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U.S. NUCLEAR REGULATORY COMMISSION

BRIEFING ON THE NRC'S CONSTRUCTION ACTIVITIES

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TRANSCRIPT OF PROCEEDINGS

Public Meeting

Before the U.S. Nuclear Regulatory Commission:

Allison M. Macfarlane, Chairman

Kristine L. Svinicki, Commissioner

George Apostolakis, Commissioner

William D. Magwood, IV, Commissioner

William C. Ostendorff, Commissioner

APPEARANCES

External Panel:

Buzz Miller
President, Nuclear Development, Southern Nuclear Operating Company, Inc.; Executive Vice President for Nuclear Development, Georgia Power Company

Jeff Archie
Senior Vice President and Chief Nuclear Officer, South Carolina Electric & Gas Company

Jeffrey Lyash
President, Power Business Unit, Chicago Bridge & Iron

Mike Skaggs
Senior Vice President of Nuclear Construction, Tennessee Valley Authority

Kelly Trice
President and COO, Shaw AREVA MOX Services, LLC

Tom Clements
Southeastern Nuclear Campaign Coordinator, Friends of the Earth

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Director, Division of Construction Projects, Region II

P R O C E E D I N G S

CHAIRMAN MACFARLANE: Okay. Good morning?

MULTIPLE SPEAKERS: Good morning.

CHAIRMAN MACFARLANE: I guess that was sort of a question.

[laughter]

All right. I'd like to welcome the staff, the media, the industry, the members of the public who are here for today's meeting. The focus of today's meeting is the staff's activities in the area of construction oversight. With over a year of activity on the construction of the new AP1000 reactors at both the Vogtle site in Georgia and the Summer site in South Carolina, the staff has re-entered an area of activity that has been relatively dormant in the U.S., the oversight of new construction.

I recently had the opportunity to visit the Vogtle construction site. I was impressed by the process -- progress to date. I was also able to observe first-hand the efforts of our resident and regional inspectors in the oversight of the activity at that site.

In addition to the work at Vogtle and Summer, the staff has been monitoring the completion of Watts Bar Unit 2 under the Part 50 process, as opposed to the Part 52 process, which Vogtle and Summer are under. The construction of these plants, by necessity, involves participation of a number of vendors, both domestic and international. And the staff has expanded their vendor oversight activities to ensure that components delivered to licensees meet our standards.

Reactors are not the only area of new construction that's being overseen by our staff. On the materials side, the staff has been monitoring the activities surrounding the construction of the mixed oxide fuel facility in South Carolina, and the proposed expansion of the Urenco U.S.A., formally the LES National Enrichment Facility in New Mexico.

Earlier this year, the staff reported to the Commission on their review of the construction reactor oversight process, and on lessons learned from the first year of implementation of the post-combined license aspects of Part 52. I commend the staff for their on-going efforts to review their processes, identify areas for improvement, and update processes to improve efficiency and effectiveness.

So today, the Commission is going to be briefed by two separate panels. The first panel is the external panel and we will hear from Mr. Buzz Miller from Southern Nuclear Operating Company; Mr. Jeff Archie from South Carolina Electric and Gas Company, Mr. Jeffrey Lyash from the Chicago Bridge & Iron, Mr. Mike Skaggs, from the Tennessee Valley Authority, Mr. Kelly Trice, from Shaw AREVA MOX Services, and Mr. Tom Clements from Friends of the Earth. This will be followed by a staff panel discussing areas of reactor and fuel facility construction oversight and vendor inspections. There will be a short break in between the two panels.

Just a reminder, folks, try to keep the acronyms down to zero. Well, you can say MOX. [laughs] And I look forward to your presentations. Before I turn it over to the panel, let me see if my fellow Commissioners have any comments? No? Okay. Then I will turn it over to Mr. Miller. Would you please begin?

BUZZ MILLER: Okay. Thank you. And good morning Madam Chairman, Commissioners Magwood, Svinicki, Apostolakis, and Ostendorff, and members of the NRC professional staff. I'm very pleased to be here on behalf of Southern Nuclear Company, as well as Georgia Power Company, and our co-owners Oglethorpe Power Company, Municipal Electrical Authority of Georgia, and the City of Dalton.

As we all know, I am going to provide updates on construction activity at Vogtle Units 3 and 4, and then also highlight a few areas of licensee focus and experience.

Looking for slides, so -- next slide. There we go. The physical process at the site is extensive, as you can see from this one page of photographs. Now I want you to know right off that our top priority is always safety and quality. The facility management team, including both the company and the contractor, are committed to the appropriate nuclear safety focus and culture of compliance with design and licensing requirements while working to the current forecasted fuel load dates of early 2017 and '18, respectively.

Major construction milestones to date, and many are pictured on the picture, so the placement of the Unit 3 base mat earlier this year, during a 41-hour continuous pour. The Unit 4 base mat placement will occur later this year. The fabrication and setting of the Unit 3 containment vessel bottom head is complete. Fabrication of the Unit 4 containment vessel bottom head is essentially complete. The pouring of Unit 3 nuclear island walls below grade has commenced and the first tanks have been placed in the Unit 3 nuclear island. Units 3 and 4 turbine island foundation work continues to advance. And Unit 3 turbine island vertical construction is clearly visible in the photos, with the setting

of the first vertical beams that will support the Unit 3 turbine deck. The Units 3 and 4 hyperbolic cooling towers are more than 50 percent complete. Switch yard modifications in Vogtle 1 -- Unit 1, are complete, and modifications continue in the Unit 2 switch yard. The new 230k kilovolt switch yard for Units 3 and 4 is complete. Permanent buildings and raw water intake structure preparation activities are progressing well and will meet construction schedule needs.

For the local community, the economic value of the Vogtle project is massive. Construction of Vogtle Units 3 and 4 is the largest job-producing project in Georgia; will employ approximately 5,000 people during peak construction and create 800 full-time, highly skilled, and highly paid careers of which more than 300 employees are already hired and in training in our operational readiness group.

Property taxes paid by Georgia Power and our co-owners to Burke County, home of the Vogtle facility, will reach $60- to $70 million annually at the completion of construction. More than 70 percent of the Burke County and Burke County school system property tax revenue comes from Plant Vogtle. In addition, the numerous small communities of Burke County and the surrounding counties receive significant indirect benefits through sales taxes, jobs, economic development, charitable giving, and employee volunteer efforts. We staff a community information coordinator to assist local residents in obtaining jobs at Plant Vogtle, which includes one-on-one consulting, résumé writing, online system assistance, and communication about job fairs.

Likewise, the economic value of the Vogtle project to all Georgia Power customers and to the state economy is extensive. Vogtle Units 3 and 4 represent billions of dollars more value over the next available alternative today

for providing safe, reliable, clean, affordable electricity to Georgians for a 60-year period or longer.

Next slide. Now I'm going to talk about a couple of areas of licensee experience, first with the Part 52 process. Working with the new Part 52 process has been a significant improvement over the Part 50 licensing process. As one might expect with any first time evolution, we have identified areas for process improvement while ensuring compliance and maintaining nuclear safety. Chief among these areas is the development of final construction details within the context of the certified design. Changes are inevitable in any construction project, as are differences of interpretation of design and code requirements. Recognizing that compliance is essential, as we proceed with the construction, the licensees will need to continue to work with the Commission and staff on mechanisms to handle changes during construction while maintaining compliance with licensing commitments.

Our AP1000 owners group conducted a self-assessment of the implementation of Part 52 in parallel with the NRC staff self-assessment. Takeaways from the industry assessment include that the necessary coordination between the licensees and NRC staff has been strong, the preliminary amendment request process is working well, and that opportunities still exist for enhancing departure and license amendment request processing. The license amendment process, including the preliminary amendment request approach, ensures that NRC performs necessary safety reviews within a public process that supports the reality of field construction.

However, the licensee and NRC staff need to continue to work toward the goal of minimizing resources expended on minor deviations from the

certified design that have little or no safety significance. The process is also underway for the licensees to address the inspections, tests, analysis, and acceptance criteria necessary for facility operation. Preparation and submittal of the first ITAAC completion notices has begun. To date, Southern Nuclear has submitted 10 ITAAC closure notifications and of these 10, six has been verified as complete by the NRC staff. Lessons have been learned by the licensees from the initial submittals and incorporated into our procedures. Additional work remains to be done to develop efficient processes to ensure that operation is not unnecessarily delayed by the volume of ITAAC closures scheduled for the last year of construction.

Next slide please. At the outset, the licensees recognize that suppliers would have challenges, since nuclear plants have not been built in over 20 years in the United States. The licensees started with early and aggressive oversight and continue to adjust based on lessons learned. It is a significant success that the procurement of most major components is complete and delivery of these components is on track to meet project needs.

In closing, I want to emphasize that our uncompromising commitment will always be on safety and quality. Our goal is to build the safest, most reliably -- most reliable facility possible; one that will delivery safe, clean, reliable, and affordable energy for decades to come. Thank you.

CHAIRMAN MACFARLANE: Thank you. Mr. Archie.

JEFF ARCHIE: Good morning. I appreciate the opportunity to be here again. My name is Jeff Archie, I'm representing South Carolina Electric and Gas, and our VC Summer site Units 2 and 3.

Primarily I want to give you an update on our progress to date, but I also want to make comment to Buzz's comments. We're working very closely with Southern and a lot of the initiatives and opportunities that Buzz talked about, we're very, very much engaged in those same initiatives and opportunities. So I won't rehash that or go through that again, but I do want to give you a good picture of the progress that we've made, especially here recently. A lot of activity at the site, a lot of excitement about our project, and a lot of good dialog and work with the NRC staff, so we feel very fortunate that we've made the progress that we have to date. And again, I'd like to give you a little bit of an update on some of the significant activities that are going on at the site.

So, first slide please. Wanted to show you some pictures here. And starting in the top left hand corner and then we'll go clockwise, but this has our nuclear island for Unit 2. Our first nuclear concrete was poured and completed on March 11th of this year. You can see there the lower bowl that is in place; the lower bowl was set on March 22nd. It was set in place using our heavy lift derrick. The lift for that lower bowl was approximately 950 tons, including the rigging, so it was a significant lift and a significant milestone to be achieved at that time.

You can see there in the background the turbine island, and if you look at the next picture there, again moving clockwise, that is the turbine island and it shows a picture of a setting, the Bravo condenser. That work was completed on July 13th of this year. A lot of focus gets placed on the nuclear island, but we are also making a tremendous amount of progress on the turbine island and the secondary plant construction activities that need to go on; so those activities are doing well and going on in parallel.

Next slide, again, continuing to look clockwise, is our Unit 3 nuclear island. The progress there has been notable. We expect to pour our first nuclear concrete in our Unit 3 nuclear island sometime later this year, in the October timeframe. So again, good progress being made. The work activities that are currently ongoing there include rebar placements and we are learning the lessons from Unit 2 from a rebar placement standpoint; some of the challenges we have there, and we're carrying over those lessons learned to the activities that we have ongoing at Unit 3.

Lastly, I wanted to show a picture of the Unit 2 reactor vessel. It arrived on site on -- excuse me -- it arrived on site on May 30th. We have had a number of deliveries of major components to the site, especially here recently. We've gotten feed water heaters on site. They are now in storage. We've gotten turbine components that have arrived on site as well. Low pressure, high pressure turbine rotors, and a number of other tanks that have arrived, fairly significant shipments to the site through the Port of Charleston. And again, that has all gone very, very successfully.

So as you can see, a lot of recent activity at the site and a lot of significant milestones have been accomplished, so we feel good about that and things are headed in the right direction.

Next slide. Just a few things that are also licensee key focus areas for us. Again, from the learnings that we took from Unit 2, we are starting to engage differently from an oversight standpoint. We're making our oversight there at the site more strategic and all of our folks are engaged in that. We're also working very closely with Southern, collaborating on those things, lessons

learned at Southern, lessons learned at VC Summer, and making sure we're applying those lessons to our oversight strategies.

We're being much more systematic in how we do oversight. We're making sure that roles and responsibilities are clearly understood in all of our oversight activities. So again, a new path that we're embarking on as it relates to oversight. A different approach, one that's more risk-informed, I would say, or more informed by those things that are critical to the project that we need to make sure that we're paying -- putting focus on, including license compliance, is a focus area for us. So doing a lot of work in that area and we've got our entire organization engaged and working very closely, again, with Southern for effective communication of emergent issues that may occur on their site, and likewise, those things that occur on our site, making sure the communication is very clear and the corrective actions are aligned.

Next slide. We're also starting to embark on design assessments, working very closely with Westinghouse on looking ahead at those next significant design opportunities and construction opportunities that we're getting ready to embark on as an organization. We have had folks with Westinghouse looking at, for instance, the design for CAO 1 which is one of our major module sections that we'll be installing, hopefully here in the near term. Looking at the design aspects, starting to learn what things may be pinch points that we want to work with the NRC staff on. And we have plans to do those interactions through public meetings so that we can make sure that we're vetting those issues appropriately.

This activity also, looking at design reviews, has given us an opportunity to develop better guides on how those reviews need to be

accomplished. Again, the interaction with Westinghouse has been very good. And through this initial pilot that we did on CAO 1, we've also gotten clarity on what the report needs to look like at the conclusion of those assessments.

Also, I want to point out that we're very much engaged in activities at Lake Charles. I will say that the folks at CB&I have been very receptive to our feedback and our intrusiveness. So that's been very, very helpful. We've engaged in their root causes. We've also had folks participate on their safety review committees as they look at some of their safety culture issues there at the facility. So again, very, very much engaged in those activities there at Lake Charles.

Finally, I wanted to make note of operational readiness. We started to hire a number of folks. We started our initial operator class, 24 candidates, so we have good work going on in that arena. We're engaged very much with Westinghouse on the development of our simulator. We have a limited scope simulator on site that we're already using for training. And also the China lessons learned; been very, very engaged with lessons learned from China. Getting good feedback from Westinghouse and CB&I on lessons learned that they are capturing. And also we're spending a good bit of time in China, observing activities there with our own personnel. So that concludes my comments. Thank you.

CHAIRMAN MACFARLANE: Thank you. Mr. Lyash.

JEFFREY LYASH: Good morning, Commissioners, and thank you for the opportunity. I'd like to touch on four points today. One is to introduce CB&I, since it's our first appearance here before the Commission. The second is to give you some progress on our efforts to support generation new build for this

fleet of nuclear units. Also, I'd like to discuss the positive effect of operating experience in what we're accomplishing at Vogtle and Southern. And lastly, to update you a bit on Lake Charles and our efforts there to ensure we've got the right safety culture.

I've got with me here today Luke Scorsone, who's our executive vice president and group president of fabrication services. So he is responsible for the Lake Charles facility post-CB&I acquisition of Shaw. In terms of overview, CB&I is a 125 year old company, 50,000 employees with construction operations around the globe. Safety is our core value and highest priority. As a matter of fact, we're very proud that last year our lost time accident rate was less than .01 globally.

Next slide. Course, nuclear safety is paramount. Building and maintaining a strong nuclear safety culture and a safety conscious work environment everywhere where activities intersect with the nuclear industry is a primary focus. And for us that means building robust processes, strong corrective action programs, and an effective and well-supported employee concerns program.

Next slide. The company has a full portfolio of nuclear capabilities across the life cycle, from engineering and design through construction, support of operation and maintenance, and decommissioning. This skill was strengthened substantially with the combination of CB&I and Shaw earlier this year.

Next slide, please. Moving on to the status of construction activities, in March of this year, we placed the first nuclear concrete in 30 years at the Summer unit on Unit 2. That was a 51.5 hour continuous pour, over 7,000

cubic yards of concrete, a six-foot thick base mat, and involved the close coordination of over 420 individuals to make that evolution successful. The picture on the left is module CR-10, that supports the containment vessel bottom head. This is a case where we built this modularly on site, lifted and placed it on the base mat. This was a lesson learned from China where this was stick built on the mat, and helped us to improve quality. We recently set the containment vessel bottom head in place and grouted it. That was a 900 ton lift. Just three days later -- next slide -- we completed the same activity successfully at the Vogtle plant and have also set the containment vessel bottom head and placed the grout associated with it.

Next slide. In China, the Sanmen and Haiyang units continue to make good progress headed toward their 2014 and 2015 initial in-service dates. The containment vessel top head was lifted, fitted, and welded in place on the first units on both of those sites.

Next. In terms of using operating experience to improve performance, we're focused on capturing lessons learned, where people have had difficulties and overcome them. For example, the area of concrete placement, which we look at closely in China; as a result of that, we commissioned two very high quality batch plants on each site, put them into service early to make sure we had operating experience and good quality. We also recognized that there were difficulties consolidating the concrete in congested areas, for example, around the containment sump. And as a result, identified those areas clearly, developed techniques to aid in concrete consolidation, training, and the extensive use of mockups to demonstrate that those techniques would be effective.

