UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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MEETING WITH THE ADVISORY COMMITTEE ON

REACTOR SAFEGUARDS

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FRIDAY,

OCTOBER 6, 2017

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ROCKVILLE, MARYLAND

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The Commission met in the Commission Hearing Room at the Nuclear Regulatory Commission, One White Flint North, 11555 Rockville Pike, at 10:00 a.m., Kristine L. Svinicki, Chairman, presiding.

COMMISSION MEMBERS:

KRISTINE L. SVINICKI, Chairman

JEFF BARAN, Commissioner

STEPHEN G. BURNS, Commissioner

ALSO PRESENT:

ANNETTE VIETTI-COOK, Secretary of the Commission

MARGARET DOANE, General Counsel

ACRS MEMBERS PRESENT:

DENNIS BLEY, ACRS Chairman

CHARLES BROWN, JR., ACRS Member

MICHAEL CORRADINI, ACRS Member

JOY REMPE, ACRS Member

P R O C E E D I N G S

10:00 a.m.

CHAIRMAN SVINICKI: Well, good morning, everyone. I call this morning's meeting of our Commission to order. Today we will meet with the Advisory Committee on Reactor Safeguards. We have, I think, many Committee members here in the room and a number of presenters at the table, including the Committee's Chairman.

We will hear a number of topics and I think that the Commission always finds value in our -- I think we target semi-annual public meetings with the Committee. Of course, we are receiving the letter reports and advice of the Committee throughout the year. But this is an opportunity to highlight a few issues.

I would note for those who are listening in to the meeting that we're not discussing today, necessarily, in depth the totality of the Committee's work over the last six months. It has a fairly lively operational tempo. And so today we just highlight, I think, some topics recommended by the Committee and agreed to by the Commission. And as the typical format would be that -- or will be that I will recognize the Chairman and then the Chairman will hand off to the various Committee members who will be presenting here today.

But before we begin with that I would ask if my colleagues have any opening comments that they would like to make?

(No audible response.)

CHAIRMAN SVINICKI: Okay, in the absence of that I will turn the meeting, or the presentations over to ACRS Chairman Bley.

ACRS CHAIRMAN BLEY: Thank you, Chairman. Well, since our last meeting with you we've -- back in April -- we've issued 15 reports.

Of those we are going to talk about four of them today. The first four I will introduce. The first -- Professor Corradini will lead us through. And that's the South Texas Project Application for Risk-Informed GSI-191, the sump debris issue.

After that Dr. Rempe will lead us through Consequential Steam Generator Tube Rupture discussion. The next one will be back to Dr. Corradini again for the Topical Report on the Safety Evaluation of Passive Nuclear Power Plant Electrical Systems. And that brings up some issues that are of interest to many small reactor folks, I think. The next one will be Charlie Brown. And that is our review of the Proposed Rulemaking on Cyber Security for Nuclear Fuel Cycle Facilities and the associated Reg Guide.

The remainder of the items we've looked at in the last six months or so include -- can we have the slides up? I didn't look to see -- down one more, one more -- one more. One more. Okay, that's where we are. On APR-1400 we have issued three letters and that included 13 chapters with open items that were reviewed. We flagged two or three items on those reports that we will be following up in the future. And on the next page we've reviewed the NuScale Topical Report on the design of highly integrated protection systems platforms. And in license renewal area we had the South Texas Project Units 1 and 2 renewals and the guidance and the NUREG and SRP on subsequent license renewal that we've gone through.

Next page, please. Guidance in bases. Couple of these -- - NUREG-1530, which was the reassessment of the dollars-per person rem conversion factor policy -- we had some disagreements with the staff that I think we are -- we plan to work out together in the future. The other one is related to that and that's the -- the guidance on cost-benefit analysis. The

draft we reviewed was missing many of the appendices. We look forward to seeing those when they come to us. The schedule for that is something we are learning this week. We don't know it quite yet.

Next one. Browns Ferry 1, 2 and 3 extended power uprate. Then we had the draft safety evaluation on the Westinghouse reactor coolant pump shutdown seals. These are the very low-leaking seals. And the safety evaluation for the Westinghouse Fuel Performance Analysis package.

Next one. Those are the ones we finished. We are continuing work in the design certification area on the APR 1400. We will be doing the SERs with no open items. And they begin to come to us, I think, next month. And NuScale, we have several more topical reports to review and sometime later we will be seeing the SERs on the application itself.

Construction permit, there's one, and that's the moly-99 facility that Northwest Medical Isotopes is working on. We expect to be writing our report on that next month. SOARCA, and I think this may be our last report on SOARCA, if I remember that properly. We're also doing that in November. The next one, please.

License renewals for Seabrook and Waterford are coming up. And for AP1000 there is a WCAP -- a technical report addressing potential debris generation associated with cables in non-metallic insulation. This is GSI-191, again. The sump, but it's peculiar to the AP1000. Next one.

In the guidance area we are reviewing a new Reg Guide on reactivity-initiated accidents. A NUREG on high burn-up fuel storage and transportation. And we will be seeing additional versions of NUREG/BR-0058, which is the cost-benefit NUREG guidance. And finally, Reg Guide 1.174, Revision 3. And you will be getting a letter on that from us this month,

later.

Next page. Digital I&C area, these two have been here for a while. And I am not sure exactly when we get to those with the staff. But we hope not too far in the future. 50.59 Guidance and diversity and common cause failure -- and defense in depth. From a hydraulic area we're back to GSI-191. This is another PWR Owners Group item with the in-vessel test results. And AREVA's AURORA-B transient code for fuel performance -- that's come to the staff and to us in packages. We've just finished reviewing the first package and we will have a report to you this month on that one.

Next, please. In the area of reliability and PRA, we continue to review the work on the level 3 PRA. We had a meeting just this week. There's been a tremendous amount of work completed there. They have a fair ways to go, yet. But it's moving along.

And in the human reliability area we have both the development of ideas -- that's the methodology in response to an SRM from several years ago. And at some point we hope to review the control room abandonment risk report. The schedule in that isn't clear at this time.

