: Okay. Well I know Bill Dean is sitting behind me. So in terms of the licensing process, I mean if he wants to jump in, I'll take it at a high level, because we do have -- as we're moving towards the license issue date, where our communications have gotten really tight between NRR and the Region, to make sure we're sharing information.

So I don't see any high level or any issues that are not -- are insurmountable at this point. I think we're just working off. It's almost like

the punch list for your house. So we're working off that. I think from a licensing perspective, they are processing in accordance with the NRC's rules, the final safety evaluation report and working through that.

From an inspection perspective, we have a couple of functionality tests that we need to see, there are Three Mile Island action items. We're trying to work with the licensee. We actually have nine inspectors out there this week, and they will follow these items, so that we can sort of get down to the punch list.

Of course, we need to make it clear as we talk to the staff that there's no line that, you know, bright line that says okay, we're done. We're going to issue our memorandum to Mr. Dean, to say okay, we've completed the majority of our construction inspection program, you know. We think that you, you know, if everything else is good with the license, you can go.

Because as soon as that license is issued, a whole other series of regulatory controls comes into place, including technical specifications, license commitments and other things. So the NRC presence is similar from the day before the license and the day after, and it's just a different set of controls.

So that was a long way to say well, I don't see the big ticket items, but we're working off the smaller.

COMMISSIONER OSTENDORFF: I think I see Mr. Dean nodding his head in agreement with your statement. I do not want to provide him an opportunity to go the podium and say anything about the San Diego Chargers.

(Laughter.)

COMMISSIONER OSTENDORFF: Sorry Bill. My time is up. Thank you all.

CHAIRMAN BURNS: Commissioner Baran.

COMMISSIONER BARAN: Thanks. Glenn, I want to start by asking about the SPAR models that the staff uses to verify licensees' PRA results for current operating reactors. These models provide independent agency assessment of licensee performance in the reactor oversight process.

Is NRO working with Office of Research to develop SPAR models for the AP1000 and ESBWR, and if so, do you expect those models will be ready when Vogtle and Summer are expected to enter operation later in the decade?

MR. TRACY: We do, Commissioner, encourage the use, and also have been working with Office of Research the development for the new reactors on SPARs. In fact, we have quarterly meetings that we routinely deal with, in order to get the status updates, and they are on track.

In fact if you don't mind, if you can take two seconds, John Monninger can provide you a very quick update of that if it's possible.

COMMISSIONER BARAN: Great.

CHAIRMAN BURNS: John, just identify yourself and position for the record.

MR. MONNINGER: Yes. John Monninger from the south. I'm the director of Safety Systems and Risk Assessment in NRC's Office of New Reactors. As Glenn mentioned, we've been working with NRC's Office of Nuclear Regulatory Research since 2008, developing the SPAR models for the various reactor designs.

We've significantly advanced on those models for the AP1000, and we expect to be using those for once the plants become operational. They're very beneficial tools for the NRC in conducting our independent assessments. We use those in the oversight process; we use them in the licensing process; we use them in the enforcement process.

As a matter of fact, we use the SPAR models within the NRC's Operations Center. So you know, the SPAR models are also used for NRC's generic issues program, in support of doing regulatory analysis for our rulemakings. So we do see quite a lot of value in developing the independent SPAR models for our new reactors.

COMMISSIONER BARAN: Thanks, John. That's helpful. Glenn, do you have anything to add in terms of the value you see in the SPAR models?

MR. TRACY: I basically feel very similarly, as what John just presented, that the independent capability to be able to validate the legitimacy of the profiles and the risk insights are valuable in terms of our licensing and our ongoing oversight of our sites.

It's a part of what the new reactor models have been in terms our ability to validate the designs as we see them.

COMMISSIONER BARAN: Okay, great. Thanks. Mike, I'm going to -- far away Mike. Close Mike, far away Mike. You mentioned SONGS lessons learned initiatives, including a pilot design inspection program at vendor facilities during the fabrications of components that would be used in major plant modifications. My understanding is that the pilot inspections would be performed by 2017.

Can you walk us through a little bit? What needs to happen

between now and then to get those inspections going and completed?

MR. CHEOK: So there are two actions from the lessons learned report. The first one, as you mentioned, was the pilot process. But to support that pilot process, the staff will have to identify what we mean by a major plant modification, and also -- and so the staff has completed the task. We have identified things like replacement steam generators, vessel heads, control rod modifications.

Also we talked about modifications for power upgrades. We talked about modifications in response to NRC orders and compliance backfits, maybe new fuel designs. So we have a list of what we think could be potentially major plant modifications. This list is obtained from the work group, from NRR and Division of Engineering, and from all four regions and from NRO, and we have come to this list.