Next. It's also important to identify best practices. And in this case, we identified a best practice around this type of large concrete pour activity that involved the formation of concrete coordination teams to focus on each of the relevant major buckets of activities including delivery logistics, inspection control, record keeping. And they served us quite well in both Vogtle and Summer activities.

Next. It's also important to reach out and look at your broader industry experience, not just the nuclear industry, but our global construction experience. An example is the containment vessel bottom head. Here in China, that head was built from the bottom up using a quite complex steel framework to support it, presented some difficulties with production and quality. Our extensive experience in spherical tank construction around the world told us that the way to do this was very simple column support structure, build it top down, so that access to the welds for the craftsmen, materials, inspection, and fit were much facilitated. Another example is the installation of penetration assemblies into the containment vessel rings as they're sitting on the pad, pre-assembly. Our Chinese experience was done with the containment in place and this approach greatly helped the schedule.

Next slide. Mockups -- extensive use of mockups to demonstrate techniques and for personal training were also very, very important.

And lastly, let me talk about Lake Charles. Lake Charles is a state-of-the-art fabrication facility. Seven bays, 500 feet long, extensive array of flatness tables, laser cutting machines, machine welding capability, and controlled conditions.

Next slide. One more. Next slide. While we built a great facility, our early approach to staffing, training, process development, and leadership did not produce the safety conscious work environment that we and you expect. And we're very acutely aware of that, and we've taken aggressive action to rectify that. And I've listed a set of the actions taken here. The environment there is much improved and we are committed to stay focused to ensure that the nuclear safety culture and all its intended elements and a safety conscious work environment are established there and maintained, and used to help us assure nuclear safety.

Next slide. In summary, CB&I is committed to the successful completion of these projects. Success is built upon a strong foundation of personal safety and nuclear safety culture, accelerated by a focus on using operating experience to improve performance and ensuring that we maintain a strong, safety conscious work environment. Thank you.

CHAIRMAN MACFARLANE: Thank you. Mr. Skaggs.

MIKE SKAGGS: Good morning. I'm Mike Skaggs with TVA, Tennessee Valley Authority, and thank you for the opportunity to discuss Watts Bar 2, our progress, our lessons learned with you and the NRC staff.

Watts Bar 2 is a Westinghouse pressurized water reactor. It's a four loop ice condenser. It's on 18-month fuel cycles. And our intent is to make Watts Bar 2 mimic or be identical to Watts Bar 1.

Next slide. The guiding principles for Watts Bar 2 is to ensure the public health and safety and make sure that our activities as performed are performed safely, on the appropriate level of quality, and that we don't impact the operating unit Watts Bar 1.

Next slide. Watts Bar 2 is approximately 80 percent complete and we're in the final stages of completing the construction on the systems. We are working hard on completing the construction associated with the systems that will be required to support open vessel testing. And our goal is to get in to the phase of performing open vessel testing the spring of 2014. We currently are meeting the targets for safety, quality, cost, and schedule.

Next slide. With respect to safety, we performed over 21.5 million work hours without a lost-time accident. And our recordable injury rate is performing well at .31 or .3 injuries per 10,000 man hours worked. Our quality acceptance rate continues to track above our goal of 95 percent. We're in the 96 to 97 percent range. And with respect to costs and schedule, we're doing slightly better than the most likely and a little bit beyond the aggressive dates shown at the bottom of Page 5.

The next page is a simple picture to describe where we are with respect to our schedule. At the top you can see that it represents that construction is progressing ahead of schedule, specifically that in mechanical and electrical. The second section is to show that engineering, the calculations, the design changes, and the work to support the inspections by the NRC is progressing on target. And down at the bottom, you can see that the -- with respect to turnover systems and startup, we're ahead of schedule.

On the next page you'll find the start of some of the lessons learned with respect to Watts Bar 2. One of the lessons that we had from the completion of the project is the clear execution strategy. That is, we didn't establish a good execution strategy. We didn't have the appropriate level of consistency with

respect to direction. And our alignment for roles, responsibilities for our employees weren't always clear.

On Page 8, around the organization, another lesson learned, is not always did we take the time to get the right people in the right positions. Our staffing strategy had more people on site than we were able to manage, and some of our experienced employees weren't in the right place to limit -- to avail themselves to perform well. So we've taken actions to fix that.

On Page 9, with respect to another lesson learned, is measuring: You measure what you need to achieve. One of our goals is to make sure that our schedule has a high level of detail and that we're measuring on a daily basis on our performance so that we can understand where it's slipping in any specific areas due to performance issues and that we can take the necessary actions to make changes to improve our performance. And that's been key, in our opinion, in being able to maintain on schedule and maintain consistency around a budget goal.

Secondly is that as the project evolves over time, the measures that need to be paid attention to need to evolve, and you need to engage the staff to make sure that they're paying attention to the measures that you're using to measure that part of the project.

On the next page is the work environment. Similar to what Jeff described, the early phases of the project, the work environment, didn't lend itself to high levels of safety and quality. And with the safety paramount, the team needs to be aligned in their role of respect to safety, not only individual, but nuclear safety and safety culture. So we continue to work with the team to understand the roles and what actions that we need to take to promote a safety

environment. And we continue to find the need to over-communicate what the project -- what the goals of the project are and where the project is heading so that people can be part of the team and feel like they're part of the success around completion of Watts Bar 2.

So in summary, Watts Bar 2, safety is paramount, and we'll continue to do the right thing with respect to safety. The strategy associated with completion of the project, that is, how construction completes and turns over the systems to startup, has got to be well developed and it's got to be fluid enough to be able to change over time. The goals have to be recognized and planned for and measured, and that we've got to engage the workforce so that they can be part of the effort to finish up Watts Bar 2. Thank you.

CHAIRMAN MACFARLANE: Thank you. Mr. Trice.

KELLY TRICE: Thank you. My name is Kelly Trice. I'm the President of Shaw AREVA MOX Services. And Shaw AREVA MOX Services is actually a U.S. subsidiary owned by Chicago Bridge & Iron, as well as AREVA.

We currently employ about 2,000 people on site, about 4,000 people nationwide are involved in fabrication of our components, and we actually have manufacturing or fabrication going on in 43 of the United States. The plant is actually based on an agreement signed with Russia. The purpose is to do away with 68 metric tons of plutonium, which equates to about 17,000 nuclear weapons. It was re-ratified in 2010 and the President referred to it in his speech in Prague as well.

Today we have topped out our roof. And we're actually -- in fact it's coincident -- as the first base mat was being constructed at Vogtle, we were actually placing the last roof section at the same day, which was coincident. We

have heavy mechanical work going on right now: HVAC being installed, piping systems being installed, electrical systems, as well as fire protection systems. Twelve of 16 buildings have been completed to date.

Next slide please. We have completed 16 million -- actually 16.3, hours without a lost work time, achieved OSHA VPP star status, and what most people don't know is we actually have 50 environmental permits just to build this plant, which we've had no violations since construction start.

Some of our challenges, and then I'll summarize some of these, but in the talent gap -- the United States talent gap for people to build nuclear plants was tremendous with this plant, and we still wrestle it quite a bit. The manufacturing capability of the United States and the ability to fabricate a component to nuclear standards and then document that it was fabricated to nuclear standards has been a real lessons learned for us. The commercial grade dedication process used when manufacturers can't make a nuclear component, and being able to test and qualify that component properly has been a real labor of love for us. I will tell you that in that arena we severely underestimated the effort required. The vendor quality and documentation across the United States, as well, as in our case, about 10 percent of our fabrications come from Europe as well. And then the development of a strong nuclear culture out of a construction industry has been a real challenge for us.

Some of the construction issues to date that we deal with, which I know that some of the reactor plants are facing now, is the minor amounts of design change that occur during the evolution of the construction. I think people know the uniform building code probably hasn't been updated in 20 or 30 years, depending on which part of the code you're talking about, whether it be civil,

electrical, software, mechanical. In some cases the code, especially in the area of software development -- and the United States went from analog to digital to wireless, has been a real challenge for both us, and I know the inspectors that come on site really read that code very thoroughly and have to learn it quite thoroughly before they come on site.

The next slide, let's see I'm on Page 5 -- supplier characteristics I talked about. The rest of it's just photos. Page 6, yeah, there you can see the hole we dug in 2007. We moved about 2.5 million yards of earth to dig that hole. The overall plant is about 25 feet underground. The base mat is 6.5 feet thick. The roof itself stands about 75 feet above ground. The roof itself is about six feet thick, to give you a feel for the civil. Page 7 you can see the construction to date. Like I say, about 12 of the 16 buildings are done. There you can see the main processing plant that's been topped out. Page 8 you can see the active gallery module. In this particular room, there's 15 miles of piping in one room, so it's quite a challenge to build generally on a nominal four to five inch on a slope over five stories. Page 9 you can see a little bit of the three dimensional module design for it. Page 10 you can see some of the heating and air components going in the building, and while it looks like a large structure, it is heavily confined and there's a lot of components that fit in this structure. Page 11 you can see a storage glove box, and this is one of about 350 glove boxes that go in this building. This is a small one in my vernacular. The larger ones weigh 110,000 pounds and are 250 feet long, so about the size of a small airplane -- I guess a large jet in that case. Page 12 you can see a sintering furnace and this is a primary component in the plant. Part of our process is we squeeze these pellets with 400 tons of force and then we bake them at 1,800 degrees Centigrade for 24

hours to turn them to a ceramic and then grind them and then put them in the cladding and then a bunch of quality stuff after that. And this is a principal component that's actually being fabricated in Germany and France. And in Page 13 you can see the diesel generators that are being fabricated as we speak. I expect to take delivery of those in about six months.

That's all I have.

CHAIRMAN MACFARLANE: That's great. Thank you. Mr. Clements.

THOMAS CLEMENTS: Yes, good morning. Thanks very much, Commissioner Macfarlane and other Commissioners for the opportunity to speak for a few minutes about the public interest perspective on oversight of construction. My name is Tom Clements. I work for the environmental organization Friends of the Earth, which is based here in Washington, but it's an international organization with offices around the world. Next slide, please.

I live in Columbia, South Carolina, so I don't live very far from either of the AP-1000 projects or the MOX project, and I have had the opportunity to formally visit all of the sites at least once. These photos, by the way, were taken by a colleague at a legal altitude of 2,000 feet; so we're monitoring the construction from the air and other ways as well. To be clear, Friends of the Earth intervened with the South Carolina Public Service Commission in 2008 against approval by the PSC of the SC&G project. We also intervened with the Nuclear Regulatory Commission, along with the South Carolina chapter of the Sierra Club, on the SC&G project. We're not interveners on the MOX project, but I'm in close touch with the interveners against the operating license and am

tracking that program quite closely, and do think that there are viable alternatives to MOX that are still present. Next slide please.

One side of the issue of oversight is, it was obviously the public, which should play an essential role, but as you probably don't participate in these meetings, the participation in the actual on-the-ground face-to-face meetings is quite low by the public. Participation is very low on the periodic phone calls and other meetings that the NRC holds, and I do participate, as many of the staff here know, in quite a number of those meetings. As far as MOX plant goes, there are very few meetings during the course of the year unless there's some kind of violation. But there is the annual update, and public participation in those meetings is fairly low. But I want to emphasize that I don't think the low participation in the oversight process is reflective of lack of interest in the projects. I think that's actually growing as the costs increase and the schedule for the projects slip. Next slide, please.

Of course on the other side of public participation, I believe that the NRC outreach to the public has been inadequate. The public is notified if they sign up to a certain list via email or also tracking the meetings on the NRC's public meeting list. For the annual updates, in particular, the NRC sends out news releases, but as of late there has been little media coverage of these meetings and little public participation. I would like to give you an example. On August 5, the NRC sent out an email about a meeting on August 15 on the COLs for the AP-1000, and that was sent to 109 people. That's how many people had signed up to be notified about that particular meeting. As far as the website -- and don't go to the next slide yet -- if you look at the home page, there's certain

things that are listed as spotlight or high-priority issues. The AP-1000 projects or the MOX project are not listed there as a spotlight. Next slide, please.

As the NRC's website is often the face the public sees most, I think that the web content is not straightforward, which leads to confusion. It's difficult for the public to piece together the regulatory process and status of regulation and construction by looking at the website. You have to go to numerous pages to find information on the process, such as reports and schedules, license amendment requests, et cetera, which leads to confusion, even by me, when I track this on a daily basis. The language is very technical as you might guess. It's hard to follow and I think this is discouraging public involvement. And given the complexity of the information, it is also beyond the resources of many public interest groups to track things in detail. That may be our fault, but it's hard to keep up with the oversight process. Next slide please.

Just to emphasize, I don't think the oversight process is oriented to the public. The public really must have been deeply involved from the start to have a chance of understanding the license review and inspection process and where it stands now. The license amendment request and construction reactor oversight process are really oriented internally and to the licensees and not to the public. And I think this needs addressing. But I would add that the NRC staff, many of whom are here today, have been quite approachable when I've raised questions and problems with the process. Next slide, please.

So just to get to a little bit about cursory recommendations. I do think that the NRC should create links on the new facility construction on the NRC home page. That language needs to be clear and non-technical as far as the updates go on where construction and oversight stands. It's really hard to

determine right now. And the oversight process needs to be described in plain, understandable language for the general public. And I would add that I think that the state regulatory agencies are doing a better job at communicating in plain language. Next slide, please.

Just to reiterate, the descriptions of the regulatory process are too technical and based on regulations that most people will not review and are not familiar with, and again, they're written for the NRC staff and licensees and not for the public. I think this needs addressing. And, of course, as you know, the NRC continues to need to enhance the website in general and to make ADAMS more accessible. There are still a lot of problems with ADAMS in accessing the documents related to construction oversight.

And finally, the last slide please. Perhaps this is my most important point. The NRC must decide, and I'm not sure if it has, if resources will be allocated towards increased public involvement if that's really desired. As a regulatory agency with a public aspect, this is not only desirable, of course, but I think it's urgently needed as the AP-1000 and particularly the MOX projects continue and as cost grows, schedule slips, and questions are raised, particularly about the MOX project. In the spirit of transparency, openness, and clarity, the NRC can and must do better in its communicating to the public about the regulation of the new construction projects. And perhaps we'll hear a bit about the outreach being done to the public when the staff presents here in a few minutes. But thanks very much. Be glad to take any questions.

CHAIRMAN MACFARLANE: Thank you very much. Thank you all very much for your presentations this morning. Thanks for staying on time. We really appreciate that. I hate to be the heavy getting people to finish up. We're

going to start off questions from the Commissioners with Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. Thank you all for your presentations. I'm going to start off with at the end, with Mr. Clements. I don't have a question for you, but I do thank you for your recommendations and I think the next panel, you will have an opportunity to hear from our staff about your concerns on clarity and the usefulness of the website, ADAMS accessibility, and so forth. So thank you for those very specific and concrete suggestions you have.

THOMAS CLEMENTS: Let me just emphasize, I do appreciate the staff being open to questions and receiving things and I can't emphasize that enough.

COMMISSIONER OSTENDORFF: Okay, and I thank you. Going again from right to left, Mr. Trice, I think you were in my office sometime in the last year and we talked about the MOX facility. And I have watched this for many years when I was on the Hill and when I was an official at the NNSA when the MOX construction started in the summer of 2007. I seem to recall -- and this is going to be a question I'm going to ask the next four people to your right -- I seem to recall that we were talking about NQA1 certification and the challenges specifically on glove box certifications as I remember, and that there were a large number of glove boxes and that the price estimate on a per-glove-box basis for a nuclear certified box was significantly higher than you'd anticipated or the project anticipated. I don't remember what that factor was, but it was significant.

KELLY TRICE: Yes.

COMMISSIONER OSTENDORFF: Big delta. So I guess, you know, with the glove box having to be nuclear certified for obvious reasons, but being a very concrete example of where we are in the United States today, in recognizing that five of you are involved in four of the -- to my knowledge -- four of the largest five nuclear projects in the United States: the two AP-1000 projects in Georgia and South Carolina, the Watts Bar construction, and the MOX facility, and the waste treatment facility out in Hanford. So we have 80 percent of the major projects represented here for kind of the U.S. nuclear enterprise for construction. So Kelly has used this example of nuclear glove box certification as being a real problem. I think he worked through it, but it was a big surprise. I'm curious if other executives here at the table have examples on your construction sites or your experience where you've had difficulty getting the nuclear certification supply chain to work for you or if you've had any specific concrete problem areas. So let's start out with Mr. Skaggs.

MICHAEL SKAGGS: So two specific problem areas is the availability of valves, in our case large motor operated valves, an ability to reach. So not only is it a -- as expense has gone up significantly but the timeframe by which you're able to get a valve from a vendor has gotten much more extended. And then the ability to replace some of the parts that we used, for example, at Watts Bar 1 and an obsolescence type perspective, is becoming more and more prevailing.