And finally, on the last one, metallurgy and reactor fuels. There's a report on the consolidation of dry cask and dry fuel storage standard review plans. And future plants, the effort on licensing modernization framework. And we will see more of that, I think, in a month or two. That's going to be coming to us.

We have already started work on the advanced reactor design criteria. And they will be coming back to us, I think, early next year is the time frame for that. So that's the stuff that's on our calendar. And at this point I will turn the presentation over to Michael Corradini to take us through

the first report.

ACRS MEMBER CORRADINI: Good, thanks. Could I get the first slide, please? So I am going to give a background about GSI-191. I am assuming you all know it, but just in case.

(Laughter.)

ACRS MEMBER CORRADINI: So clearly it's been identified as a safety issue. Following some sort of postulated loss of coolant accident what we want to assure is long-term cooling over hours, days, weeks if necessary. And the concern was raised that because of the LOCA event you would generate debris whether it be stirring up latent debris in the containment or essentially fragmenting or disassembling pieces of thermal insulation. And this debris can then be transported with water. And as time marches on you firstly -- you initially have injection of water from alternative tanks outside of containment. But when that's depleted you switch to a circulation mode that the water sitting at the bottom of containment is brought back in through a sump and pumped back into the vessel.

And in that circulation mode the concern is that generated debris will accumulate and potentially can do one of two things. It can either potentially clog the sump by essentially accumulating on the strainers and causing some sort of unfortunate lack of operation of the pumps. Or, if it passes through the strainers, some of the fine debris can make its way downstream into the vessel and clog or diminish the heat transfer capability inside the fuel assembly.

So for those two reasons GSI-191 was identified -- the generic safety issue 191 was identified back in 1996. Following that -- for both concerns, I should say. Following that in 2004 there was an issuance of

generic letter which asked licensees to do three things. One, to perform an evaluation. Secondly, this evaluation would have to consider that this debris is floating around and circulating and how it affects the long-term cooling issue. And third, if action needed to be taken, define what that action is and inform the NRC.

Next slide, please. So the staff and this has been going on, as I am sure you are all aware, for a while. The staff has developed three options. The first option was under some circumstances where plants have types of insulation that can easily meet this, that they've developed what I will call a set of conservative compliance approved models. And that was the first option.

Second option was to do mitigation and alternative methods -- both a 2A, which was deterministic, which I am not going to discuss, and 2B which is risk-informed -- which is the purpose of us here today. And just to identify that South Texas is the pilot for this risk-informed approach.

There is an option three which hasn't been used yet whereby separate strainer and in-vessel issues would be first determined -- determined. This could be for strainer issues and then risk-informed for in-vessel issues. Back to option 2B. As we understand it, there are a number of plants that may use option 2B. And I have just some listed here -- not that they will, but they could.

Next slide, please. So for South Texas, Units 1 and 2 have fibrous insulation on their reactor coolant system piping. And there is a good deal of it, such that it is a large burden to remove it either due to the radiological dose to the workers, or because of the cost. So what was taken in terms of actions was first, by South Texas -- was first to replace the original strainers

with new, larger strainers. I quote the number -- engineers like numbers, so it's there. It is big. But much larger than what was there before -- at least more than a factor of ten larger in terms of the surface area of strainers to prevent clogging and those issues.

They also replaced the Marinite insulation with NUKON insulation. I think it was around the hot leg nozzles. Next slide, please. So following that, South Texas requested the use of a risk-informed method. They submitted this to the staff in 2015. Following that, in discussions with the staff they modified their submittal and submitted in December of '14, an approach which we will call R over D, or RoverD, to bound the uncertainties.

It had three characteristics, first is to ensure that they would do a series of tests that would essentially bound most if not all of the debris species that would go into the containment in this long-term phase and that would -- might show up on filter screens or in the core. Then if they found scenarios that would produce debris that was larger than that, they would assume that that would lead to core damage and assess the risk. And then finally, through all of that, confirm that contaminant integrity was maintained to provide adequate defense in depth.

So I have a cartoon figure on the next slide by one of our great graphic artists. That's an inside joke. But all I want to do is just to lead you through the fact that -- that the whole thing is driven by the fact that there was a good deal of empirical test data to bound how much fibers would be generated. You would then examine individually through a process all the various locations for a break locations that could produce this debris, and then make a determination if the total amount computed to have been generated at these various locations within the containment due to loss of coolant accident

was greater than the total amount of finds tested.

It was assumed that the scenarios would essentially lead to fuel damage. If they were less than -- then essentially it would be deterministically acceptable and therefore risk over deterministic. Next slide, please.

So the staff did an evaluation of this using the Reg Guide 1.174 structure based on five key principles. And so, once again, let's turn to the figure -- next slide, please. So these are the five tenants of risk-informed principles for risk-informed regulation. I am not going to read them. You probably know them better than I. I have to remind myself of them.

But what I intend to do is just simply to walk through these and the staff's conclusions relative to how the proposed risk-informed approach met all five of these. Next slide, please.

First one, in terms of Principle 1, if the regulations were met -- this was a license in exemption primarily because historically this was determined by -- this was found acceptable by deterministic means. This was a risk-informed approach, so it required an exemption per regulation. Staff felt that the regulations were met by this exemption. So that was Principle 1.

In terms of Principles 2 and 3 for defense and death and safety margins -- for defense and depth, staff felt that the actions identified were adequate in response to the LOCA event. That is, there was an appropriate balance between prevention and mitigation. There was redundancy in terms of the design and the barriers had a sufficient amount of independence.

In terms of safety margins, they felt the margins were adequate. That is the construction of the -- we will call the larger strainers --

and the appropriate systems were per codes and standards as well as the inspection process. And the licensee basis of the values were appropriate. Next slide, please.

In terms of Principles 4 and 5, first for performance monitoring -- the approach taken was felt by the staff to be consistent with NRC guidance. In terms of Principle 5, showing that the Delta risk increase or change was within the guidance of Reg Guide 1.174, the analysis showed the contributions to increase in the risk due to the debris was small and consistent with the Reg Guide -- whether it be due to core damage frequency or a large early release.