The second part of the -- before we go into the pilot process, is also to identify a process as to how we should prioritize, whether we go out to the plants to inspect these major plant modifications. Again, you know, we look at things like safety significance of the modification. We look at the complexity of the design, whether it's a new design or whether it's a design that's just basically like for like, really like for like.

We also would look at things like the vendor's past history, performance history. We look at things like whether NUPIC or the industry group, or whether NRC inspectors have been at this vendor recently and what the findings are.

So that there are processes that we have now identified as to, you know, what we need to do before we go carry out the pilots. As you say, we intend to finish three to four pilots by 2017. At this point, we are

working with our regional counterparts and with NRR on trying to identify the best situations and the best places to go to begin the pilot process.

COMMISSIONER BARAN: Okay, and do you have a sense of when the inspections would begin?

MR. CHEOK: It's hard to say. I think we have -- we did an inspection in Canada for a steam generator replacement project. So that would be part of the lessons learned.

We need to determine if we need to look at, you know, if there is another steam generator replacement project going on right now, and it's being built in Spain. We're trying to determine if it's worth for us to go, if this design is different enough or if there's going to be enough lessons that we can learn, to inform whether we go forward or not.

So it depends on the identification of modifications by the regions and by NRR as to, you know, what we go see as part of a learning process.

COMMISSIONER BARAN: Okay, and what's the focus of the inspection going to be? Is it going to examine the actual design engineering of a component as well as the fabrication? What's the -- what will you be looking at?

MR. CHEOK: It would be both. So we will actually -- and we have been doing this already with our vendor inspections. We would be looking at the design inspection, and we will also be looking at the fabrication processes and testing processes, etcetera.

It could be done in two phases. We could do a first phase at a facility where we look at the design, and then we'll go to the fabricating -- the vendor facility where we would review the transfer of the design into

fabrication and engineering.

As a matter of fact in our inspection at NuScale, we looked at things like the scaling factors. We looked at the computer codes, in addition to looking at the test facilities themselves. So we are already doing that and, you know, we are just -- and we have inspection procedures written to do that.

COMMISSIONER BARAN: Okay, thanks. That's very helpful. You brought up NuScale there, and one question I had is with respect to oversight of small modular reactor fabrication, how do you see those inspections differing from the current vendor inspections?

MR. CHEOK: So as I mentioned earlier, we expect that a lot of the modules themselves, and also a lot of the ITAAC activities, will reside in the module facility versus in the current plants where they happen -- most of the activities will happen at the plant site itself.

So this brings up the different challenges that I talked about. For one, you know, what process should we use for inspecting? So should it be the construction inspection process, or is it the vendor inspection process.

So we're looking at how we'd be documenting the findings. Would it be through notice of non-conformance, as we normally do now with the vendors, or would it be through the construction ROP process, for example?

You know, when you're looking at potentially the need for resident inspectors at a vendor facility, do we need that? So things like that we look at, and I think fee billing. We talked about that earlier, you know. If you're inspecting at a vendor facility for a lot of the work, how do we do our fee billing?

And so that potentially could be policy issues, but we are trying to work through them, to see if there are issues that we need to bring up to the Commission.

COMMISSIONER BARAN: Okay, thank you. I just wanted to follow up with either Frank or Mike, whoever makes sense of this. Commissioner Ostendorff had a question about do you expect any additional policy issues on NuScale. I just wanted to broaden that just a little bit and ask is that the expectation for SMRs generally? Do we see any additional policy issues that the Commission would need to weigh in on?

MR. MAYFIELD: We -- my area deals with the generic policy issues, as opposed to specific design issues. Generically, we expect to bring you a paper shortly after the first of the year that will look at the nexus between mechanistic source term technology issues and siting considerations.

The business models that have been discussed for SMRs are where they would put them on sites to replace older fossil fired units. The problem there is that population centers have moved in closer to those older sites. So now you start to run into siting considerations, if they really want to follow through on that business model.

So we're looking at what does that really look like? What's the conflict between emergency preparedness, EP zones and siting criteria? So we've just started to explore that internally, and that will be a paper that you'll see at the end of the calendar year, that will flesh out that issue and put it in front of the Commission.

The other one that we have talked about since 2010 is insurance and liability considerations, essentially Price-Anderson. Many of

the SMRs fall into areas where they wouldn't trip the secondary insurance considerations for a single module. Yet if you look at multiple modules in a common facility, think about NuScale, should they trip that?

We have just recently engaged counsel to flesh out this issue. Is it a policy matter? Is it something that would require a legislative remedy? What is it, if anything? So we'll flesh that out in the coming weeks and bring that forward. That also spills over to the smaller, non-light water reactors, because some of their business models aren't to produce electricity; they're to produce process heat. Yet legislation and regulation talks about megawatts electric.