COMMISSIONER OSTENDORFF: Okay. Mr. Lyash?

JEFFREY LYASH: Yeah, as we entered into the nuclear renaissance we had great difficulty finding enough suppliers to provide materials. And construction projects of this size, what you'd really like is multiple suppliers

so that you have some contingency. And what we found was that suppliers really struggled understanding the exacting nature of what we wanted, how to stand up programs around 10 CFR 50, Appendix B, Part 21, 50.55(e), NQA1. So getting suppliers up the learning curve on what was going to be expected in terms of quality and how that process had to work was quite difficult, even on the commodities front, where you really want to have multiple suppliers of quality structural steel, concrete, we had difficulty with that. I think we've largely worked our way through that, but here shortly we'll enter a phase that looks more like Mike talked about, where we're into the suspended systems pumps, valves, et cetera. And so --

COMMISSIONER OSTENDORFF: If I can just ask a clarification question, is that a challenge because the potential suppliers do not see it as being in their economic interest to enter this business line?

JEFFREY LYASH: Yes, it takes quite a commitment to establish the program and the controls to deliver the quality product, and many of these suppliers either aren't willing to make that commitment, so they can't be part of the supply chain, or if they've had that commitment in the past it's a reeducation and a relearning process for them to get up to the production levels that we're talking about.

COMMISSIONER OSTENDORFF: Okay. Thank you. Mr. Archie.

JEFFREY ARCHIE: I guess I would concur with everything Jeff Lyash said. You know, as a result of the fact that we have EPC contracts, engineer-procure-construct contracts with CB&I and Westinghouse, the focus that we have as a utility is more so on ensuring that we have the right quality of deliverable from the supply chain. So oversight, those things that we need to do

to make sure we're engaged in that piece of the process, is where primarily our focus is. But the accountability to ensure that we have the components that we need is really in the ballpark of CB&I and Westinghouse. We do get engaged with issues, for instance, some of the challenges that we've had at Mangiarotti from a financial standpoint, paying a lot of attention to that and being engaged with Westinghouse on the resolution of that kind of an issue, yes, we do get involved fairly extensively in those kinds of challenges. But again, the accountability for the delivery of the parts that we need is primarily with the consortium, CB&I and Westinghouse.

COMMISSIONER OSTENDORFF: Okay. Mr. Miller, anything to add there?

BUZZ MILLER: You know, not much different, starting backwards I'd say on the major components, as I said, it's -- we had issues worldwide, but it's really a success story. We've been fabricating some of these things for five, six years. And we've had people in certain shops and we rank them, and so we've managed through that. And you heard about modules. So I think on the bulk side for your -- you know, in Georgia, for your average rebar supplier, you know, bend radiuses that are an eighth of an inch off, which we have to comply with, I'm not arguing that. When you're new to the business and it hasn't -- we haven't been building nuclear plants in years, it's hard for a lot of these suppliers to just comprehend what's the difference. And -- but that's why -- where the oversight comes in and we just have to stay at it and make sure it's right.

COMMISSIONER OSTENDORFF: Okay, let me ask -- turn now to both Mr. Miller and Mr. Archie for the following question. You know, our staff under Glenn Tracy's leadership, had gone through and done a Part 55 lessons

learned to date for the staff so far, and I think you're very familiar with that report. Do you have any disagreements or different perspectives to add to that report?

BUZZ MILLER: No, I don't think so. I think the staff did a very good self-assessment and identified a lot of things that, you know, we're glad they identified. We did the self-assessment. We identified things as well. So I don't think we have issues of disagreement and all. I think you just have these areas of when the rules require pure compliance with every detail, there's errata, there's tolerances that conflict with each other when you get into the real world. And managing through those is what we need to work on improving because they -- a lot of things just don't have safety significance.

COMMISSIONER OSTENDORFF: So give me -- in your comments you made a remark to the effect that there's some example -- you didn't give an example, but you made a general comment about we need to not spend so much time on small issues that are low to no safety significance. Can you provide one example from your experience in the Vogtle construction Project?

BUZZ MILLER: So we're wrestling now with some embed plates which are really just flat pieces of steel and they have what's called wire, but it's really smaller rebar attached to it. The walls are only going to be three feet thick, so when you put these in, to meet codes you have to actually put rebar in and bend the rebar because you can't extend all the way through to the other side. Codes have a specified bend radius on rebar and we've had to reject certain embed plates recently because of the bend radius did not meet code specifically. But the code really didn't contemplate the arrangement that it was in, so you have to reject those and go back to the supplier and start over. There's no fast

way to disposition something that's of no safety significance like that if it's specified. And we've said we'll meet the codes and the codes are in the licensing documentation.

COMMISSIONER OSTENDORFF: Okay, I've got limited time, but I'll see if Mr. Archie has an example from the Summer site to provide some of what Mr. Miller did from the Vogtle project.

JEFFREY ARCHIE: Well first, Commissioner, to touch on the original question, I think that the staff did a very, very good job with their self-assessment of the post-COL opportunities that we've had in Part 52. They also asked for our communication and input relative to areas that needed focus prior to going out and doing that self-assessment. So we as a stakeholder were very much engaged with that. As far as the recommendations that came out of that, I think they hit the mark pretty well. I have conferred with my staff on that and they are very much aligned on the fact that these are good issues that need to be supported going forward, so we are very favorable of the output from that self-assessment. There are probably a number of things that we could talk about, as Buzz has pointed out, relative to those things that we have to deal with that may not rise to that level, at least in our minds, of safety significance, but I think license compliance, license basis compliance is important, it's what we committed to. And it's the path that we need to continue to work down. I think as we went through and, in hindsight, looked at some of the challenges that we've had through the self-assessment that the staff did, we've noted some things that we want to look at more aggressively earlier on to make sure that our interpretation of what the requirement is, is clearly understood. So again, that's part of the self-assessment that I think was very favorable in lessons learned,

because there are going to be some things that are pinch points, obviously, that we need to take a step back and reassess and make sure that we're protecting quality and safety. That's priority number one. But at the same time, as we interpret those regulations and expectations in that area, we want to make sure that we're learning from our experience. So I see this as being a continual learning opportunity as we go forward in the process.

COMMISSIONER OSTENDORFF: Thank you. Thank you, Chairman.

CHAIRMAN MACFARLANE: Thank you very much. Okay. I'll start off with Tom. I appreciate your discussion of public participation and I wonder if you could give us some advice on how you think we could increase public participation.

THOMAS CLEMENTS: Well, thank you for the question. That's a tough thing. It's a tough thing for public interest groups to motivate the public to get involved and to participate. The Savannah River Site Citizens Advisory Board, which is a FACA committee that works on clean-up issues at Savannah River site has somewhat the same problem, although it's a large panel with quite a number of people. So this is always a question on my mind. As I said, I think part of the problem is the technical language that the NRC uses scares people away.

CHAIRMAN MACFARLANE: [affirmative]

THOMAS CLEMENTS: It looks to me like also the media, even the trade press, has drifted away from a lot of the calls because, as I mentioned to someone before the meeting started, it's kind of like taking a calculus class. If you don't keep up with the class all along, then you're going to lose it. So I think

that, as I said, that you need to go back and clarify things, order the website a little bit better. But I know this is always going to be a struggle. And I do try to reach out to people to get involvement, and it's a daunting challenge first of all.

CHAIRMAN MACFARLANE: So which state agencies are doing a better job explaining the --

THOMAS CLEMENTS: Well, in particular -- and certainly their role is not regulating the oversight.

CHAIRMAN MACFARLANE: [affirmative]

THOMAS CLEMENTS: It's more the cost aspects from a public service commission perspective. But the South Carolina Office of Regulatory Staff, for example, does an assessment of construction on the reports that SC&G files, which, of course, Mr. Archie knows. I guess you filed one a week or so ago. They -- after 45 days after they're filed they do an assessment and it's in much clearer language and it's much more comprehensible by the public. And I think at least testimony before the Georgia Public Service Commission concerning issues before them is much clearer and easier to understand.

CHAIRMAN MACFARLANE: Okay. That's very helpful. All right. Next question is for Mr. Lyash. I know that when you gave your talk you talked about addressing issues of safety culture at Lake Charles and I wonder if you have taken similar steps to address quality control there.

JEFFREY LYASH: Yes, we have. Yes. You know, it was quite a difficult undertaking standing up a fabrication facility like Lake Charles. And, you know, there's a stack of issues you have to deal with, these compliance detail with the DCD and making sure that that design is exactingly done in the plant. The state of that design, the fact that we're standing up a largely non-nuclear

workforce and how to instill that quality ethic into the workforce, all these can be challenges to quality. But in addition to the safety-conscious work environment, we have stepped back and looked at our entire process, including the documentation process, the work package quality, the traveler process that follows the material and the work all the way through, to ensure we build quality in. We've also got joint quality control inspection teams on site in process and after completion that are comprised of QC representatives from the Lake Charles program, source inspections from Power as the receiver of that -- we're inspecting it right there -- and the clients' QC organizations have been involved in jointly teaming with us to do those inspections to ensure there's quality. Or where we've had historic quality issues that have manifested themselves in legacy modules that we get that documented, dispositioned, and correct it.

CHAIRMAN MACFARLANE: Okay. And I note that in your action plan you said you had a root cause analysis that was going to be completed this week. How is that going and do you have any insights?

JEFFREY LYASH: Yes. Yeah, that root cause analysis is one of a number of them that we've just finished up. And, you know, I'm not prepared really to brief the Commission on the results of that in detail, but it confirms that the actions that we've needed to take, which include establishing a much stronger employee concerns program, engaging the employees through employee advisory boards so that they have a clean and clear voice, encouraging them to use the entire portfolio of channels to report their concerns, and probably most importantly, getting the right leadership in the plant and having that leadership effectively deployed, are the actions that we need to be taking. And so what we're seeing out of those root causes are confirming that

the early actions that we took in response to the Commission's chilled environment letter were the right ones.

CHAIRMAN MACFARLANE: Okay. Okay. Good. Mr. Trice. Given the DOE funding issues and the delays in the environmental impact statement, what is your current projection of completion for the MOX facility?

KELLY TRICE: Well, of course, the record date presently is 2019, based on the funding levels being provided. The new secretary is weighing different options and we believe in the near term he's going to make a decision on the path forward --

CHAIRMAN MACFARLANE: [affirmative]

KELLY TRICE: -- and we'll know then. And I'm sorry I can't give you much more than that.

CHAIRMAN MACFARLANE: Okay. Okay. Well, that's good. And then in terms of demand for MOX fuel from the commercial nuclear fleet, what's your prospects on that?

KELLY TRICE: Actually demand is strong, and it's difficult because I can't put a signed piece of paper on the table at this point, but I would tell you we've been negotiating with the department for some time on a master fuel contract. That is at the point of ready-to-sign subject to these other decisions being made. We have employed AREVA's NP Division to be a wholesaler of the fuel for us, as well, which opens up potential MOX fuel to 30 percent of the fleet. And I know the department itself is also looking at GE and maybe Westinghouse fuel, as well. We're capable of making fuel for both BWR and PWR reactors which, of course, opens up a lot of the fleet. The other thing we're seeing and we have -- AREVA actually would tell you that they several utilities who have come

to the table and are interested. We also we're seeing -- and this is unique because of Chicago Bridge & Iron, but the price of natural gas is actually driving demand for the MOX fuel. And we're seeing that the prices --

CHAIRMAN MACFARLANE: Reactors that aren't -- except with the exception of what, Palo Verde, most reactors would have to make adjustments to use the MOX.

KELLY TRICE: Yes. Yes, there are some reactor modifications.

CHAIRMAN MACFARLANE: And who pays for that?

KELLY TRICE: The department does. And the department would pay for the modifications and the department would assist in the shipping and the transport containers, the licensing as well. And they pay for it all to be able to use the fuel.

CHAIRMAN MACFARLANE: [affirmative]

KELLY TRICE: So generally we're seeing strong demand. I would tell you recently it's driven by the price of gas, which is a unique positive attribute I guess, from one aspect. We expect actually there to be more demand than the plant has capacity for. And we need -- at full capacity we need five PWR-size reactors to keep up with this.

CHAIRMAN MACFARLANE: [affirmative]

KELLY TRICE: So.

CHAIRMAN MACFARLANE: Okay. Okay. All right. I'm going to go back to questions that Commissioner Ostendorff was asking about quality of components delivered by vendors. And so this is mostly for Mr. Miller, Mr. Archie, and Mr. Skaggs, and Mr. Trice. So we've seen a number of quality control-related issues, as you are all very well aware, based on inspections that

our staff has conducted. And I want to understand a little more if you have been detecting any differences or particular difficulties between domestic and international suppliers. I'm trying to get an idea of the quality of components in the supply chain here, and if you see any trends.

BUZZ MILLER: I would tell you I don't -- really studied that -- but that I don't see really -- we don't talk in terms of a difference between foreign and domestic suppliers. A lot of the items coming from foreign suppliers are larger components. There has been some plate steel, but larger components and so much like replacing steam generators, we've had people in the shops and monitoring things and handling them sort of in their shop just like you would replacement steam generator. I think a lot of the issues if you look at the preponderance of issues at Vogtle, certainly a lot of it's bulk commodities, rebar specs, embed plates, quality of welds --

CHAIRMAN MACFARLANE: [affirmative]

BUZZ MILLER: -- on bulk commodities, not welds that are part of a containment vessel to get x-rayed 100 percent. And so, again, I think it's -- I think it really is just back to a vibrant supply chain where you're -- you know, we knew there was risk when we started on supply chain. We had a lot of risks. We've managed through a lot of the risk and the sort of the nagging one is the continuing one of bulk supplies. And our goal is to not have any quality issues once things are at the site. And we don't want your inspectors to find things, but rest assured, we're finding a lot of things. It's not -- we're not relying on the NRC inspection team.

CHAIRMAN MACFARLANE: [affirmative] And that's good.

BUZZ MILLER: We started very aggressively --

CHAIRMAN MACFARLANE: We're aware of that.

BUZZ MILLER: -- and we've added to it.

CHAIRMAN MACFARLANE: [affirmative]

BUZZ MILLER: In fact that leads to other issues with our -- you know, our other commission, the Public Service Commission, as we get more aggressive about performing oversight. So we continue to learn and incorporate lessons and the situation improves every day. And we don't have -- I'm not sitting here to tell you there's any big problem. We have very good oversight, very good programs, and we're seeking perfection. Until we get that, we won't rest.

JEFFREY ARCHIE: Yes, I would concur there's no analysis that we've done, obviously, looking at international versus domestic suppliers. I concur with what Buzz pointed out that we're seeing more of an issue with commodities versus the large components that we're getting internationally. I think also that may be due to the fact to some degree that our oversight and inspection looks differently sometimes for large components than it would for commodities.

CHAIRMAN MACFARLANE: [affirmative]

JEFFREY ARCHIE: We have in-line production type checks that we do for large components, witness and hold points, for instance, that our quality organizations along with Westinghouse get engaged in and taking a look at the in-line process for ensuring quality for large components. On the commodities side, it can sometimes look different. We go in, we look at production and a production sampling of a product. But in turn then we receive large volumes of product that sometimes have challenges and our receipt

inspection process then has to be very, very robust to make sure that we're identifying those issues and we're not accepting anything that does not meet our standards. So as you pointed out, Chairman Macfarlane, I think that we have tried to be ahead of the NRC teams --

CHAIRMAN MACFARLANE: [affirmative]

JEFFREY ARCHIE: -- and those inspections and making sure that we're taking the accountability to ensure that the products that are delivered to us are the right products, a lot of emphasis on receipt inspections and what we can do, lessons learned, from that process, a lot of engagement with Westinghouse, as well as CB&I, in making sure that that whole process is healthy. But no real difference between the components that we're -- or the materials that we're procuring internationally versus domestically in terms of trends, there's nothing there that we've looked at.

CHAIRMAN MACFARLANE: Okay. I don't know if you guys want to jump in real quick because we're running overtime.

MIKE SCAGGS: We don't use foreign materials so for me to answer that question -- with minimal use of foreign materials, so quality is somewhat spotty. Most of them are picked up prior to the receiving on-site. I would tell you that the issue that we have the biggest problem with is the vendors' ability to resolve or be able to identify the cause for the quality issue.

CHAIRMAN MACFARLANE: Interesting.