I will mention that the staff wanted to be sure about this, so they performed a series of bounding calculations where they essentially looked for the smallest break size that could create these debris. And then the fine debris as well -- latent debris. And then found anything larger than that and assumed it would to damage. And still the Delta risk was sufficiently small to be acceptable. So the staff's bounding calculation gave them even more confidence in the analysis. Next slide, please.

So to get to our conclusions, the first thing was that we felt the staff -- or, excuse me, that the South Texas proposed change to its licensing base that it described in the LER was acceptable. We also felt that the South Texas proposed changes to the technical specs were acceptable. And there were no changes that caused a radiological source form any different than was previously approved for South Texas 1 and 2. Next slide, please.

In addition we found there is reasonable assurance that the health and safety of the public won't be affected by the operation of South

Texas' 1 and 2 in the proposed manner using this approach. We did feel that the staff should, if this application -- this method of application of risk-informed meeting of GSI-191 is to go forward, the staff should ensure the future applications benefit from a more systematic implementation of the risk assessment process. There were certain particulars in how it was done that we thought could be improved and we thought it should be regularized. So I think that's it. And I will turn it back to the Chairman.

ACRS CHAIRMAN BLEY: Thank you, Mike. At this point I will turn it over to Dr. Rempe. Joy?

ACRS MEMBER REMPE: Thank you. So this presentation, if I could have the first --

ACRS CHAIRMAN BLEY: It's off now.

MR. REMPE: Oh, red it on.

ACRS CHAIRMAN BLEY: Red dot is on.

(Laughter.)

MR. REMPE: Green should be on. That's the way we're trained at ACRS meetings, sorry. Anyway, if I could have the first slide, please. Thank you. Okay, this presentation does focus on our efforts to review staff activities regarding consequential steam generator tube rupture.

Consequential steam generator tube rupture occurs when there are tube failures that are induced by other events. This includes thermal-induced failures associated with hot gases coming from a degraded core during a severe accident and pressure-induced failures that may occur if there's a large pressure difference across the tubes during an accident such as a main steam line rupture.

These events can dominate plant risk if they lead to

significant radionuclide releases that bypass the containment. In December 2009 the Office of Nuclear Reactor Regulation issued a user need requesting methods for evaluating risk assessments that treat consequential steam generator tube rupture. The user need explicitly requested methods for evaluating this phenomena in Westinghouse and Combustion Engineering plants. It was recognized that there were differences in the steam generator geometries for such plants and that these differences could affect the potential for consequential steam generator tube rupture. Next slide?

The Office of Nuclear Regulatory Research addressed this user need using a combination of state of the art computer codes and simpler analysis tools. A CFD code, which had been benchmarked with one-seventh scaled experimental data was used to predict the complicated flow patterns associated with natural circulation. Mixing parameters were developed based on these results that could be applied in systems analysis codes such as MELCOR for predicting the plant thermo-hydraulic response.

Detailed finite element codes were then used to benchmark simpler analysis tools for predicting the potential for failures within components in the RCS. The staff developed a new software tool for predicting the risk. And an advantage of this new tool was that it could accommodate plant-specific input such as the geometries and the materials associated with various components in the plant.

These methods were applied to two example plants -- a four-loop Westinghouse plant and a two-loop Combustion Engineering plant. In the next slide, if I could have it, I've highlighted some of the features of the efforts completed by the staff. They considered the -- or the effects of two defects of flaw distributions that were developed based on in service

inspections. They considered the potential for other vulnerable plant locations to fail first, such as the surge line or the hot leg. And that's important because if they fail prior to steam generator tube rupture -- RCS will depressurize into the containment and reduce bypass releases. The evaluations consider both design basis and severe accidents.

Thermal induced failure analysis focused on station blackout events. The long-term station blackout events considered a key uncertainty, the presence of looped seals, by considering multiple cases -- cases with the looped seals closed and opened, as well as intermediate cases where you initially had a looped seal open and then it re-closed.

To illustrate why this is important, I have included the graphics on the left of this slide that's disappeared. Anyway, the presence of looped seals can affect the heat load to the steam generator tubes. If the looped seals are closed, just showing in the upper left graphic, water will accumulate at lower elevations with an RCS piping and this will form a seal that inhibits full loop natural circulation flows.

Counter-current flows will develop in the hot leg which promotes mixing and cools gases from the degraded core before they come in contact with the steam generator tubes. If the looped seal is open, full-looped natural circulation flows are reestablished allowing the gases from the degraded core to more directly impart their loads onto the steam generator tubes.

Risk evaluations focused on characterizing two parameters -- the probability of containment bypass due to consequential steam generator tube rupture, and large early release frequency. Results are documented in NUREG-2195. Our letter on this topic has several recommendations and

conclusions that I have highlighted on the last two slides of my presentation.

First we recommended that NUREG-2195 be published. Staff efforts on this topic have significantly advanced the state of the art for evaluating this phenomena. And there's several near-term applications for using these methods. They can be used to characterize the risk significance associated with operational events and inspection findings. In addition, they help other ongoing staff activity, such as the level-three risk assessment being completed by the staff.

Second -- next slide -- our letter emphasized that the vulnerabilities associated with consequential steam generator tube rupture are very much specific on the design and operation of the plant. In NUREG-2195, evaluations indicated that the contribution of consequential steam generator tube rupture to containment bypass frequency was an order of magnitude higher for the Combustion Engineering plant than the Westinghouse plants selected. This result was primarily attributed to the differences in steam generator geometries of these two plants.

But there's uncertainties in these -- and limitations in these results. For example, the uncertainty associated with loop seal clearing. Thus, our letter also emphasized the point that it is very important for staff to complete their ongoing efforts to develop guidance for applying these methods and that this guidance should explicitly list the limitations and uncertainties.