So there's a quirk there that we're going to have to address. So it's a couple of those and some of the previous issues, multi-module considerations, begin to factor into these. So we're looking at how do we pull these together, so that we're addressing the range of issues put before you?

So it's not a large number. But the ones that are still out there may be a little thorny.

COMMISSIONER BARAN: Okay. At one point, the staff thought or has tossed around the idea that the number of control room operators per unit might be something that rose to a policy level. But what's the latest thinking on that?

MR. MAYFIELD: We had worked through that specific to NuScale some time back, and it concluded we could work that at least initially through exemptions. NuScale is changing their concept of operations in the control room. So we're looking at it again. But we don't think -- so the basis for an exemption may change, or at least what we would expect to see. We don't -- still don't think it's going to rise to a policy matter.

COMMISSIONER BARAN: Okay, thank you.

MR. TRACY: I would just add, if I may, that that's one we're closely monitoring, and we're going to be very closely communicating with the Commission in terms of where the final, you know, concept of operations falls out. We'll keep you well informed.

COMMISSIONER BARAN: Thank you.

CHAIRMAN BURNS: Okay, thank you, and my colleagues have touched on a number of subjects of interest to me. So I appreciate that, and just on the Price-Anderson.

One thing coming from my past experience, it may be worth looking at engaging in some of the -- in terms of the international community, because from the standpoint of some of the other liability conventions, how you treat the size of the facility or the potential impact can have -- can have an impact on what the nature of the financial requirement or the insurance and things like that.

Granted, we have national legislation that takes primacy, although we are now -- U.S. is a member of the Convention on Supplementary Compensation. But there may be some learning from that, in terms of how what are considered smaller installations are approached.

I wanted to cover a number of areas, some of them following up on some questions or issues that have already been raised. But for example, one of the things that may be asked in terms of Laura this, how are we sort of preserving our experience, if you will, in terms of the construction oversight we're doing on Vogtle and Summer?

Because if you say that, you know, there's some anticipation. We may have some significant gap. There may be some

significant gaps, and my impression too is from -- again, from an earlier part of my career, in terms of sort of assisting inspection staff or overseeing construction programs in the late 70's and early 1980's.

This construction experience too has been a little bit different. So I'd be curious. How are we trying to preserve learnings that we've had from the experience we've gained?

MS. DUDES: Okay. So there's a couple. So there's the technical learnings, which thankfully we have our CIPIMS system and well documented understanding about the challenges we had early on in construction. I think the dialing up of the construction organization and then the slow dial down as well, there's also quite a bit that we can learn from -- in fact, I had this conversation with Vic as I was walking out the door to get on the plane, which is we've learned a lot about what we need when, and timing.

So we need to capture that if we have to dial back up again, because -- so that's one piece, in terms of how many people you need to bring on and how fungible they can be early on in the process. So how are we preserving that? We plan to do a bit of a lesson learned. I will tell you I came down a few months ago and need to be looking at the organization, right now keeping everybody focused on getting Watts Bar across the line.

But we're already scheduling a few sort of organizational reflections and how should we be organized going forward if we have this four AP1000 situation for the next couple of years, and there's nothing else on the horizon. So we need to figure out how do be able to dial up and dial down more gracefully, what systems are needed to support what level of construction.

We have a lot of great computer systems and scheduling

systems. How big do they need to be for projects? So we plan to capture those lessons learned. The last point I'll make, if you think about it, is that the unique construction inspection skill set is really of a civil, structural, that very strong piece and sort of rebar, concrete codes.

Once you get past that civil area, we have a highly fungible organization in the NRC in all four regions and headquarters, in terms of people who know ASME code. We have a subset of pretty good welding engineers. But then you get into electrical and system testing. I think we have -- we've got to look at ourselves in the whole in the future.

So we will preserve those lessons learned from the dialing up of the construction organization, and then the slow dial back down.

CHAIRMAN BURNS: Okay thanks. Thanks a lot. I want to sort of moving off of that and one of my impressions, and we've heard a lot of discussion today in terms of the importance of oversight of the vendor and the supply chain. I think we all recognize that this is -- it's much more of a global supply chain.

Vendor inspection has always or vendor quality, and I'm not talking necessarily the large, you know, the large components that we think of. But the supply chain in terms of the quality has always been a challenge. It was a challenge during what I'll call the first generation construction. It is now.

So a couple of questions I have related to that is one, what -- what do we do in terms of -- in terms of our monitoring issues regarding, that arise internationally, that have arisen internationally with respect to the quality of parts, and basically counterfeit parts or sub quality parts in the supply chain? What do we do to engage on that?