KELLY TRICE: I would tell you in our case we do 90 percent of the fabrication in 43 states, about 10 percent overseas, principally in Europe, Switzerland and Germany, France, Belgium. In the case of the European manufacturer, the craftsmanship is quite good. The skill of the trade is quite

good. The documentation is quite different. I would tell you in the United States when you order 304 stainless steel, you have to take a sample and prove it's 304 stainless steel. And you may do a statistical amount of samples. In ISO standards in Europe you get a piece of paper that says it's 304 stainless steel. And I would tell you we see that prevalent throughout and we build, you know, of course to the NQA1 standards of the U.S. building codes, whether it's being fabricated overseas or in the United States. The translation for how to do it is quite time consuming. And I would tell you I have -- and it is vendor-specific I would tell you, and it depends on the culture of the vendor in a lot of cases. In the United States we embed people in the shops and also overseas. And I would tell you one of the things that we learned and, of course, what we're manufacturing is much different. We don't have big, large, massive components with the exception of glove boxes. We had 53,000 little bitty components made in all these places. And on any given day we have 100 to 150 people embedded in a shop somewhere, either an engineer or a procurement or a quality person just to make sure we get the part right and the documentation is correct. So.

CHAIRMAN MACFARLANE: Okay. Thank you. Thank you. Commissioner Svinicki.

COMMISSIONER SVINICKI: Well good morning, and I add my welcome and my thanks to each of you for sharing the observations and the feedback you've given us. I think that that's very helpful for the Commission's work as we move forward. I have a few items here I wanted to cover. I shouldn't be honest about this, but you observe people in various jobs and you learn certain tricks of the trade. Something that I observed of senators is that they are very accustomed to having these limited times for Q-and-A. So they have this

technique that I think is very clever. They outline all of the things they want to ask and then once the witnesses begin answering they say, “Oh, but chairman, can’t the witnesses take the time to answer my questions once time runs out?” So, but I think it might be helpful if I just mention some topics. And I don’t know who wants to chime in on these various topics. Mr. Miller, you passed over a couple of items in the interest of time in your presentation, but I think that they -- there it would be useful to hear a little bit more on the status. You had a topic of modules, so I would like to hear from the participants who have equities in the question of modules and module delivery. And then you also had squib valves mentioned. I know the NRC staff has had some engagement on issues related to squib valves so I think that that would be useful to talk about.

I also would like to hear a little bit more, from any of you who want to address this, about the ITAAC closure process and how that’s going. I think the first closure notice didn’t encounter the smoothest process in that I think it was sent back for additional information. The staff has done and Commissioner Ostendorff made reference to the lessons learned review they’ve done, they note that on the ITAAC closure process it will quote, “require continued effective interface with the licensees.” I mean, I read that and we have an extremely elaborate software system just for ITAAC. And so if I don’t know what our specifics that we need to be doing to improve that process. Also on the topic of Tier 2 STAR information, the staff again identified that and said we need greater clarity of design control document Tier 2 STAR information -- and for those listening in, this has to do with information that requires prior NRC review and approval before changes are made. And the staff has said we need to enhance that. But, you know, I guess my question is driving to that next level of detail

beyond, you know, enhancing and improving and doing things like that. Obviously we always want to be looking at doing things better, but are there specific things that need to be changed or altered about what we put in place in advance? At NRC we try to be in a good state of readiness on these processes, but you don't know exactly what it's going to be like until you start doing it. So I'm trying to understand that and I think, to me, the Tier 2 STAR information question gets to the heart of the whole change that's been made in one-step licensing, which is that it's this compact between the regulator and those constructing the facility. You know, Mr. Skaggs doesn't have to go through, you know, ITAAC and things like that, but he has to go through a second approval process. So the compact here is that either it's just a one-step licensing, but the regulator has to know that it was built in accordance with what we approved. And so, I don't know what the sweet spot is in terms of having some level of being risk-informed about looking at changes, but when you have a one-step process at the, you know, at the very highest level, what that means is, well, I'm approving one thing, and so I need to have that exact thing get built. Now that's not realistic in the real world, but I think this, you know, difference between changes and change control processes, I think this might continue to be a kind of a dynamic friction in this process all the way up until the end. But anyone -- so those are my topics if anyone wants to chime in on those.

BUZZ MILLER: So you want me to go, or you want to go? Go ahead.

JEFFREY ARCHIE: Well, I'll start on the topic of modules. You said that Buzz had that listed as one of his bullets, but I did want to comment on the fact that we've engaged very aggressively in activities at Lake Charles and,

you know, the module production quality and what goes on underneath the roof from a nuclear safety culture standpoint is very, very important to us because that directly impacts or can impact quality. So we've been very engaged in all the efforts that CB&I have brought forward. I would like to say that CB&I has been very receptive to our feedback, very receptive to our intrusiveness. Quite candidly, that was not always the case prior to -- so we've been very, very encouraged by that. But yet, we still have a lot of work to do. The inspection of module components that come to us, we've engaged in that in a number of different ways. I know that Southern Company has had representatives there at the facility to make sure that we're getting engaged there at that level and ensuring that what's delivered is right. We've also done some very aggressive things on site once some modules arrived to make sure that from a receipt inspection standpoint we're ensuring that we go forward with those things that are right and approved versus those things that may have discrepancies that need to be addressed.

So on the subject of modules, while it gets a lot of our attention, we're also very, very engaged and I think we're working very well together in resolving the quality issues, as well as working well together in assessing and being intrusive and the right corrective actions going forward for the nuclear safety culture piece. So still much work to do in that area, but I've been very comfortable with the level of engagement and the receptiveness of CB&I in that whole journey that we're on to make sure that we improve and have a sustainable process for the production of modules to make sure we're meeting the quality expectations.

Also you made a comment to the fact that we've talked a lot about lessons learned and all those things that we're doing to try to improve process. You talked about Tier 2 STAR and the interpretation of and some of the challenges that we've had in that area. But quite candidly, the lessons learned piece of it is very, very important. What we're doing with design reviews now, for instance, is a lesson learned from some of the challenges that we've had earlier on where we have those challenges that we would foresee in the interpretation of Tier 2 STAR items. We need to get ahead of those and we need to have the right level of discussion to make sure that there's clear understanding of the expectation, the interpretation, going forward. So the lessons learned piece is always going to be critical in this whole process. I don't know that I would step up to the plate and say that we need to make drastic changes in what we're doing, but I do think that we need to inform ourselves by those lessons that we're learning and make those adjustments as we go forward. It's going to be very important from a communications standpoint that the licensee and the staff communicate on those issues. So I think we've started down a path of making sure that that's going to be in place and from the self-assessment that the staff did that was noted as one of the things that we could improve on. So I don't know that we can get ahead of that by saying that there are significant changes that we need to make. I think we will be informed as we go forward on those potential changes that may need to be considered through the lessons learned that we're capturing as we proceed through design and construction of our projects.

JEFFREY LYASH: If I might I'd to add to Mr. Archie's comment on Lake Charles. The client's involvement here in helping us with our safety-

conscious work environment issues I think has been very beneficial, both Southern Company and SCANA have been directly involved. And one of the examples I'd give you is we formed a Nuclear Safety Advisory Board. This is an independent board much as you'd see at an operating reactor that includes representatives from both of these organizations, as well as CB&I and outside members, including former NRC executives Louis Reyes and Loren Plisco. And that team I think -- that board has been very effective for us in helping give us an independent and fresh look at the issues we're facing, at the effectiveness of our corrective actions, and helping to suggest ways we can accelerate performance improvement. You know, in terms of the design, I would share an issue from a constructor's point of view.

One of the issues we struggle with, that we have just got to manage our way through, is probably not as strong a consideration of constructability of the plant early in the design and licensing process. It was just the nature of the way the process unfolded. And so, we've teamed with Westinghouse to begin looking at design and licensing issues that really influence the constructability of the design in the field, because the harder you struggle to execute on the plan, the more likely you are to have a quality problem or an issue. And so we have undertaken an effort with Westinghouse to try to get out ahead of that issue and make some suggestions.

COMMISSIONER SVINICKI: Thank you. Mr. Miller, did you want to talk about squib valves and maybe ITAAC closure?

BUZZ MILLER: So thank you for noticing that I'd sped up my presentation and skipped that. I would just say on squib valves, I was going to use it and highlight it as an example. A lot of us are used to big steel

components and easier to kind of understand squib valve as a more complex component, electrical, digital, mechanical. It has ITAACs associated with it. And I would -- the point we're going to make there is we learned as we got going on the -- Westinghouse learned in this case that that complexity required a lot of cross-functional involvement from different organizations to make sure quality reviews were being done appropriately. Another thing -- we have risk registers and the appropriate ranking of these in your risk registry to make sure the right resources are applied to the right things. And we recognize that this Commission had questions about squib valves back to our licensing period. And so, the point was we have adjusted. We have a graded and integrated approach and we track those and monitor them and are a lot more confident where we are on those.

On the ITAACs and completion notices, as I said earlier, we've sent in 10 completion notices. We did have a back-and-forth on the first one. I take that as a positive. The staff had, you know, it was the first one. We had done a pilot program through DOE funding and worked on things. But, you know, our job's to meet the expectation on what's supposed to be filed. It filed and it didn't meet expectations, but it wasn't that things were necessarily erroneous, it was just things weren't in the proper format, and we learned from that and we fixed it, and we've had nine others sent in since then and six of them completed.

I know you've got a lot on modules, but, you know, we -- in the nuclear we talked about them a lot because they're the critical path right now. There's a lot of good things going on. A little context on modules for everybody. The first big one we're talking about is really part of the auxiliary building and its walls and floors. And it's 72 pieces of walls and floors. At Vogtle, 42 of those pieces are on-site and good to go and being welded together. Thirty, the

remaining 30, are fabrication complete. They're at Lake Charles and it really is getting down to these teams scrubbing those, so to speak, to make sure -- I don't want to downplay anything, we have to comply -- but scrubbing these to make sure really very for the most part minor issues. We have had some studs missing and things, but very minor things are fixed to make sure they fully comply when they come. So we'll make sure -- that's where we have teams down there. And to a point if those teams aren't efficient anymore, we'll pull them back and then we also have the ability to do work at the site.

And so I would just say -- echo with CB&I coming in, they've got the right mindset, brought in a lot of talent. I will tell you at Vogtle, up through all the management including Mr. Lyash and Scorsone, there's not a single person still in place from our project site directorate, CB&I up to the CEO, that was the same person six months ago. So we're very excited about where we're going and we're confident that their head's in the right place and they're going to deliver on these.

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

THOMAS CLEMENTS: Let me just say one thing just to flag for you concerning modules. It was the South Carolina Office of Regulatory Staff which has flagged some construction challenges. The shield building modules, which I don't think that either company or the NRC have really mentioned, fabrication of them has been moved to Newport News Industrial. I don't think they've done it before. I asked on one of the calls if there had been a vendor inspection maybe about a month ago. There hadn't been, but I would encourage

you to ask some questions about how the shield building on module fabrication is going based on what happened at the Lake Charles facility. Thank you.

CHAIRMAN MACFARLANE: Thanks. Okay, Commissioner Apostolakis.

COMMISSIONER APOSTOLAKIS: Thank you, Madam Chairman. Mr. Archie and Mr. Miller, I heard you earlier talk about compliance with the license requirements, the certified design. And also you mentioned safety significance, and I'd like some clarification there. What exactly do you mean by that? Certain things, for example, you didn't comply -- or the project didn't comply with some requirements but those were of lesser safety significance. Does that imply that our staff should be paying less attention because the safety significance is not high? Is that the right place to bring up safety significance? It seems to me the right place is when we write the requirements. After you have the requirements you have to comply, don't you? Maybe I misunderstood what you said, but please.

JEFFREY ARCHIE: Yes, I think that could have been interpreted incorrectly. We have had some license compliance issues -- compliance issues that were purely compliance issues. No gauge there on safety significance or not, but compliance issues that had to be dealt with, and we're making sure that we're understanding of those issues.

From a safety significant standpoint, you know, we are accountable to ensure that we're working to the license basis and making sure that we're building what we signed up to build. So we're not trying to confuse compliance and safety significance. If that was interpreted that way, then that was an error. That was not our intent -- at least not my intent to communicate it that way.

COMMISSIONER APOSTOLAKIS: Thank you. So you don't really expect the staff to do something less?

JEFF ARCHIE: That's correct.

COMMISSIONER APOSTOLAKIS: Okay, thanks, appreciate that.

Mr. Clements, I get the impression from your speech -- from your presentation -- that public interest in these projects is low. They don't participate -- participation is low. But then you sort of implied that it's the NRC's fault because the website is not accessible and so on. And it's highly technical and confusing. Have you dismissed the possibility that the public actually trusts the agencies that are involved and they feel that they don't need to be involved? I mean, why do you think that --

TOM CLEMENTS: As I said, public participation in the oversight process in the meetings is low. I don't think that implies that the public's interest in the projects is low. As I said, there has been much more interest where I live in the cost and schedule issues, and perhaps related to Fukushima, too, on the part of the public. But the participation is not in this oversight process. And you may be right that the public is trusting the NRC to carry out its role, and all of us have to trust in the staff's ability to carry that out. But I didn't mean to imply that there's not public concern and interests. It's just in the oversight process. And it's a dilemma for me with the public interest group to get public involvement in this and a host of other issues.

COMMISSIONER APOSTOLAKIS: Thank you.

TOM CLEMENTS: I mean, the blame is not certainly all the NRC's, but I do think it's responsibility of the NRC to improve its communication methods and the website to the public.

COMMISSIONER APOSTOLAKIS: Well, communicating in nontechnical terms, I don't know how that would be achieved to any level of having meaning, you know. This is a highly technical agency. So if you have any suggestions that you may want to communicate to us how to do that, I, personally, would appreciate that, because I've heard that criticism before, even when it was on the ACRS. You people use all these technical terms. Well, we are a technical agency, so we have to use those terms.

Now, I can understand that one can describe but the higher level the process, you know, this is where we are today, and so on. I don't know -- if you think that's useful, maybe we should pursue it. But I'm a little bit confused as to what nontechnical communication means.

TOM CLEMENTS: Well, I think what you just said is what one thing that I'm after. If you go to the website, you really have to -- you have to find -- first you have to find where to go, because it's not straightforward. Then, from -- if you go to a spot that you have to go to the license amendment request. It's not pulled together in a concise way. And I do think doing some kind of overview, which is not the detailed technical language, which of course -- the regulations are that -- would be helpful; not get right off the bat into the whole technical issues.

Another example is it's hard to know exactly what license changes have been made. And I think that can be described in a less technical manner, but then it's good to have the links to all the license amendment requests. And that was done, I think, because public interest requests that they are put up. And I went back through before coming here and tried to figure out, you know, from a more general public perspective. And it's very difficult to do.

I, you know, I challenge you to maybe do that, or get somebody who's not followed the process and give you some thoughts about what might need to be done. Or maybe the NRC needs to do a little focus group or something.

COMMISSIONER APOSTOLAKIS: Thank you.

We have at this table people who are presenting projects that follow Part 52, Part 50. You have any thoughts as to which one is better or should a hybrid be better? Or I thought everybody wanted to follow Part 52. Then I hear that TVA is for the small reactor is thinking of going with Part 50. Can you give me some thoughts about it? I mean, does Part 52 need any modifications? Or Part 50 obviously is not dead. I would appreciate that.

BUZZ MILLER: So I'm knee deep in a Part 52 project, so that's the one I want to make work.

[laughter]

And so the answer to your second part is yes, we -- you know, these are -- the point of a lot of the things that I spoke to are when you get into practically installing massive things out in the field, you might have a tolerance written in a document five years before that says something will be half-inch or less that wasn't really critical, but translates into licensing documentation. And if you find out you can't meet that half-inch, you know, you need to be three-quarters of an inch, is that really -- we've got to figure out how to handle those kinds of things, because there isn't an easy mechanism right now to handle sort of those small, detailed deviations. And that's where the discussion -- it was in the context of changes that what's the safety significance? Because you have a

lot of things that over the years have translated through the DCD that aren't really the foundation of the safety analysis for the whole project.

COMMISSIONER APOSTOLAKIS: But are these issues handled better under Part 50? If it's an unfair question, it's okay.

BUZZ MILLER: Well, you know, it just doesn't matter to me if they are, because I need Part 52.

[laughter]

I need to make --

COMMISSIONER APOSTOLAKIS: It's what?

BUZZ MILLER: I need to make Part 52 work. You know, I spoke to -- we think Part 52 is an improvement. But going first, as we are, is going to iron out a lot of the gray areas. And I think for the followers of it, Part 52 is going to be a very strong process.

JEFFREY LYASH: Commissioner, as a constructor, there was a lot more latitude, as Buzz said, under Part 50, when you were in construction, to take non-safety significant tolerance stack-ups and constructability issues and identify those changes, evaluate them, and implement them very quickly in the field. In that respect, Part 52 is much more constraining to the construction process.

I think it feels very -- more constraining now than it will be on the 10th plant, when the design is very mature, when that design's been translated in the construction detail and erected, and lessons learned plowed back into that. So, you know, my feeling is, as a first of a kind plant, Part 52 presents some challenges to construction. On the nth plant, those things will probably be much more in the background.