Our last recommendation was that additional plant-specific risk evaluations be completed using the NUREG-2195 methods. The staff efforts on this topic have identified some vulnerabilities associated with containment bypass frequency -- with consequential steam generator tube rupture that affect containment bypass frequency. Hence, we also

recommended that these additional valuations consider the effectiveness of mitigating strategies to reduce this risk. With that, that's it.

ACRS CHAIRMAN BLEY: We're going back to Mike Corradini for a discussion of electric power system criteria for passive nuclear plants. Mike?

ACRS MEMBER CORRADINI: Hello again. So I am an electrical engineer now -- or, at least a fake one. What I want to talk about is the safety classification of passive nuclear power plant electrical systems. Could I have the next slide, please? So a little bit of background. First, a reactor design with no safety-related equipment dependent on electrical power to perform its safety function, based on the current logic, would not require the use of a Class 1E AC or DC power system. So throughout this and the letter, Class 1E AC or DC power is essentially related to safety-related. And non-Class 1E is non-safety related.

NuScale submitted a topical report to obtain approval of a set of passive design attributes that would justify the use the non-safety related electrical power systems. Next slide, please. So the topical report was unique in that it specified a set of conditions of applicability that describe plant design features and operational attributes that would -- that justifies this conclusion. The report also provided augmented design qualification and QA provisions as minimum requirements for the electrical systems to be determined to be non-safety related, but that would be needed for accident monitoring. Next slide, please.

So these attributes and augmented requirements were proposed to be generic for any passive nuclear power plant electrical system. When the topical report was submitted NuScale asked and staff agreed that

all that was reviewed was the main body of the topical report. There was a series of five appendices that were there as examples. Staff did not review those and did not comment on them, rather had their judgment based on the main report.

Staff found that this proposed concept with the conditions of applicability as well as a design, qualifications and QA provisions were acceptable. But they felt they needed to add specific limitations and conditions. And so what I want to go over is the -- those limitation and conditions. Next slide, please.

So, in terms of the concept of a highly reliable non-Class 1E DC power system, the topical report indicated that a traditional safety-related vented lead acid battery as well as a commercial grade valve regulated lead acid battery -- don't ask me the difference of those. I have backup just in case on this since I am -- I don't drive motorcycles, essentially. But in any case, they're -- both the safety-related vented lead acid battery as well as the valve regulated commercial grade lead acid battery were deemed acceptable based on suitable IEEE standards.

In the topical report it required that such a full load capacity -- that twice the full load capacity of the typical Class 1E DC power system would be required in such a design for any passive nuclear power plant system. But the staff felt there were two additional conditions they wanted to add. First one was that sufficient detail in the design should be there so that they verify the relevant QA program so that it meets Reg Guide 1.155, Appendix A guidance. And secondly, a second condition that the batteries as well as their associated structures and components be seismic, Category-1 grade. Next slide, please.

In terms of post-accident monitoring, the topical report only applies to a design in which no parameters being monitored are needed for operator action during any design basis accident. So those systems that are watching various key parameters are only there for safety status indication, not necessarily for operator action. The reliabilities instrument should be substantially similar, though, to that of a Class 1E electrical system. Staff felt it was important to emphasize this by adding in another condition that no operator actions are needed based on the fact that it's only safety status indication, rather than need for action. Next slide, please?

In terms of safe shutdown core cooling as well as pressure boundary integrity, staff added a condition that it's important to demonstrate that these conditions of applicability are consistent with the functional requirements contained in a plant principle design criteria regardless of what the passive nuclear power plant might be. In addition, staff wanted to understand -- in the topical report it was indicated that the plant should be brought to a safe, stable condition. Staff asked what does that mean? That came back with that meant sub-criticality and ability to remove decay heat to maintain fuel cladding integrity to maintain that safe shutdown criteria.

And the staff added an additional condition. And that is it must demonstrate that this is consistent with GDC 26 and 27. I don't remember that. I went and looked it up since I don't remember all these GDCs. That basically is saying that I want to provide shutdown margin in case of malfunction. So for example, if I have a stuck control rod I want to make sure that I have an appropriate margin. Next slide, please.

Again, on the same topic, passive plant response to some anticipated operational occurrences include a process by which you establish

a direct coolant flow path between the reactor core and the containment. The question raised by the staff was there too much reliance on containment? They wanted to make sure there was an appropriate balance in defense in depth between the various levels of protection. And so they added an additional condition, which is that systems necessary to retain reactor coolant within the reactor coolant system boundary are designed with sufficient reliability so that a challenge to containment does not occur with the frequency of an operational occurrence. That is, I don't want to have something that I keep on going back to containment as my final barrier of defense in depth. Next slide, please.

So our conclusions on this and recommendation -- the topical report in our mind was acceptable, but only for use as a reference document for the NuScale plant electrical system design subject to the staff's limitations, conditions, which I just went over. Secondly, that the staff's SER on this topical should be amended so that it appropriately indicates just a NuScale design. Next slide, please.

And then, finally, that the design qualification and quality assurance provisions apply to the non-safety DC power supplies should also be applied to the non-safety AC or DC power supplies that support operation of risk-significant systems, or performance of risk-significant human actions that are identified in the site-specific PRA that NuScale is preparing. So that's it. Thank you.

ACRS CHAIRMAN BLEY: Thanks, Mike. Now I will turn to Mr. Charlie Brown to walk us through the Proposed Rulemaking for Cyber Security at Nuclear Fuel Cycle Facilities. Charlie?

ACRS MEMBER BROWN: Okay, and this brief presents

our review of the Proposed Cyber Security Rulemaking and Guidance for Nuclear Fuel Cycle Facilities. For background, the SRM for SECY-14-0147 directed the staff to proceed with a cyber security rulemaking for fuel cycle facilities. The proposed rule amends 10 CFR Part 73, physical protection of plants and materials and related Parts 40 and 70. There is also an associated draft guidance, DG 5062, which provides implementation guidance for the new required cyber security program. Next slide.

The rule objectives are to protect against radiological sabotage, unauthorized removal, theft, diversion and loss of material control for special nuclear material, radiological exposure, acute chemical exposure or ingestion of materials exceeding allowable limits and loss of unauthorized disclosure -- excuse me, and loss or unauthorized disclosure of classified information or classified matter. Next slide, please.