MR. CHEOK: We have continued to interact with our international partners through the NEA and through the IAEA, in terms of getting information and operational experience from the other countries, in areas of operating reactors as well as in construction inspection.

We have also started an initiative, where we have engaged our international partners in reporting counterfeit, fraudulent or suspect items, with a very specific code that could be entered when we have such incidents that would happen. We have continued to investigate and to inspect vendors, together with, for example, our South Korean counterparts when they were looking at the cable issues that they have.

So we continue to keep abreast with our international partners, and we have databases and processes in place that would encourage the reporting of such incidents.

CHAIRMAN BURNS: And again, one other question related to vendors in terms -- you talk about international inspection. The question there again I would have is are we getting the access that we need? So is our access to facilities that are either forging, constructing, whatever parts?

Is that -- is it -- does it meet our expectations and how -- and, you know, are there particular challenges in terms of conducting those types of inspections and feeding those results back into our system?

MR. CHEOK: At this point, the short answer is no. But I think we have been concentrating and focusing mostly on the larger components, and with the larger components, there is a very defined customer. So the vendor would know that we are there to look at what they're doing for those customers.

I'm not quite sure what the reception would be if we were going to show up unannounced, let's say, at a vendor overseas that would be manufacturing somewhat smaller parts for our plants.

CHAIRMAN BURNS: I have a feeling it might what it was, the experience was in the United States on some things. Let me understand, because we mentioned in terms of, again the international cooperation. But it might be helpful to just explain a bit the difference between in effect three fora that have been described.

We have the Multinational Design Evaluation Program, for which OECD NEA provides a secretary. We talked about a new project that's, I presume, under one of the NEA committees on advanced reactors, and then the IAEA SMRs. Could you elaborate, someone elaborate a little bit on what the differences are and what we're -- what we expect to see?

MR. MAYFIELD: Well, the Multidesign Evaluation Project I will leave to Gary, who isn't here. But in terms of the IAEA and NEA, the Group on the Safety of Advanced Reactors, the GSAR group, is a joint group under CSNI and CNRA. So it has both of those pieces. The focus on the CSNI piece is what research would be needed to support regulatory action, not what research is needed to develop technologies. So it's focused on the regulators.

CHAIRMAN BURNS: So in a way, because I do know something on MDEP, it's in a sense a step short of where we are with MDEP, where we're actually looking at designs -- actually looking at designs in the different -- the different committees with the design focus?

MR. MAYFIELD: Exactly. So what we were trying to do with NEA is to get the regulators with common interests on non-light water

reactors in the same place at the same time talking about the same issues, because they don't have the rich dialogue and the history of dialogue that we have on the light water side. So we're trying to come up with a scheme to get people in the same place at the same time.

The IAEA piece is similar concept, but less focused on -- well, it's not focused initially on the non-light waters. It's focused on the light water SMRs and the interest there, internationally those tend to be, I think the in vogue phrase or the new entrant countries, the newcomers, folks that don't really have a mature regulatory structure but want one.

So the idea here was to bring people together with a common interest in the small PWRs, and there are a few around the world, and then get them to work together to look, what are the common policy issues, what are the common technical concerns, and start helping one another and as much as anything as us helping them.

But one of the things that it is having is reducing the number of drop-ins we have from all of these folks. So we bring them together in Vienna to share those insights, to learn from us and us to get insights from them frankly. So it was more a small modular, small PWR focus in Vienna.

There is interest from those countries in the non-light water technologies. So we've been pushing at colleagues in Vienna to show up in Paris, and similarly we're looking at, since Debbie Jackson co-chairs the forum, it's a little easier to make sure we're getting the information flow from the NEA group back to Vienna.

But we're trying to make that a little more fertile ground for dialogue between Paris and Vienna organizations. Does that get to your question?

CHAIRMAN BURNS: No, no. That's helps a lot, Mike. That answers my question. Thanks a lot. Mark, do you want to -- okay. Anything else? Well, I want to thank you all again for the presentations. It's an important opportunity for here.

As Commissioner Svinicki said, to sort of hear in concert the activities and quite diverse activities that undergoing from -- we were just talking about, in terms of looking forward in terms of the potential for advanced reactor designs, as well as small modular reactors, hearing about the construction experience we have today, as well as the licensing challenges that Frank talked about, and this important interface, which is slightly different than I think we really experience in terms of vendor, looking at vendors.

So again, I appreciate the presentations today, and with that, we are adjourned. Thank you.

(Whereupon, the above-entitled matter went off the record at 11:42 a.m.)