MIKE SKAGGS: So with respect to Watts Bar -- and we're using the regulatory framework from Watts Bar 1 to mimic it to -- for Watts Bar 2. Our choice is clear: Part 50 is the -- is what we prefer and it's the best option for Watts Bar 2.

With respect to the small modular reactor, we want to just keep our opportunities open to us until -- because we're experiencing Part 50. We don't have any experience like these gentlemen do. So we just want to make sure that we keep our options available to us for right now as we look forward to the small modular reactor.

COMMISSIONER APOSTOLAKIS: So Part 50, then, seems not to be as constraining as Part 52. Is that the general conclusion here?

BUZZ MILLER: Let me state that again before I --

[laughter]

COMMISSIONER APOSTOLAKIS: It's easier to make changes under Part 50 during construction than Part 52? Is that correct?

BUZZ MILLER: I think that's probably fair to say.

JEFF ARCHIE: Yes, that's a fair statement. But again the only piece that I was going to add is we're still very early in the process, you know. And sometimes I think with the level of effort and opportunities that we've had up to this point, it just really hadn't been that long. And going back to the importance of lessons learned and, you know, what do we need to be informed by, we still have some things that we need to go through and understand better, including fidelity of design and those things that may contribute to some of the challenges that we have under Part 52. There's still some lessons to be learned

and some Vision and information there that I think will be helpful to us going forward. So still very early in the game, from my perspective.

COMMISSIONER APOSTOLAKIS: Thank you very much. Back to you.

CHAIRMAN MACFARLANE: Commissioner Magwood.

COMMISSIONER MAGWOOD: Thank you, Chairman. Well, as usual, when you go last, all the good questions have been taken. So just ask them all over again. No, actually, I do want to explore a few things but, you know, first it's interesting as I sit and look at this panel, I realize I've been to all your facilities over the last few years, except for Tom hasn't invited me to his place for dinner or anything, so I haven't been to Friends of the Earth. But that's what's known as a leading comment, Tom. You can invite me any time you'd like.

[laughter]

If it's good food.

[laughter]

And, you know --

TOM CLEMENTS: Next time you're in Columbia.

COMMISSIONER MAGWOOD: I'll let you know. One of the things about, you know, when you have a lot of history in this area, you think back about, you know, say, 10 or more years ago, and one of the big concerns that was, I think was in both government and industry, is whether we actually had in the United States, a manufacturing base, a talent base, to actually build more than, say, one major facility at a time. There's really big questions about that several years ago.

And what I guess I'm hearing is that the answer is, "Well, yeah, there's difficulties, but we're managing it and we're building infrastructure as we go. So it seems like it's working out." So now where you see where we are today, not where you started when these projects began, but where we are today, have -- where are we along the road of rebuilding capability in the U.S. to actually build large nuclear facilities? Is it a healthier -- certainly healthy -- is it a healthy situation, or is it a situation that still has significant challenges? Just ask each of you to sort of assess where we are today. We can kind of sort of go along this way.

KELLY TRICE: Okay, sure. I would tell you it's better than it was. I would say there's still a 30-year gap in both people and technology, and I think the people part is the harder part of the equation. And I know we were joking at a breakfast this morning, we're all swapping people back and forth all the time now. And so we find that the industry is challenged for having a talent pool that's between 20 and 80. You know, finding someone who's 40, 50, and 30 is hard in this business.

In the manufacturing capability, I would say when we started out, there was about five manufacturers who could make our kind of stuff to a quality level 1 level. I would say three of those, while they had a lot of paper that said they did it, they had disbanded their staff and they really weren't capable. And those documents were 20, 30 years old and hadn't been updated.

I would say today that there's probably a couple of hundred, at least for the kind of components we manufacture, who are capable. I would echo one of Commissioner Ostendorff's statements, is the economic incentive still isn't there. There's not enough demand for the manufacturing capability to keep a

large, robust nuclear staff for a long period of time without a substantial investment from the corporation. And it tends to lend itself towards larger companies, as opposed to smaller companies.

The result is to achieve the manufacturing, we embed people and we help them, you know, at cost, as you would expect. So...

COMMISSIONER MAGWOOD: Thank you. Mike.

MIKE SKAGGS: So from our perspective, the talent pool is -- if I would, I'd like to pick each one of them apart. From a engineering perspective, the design capability, I think that talent pool is improved. I think the capability has improved over the last 10 to 15 years. From a construction perspective, construction management, and craft to perform the work, I think it's degraded since 10 or 15 years. And there's resources available, but the talent and the skill set seems to have gone the other direction or the wrong direction.

Now, from a startup perspective, that is bringing people in that understands the means by which systems work, how to perform the testing, be able to diagnose issues, that's degraded also over time. And that the people that were available to do that, had had expertise, have gotten older and no longer available in some cases to do the work. And we haven't grown that ability.

The -- in a materials perspective, I think it's improved. I think the people that work in those areas, that's improved. And I think that capability has improved. And then I think from a pool of vendors to pick from to provide for services, perform functions for you, that pool has shrunk in size. There's not as many to pick from, and -- but I think the talent has pretty much held its own, sustained its position in the last 10 or 15 years.

COMMISSIONER MAGWOOD: That's interesting. Thank you.

JEFFREY LYASH: Yeah, I think these are very good comments. I think the supply chain has come quite a long way. Companies who either have gotten into the business or who have resurrected their quality programs and tried to stand back up the capability again, some of them have been quite effective. But the volume, the draw, and the stability of that draw over the coming years isn't enough, really, to get you multiple qualified suppliers in the market, because it's such a big commitment by the company. And was said by these gentlemen, that -- to compensate for that, we have to get directly involved with the suppliers.

I mean, you can see this in the discussions we've had with Lake Charles. Even a company that wants to invest the capital needs to pay quite close attention and dedicate tremendous resources to build that culture and those processes to deliver what's in demand.

You know, there are suppliers whose experience outside of nuclear can translate with the right focus. And CB&I -- I'll give you a great example. Our steel plate structures organization, that in the distant past built about 75 percent of the containments for the operating fleet, became a liquefied natural gas robust tank construction organization. Their ability to translate back into the nuclear environment is quite strong because the quality focus never left the organization. It was a different standard, but it was the same quality of craftsmanship focus that was maintained.

JEFF ARCHIE: I guess the only thing that I would add is that when we talk about talent, sometimes I think we confuse talent and experience. I think experience is obviously important to us; folks who have done it before. You know, that's what we're always looking for: folks who have done it before. But at the end of the day, we have a lot of talent out there. And we've seen that in our

recruitment of folks to support us from an operations standpoint, and we've seen it from the recruitment activities that CB&I, Westinghouse have embarked on to construct the plants. The talent is there but the experience may not be there.

Now, to offset that, I think that the training capability has really ramped up. We've seen our four-year schools, our two-year schools really try to fill that void of training that's necessary to replace that inexperience and match it up with the talent that's out there, from a training standpoint.

So I think that's good. And quite candidly, with the onset of new plants, with the onset of more folks retiring from our industry, we've just really seen the training institutions really step up to the plate and provide those things that we need.

So we can't find experience, we can't find those folks that have done it before as readily, perhaps, as we could at one point in time. And that goes for construction as well as operations. But filling that void is a large talent pool that just needs to be trained and needs to be given an opportunity. You know, we can't expect that, you know, the gap that we've had in building new plants in this country, you know, wouldn't have an impact on experience and those folks that are available. But I don't think it's a desperate kind of situation. We've been able to get some very, very talented people on board that can do some very, very significant things and are quick learners as well.

So I think, speaking for CB&I and Westinghouse, I think that they have been able to recruit good people, talented people, but the experience piece is what's missing. And we're trying to fill that void through some of the opportunities through training.

COMMISSIONER MAGWOOD: Okay. Buzz?

BUZZ MILLER: Well, I could take the easy way out and say everybody's already answered, but, you know, I'll be positive here. I think on the utility side and our role and Part 52 and the way we're set up and doing oversight, we have people that were, you know, pouring concrete on Vogtle 1 and 2, and they're working hand in hand with new engineers fresh out of school and training them.

So I think it is about talent and training leadership versus experience. I took this -- I started this undertaking almost eight years ago. And a lot of people, you know, great experience, came up and said, "What are you going to do when you're in there and you're ripping things out like we did 30 years ago, and drawings are filling in the hole, and you don't have people like me?" I said, "We're going to stop if we're doing that." You know, it's not that experience that we need. It's leadership and talent that we need.

And so I feel good about it. I think we're training up people. I think the overall success, certainly on the new reactor side, hinges on the success of these two projects. And CBI Westinghouse supply chain will come along as we succeed. People will come along as we succeed. We're hiring massively on the ops readiness side, attracting a lot of great talent there. Lot of it's ex-military; lot from commercial utilities; on the craft for us, building and trades. You know, they'll openly tell you their number one focus and commitment priority is execution of the Vogtle project. And so, you know, I feel good about it. It's -- but we have to -- I think a lot of everything hinges on success here. And as we succeed, a lot of it's going to come along.

COMMISSIONER MAGWOOD: Thank you very much. I had just one quick question for Tom. I appreciate your dialogue with Commissioner

Apostolakis, and I do -- I think we've often heard similar comments about how technical our language is and the difficulty using ADAMS. And I think these are things we often think about.

But you did mention in your comments, I think, that we had an opportunity to put more resources into the public participation. Did you have something specific in mind when you said that, or was that just a general --

TOM CLEMENTS: It was more a general comment. I don't know how you're allocating, you know, staff to review the construction. So it was more of a general.

COMMISSIONER MAGWOOD: Okay. Thank you. Thank you, Chairman. Thank you very much.

CHAIRMAN MACFARLANE: Okay, any further questions? No? All right. Thank you very much, folks, for your presentations and discussion, and we will adjourn for five minutes.

[break]

CHAIRMAN MACFARLANE: Going to get going here. Otherwise we'll be here all afternoon as well. Okay. So now we're going to have a presentation from the staff on the areas of reactor and fuel facility construction oversight and vendor inspections. However, before I begin, I want to acknowledge that this is the first Commission meeting at which we have our new Executive Director of Operations, Mark Satorius. So I'd like to congratulate Mr. Satorius on his selection, and I really look forward to working with him in the future. And this is the first of many, many meetings [laughs] where we will be sitting across the table from each other.

MARK SATORIUS: So I've been told by Mr. Borchardt.

CHAIRMAN MACFARLANE: Yeah. [laughs] So, this will be a real familiar exercise soon. So congratulations, Mark.

MARK SATORIUS: Thank you.

CHAIRMAN MACFARLANE: And welcome.

All right. Would any of my Commission colleagues like to make any comments before we begin? No? Okay, good. Then --

COMMISSIONER APOSTOLAKIS: Silence means we agree --

CHAIRMAN MACFARLANE: Yeah, yeah, yeah. I just have to make sure. It's hard, you know, when you're on either side of me. Okay, so, I turn it over to Mark.

MARK SATORIUS: Well, thank you very much. And thank you for that introduction, and good morning, Chairman and Commissioners. Staff is here today to brief the Commission on activities associated with construction oversight and the licensing program for light water reactors and fuel cycle facilities.

The panel's going to be covering a number of items in depth, but I thought I'd just touch on a few. One is that we are currently -- we have inspectors in the field conducting high-quality and safety-based inspections of these facilities. These inspectors have been effectively trained and they're prepared to do their jobs because of the people that are sitting at this table, and others.

A number of offices are involved with providing prompt and well-documented licensing and technical support, including the Office of the General Counsel, the Office of New Reactors, the Office of Nuclear Reactor Regulation, and the Office of Nuclear Materials, Safety and Safeguards. Staff is proactive in carrying out its duties, and you've heard from the earlier panel of self-

assessments who were done and staff is taken the results of those self-assessments and made enhancements to the program. And I'd like to point out that the individual responsible for conducting that self-assessment and leading it is Jim Luehman, who's in the audience. Jim will be retiring on Friday, after 40 years of service to the NRC. So I think he's in --

[applause]

The panel is also going to provide you with some of the challenges that they are working with as they move forward, some of which are changing construction schedules, supply chain quality -- and both of those, which impact our ability to perform our inspections in a timely manner. And then lastly, you'll hear about challenges in the area of what you've heard from many offices, and that is making sure we use our resources in the most efficient way that we can so that we can accomplish our safety missions.

Next slide, please. This is the agenda. I don't intend to go into it. I think I'd just identify that under the first bullet, Laura Dudes will be making that presentation; and the second one, Marissa Bailey, to my right; and the third, Joel Munday. So if we could have the next slide and, Laura, if you could make your presentation.

LAURA DUDES: Thank you. Good morning, Chairman, Commissioners. I'm Laura Dudes. I'm the division of Construction Inspection and Operational Programs director in the Office of New Reactors. Next slide, please.

This morning I plan to cover the construction reactor oversight process, the vendor inspection program, and highlights from our Part 52 one-year implementation lessons learned review. I would point out that the photo on

this slide shows part of Summer's 50-hour straight pour of more than 7,000 cubic yards of safety-related base mat concrete. As Joel will discuss later on, our inspectors did provide 24-hour coverage of this activity.

Next slide, please. In 2011, the Commission directed the staff to develop a construction oversight program that was similar to the reactor oversight process. A year later, the staff issued combined licenses for the Vogtle Units 3 and 4, and VC Summer Units 2 and 3 units. And we began to carry out our construction oversight at both sites. During that period, the inspection oversight team conducted numerous inspection activities and issued 10 inspection reports that covered both resident and regional inspector activities. The staff found sufficient data to assess the effectiveness of the program guidance documents; exercise the significance determination process, which is a process by which we characterize the safety significance of the findings; and conclude that the construction assessment matrix appropriately characterize the licensee's safety performance during the calendar year.

At the conclusion of 2012, we performed a self-assessment to examine how we met the assessment criteria we defined in the construction reactor oversight process. Our assessments included formal written surveys of staff, licensees, and members of the public, as well as public meetings both here at headquarters and in the vicinity of the sites to solicit feedback on the program. Now, I would want to say that this would be an area where the staff would be in agreement with Mr. Clements in terms of we make every effort, whether it's putting information in the newspapers, using our state liaison officers to reach out to people, local, and state officials who are interested in this. And we can always

do better, but we would like to see more participation so we get more members of the public commenting on the oversight process.

So we conducted those assessments. The staff did document our process for examining the construction reactor oversight process, our assessments, and results in our annual report to the Commission, which was SECY-13-0042. Now, after the first year of construction, we did enhance some of the program guidance documents to reflect feedback from the first year; however, the fundamental principles of the construction reactor oversight process including the cornerstones that the inspection -- baseline inspection is built on and the significance determination process, and then the licensee's performance assessment matrix, all of those remain the same.

So the staff concluded that the construction reactor oversight process effectively ensured that new reactors are built in accordance with their approved design, which is a fundamental tenet of Part 52 is making sure the final product or as-built meets the approved design. We will continue to gather feedback on the program from staff, licensees, and members of the public, and provide an annual assessment to the Commission. Next slide, please.

There are other activities that supplement our oversight program. One is the NRC's Operational and Construction Experience Program. This program gathers information from sources such as event reports or inspection findings and it's not limited to reactors that are under construction. We gather information from operating reactor events, nuclear fuel facility events, vendor inspection, a wide range of sources, so we can review and analyze this information and communicate lessons learned and best practices in the areas of inspection or licensing to appropriate staff or to appropriate industry by a generic

communication. An example is an information notice we issued a few years ago, which was titled Construction Experience with Concrete Placement; this discusses, among other things, the construction experience at the MOX Fuel Fabrication Facility at the Savannah River. This information was also passed on to our construction inspectors such that they could be prepared or use this information as they move forward into the reactor inspection activities.

The staff continues our bilateral exchanges with China, sharing information on design issues, preoperational testing, and enhancing our inspector exchange activities, such that our inspectors will have an opportunity to observe activities in China as the first AP1000s in the world are brought online. The photo on this slide is the AP1000 plant in Haiyang, China. We also continue to participate in the MDEP Program, which now includes preoperational and startup testing as part of their activities. Our work with the Multi-national Design Evaluation Program, or MDEP, also informs our vendor and licensing activities. Next slide, please.

Moving to the supply chain, the NRC's regulatory framework holds licensees accountable for overseeing all suppliers, contractors, and vendors. We do not license suppliers; however, we do perform select vendor inspections to verify that licensees are meeting their oversight obligations. Our inspections are selected based on the safety significance of the components being manufactured, the performance history, if available, the number of U.S. customers that may be impacted by the supplier, and of course the unique or first-of-a-kind aspects of the activity being performed. These inspections are in part programmatic as we will review the supplier's overall quality assurance program; however, we do bring NRC technical experts, depending on the part or

service that we're looking at -- it could be a welding expert, a materials expert -- so that they can do a deep dive or vertical slice and assure that the supplier is actually manufacturing the components or performing the services, not only in accordance with a good, strong, quality assurance program, but they've got the engineering capabilities as well. Next slide.