The rule requires fuel cycle facility applicants and licensees, current or new, to establish, implement and maintain a cyber security program that detects -- protects against and responds to a cyber attack capable of causing one or more of the consequences of concern identified in the rule. There are four types of consequences of -- next slide, please -- there are four types of consequences of concern identified -- latent consequences, design basis threat, a latent consequence for safeguards, an active consequence for safety and latent consequence for safety and security. Next slide, please.

To accomplish the objectives, fuel cycle facility licensees are required to develop a cyber security plan defining how objectives are met. Also, to establish a cyber security team, security controls, identification of digital and vital digital assets, establish a configuration management system and provide for reviews of the cyber security program event reporting, tracking

of degraded controls and records and record retention. A fairly extensive list. Next slide.

Fundamentally, to meet fuel cycle performance objectives cyber security is achieved through control of access. Ensuring only authorized access to digital assets that execute plant processes. And material control and accountability methods for special nuclear material. Cyber threats have two basic sources -- external from non-isolated internet facing systems and those initiated internal to the plant. Next slide, please.

The basic rule approach is to identify all digital assets within the plant that, if compromised by cyber attack, would result in a consequence of concern. Then analyze each asset to find if it is a vital, digital asset by considering whether or not it has an alternate means available that addresses all threat vectors. Those with no alternate means are considered vital. The key words here are addresses all threat vectors. That means not only today's threats, but all future threat vectors as well. Next slide, please.

The rule approach also includes draft guidance, which specifies a procedure to screen out components -- that means digital assets -- that do not need to be part of the cyber security plan. Next slide.

We had the following concerns. As written, the rule requires all digital assets to be assessed, vital assets identified and then protected and maintained against threat vectors using several hundred cyber security controls. This effort and the long-term maintenance of these controls could be very resource consuming. Furthermore our concern is that the administrative burden -- not just in the beginning -- but it will grow and become excessive with this bottom-up approach. Next slide.

A higher-level approach is one that emphasizes --

emphasizes the importance of digital asset isolation from the external world. Isolation is important as a defensive measure and may result in an easier determination of which digital assets are vital, and thus reduce the resources needed to achieve adequate cyber security protections to only internal threats -- vice external threats as well. With regard to a high-level principle approach, the draft guidance describes a boundary concept approach. However, no definitive discussion of acceptable defensive architectures and isolation concepts from external threats are identified, nor are there -- nor are there any examples or an example appendix for its application. Next slide.

Conclusions and recommendations. We did agree that we ought to issue the proposed rulemaking for comment. Next slide. Our other conclusions and recommendations were that the guidance should be more specific on methods to screen components based on high-level principles as an alternative to a detailed examination of every digital asset. The high-level approach should be discussed with industry during the public comment period and addressed with the final rule and regulatory guide are completed. Next slide.

We are not alone in our concern. Industry has also expressed concerns with the scope of the proposed rule, but we have not yet discussed specific industry concerns in detail with the staff. We do look forward to meet with the staff after the public comment period is completed for the proposed rulemaking. That's it. Thank you.

CHAIRMAN SVINICKI: Thank you very much for those presentations. And in the question and answer period today I will begin. So let me get started. I will start maybe with a couple of comments. First of all, I do appreciate a couple of the letter reports we received in this period had

included additional comments and views of individual or subgroups of the ACRS Committee members. And I just want to note that I find that very valuable. I know that a broader sense of the Committee's deliberation can often be gleaned from reading the transcripts -- not just of your letter-writing sessions, but of the back-and-forth on various issues.

As a practical matter, I know for me and I assume for other members of the Commission, there isn't time to read all the transcripts. So where there is a separate emphasis that members of the Committee would like to make, I just -- again, I'm not trying to solicit or encourage individual members, but as a recipient of the Committee's advice I do find it valuable to know if there was some other maybe lively discussion of something that -- the consent -- the letter reports are consensus documents. I both understand and respect that because I think it's important for the Commission to understand what the broad consensus view was. But as a result there -- between the transcripts and the actual discussion you had amongst yourselves -- and the letter reports -- there's often a marked difference in what was able to be agreed upon as a consensus.

In that vein, I was looking at the transcript for one of the Committee's engagements on this topic that was the last of this panel -- which was the cyber security for fuel cycle facilities. And it's interesting because, if I am giving the proper attribution here, I think it was Committee Member Skillman who opined about a concern -- which did make it into the letter report -- of a larger and larger potentially unmanageable juggernaut in terms of the screening of what on the power reactor side we call critical digital assets. Here, I guess, in fuel cycle we've decided to call them vital assets.

But it's hard for me, remembering very clearly the

development of the cyber approach for operating power reactors, not to make a comparison to some of the staff's iterative process they had to go through in order to arrive at a very workable process for identifying, again, what in that realm is called a critical digital asset. There were times when the Commission was engaging in receiving feedback on the approach -- when people said I have to fill out 100-page screening criterion for each thing that could possibly be a critical digital asset. And I think that in the staff kind of evolving that and iterating they were able to come to something that I think was still very extensive, but was better than where they began.

And in the Commission's feedback to the staff, if I am remembering right, for the development of this proposed rule there was explicit direction that indicated they ought to engage with and learn from their operating reactor colleagues within the agency to -- to avoid the same threshold issue of how to even identify what regulations and requirements need to apply to what assets.

So did the Committee have any discussion about perhaps seeing that maybe that aspect -- if there was better engagement between where the NRC's staff experts and operating reactors -- the approach they eventually evolved to could begin here? I would note, I know the Committee said to move -- concluded that the proposed rule should be published. I have developed a view in my time on this Commission that a proposed rule should be the vast and most sophisticated approach that the agency wants to send out into the domain of public comment.

I don't think it should be something about which substantial concerns exist and we hope that the public comment period will somehow perfect that or rehabilitate it. Because when the Commission gets a draft final

rule, our ability to vote and propose changes is limited under the Administrative Procedure Act unless we go out and re-notice the rule.