The results of our reactor vendor program can lead to generic communications with a broad range of industry or specific letters to licensees. With respect to the meeting today, our Part 52 construction activities, if one of our vendor inspections identifies a non-conformance that could materially impact a licensee's ability to submit their inspections test analysis and acceptance criteria closure documents, the staff will issue a letter to the licensee detailing the issues that they found during the vendor inspection such that they can be addressed as part of the inspections test analysis and acceptance criteria closure process.

And lastly, we also perform an annual self-assessment of the vendor inspection program to assess the program's quality, timeliness, and effectiveness. The 2012 assessment concluded the overall program continued to effectively provide insights on how the licensees oversee supplier's compliance with our regulations. Next slide, please.

So, many of the inspections planned for 2013 did focus on suppliers for the Vogtle and Summer AP1000 units. We selected components and engineering service vendors based on criteria such as safety significance and first-of-a-kind activities. A few examples of components inspected this year include the accumulators and core makeup tanks that will supply emergency cooling water to the reactor; the reactor coolant piping, which is shown in this

photo as our inspection team is observing the heat treatment of the piping. We've also inspected suppliers of safety-related valves, such as the squib valve, which was raised in the earlier panel, and I'm glad that Commissioner Svinicki did raise that. And finally, we also have done inspections of the module building sections being fabricated for the AP1000, primarily at this point in Lake Charles. Since our September 2012 meeting with the Commission where we raised issues on the squid valves for AP1000, we have engaged the licensees on our inspection findings, we have conducted public meetings to review these concerns, and continue to monitor the final design and testing activities associated with these first-of-a-kind, unique valves.

I will note here because it was raised in the previous panel, the Newport News vendor inspection is scheduled for the third week in September, that was raised in terms of the shield building modules, the staff has been in contact with suppliers and the licensee and we're ready to do that. We do often try and wait so that we can make sure that not only that the supplier has done their quality assurance, but the licensee has done some quality assurance activities before we send a vendor team out there. Next slide, please.

So our AP1000-related inspection efforts continue to raise issues at various stages of final design and fabrication. These issues will inform both the onsite as built inspections that will be performed by Region 2 and ultimately, be part of the NRC's information that when we find that all acceptance criteria have been met before fuel load. Next slide, please.

The staff is confident that we've met the challenges of the first year of construction and maintained our safety focus. However, in the spirit of continuous improvement and as you heard from our first panel, we did establish

a working group to identify areas where we might be more effective in accomplishing our mission. The working group examined two issues associated with the civil structural activities at the construction site. The team examined these issues from a technical, licensing, communications, and programmatic perspective. They interviewed NRC staff, they interviewed licensee personnel, and they also interviewed members of the public. Next slide, please.

The working group had several positive observations on the programs and the staff performance; namely that the staff conducted high-quality, timely, safety-focused inspections. The staff was well trained and prepared to implement the Part 52 inspection programs and that the staff provided prompt, accurate, and well-documented support to the construction effort, and that is when issues had -- came up at the sites, OGC and other staff members in NRO and technical staff did provide that prompt support. Next slide, please.

The working group also noted that both programs, the construction reactor oversight program and vendor inspection program, included well-documented bases, also that both of these programs had built-in feedback mechanisms as the annual self-assessments that I had referenced. And these feedback mechanisms promote self-correction on an annual basis. Lastly, the group noted that the staff did a good job of processing license amendment requests in support of construction activities. Next slide, please.

The working group and lessons learned report also identified five lessons learned which I will now cover. The clarity of the design control information that requires NRC approval prior to making a change could be enhanced, such that when a change is made during development of construction

drawings or during the actual construction process, all parties understand what regulatory process they are in before making decisions to proceed. In addition to a common understanding of the design information and change processes, clear and timely regulatory decision-making in a construction environment could be enhanced through better communications. Next slide, please.

Additional lessons learned include, as was mentioned, that the staff should continue to interface with the licensee to assure a common understanding of the information that should be documented in an inspections test analysis and acceptance criteria closure notification. The staff should clarify the vendor oversight program objectives and enhance communications regarding performance issues with both operating and construction licensees. And lastly, the working group recommended that staff and licensees should monitor implementation of the changes during construction process to identify if any enhancements to the guidance are warranted. At this point, the NRO office director has a tasking memo to direct the program leads to implement the recommendations in the lessons learned report. This concludes my prepared remarks and I would like to turn it over to Marissa Bailey.

MARISSA BAILEY: Thank you, Laura. I'm Marissa Bailey. I'm the Director for the Division of Fuel Cycle Safety and Safeguards in the Office of Nuclear Material Safety and Safeguards. And can you go to Slide 18, please? In this presentation I'll be giving an overview of the two facilities that are under construction; that's the Mixed Oxide Fuel Fabrication Facility and the URENCO USA Enrichment Facility. Joel will give a more detailed discussion on the NRC field experience with those facilities. I'll also provide a status of the other NRC licensed new fuel cycle facilities. Slide 19, please.

I'll start with URENCO. The URENCO USA facility, which was formerly known as the Louisiana Energy Services National Enrichment Facilities, a gas centrifuge uranium enrichment facility; it's located in Eunice, New Mexico. I'm sorry, can you go to Slide 19, please? Slide 19, please? Slide 19 is missing? Oh, there it is. And this is a picture of the site -- Slide 19 is missing. I had a picture of the site before construction began and it's a picture of a field basically. The facility was licensed in June 2006, construction began in August 2006, and initial operation began in June 2010, basically making it the first new commercial enrichment facility to begin operation in the United States in over 50 years. Since then URENCO has constructed additional auxiliary buildings and process buildings, and also brought additional cascades into operation. Slide 20, please.

When URENCO broke ground in 2006, it became the first large-scale nuclear construction project in this country in almost 10 years. And to oversee construction at the facility, the NRC developed a construction inspection program that primarily focused on inspecting the items relied on for safety to ensure that they were constructed in accordance with the license and regulatory requirements. Another program objective was inspecting the licensee activities, as well as their contractors and vendors to ensure that the licensee was effectively implementing its quality assurance and other safety programs.

Also, a major component of the construction inspection program is the operational readiness review. Before authorizing initial operation, the NRC assessed the state of readiness of the facility by conducting its operational readiness reviews. These were inspections conducted by multi-disciplined teams to verify that the facility was constructed in accordance with the license and also to gain confidence that the facility can be operated safely. And after authorizing

the initial operation, the NRC staff did conduct a lessons learned, and one of the things that we concluded from that lessons learned was that a construction resident inspector would have allowed us a better use of resources in terms of conducting inspections, processing allegations, and also just generally facilitating communications. Another significant lesson learned involves proper planning for a large number of design and program changes and enhance license amendments during construction especially as the facility approached operation. During construction, URENCO's design finalization and cost-control efforts lead to numerous amendment requests, and both the licensing and inspection staffs demonstrated a great deal of flexibility in terms of coordinating the licensing actions and the inspections to accommodate these unanticipated changes and to make sure that licensing actions were processed in a timely manner and inspections were completed before we authorized operation. We have incorporated these lessons learned in our current construction oversight activities and in the planning of future construction activities.

With regard to what worked well, I would highlight the level of communication and coordination between the Region 2 and NMSS staff, as well as the communication with the licensee, and also the quality of the inspectors that we had to oversee the facility. Slide 21, please.

Overall, NRC's licensing and construction oversight of URENCO is a success story in the sense that in the span of four years, we issued a license, we oversaw construction, and then we authorized initial operation of a major nuclear fuel cycle facility that now -- or today is operating and conducting their activities safely. Our oversight efforts on URENCO significantly contributed to the current NRC construction oversight programs. This first major construction

activity provided an opportunity for training and developing many inspectors for construction. Also, as we gained experience, we did improve our inspection planning. On Slide 21 is a recent picture of the URENCO site. The major structures are the two cascade halls, a cylinder receipt and dispatch building, and a centrifuge assembly building. And recently, URENCO has submitted a license amendment to expand their enrichment capacity and we are currently conducting the safety and environmental review for that request. URENCO has started to construct a new building to support that expansion and the NRC staff has started inspecting some of those construction activities. Slide 22, please.

The other fuel facility under construction is the Mixed Oxide Fuel Fabrication Facility or the MOX Facility. And this facility actually then will take weapons-grade plutonium and down blend it with natural uranium to make fuel for light water reactors, commercial light water reactors. The facility is being constructed in Aiken, South Carolina and you've seen this picture before. This is how the facility looked in 2007. Unlike other fuel facilities, the MOX Facility is under a two-step licensing process. The first step is to issue the construction authorization, which was issued back in 2005 and construction began in 2007. The second step involves the ongoing licensing review and issuance of a special nuclear material license. The NRC staff has completed the safety review, and we issued the safety evaluation report in December 2010. The application is now before the Atomic Safety Licensing Board, who is considering three contentions. The hearings were held in March 2012 and in May 2013, and the board's final decision is expected later this year. Slide 23, please.

Other unique aspects of the MOX Facility are, first, it's required to have a quality assurance program that's the same as that required for operating

power reactors, and that's Part 50 Appendix B. Also, before we can issue a license, we must verify that the principal structure, systems, and components, or PSSCs, are constructed in accordance with the commitments in the license application. Similar to URENCO, we did develop a MOX construction inspection program to verify that the construction of the primary structure, systems, and components, and the items relied on for safety are completed in accordance with both the construction authorization and the license application, and also to verify that the QA program and the design basis for those structure, systems, and components are being adequately implemented.

Also similar to URENCO, before we authorize startup, the NRC staff will perform an operational readiness review. I'd like to note that the construction inspection program for MOX does include a resident inspector. Also I'd like to note that because we have to verify construction of the PSSCs before we can make a licensing decision, the close coordination between the licensing and inspection staff is a very important aspect of the MOX construction oversight program. Slide 24, please.

This is a picture of the MOX Facility today. The primary building is the building to the right, which contains the aqueous and MOX processing portions of the facility. Construction at the site is continuing; however, recently the President's 2014 budget talks about a slowdown of the MOX construction project. And we are still waiting to hear from MOX Services on their construction plan for the next few years, and once we receive that then we may need to adjust our construction oversight program so that the pace of our inspections is commensurate with the pace of the MOX construction schedule. Slide 25, please.

This slide shows the status of the other new fuel cycle facilities. The lead cascade is licensed and operating. This is a research and development project with the Department of Energy to test the viability of the American Centrifuge Plant. The other four facilities listed here are also all licensed and primarily, for financial reasons, the licensees have deferred construction of these facilities although none of them have requested their license to be withdrawn. The construction schedules for these facilities remain uncertain so we are continually communicating with our licensees to get up-to-date planning information. Our goal is to make sure that if or when construction begins, we can conduct deflective oversight and have the right inspector at the right place at the right time. And that concludes my presentation. I'll turn over to Joel.

JOEL MUNDAY: Thank you, Marissa. My name is Joel Munday and I am the Director of the Division of Construction Projects in Region II, and I'd like to take a moment to say also with me today are four inspectors that are largely responsible for some of the issues that I'll be talking this morning: Eric Mitchell, Tony Ponko, Carl Jones, and Robert Mathis. Next slide, please.

My presentation this morning will cover inspection activities at both the reactor and the fuel cycle facilities. I will also share with you the region's strategy for staffing construction inspector positions in the region. Next slide, please.

In the photo on this slide, you'll see an inspector overseeing the licensees doing some work cleaning and machining reactor head stud holes located at the top of the reactor vessel. This year's end-of-cycle assessment for Watts Bar concluded that the site's construction activities were properly implemented. It's an understatement to say that we are conducting a significant

amount of inspection at the Watts Bar site. We currently have a senior resident inspector and two resident inspectors stationed at the site with plans on putting a third resident inspector out there in the spring to support preoperational testing. To date, we've conducted about 12,000 hours of inspection each year for the last several years. Our staff has identified a number of issues at Watts Bar, the latest being in the area of commercial-grade dedication. Commercial-grade dedication allows a licensee to purchase a component commercially available and then conduct analyses and tests of that component to ensure that it'll stand up to the rigors of the nuclear environment. Region II had identified a trend at Watts Bar in the area of the commercial-grade dedication program. We assessed that and decided to do a focused inspection of that program and we did that. We identified programmatic implications with the program and issued escalated enforcement, which was determined to have TVA fleet-wide implications. Watts Bar subsequently reviewed all of the components associated with Unit 2 and verified that they were acceptable to use as is and did not need replacing. They are continuing with corrective actions and following completion of those we'll have inspectors go back out and determine the effectiveness of those corrective actions.

Other work remaining at Watts Bar for us includes implementation -- or oversight of implementation of the Fukushima orders, preoperational and startup testing oversight, as well as follow-up to a number of historical items; things such as generic letters, bulletins, Three Mile Island action items that have applicability to Watts Bar too. Next slide, please.

The picture on this slide as others have said earlier is the containment vessel bottom head and it's roughly 130 feet in diameter and weighs

about 900 tons; it's a large component. In general, our assessment of Vogtle and Summer indicates that their oversight of construction is good. We completed the first end-of-cycle assessment under the construction and reactor oversight process back in February and concluded that both licensees were constructing the facilities in a manner that preserved public health and safety. Although licensee performance has been good, our inspectors have identified a number of issues in the area specifically of design control and receipt inspection. Our inspectors identified design-control issues based on the general knowledge they had when they came to work for the agency in the area of civil engineering, specifically with regard to concrete and steel reinforcement. One inspector, while conducting an inspection of the base mat, identified some steel reinforcement that didn't appear to be constructed the way he expected it to be. He interacted with the licensee and they concluded that the design and fabrication drawings that were used for that steel reinforcement did not comply with the updated final safety analysis report and in fact were incorrect. Additionally, it was determined that the problem extended into other areas of construction and requiring rework on the part of the licensee.

While these issues were of very low safety significance, they do highlight potential challenges in interpreting design control and design information. As a result, as several of the licensees mentioned this morning, they are now looking ahead at design issues well in advance of fabrication to try to iron out the ambiguities associated with interpreting these design issues. As they do that, as these issues come up, we will engage with the licensee to try to work out what these ambiguities are.

Inspectors have also identified findings in the area of receipt inspection. One example of this involves the prefabricated wall module where installed conduit was too closely -- located too closely together such that the concrete, when it was placed inside the wall, it wouldn't fall between the conduit as it was intended to do.

My last point involves the challenge associated with scheduling inspections in a construction environment. Our team has been successful ensuring we get the right inspector to the right place at the right time, thanks to the staff's flexibility in changing our schedule as construction changes. For example, when we covered the concrete pour for the base mat at both of the sites, it took about five inspectors working around the clock for three days, and even a small slip in the schedule due to no one's -- no oversight on anyone's part could have repercussions on the inspection on the individual inspectors that were overseeing that project. Next slide, please.

This photo is of construction of the Mixed Oxide Fuel Fabrication Facility, and as Kelly mentioned earlier, this building is now complete with walls and a roof. We inspect fuel facilities much like we inspect reactor facilities, and in fact we use the same inspectors. The programs are similar in terms of what we actually look at. We look at their quality assurance plans, the corrective action programs, design control, we look at work going on in the field as well as design activities. And we also assess their performance periodically as we do the reactor facilities. Since 2008, our assessment of the MOX Facility has concluded that MOX construction activities have been conducted in an acceptable manner. As I alluded to in my opening slide, the Region II strategy since the beginning of construction involves hiring individuals with the right

technical expertise and backgrounds to perform the unique inspection that construction requires. However, the area of expertise changes as construction progresses as you would imagine. In the early -- in the beginning of construction, we have a heavy reliance on civil engineering, which shifts to mechanical and then electrical engineering on through the construction process. We have hired only the staff that we need mindful of the change in expertise as we progress through the cycle. One individual of expertise for fuel facilities that we really don't have a need for, at this point at least, at the reactor facilities is that of nuclear criticality safety. The resident inspector at the MOX Facility has such experience and had a finding in this area recently. A design change had been made that could've introduced water into an area that would eventually house nuclear fuel and thereby would reduce the nuclear criticality safety measures for that particular location. In response to the finding, the licensee implemented a number of corrective actions, including correcting that particular modification, as well as ensuring that all applicable departments reviewed design changes as necessary going forward.

At this facility we adjust our inspection resources based on the construction activities ongoing at the site. And recently when the resident inspector accepted a position in the region, we chose not to backfill for his position at this time. We do have the FTE to do that, the position is available and we can -- and in fact, we have a third resident inspector position that we can fill and we'll just watch the pace of activities and do so when it's warranted. Next slide, please.

The photo in this slide is looking down between two cascades of centrifuges at the URENCO Facility. Although Region II does oversee the

construction activities, we oversee the operational activities, too. I will limit my remarks this morning to just the construction activities. In 2012, our annual performance assessment for this facility concluded that the licensee had conducted activities safely and securely while protecting health and the environment. Our inspection objective, as Marissa alluded to earlier, is to verify that items relied on for safety have been constructed in accordance with the license application and with appropriate regulations. In doing so, during the initial construction phase, we had a number of inspectors with particular expertise in the area of commercial-grade dedication. They identified a number of issues with this particular program. As a result of that and other similar issues, Region II management held a management meeting with the licensee and we discussed our concerns and issues with them and they shared with us the corrective actions that they had already begun undertaking and what they had yet to do. We subsequently followed that up with an inspection and have determined that their corrective actions were adequate and should be effective.

As with MOX, our inspection effort follows the pace of activities. As things slowed we scaled back the number of inspections that we conducted at the site. As Marissa indicated they are fabricating a new building and we have been out there already conducting civil inspections. Next slide, please. The photo on this slide shows Vogtle Unit 3, both the nuclear and the turbine islands and the dark circle you see in the center of the slide is the containment vessel bottom head. I'd like to summarize by saying that we have concluded that construction activities at both the reactor and the fuel cycle facilities are being conducted safely and in accordance with the appropriate regulatory requirements. NRC inspectors are identifying issues, good technical issues and

programmatic issues. The thoroughness of their inspections, as well as the timely corrective actions and lessons learned by the licensees gives us reasonable assurance that the plants are being built safely and properly. And third, Region II has developed and is implementing a resource management strategy to respond to the dynamic nature of construction environment and the resulting staffing impacts on Region II to ensure that we are capable today and remain capable of putting the right inspector at the right place at the right time.

That concludes my remarks. I'll now turn the presentation over to Mark Satorius.

MARK SATORIUS: And just to summarize, I think you've seen by the presentation here that the NRC has a robust safety focus construction oversight program that includes oversight of the supply chain. In addition, the NRC will continue to be proactive, leveraging construction experience across programs and across the international community. And I'll just add one more thing that I think is a very visible demonstration that you were able -- as you followed the precession of presenters in this panel, and that is you've seen two program offices in headquarters that are interacting very well with our regional office, and that's something that we strive for. So, as a staff we are better in our diversity of experience when we can add those resources into one team. And with that we're ready for your questions.

CHAIRMAN MACFARLANE: Great, thank you guys very much. I will turn it over to Commissioner Ostendorff.

COMMISSIONER OSTENDORFF: Thank you, Chairman. First, Mark, I want to add my congratulations and welcome to that of the Chairman and

your new role as EDO. We're all very excited about working with you and we all wish you well.

MARK SATORIUS: Thank you.

COMMISSIONER OSTENDORFF: Let me also make some introductory comments in a couple of the areas. Laura, I want to applaud you and Glenn and Victor for your work to do the Part 52 lessons learned. I think that showed great initiative and it was important and a lot of organizations perhaps would've waited another year or two to do that, and I think you did it at the right time and I think that demonstrated great foresight on y'all's part, so well done. I also look at Glenn and Victor sitting next to each other, and I comment on their very positive working relationship and I think it exemplifies the importance of headquarters and the region working together so closely and with the proper communications. I know, Joel, you're a key part of that as well, but I just couldn't let this opportunity go by without commenting on the importance, but also how much we appreciate what you all are doing to make this complex mechanism work together well.

And Joel, I also want to comment on your acknowledgement of the construction resident inspectors and your team and those here. I think the entire Commission when we visit the sites, and I speak for all five of us here, that we've been extraordinarily impressed with the skill sets and the competence of the people that are out there looking at this day to day, and perhaps this is an area where you've not done enough as an organization to acknowledge and publicly show the American public what we're doing as a regulator in this area, but I wanted to thank you for --

JOEL MUNDAY: Thank you.

COMMISSIONER OSTENDORFF: -- highlighting that, but also I know that Victor and Glenn and others and Laura have been very active in talking about this because it's so important. And I know that when I've looked at the people's backgrounds in these positions I've been in awe of their competence.

Laura, let me turn to some questions with you if we can start out. And I want to go, kind of, to your Slide 8, 9 area that talks about supply chain oversight, and I appreciate your highlighting that the responsibility lies with the licensee to ensure that the vendor supply chain works well. That's a very critical point which I completely agree with. From time to time the Commissioners, we have a chance in our international travels, to talk to countries that are thinking about embarking on a nuclear program. We call them the new entrant group, those who don't have nuclear power plants, but are thinking about it. And there's a set of lessons learned from the NRC, from the IEA, from NEA, et cetera that go into those kinds of discussions. I'm curious, if I'm a new -- if I'm a U.S. company, I'll just use this as an example, and I'm in some kind of a vendor area, have not yet done any work in the nuclear field, where do I go to, kind of, get a feel for what am I getting into potentially, what are the lessons learned, how have other people faired who've entered this nuclear vendor supply market?

LAURA DUDES: Thanks. That's a great question, Commissioner. I think there's a lot of places you can go. So, I'm going to navigate you a little bit from a regulatory perspective so you can understand the regulator's view, and then I'd think you'd also -- I think the industry has a lot of guidance out there in terms of what you would do. I would always start, if I'm coming into the nuclear business, is to understand the lessons learned of the past. And so the agency

issued a pretty comprehensive lessons learned document, what is it, almost 20 years ago in NUREG-1055. So, that's, you know, what I would consider to be the mother ship of lessons learned from the first round of nuclear construction. But I think the agency also has done a lot with respect to suppliers. And if you look back in the 1980s and 1990s, we had issued multiple generic communications on things like procurement engineering, expectations associated with commercial-grade dedication. We actually had information back in the '80s and '90s on counterfeit, fraudulent, and suspect items. So, there's a wide variety of information that a new vendor could look at to see what the regulator's view is on some of the key issues. And then of course we have for -- we have a vendor website that talks about expectations associated with when we go out to inspect, our interactions with the Nuclear Issues Procurement Committee, which is an industry oversight body on the supply chain; our interactions with the American Society of Mechanical Engineers, their quality assurance requirements; and the Electric Power Institute, EPRI has quite a few documents out there. So I think there's probably several other areas you could go, but I think there is quite a bit of information out there that would provide context for what the nuclear industry requirements and expectations are.

COMMISSIONER OSTENDORFF: Okay. Let me shift gears a minute. A very specific question for you, Laura, in the context of the Lake Charles Facility, and there's been a lot of discussion, publicity, et cetera on modular construction and how that's gone the last couple of years down there. Over the last year or whatever frame of time reference you think is appropriate, are they making progress and getting better down there?

LAURA DUDES: Wow. Well, I think Buzz and Jeff made a comment regarding where they're, you know, the modules that are being delivered in the site, so I would hope that they would comment on the progress. We are -- have a team out there, actually this week; they're looking at the progress that's being made. It's a smaller team; it's more focused on some of the cultural aspects. I would say -- my best answer is too soon to tell. The team that's out there from the NRC this week will come back with insights. We have a follow-up inspection this fall to really look at the quality assurance requirements and the quality of the work that's coming out there beyond the environment because environment's important, but we're getting modules out, too. So our vendor inspections need to balance what they're looking at. So I would say that we're cautiously optimistic and our inspection activities will inform the actual progress from our perspective.

COMMISSIONER OSTENDORFF: That's fair.

LAURA DUDES: Okay.

COMMISSIONER OSTENDORFF: I'm going to run out of time here and I want to be mindful of some other questions, but very quickly, do you have any reactions to, in the first panel, Mr. Clements comments on our communications to the broader public? And as I understood it, and I talked to Tom at the break -- I know that the Commissioner Apostolakis and the Chairman also asked, and I think Commissioner Magwood in that area, you know, I could see us always having to -- we need to have the complete rigor of comprehensive technical discussions on how we do business, period. That will never go away. But I believe the notion was having a second tier or second set of communications that might be at a less technical level geared towards an

audience of different literacy from a scientific standpoint. Do you have any thoughts or reactions to that?

LAURA DUDES: Yeah, I think the staff -- no one on the staff would not support making every attempt to speak in a plain language manner and to provide either at the beginning of any meeting or document some kind of high level description, as you said, of maybe a second tiered. We always have to balance the cost of doing business because we have to communicate on very complex issues to our regulated community, because we -- often we're expecting them to produce something for us, so we have to be as clear as possible to them what's expected. But I think outreach and making information on the website as accessible as possible within a reasonable set of constraints is always good, and I -- so I appreciated Tom's comments.

COMMISSIONER OSTENDORFF: Okay, thank you. Marissa, let me ask you a question and I'll also ask Joel to perhaps respond as well. I know that you have one-of-a-kind facilities that you're dealing with that are very different in many respects from the Part 50 or Part 52 reactor construction projects, and I know that there's some apples and oranges, but there's also probably some commonality between construction inspection activities for fuel facilities and for the reactor projects, and that there might be some areas where it's helpful for us as an agency to have some commonality of approach between Laura's organization, yours, and what -- and Joel's kind of bringing these both together in Region II dealing with both fuel facilities as well as reactor facilities. Do you think that the -- different parts of our organization are fairly well aligned in this area or are there any gaps that need to be addressed?

MARISSA BAILEY: I think that we are fairly aligned. As Joel mentioned, the construction inspection for fuel facilities is very similar to how they do construction inspection for reactor facilities, and they even use the same inspectors -- the -- you know, the civil engineering type inspectors and all of the other construction inspectors. I think one area, for example, where we've been able to leverage from each other is for -- the inspection of the vendors and the suppliers. In both areas, we're not there to inspect the vendors. We're there to really inspect the implementation of the licensee's quality assurance program and other safety programs to ensure that the quality of the products that they are procuring meet regulatory requirements. So I think that there is a lot of commonality and there's a lot of integration between how we do construction inspection and fuel facilities inspection, and where there needs to be a difference, then we accommodate that.

COMMISSIONER OSTENDORFF: Okay, so --

MARISSA BAILEY: Okay.

COMMISSIONER OSTENDORFF: -- Joel, do you have anything quickly you want to add on that?

JOEL MUNDAY: I would agree with Marissa on that. Much of the codes that are used for the facilities are the same codes. The inspectors had a tremendous amount of experience, as y'all have seen as you've gone to the sites, in dealing with some of the issues that we've dealt with thus far. And I've been in my position for about a year, and when I came over I was really concerned that I'm going to have to learn how to construct two different types of facilities, and I was very happy to find that they really are not that much different from an inspection perspective.

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

CHAIRMAN MACFARLANE: Okay, thank you. All right, I'm going to start with you, Laura. And good to see you here.

[laughter]

Didn't see you in the gym this morning [laughs]. So going back to the discussion you just had with Commissioner Ostendorff about communication. First let me ask quickly, the working group -- the lessons learned working group that you talked about, you said that they interviewed NRC staff, licensee folks, and members of the public. What members of the public were interviewed? Do you know offhand?

LAURA DUDES: Yeah, and that's a great question. In fact, Jim Luehman and some of our staff had talked to Tom Clements and they had gone through the lessons report. So Tom was involved in the lessons learned report and he raised the very good issue associated with our websites. Our staff, both in projects -- project organization and construction organization took his comments and said, "Okay, yeah. We think we can do better," and they made some improvements to the websites to make them more accessible. But again, I think sometimes we -- we're engineers and we -- you know, we need to ask for help sometimes and we need to get engaged --

CHAIRMAN MACFARLANE: [affirmative]

LAURA DUDES: -- OPA and others to say, "Okay, well, so this is what we think and we've organized this great information in a certain way, but we can always do more." So we did try to be responsive because he raised that during the lessons learned, and we'll continue to be responsive. In fact, in talking

with Glenn yesterday evening, he said, “Well, I agree. Why isn’t it on the spotlight? These are projects of national significance. We can probably do better.”

So he was -- you know, we have every intention -- all the best intentions. We want to hear from the stakeholders and when we do we try and address when they’re reasonable concerns, and then we balance it out with the issues that Commissioner Apostolakis had raised, which was we also have to -- at some level we want to make sure that it’s accessible, but it has a -- still has a technical meaning and that we’re still spending a lot of our effort with the complex issues with our community.

CHAIRMAN MACFARLANE: I don’t think anybody, and Tom included -- where did he go? Oh -- would want you to dilute the information, okay? Nobody’s suggesting --

LAURA DUDES: Right.

CHAIRMAN MACFARLANE: -- but I think it’s important to be able to communicate to the public. I had a -- knew a professor from Harvard who used to say that he thought that a person shouldn’t be given a Ph.D. until they could walk into Central Square, arrive from the red line, walk up to the top of Central Square -- this is something that Commissioner Apostolakis will understand -- and explain what their Ph.D. is in a sentence.

LAURA DUDES: [affirmative]

CHAIRMAN MACFARLANE: What they worked on to a, you know, the first member of the public that you meet. And, you know, if you couldn’t do that, then you don’t deserve to get the doctorate. And I think that that’s true. It’s not -- this is not rocket science, being able to explain some of these issues in a

simpler way. And you're right. Maybe you need to work with others within the agency to do this, but I think the onus is on us as the NRC because it is simply part of our mission. Our mission is to protect public health and safety. If you can't -- if the public don't trust you, and they're not going to trust you unless they understand what you're saying and what you can do. If they don't trust you, you're not protecting the public health and safety. And so to do that, to get to that point, I think we need to be able to communicate well, a point which I will continue to hammer on [laughs] with time. But I appreciate your efforts.

And in terms of the website, we -- over the past year, I have heard constant complaints about the website, not just the stuff that you work on, but I think we need to make a stronger effort to work on that and make it more accessible and more reasonable, especially ADAMS.

So a question for you and Joel. In terms of the -- working with the Chinese and doing visits and that kind of thing, what I'd like to understand a little bit more in detail from both of you is what we're getting out of this exactly. So to what extent is this international cooperation informing our oversight of the vendor and supply chain process? What are some of the NRC's objectives in making the observations that we do of the Chinese program? So if you could both speak to that a little bit more, that would be helpful.

LAURA DUDES: Okay, so in the -- how about if I talk a little bit about the international vendor and then maybe you can talk about expectations in China? Well, I think our multinational design evaluation program efforts in the vendor inspection area have been probably one of the most proactive and productive aspects of the MDEP program. We do joint inspections with various member countries. We have an upcoming multilateral inspection. So not only

are we aligning and sharing on our inspection objectives and procedures such that we have sort of a common focus -- so that's a formal benefit that we --

CHAIRMAN MACFARLANE: [affirmative]

LAURA DUDES: -- get. I think we also get an incredible informal benefit on the relationships with our regulatory partners in other countries, and I would say there were recent examples in the news where there were some issues in Korea with some suspect parts, and what do we really want to know from a safety perspective? And we'll deal with that in a formal perspective in our relations, but if we have people that work closely on working groups that can get insights into these issues and then verify, "All right, well this may -- this doesn't apply or we're pretty confident that this is not impacting our U.S. plants, and then how can we help you, our partners, in Korea?" Those types of relationships, I think, are invaluable.

CHAIRMAN MACFARLANE: When you do international inspections, you have a team from all -- inspectors from all over --

LAURA DUDES: Well --

CHAIRMAN MACFARLANE: -- the world?

LAURA DUDES: -- we'll do -- well, the multinational, I believe, and it has three countries participating in it. We don't have one member from --

CHAIRMAN MACFARLANE: Right.

LAURA DUDES: -- the working group because I think the working groups are up to probably about 10 or 11 countries for the multinational design program. But we will have -- for the joint inspections it's two countries and a common procedure executing that procedure at a facility. For the multinational -- or multilateral coming up, I believe it's three countries --

CHAIRMAN MACFARLANE: [affirmative]

LAURA DUDES: -- participating in aligning on the procedures, objectives, and then issuing a report.

CHAIRMAN MACFARLANE: I would imagine one positive impact from that would be not just seeing another country's facility from your own viewpoint, but also if you have folks from two other countries with you, you get their insights as well, which may be different from yours --

LAURA DUDES: Right, and --

CHAIRMAN MACFARLANE: -- which might be helpful.

LAURA DUDES: Absolutely. And so you actually can gain technical expertise that -- and leverage that across the country teams. Also the cultural insights that really make a difference --

CHAIRMAN MACFARLANE: Yeah.

LAURA DUDES: -- in terms of understanding why something's being done some way. So aligning on a procedure and executing that technically is a great benefit, and then having worked side by side with these people in other capacities gives you a lot broader insight into how business is being done in the vendor world.

CHAIRMAN MACFARLANE: Great, that's helpful.

JOEL MUNDAY: Well, you heard this morning that the AP1000s at Sanmen and Haiyang, and y'all knew this, are the first in the world to be constructed. And both Buzz and Jeff Archie mentioned this morning they have staff over there watching those activities and working with the Chinese and gathering in their lessons learned as well as their own. We have done the same. We've had inspectors in China already looking at some of the construction

activities. We actually supported one of their inspectors -- the senior resident inspector at Sanmen, Mr. Lee, spent some time in the region a couple years ago, sort of as an exchange to see how we implement the regulatory aspects of things.