So it does have procedural ramifications to send something out if there is -- if there is at least a better than small potential that the whole approach needs to be revised in some very fundamental way, I am not supportive of sending out a proposed rule that is going to require that extensive of a change between proposed and final. So I will let you respond to that. Did the Committee have deliberations around that? And if so, what were the main points with which you grappled?

ACRS CHAIRMAN BLEY: We had extensive deliberations about the complexity of the first process described in the rule. We didn't reflect back on operating reactors to my memory. It's a good idea. I wish we had thought of that.

We did find in the rule, as Charlie mentioned and our letter said, there was a -- it had the opportunity -- it had an item that told you you could come up with an approach more like the top-down approach we were talking about. Our problem with it was it didn't -- it could use a lot more meat if somebody were going to use it.

I suspect -- and this is my opinion. Our Committee is what we put in the letter. Our hope was that discussions would continue and there be substantive comments if it were put out for public comment about how to expand the guidance to help people get through that. And it probably needed some interaction between the staff and the industry -- is what was just our small Committee.

CHAIRMAN SVINICKI: Okay. And I appreciate that understanding of what the Committee did and didn't deliberate in terms of the

letter report. I think for me it will be something to ponder is -- you know, how substantial would likely an overhaul of the procedure be if the proposed rule went out as it was scoped? Right now it's something -- I agree, it's not for the Committee to maybe have a view on. It's something for the Commission to receive your advice and then reflect upon.

Turning to GSI-191, there was a section of the letter report on future applications of the methodology. And it was a fairly complex discussion. And again I appreciate that the Committee was very, very thoughtful about this. I -- this is a generic safety issue. And so I think the objective on a pilot is that it demonstrate a process that, if other licensees chose this as a compliance path for closure of the issue, it would truly be useful. And I know Dr. Corradini is reviewing that section of the letter report.

Are there any high-level insights that the Committee would share about kind of the overall utility of this for other licensees? Did it end up being a pilot of a methodology so specific to STP that its generic utility is questionable? As a resolution path for GSI-191.

ACRS MEMBER CORRADINI: I think I understand your question. I think the short answer is no, I think it is useful to other applications. And I am going to -- my colleagues that are risk aficionados can jump in. But my personal view of this is it is useful. I think some of the details in how they did the calculation could have been more systematic to help the next one down the line.

CHAIRMAN SVINICKI: Okay, and that was the bulk of those paragraphs --

ACRS MEMBER CORRADINI: Yes, yes.

CHAIRMAN SVINICKI: About looking at the various

scenarios --

ACRS MEMBER CORRADINI: Yes.

CHAIRMAN SVINICKI: And having it. So that would form like a generic matrix that you could kind of filter? But filter is a bad term to use here.

ACRS MEMBER CORRADINI: No, no. It's a good word.

CHAIRMAN SVINICKI: You could push it through.

ACRS MEMBER CORRADINI: It's a good word. So no debris gets through. No, I think the way I'd frame it is is that they did a systematic approach. There were certain pieces of how they did it that could have been more regular so that -- we'll call it applicant number 2 would say gee, this is -- not only do I understand it and it's a good approach, but if I simply follow this pathway with my different design I can essentially -- so, I think it was that systematized the approach.

CHAIRMAN SVINICKI: Okay, I think that that's helpful. And it elevates the discussion. And the letter report was very specific, which is of course of benefit. But that's more, I think, lay person's understanding of where the Committee came out. So that's very helpful to me.

I just had one other item, and I am not sure if it's really a question. Well, I will be able to turn it into a question here at the end. But I hesitate a little bit, because I am going to work from a foundation that the Committee members know my deep respect for the ACRS. And I have opined, people are getting nervous now.

(Laughter.)

CHAIRMAN SVINICKI: I have actually reflected on the history in the past that the ACRS is actually much, much older than the NRC.

It is an enduring body with its roots in the Atomic Energy Act. So it has a history as old as the atomic age, practically, in the United States. So I don't mention this this way.

But again, I am a recipient of the advice that the Committee generates and derive great value -- have over nearly ten years, now, of engaging with this Committee and the membership over the course of time. Something very curious, though, and I guess it's unnerving if I come in with all these transcripts.

But recently the Committee engaged with the staff and applicant on the construction permit review for the Northwest Medical Isotopes. This was a subcommittee meeting. And there was a dialogue in here that made me pull way back and reflect on the relationship between the Committee and the Commission.

And the question was asked by a member of the Committee -- it doesn't matter the individual member, but it had to do with the development of eventual piping diagrams and things like that for the Committee. And the staff I think was trying to respond -- the NRC staff -- but then wanted to calibrate and had some commentary about, you know, the fact that the design is only 20 percent complete and this is for the construction permit, and not the operating license. And the staff said, I will quote, we are regulating to the regulations and what the regulations allow. And at this point there is a large amount of latitude as to what needs to be done to issue the construction permit, because the process of constructing the facility in and of itself is not a nuclear safety issue. They go on to say it's the Applicant's responsibility to come back with an operating license application that is going to meet the regulations, be able to get a complete review by us.

And I will say that, Chairman Bley, your response to that was -- you thanked the staff for that comment and you said but back to what the member was saying, though. We're not the staff. We can take a broader view of safety.

So this caused me to think about the fact that when the Committee is advising on the adequacy or sufficiency of the staff's review of a licensing matter, is it the Committee's view that the -- the judgment on the sufficiency of the staff's technical work can go beyond reasonable assurance of adequate protection? Or what the regulations allow?

Because as a recipient of the Committee's advice, I had thought that you judged sufficiency and adequacy of the staff's work to be the same as what he legal and regulatory threshold would be. The comment about we can take a broader view of safety, is that about reasonable assurance of adequate protection?