There's a tremendous amount to learn. While our inspectors are tops in their field and have a lot of expertise, right now its theoretical in terms of how these systems will interrelate and how the preoperational testing will go. We would like and have talked to China about going over there. They have been gracious and said, "Please, you're more than welcome to." We have a number of inspection procedures that we would like to take and witness some of the preoperational tests that will take place. We've actually provided a list of those tests to China -- to the regulators there and to contact us so that we can coordinate the dates to ensure that we're there. We think there is a tremendous amount to learn as the systems start operating. Like I said, we understand valves and pumps and systems, but these are new. These are the first time these have operated and we think it'd be a tremendous benefit to be there and be able to roll not only their lessons learned, but we see ourselves back into our inspection procedures.

CHAIRMAN MACFARLANE: Okay, great. And Marissa, just briefly, because I don't want to run over time here, but can you say something about -- do you feel that the URENCO facility construction and oversight went smoothly compared to what these guys are going through now or can you draw any comparisons?

MARISSA BAILEY: That's hard to say because URENCO, when construction began, was really a first time experience for us, and Joel can

probably talk a little bit more about how smoothly it went in terms of inspection. I think there were some rough parts.

CHAIRMAN MACFARLANE: Yeah.

MARISSA BAILEY: I think it went as smoothly as it could given that it was the first time we had done something like this in 10 years or so. Add to that that it was a fuel cycle facility which introduces very unique processes compared to reactors. In the end, as we approached authorizing operation, I think there was a lot of scrambling to process last minute license amendments and to get the inspections done so that we could authorize operation at a schedule that the licensee needed.

CHAIRMAN MACFARLANE: [affirmative]

MARISSA BAILEY: So it went as smoothly as it could. There were some rough parts, but I think the -- what I'd like you to take away from that, it's that we did learn from it.

CHAIRMAN MACFARLANE: Yes.

MARISSA BAILEY: You know, there were some lessons learned that we are applying as we move forward with the MOX oversight, as we move forward with the additional URENCO oversight, and are planning for the oversight of the other new fuel cycle facilities.

CHAIRMAN MACFARLANE: Okay. Thank you. Commissioner Svinicki.

COMMISSIONER SVINICKI: Well, I will join in my thanks to all of you for your presentations, and I also want to thank and compliment your colleagues. I know you're representing the work of your teams and a lot of folks who have contributed to the achievements that you've presented on here this

morning. I think -- well, one of our presenters on the first panel, I think, answered a question by saying perfection is the goal, and that may well be, but it is a goal for which I think we will be in a constant state of striving, so we will never quite be there. But having said that, maybe we acknowledge that we're not perfect.

I think that the development and the overall road towards preparedness for the activities you all are carrying out today is something that has been constantly assessed and examined and I think would stand as a model for the development of something. We've received a lot of feedback. We've table-topped things. A lot of the things that got interwoven in people's presentations and answers here today. But the outgrowth of a lot of the solid things we have in place today was no accident and took a tremendous effort and evolution and development over time. So I know that you're standing on the shoulders of all that good work, but I think the spirit of today's meeting is to continue to examine where we are and what we might modify or attempt to perfect and make better.

I asked the first panel about the ITAAC closure process, and I had some years ago visited Region II and met specifically with the group that was going to be managing the tremendous flow of information and paper. They showed me the whole suite of software tools and other things that we had to deal with that. I'm wondering if someone could address our general level of satisfaction with those tools and mechanisms we had put in place for the ITAAC process. I don't know if someone could speak generally to how satisfied we are with what we put in place in advance.

LAURA DUDES: Thanks, Commissioner. I think there's two people who can -- and really answer this because we have the programs in place

that the construction inspection program management information system, CIPIMS, which you saw down in the region, and I'd very much like Joel to talk about, as the end user, that system -- the implementation. And then we also have the systems that we put in place here in headquarters that help us process the licensees' ITAAC closure notification, which is more of a workflow system that just references all the information in CIPIMS. So the workflows that are -- that exist for us right now to process the licensees' submissions -- I think we have a general satisfaction and we're working through and making tweaks to the lessons learned. But the bigger system that captures all the information that will support our finding down the road is CIPIMS and so the users should comment.

JOEL MUNDAY: Yes, CIPIMS is a very powerful tool, and if I were completely honest with you, I would tell you that in the region we sort of fought CIPIMS a little bit because it is overwhelming. It was new. It's different. But we've come around.

COMMISSIONER SVINICKI: Okay.

JOEL MUNDAY: The program office has worked with us tremendously in developing a program that we can work with that's somewhat intuitive, more intuitive than it was in the early stages. We are producing inspection reports from CIPIMS now. We use the program from the beginning of the inspection cycle through the issuance of the inspection reports through closure of the ITAAC themselves. And we found that when we devote the effort and learn how the systems work that we can use it and it is working out well, and it's a very powerful tool that does keep up with the specific inspections, the specific elements that we need to keep up with to be able to make a finding at the end.

COMMISSIONER SVINICKI: Okay, and on this point, in terms of the orchestration of what I'll call for lack of a better term the various hold points or where we might want to have someone observe an evolution, are these tools working as intended to make sure that we're aware of when we would want to have eyes on some sort of process and have the right people there?

JOEL MUNDAY: They do work well in that respect. We are able to identify and map activities in our inspections with activities -- construction activities with the licensee. We share -- the licensee shares with us their schedules. It's very difficult to -- you know, to plan a schedule in a construction environment like we're doing today and hit it closely. The licensee provides us with long-range planning as well as six week look-aheads and we're able to use that to better hit the points that we want to look at to implement the inspections that we need to do.

We have a little ways to go in that. The pace of activities has been slow enough that it really hasn't hurt us. We are committed to devoting the resources necessary to be able to work with the licensee more closely to be able to get a better understanding of when certain activities will take place to ensure we have the right inspectors there.

COMMISSIONER SVINICKI: Okay, thank you for that. And in response to Chairman McFarlane's question, both you and Laura were talking about international experience, the opportunities we've had most notably in China because of the AP1000 connection, to observe or to cooperate on and collaborate and observe inspections and other activities. You mentioned some pretty operational testing at, I don't know if it was Sanmen or Haiyang or maybe both, that we think we're going to have the opportunity to be invited in and

observe. That leads me to a question of whether or not -- has there been any discussion or have the Chinese offered that we could have observers present at power ascension for the initial startup? Is that an opportunity we'll have as well? And if we did have people there at that time, what would be our objectives for observing that activity? What do we think we would get out of that?

LAURA DUDES: That's a great question, and I know -- in fact, we have -- and our office director has actually been invited to be in the control room during startup. Now he knows very well that that's nice, but we actually would want perhaps our technical people and our startup folks being able to watch those activities given -- in light of travel budgets and other things. So I mean, I think the objectives would be to just get an understanding of what that evolution actually looks like in power ascension. I'm not sure power ascension would be as interesting as the first of a kind, first three of a kind tests that are in the license condition, which really looks at the unique features of this design. Perhaps maybe a less resource-intensive activity to look at power ascension may be interesting just to see if there's anomalies, you know, with the scale of the facility or something like that. But --

COMMISSIONER SVINICKI: You know, what tends to happen is that people like office directors get dispatched for ceremonial types of things of significance, so that may be why he has been invited to power ascension --

[laughter]

-- but I do think that the -- some of the other preoperational testing as Joel went over very well in response to Chairman McFarlane's question, I think there's some very key things, some points of knowledge that I think we could really benefit from, so I appreciate that and I'm not trying to -- I know these

things are discretionary for the Chinese to invite us or not, so I know we're also being sensitive not to wear out our welcome there. So I appreciate that. Thank you, Mr. Chairman -- Madam Chairman.

CHAIRMAN MACFARLANE: Okay, thank you. Commissioner Apostolakis?

COMMISSIONER APOSTOLAKIS: I have no questions and no comments on the Harvard professor's suggestion.

[laughter]

CHAIRMAN MACFARLANE: Just because he's from Harvard.

[laughter]

No more questions? Okay. Commissioner Magwood.

COMMISSIONER MAGWOOD: Never know what to expect on a Commission. Well, first let me echo some previous comments, first welcoming Mark to preside over his first meeting as EDO. I'm sure that the -- you must feel a little bit like a potted plant right now listening to all of this, [laughs], but --

MARK SATORIUS: A little bit.

[laughter]

COMMISSIONER MAGWOOD: But I suspect that as this goes forward, you'll find yourself talking more than you want to. So --

MARK SATORIUS: Thank you. Thank you.

COMMISSIONER MAGWOOD: -- enjoy the calmness while it lasts. And I'm sorry to hear that Jim is retiring. I didn't -- I hadn't heard that, so I'm really pleased that you invited him to participate today. He's one of the few people in the agency I can see eye to eye with, if you know what I mean --

[laughter]

-- and, you know, I have a great deal of respect for him for a variety of reasons, so we're going to certainly, you know, miss his great contributions. So, Jim, I hope you're -- have a long, healthy, and fun retirement.

I also wanted to echo Commissioner Ostendorff's congratulations sort of broadly to the team here. I mean, I think Glenn and Vic and Joel, Laura in particular, I think you've all done tremendous work here. This has been a very unique, difficult, complicated, historic exercise over the last year or so, and I think despite the fact that there were certainly some areas of friction in discussion that took place with the licensees, I think when you see where we are today it's gone very well. And we saw these photographs of how far the projects have come and a lot of that's due to the work of you and your staff, so you deserve a lot of congratulations for that.

But let me start with you, Laura, because I look at you as being the person who seems to have spent the most time staring at the wall thinking about these things. And I think that -- and I know you heard, particularly, I think Buzz Miller talking about this during his time at the table. I know you've dealt with this and thought about this, and this question about what to do with what I think Buzz referred to as small deviations, which I think is a very complicated term when you break it down, but it is -- it's a fair question to ask. You know, we do have, you know, the 50.59 process on the operating plant side, and obviously if you're building something as large and complex as a nuclear plant, you would like to have a certain level of flexibility. But as you pointed out in your remarks, our job is to make sure you're building what you're supposed to build. So how do you see that question of small deviations and how going forward we should look at

that, and should we have processes that look like 50.59 more to deal with those sorts of things?

LAURA DUDES: Thank you. That's a good question. I appreciate the question, and we do think about that quite a bit. But actually, we do have a process in Part 52 that's a 50.59-like process. There's a lot of information in the final -- updated final safety analysis report that the licensee has or their license that can be changed without any prior NRC approval. So that exists, but I don't think that's the answer just yet, because we have situations that -- I think that Buzz was alluding to where perhaps there's a code reference, and the code is an area where we don't want licensees to deviate. They commit it upfront. So, you know, again, the staff is open. If you look at two of our lessons learned from our report, the first one is making sure we clarify the information that needs prior NRC approval to make sure that everyone understands what process they're in. And then one of the lessons learned was making sure that we monitor the changes during construction process to make sure that that has the right threshold. Now, up until recently, we had -- we were engaged. We would have public meetings with the licensees. Probably within the last three months, I know we've had discussion that says is there anything that you're finding that has no safety significance or little safety significance that you're not able to change through the existing processes? And the answer up until now has been, "No, we can't find an example."

So as we move through this, and I heard the embedment plate issue, and I think that's being discussed with the region. It may not have raised up to this is an issue. A, we should take -- be happy that the licensees are engaged, that they're aware that there's these deviations. We need to have the

dialogue with them to then understand the safety significance and it's up to them to provide that information and the staff to really do their engineering upfront and then have that dialogue to say what processes are there. I don't think -- I think we want to preserve the Part 52 process. We want to make sure that safety features -- and it's being designed in accordance. But our lessons learned report for which we've been tasked by Glenn to look at these things, I think if we see examples where there's a lot of staff resources and licensee efforts being spent on clearly understood non-safety significant issues, we're open to discussing that and moving forward. The fact is, we're just not seeing those examples coming to fruition where there is a change process that isn't working or that there's a challenge. There's some communication challenges which we worked through in the first year to make sure we're on the same page.

COMMISSIONER MAGWOOD: I appreciate that. You know, I think that -- I was listening to the presentation at the table a little bit earlier, and, you know, I did hear that -- and by the way, I do think that the lessons learned report was very good and very helpful in lots of ways. And one of the things that's pointed out in the report is that we need to be more precise about how we refer to various terms and processes and requirements. And it really suggests -- and I think Joel mentioned this when he was talking, but it really does seem to me to suggest that we almost need a greater level of detail and fidelity in the explanations of -- I think there was a one discussion in the report about the word "typical." What did typical really mean? So the suggestion was, well, we have to be more elaborate, we have to be more specific, and nail down what we meant when we said that. On one hand, I understand that and that's the appropriate reflex. But on the other hand, that's adding more detail to the DCD, isn't it? And

isn't that kind of what got us into a lot of these questions in the first place? So is there -- are we going to have like tension between the desire to have more detail to avoid these misinterpretation issues down the road, versus the desire to, perhaps, not have that detail in there in the first place so we aren't holding licensees to it? How do you see that working out?

LAURA DUDES: Well, I think, and again, it's a great point. As we implement or resolve the tasking memo from the office director on detail -- see, I don't know if I would say detail or clarity necessarily implies more detail. As they resolve the thinking around this issue, in terms of what requires approval, it may not be more detail, it just may be having very definitive points in the document where you're clearly -- you're not reading text in one area that references a document in another area and trying to figure out what in those -- what in that technical information has a certain level of change process approval to it. So, again, clarity -- I hope we're not going to go down to more detail, because I don't know if we've ever made things more clear with more detail [laughs] in Part 52.

But I think there's work to be done. I think you have to look. We can be mitigative, looking ahead for DCDs that are coming forward that we haven't certified yet, but also communicative with licensees and public on interpretations of the existing documents so that we can be looking forward. I know, with respect to certain complex structures and other activities in the current design, we're looking to have public meetings so that we're communicating on these different levels of detail. We may not have to add more into a document, but it gives you pinch points where you may want to communicate more for a common understanding.

COMMISSIONER MAGWOOD: Okay, right, excellent, appreciate that. What -- just quick question, what -- the seamless pipe that you showed in one of your earlier slides, where was that being manufactured?

LAURA DUDES: That is the IBF facility in Italy.

COMMISSIONER MAGWOOD: Oh, that was in Italy?

LAURA DUDES: [affirmative]

COMMISSIONER MAGWOOD: Rats, I thought that was here. Okay.

[laughter]

Just to -- just to close, I just wanted to come back to Mark, just to give you a chance to -- because I don't think you had a chance to opine on this. So the Chairman was talking, I think, to Laura about the public communication aspect of this and the clarity of the language and the website. Just give you a chance to react to that. While you've been EDO for hours, you've been in the agency for a long time. Do you think there's -- what do you think about, you know, the discussion about ADAMS complexity, the website, anything of that you'd like to opine on?

MARK SATORIUS: Well, it intrigues thought, because I can see the needs of the public to be able to understand some of the things that we're doing. It's important to have their confidence to be able -- and for them for -- to gain their confidence, we have to be able to explain what we're doing. There has to be, and I think the Chairman even acknowledged -- Chairman acknowledged this as well, there has to be, we have to have that technical discussion at the right level to be able to do our regulatory duties to make sure that the facility, in

this case, is being built properly, and for operating reactors being operated properly.

I think that we need to examine whether we can do some things to our website that will enhance it and possibly make it more open to folks outside. I know my parents have gone on our website and can't find some things, so. But then they call me, and I tell them what they need to know, so.

[laughter]

But, I think there's an opportunity here, that we need strike a balance some place in the middle, that we see to the needs of not only our licensees and staff having the right dialogue at the right level, but enhance the ability for the public. It's just going to, it's just going to be a positive in the outcome if we can be more -- explain more to members of the public what it is we do.

COMMISSIONER MAGWOOD: Appreciate that. As I always reflect that, you know, it's always worth reminding ourselves that we work for them; they don't work for us. So we're the ones that have to do the work to make sure these things are as clear as possible. Again, thank you, thank you all. Thank you, Chairman.

CHAIRMAN MACFARLANE: Thank you. Thank you very much, staff. I really appreciate your presentations. I appreciate all your hard work. Appreciate Vic coming all the way up here, and Joel, and the inspectors, too, from both --

MALE SPEAKER: From the regional office.

CHAIRMAN MACFARLANE: -- from the regional office, okay, great. Appreciate you guys coming up here. Appreciate all your hard work,

Glenn, staying on top of this, you know. And Laura, you guy have been -- had some busy times recently. So it was a very fruitful discussion this morning, and fruitful discussion with the external panel as well. And with that I think we will adjourn this meeting. Thank you all.

[Whereupon, the proceedings were concluded]