ACRS CHAIRMAN BLEY: We typically don't try to define -- or figure out where the Commission would see reasonable assurance of safety. We look for areas where we think safety might not be -- well, where there might be safety issues and how well they're being covered. And I don't think -

CHAIRMAN SVINICKI: And I -

ACRS CHAIRMAN BLEY: We ever really try to reduce it to what the law says. If we find something that looks like it could be a significant safety problem and it is not being covered -- on the other side, I expect there is somewhere in the law that would cover it -- we want to raise them to your attention.

CHAIRMAN SVINICKI: Okay, well, again, I am looking at

not just the comment in isolation but the engagement with the NRC staff. Because they do regulate within the law, of course. And within the regulations as they stand. When the Committee operates in its pure advisory capacity on a number of the types of topics we've talked about today where there is an emergent issue, or something of technical -- we are probing the technical understandings of a phenomena or something like that. But for those areas carved out in law where the ACRS performs, again, under the Atomic Energy Act review of license renewal application, or a COL or something like that -- or the design certification reviews -- I have always understood the Committee's work to be benchmarked against the regulation so that the Commission can be advised that the staff's review either was sufficiently probative or was not with the regulations as they stand now.

When you are reviewing a proposed rule or something else, that's a different matter because that is something in development at that point in time. So I think it is something I am going to think more about. But I have understood the ACRS's role there to be identifying for the Commission gaps or insufficiencies in the staff's work versus the regulations as they exist, not as they could possibly be changed.

ACRS CHAIRMAN BLEY: Going back to the one you are talking about -- and I don't remember the whole context of where that came up, but I know the thing we've been doing on the construction permits is not only looking to see is it time to issue the construction permit, but are we stumbling across something that we think might be an obstacle to the operating license when it comes -- the request for it comes? And trying to get those out in front of people so that either the people building the facility think about it before they pour concrete and are stuck with a facility, and to remind the staff

later when the application comes in that these are some issues that are important to clear up at that stage.

So we have tried to separate those. And in the letters we've written we have done that. I thing in general we always -- and the easy one to refer to is the license renewal efforts. We do in fact very closely follow how well the staff is implementing the regulation. If in that process we see some place where something looks like a significant safety problem and it wouldn't have been caught by the regulation, we would certainly bring that to your attention and to the staff's attention.

CHAIRMAN SVINICKI: And that's a good example -- and I will close on this. One of the letter reports you did generate in this six-month period was a recommendation that it was the Committee's view that STP 1 and 2 should be renewed.

ACRS CHAIRMAN BLEY: Yes.

CHAIRMAN SVINICKI: So when that conclusion is reached by the Committee, it sounds like that is, again, the threshold set in the current regulation. So that I do understand that to be what the Committee intends when they write that advice to the Commission. Okay, all right.

ACRS CHAIRMAN BLEY: That's true.

CHAIRMAN SVINICKI: Thank you, I appreciate an opportunity to have an engagement. I think, again, it's important for the Commission to understand the framework through which the Committee is making the -- providing the advice that -- and recommendations that they provide to the Commission. So thank you for that. I apologize. I am way over my time. Commissioner Baran?

COMMISSIONER BARAN: Thanks. Well I would like to

ask about the NuScale Topical Report on the Safety Classification of Passive Electrical Systems. As we all know, NuScale has a new design with a lot of novel features. And as the NRC staff grapples with some, you know, potentially first of a kind type issues, the role you all play is going to be so important. So thank you for everything you are doing on this.

The topical report seeks regulatory approval for having no safety-related electrical systems as long as certain conditions are met. And as I understand it, the idea is that if there is no safety-related equipment that needs electrical power to actuate in the event of an emergency, and operators aren't required to take any actions in the event of emergency, then safety-related electrical power isn't necessary.

That is a new concept for NRC because the reactors in the existing fleet all have safety-related electrical power. It looks like the staff is comfortable with this approach if a number of additional conditions are met. Dennis or Michael, I just want to take that step back and ask you to talk just a little bit about how you all view this general concept of not needing safety-related electrical power if a design has certain features. Is that a general approach that makes sense to you?

ACRS MEMBER CORRADINI: So, I am going to try --

ACRS CHAIRMAN BLEY: Do you want to do it, or do you want --

ACRS MEMBER CORRADINI: Well, let me try and then pass it off to more of a risk expert. Now, this is a personal opinion. My way of looking at this is given the fact that they met the conditions in terms of design and qualification and QA and reliability such that -- whether it's safety or non-safety related, that it -- if risk significant it would be properly looked at, then I

wouldn't have any problem crossing that boundary. I think, to me personally, it's a matter of if it's risk significant, it be a properly identified and it have the appropriate reliability and QA requirements.

So that's -- and I will use one example is the difference between the vented lead acid battery and the valve-regulated. At least in my personal opinion they convinced us that given commercial grade with the appropriate IEEE standards, this would be an appropriate thing. It would be -- it has to be appropriately monitored and tested. You've got to make sure that you've not overheated it, you've not essentially not -- tried to overcharge it, etc. But given that, I didn't see a problem.

But it's a matter of risk significance versus non-risk significant in my mind. I'm sorry.

ACRS CHAIRMAN BLEY: Well, it's also following what the Chairman just said. If you go back and read our transcripts you will find at least somewhere along the line some members of the Committee may have expressed we have to have safety-grade electrical power. But we talked through it and that's our tradition because we've needed electric power. If you don't need electric power, why would you need the safety?

So the argument, as our letter says, we managed to deal with, they -- the staff had said, but remember, even if you don't need it to drive safety-related equipment, if there's an accident you need to be able to monitor it. So the requirements that the topical put forward and that the staff endorses are pretty close to 1E requirements. In some cases they even exceed it. So it is a really good electric power system.

But when -- I think maybe getting at the heart of what you're asking, again, this shows up in the transcripts, not in our letter. You will find

that the staff indicated -- and I think some of our members probably pushed on this area -- that when the actual application is reviewed, some of the -- that it will be very important for the Applicant to show and for the staff to agree that they actually meet those criteria.

And some of them are things we've never had to look for before. So that review will have to be very well done to prove that you meet those criteria. But that comes later. We will be reviewing that in a year or so maybe. I don't know when.

COMMISSIONER BARAN: And it sounds like the staff and the ACRS both agree that operators should still have reliable power to instrumentation that tells them what is happening at a plant during an accident scenario, even if no operator action is necessary to put the plant in a safe condition?

ACRS CHAIRMAN BLEY: That's what the topical put forward and what the staff agreed and what we supported in the letter. Yes.

COMMISSIONER BARAN: I had a question about something you just mentioned which was -- and this I think is on slide 38 -- notes that the reliability of the safety status indication would need to be substantially similar to that of safety-related electrical system. And can you talk a little bit -- what exactly does that mean? And how does it differ from a safety-related system? I mean you kind of -- your comment was, well it's actually really close to a safety-related system.

ACRS CHAIRMAN BLEY: Well the thing Mike mentioned -- the new batteries they want to use -- and they aren't that new. They were invented in 1935 or something. They've been around a long time. But they haven't been certified to be used in nuclear plants. So they're not safety

grade. They don't meet all of that.

But they have a lot of experience. They have been used in a lot of areas. We found they've been used by the Navy and by other industries -- they're in your car. Things like that. And the staff was worried -- and there are some controversy on them that, you know, they have to be monitored very well. And they found that the IEEE standards gave a good set of rules for how to take care of them.

You know, if they get operated outside of the range they are supposed to be operated in, they can have -- have serious troubles. So they -- they've reached the conclusion that, given the IEEE rules and then once they are in place -- having surveillances, that they should be no problem. And that -- doubling the capacity, too. So.

COMMISSIONER BARAN: Right, which raised for me an interesting question. I was trying to understand giving -- the doubling of the capacity. But it's not safety related. It's commercial-grade. I was trying to get a sense of what the expected relative performance between those two types of batteries would be. I mean, is this something that, because of the doubling of capacity this, this design would offer an overall safety improvement? Or it just be comparable? Or ---

ACRS CHAIRMAN BLEY: I don't think anybody has tried to evaluate that. You might -- yes, I think that's one for the Applicant. And I can't tell you why they did that. I don't know that they had to. I don't know what the review would have said otherwise.

We have -- you know, we are not experts on all the battery types. We have looked into them some and we didn't find any reason to disagree with the staff. You know, if you push and say -- this is me speaking

now, this isn't in our letter -- why would somebody not want it to be 1E? Well there is a whole lot of administrative overhead associated with that. So the staff came up with this concept and so did the applicant of highly reliable non-1E power. And they seem to have a set of criteria to -- that would assure that. Along with continuing surveillance when they're in the plant.

COMMISSIONER BARAN: One of the staff's conditions specified that the -- that these batteries had to meet seismic Category 1 standards, which I think Michael mentioned. I just wanted to clarify -- and I think you -- you said this -- does that apply to the battery equipment itself, to the structures they're in, or everything?

ACRS MEMBER CORRADINI: Everything.

COMMISSIONER BARAN: Okay. You all had a recommendation that the design qualification and quality assurance provisions described in the topical report should be applied to any non-safety AC or DC power supplies that support significant equipment or operator actions. The staff responded that the intent of the recommendation was already addressed through the reliability assurance program, or what is commonly referred to as the regulatory treatment of non-safety systems in passive plant designs, or RTNSS.

Were there particular examples of equipment that you had in mind when you made this recommendation? And does the staff's response address your concerns?

ACRS MEMBER CORRADINI: So I am going to let my colleague -

(Laughter.)

(Simultaneous speaking.)

COMMISSIONER BARAN: Seems eager.

ACRS CHAIRMAN BLEY: Well first we have not had a chance to deliberate on the staff response.

ACRS MEMBER CORRADINI: We just got it.

ACRS CHAIRMAN BLEY: Apparently it showed up just last week and we didn't see it until today. So we haven't seen what they had to say.

Our concern was that it seems like a good set of criteria but the actual plant, as built and installed and modeled in the plant-specific PRA before core load will have differences. That PRA should be able to look at those differences. And if something pops up its head as risk significant associated with the electric power system, that's new information and it ought to be identified and dealt with.

And that's why we wanted that -- we said, you know, we don't know what you'll find when it's actually the real plant and it's there. And at that point if something is risk significant, it should be covered. I can't comment on what the staff said. It sounds like they said they're covering it somehow, and I don't know if we will agree with what they said or not.

COMMISSIONER BARAN: Okay, great. The Committee concluded that the staff should amend the safety evaluation report to specify that it applies only to NuScale because the staff relied on the NuScale specific topical report appendices in its review. And the staff agree with that recommendation.

Four ACRS members submitted an additional comment and seemed to take a different view. You're one of them, which is ---

(Laughter.)

ACRS CHAIRMAN BLEY: Yes, we did.

COMMISSIONER BARAN: First of all, let me echo, I really appreciate that. I mean, I think if folks have additional thoughts that aren't, you know, consensus views that is really helpful to us to hear that. So thank you for doing that. I was hoping you could just kind of walk us through that issue or -- if it's an area of disagreement, what the issue is there.

ACRS CHAIRMAN BLEY: Yes, I would be happy to. There was one are of disagreement and one area of more clarification that we provided. And we're not always comfortable with the idea of adding comments because it gives really a lot of weight to minority opinions. We try generally to incorporate the disagreements into the letter in some form. Sometimes we even say we had this view and this view.

In this case, since I authored these first, I will speak to it. I was not able to convince the Committee that this was the way we ought to write the letter. I felt kind of strongly so I wrote them and three other people joined me after I drafted them.

The thing that bothered -- there are two things bothered me and led to the added comments. The first was this was a topical report and it could apply to any plant in principle. Second, although the staff said they didn't look at the appendices, in fact as you read through the SER they refer to it many, many times and many of their conclusions they anchor to those appendices.

That's the reason the letter says it should only apply to NuScale -- because those appendices are NuScale-like, if they're not NuScale. In fact, NuScale revised that report and moved all of the relevant detail that the staff asked about up into the main body of the report -- Chapter 3 of that report

-- not connected to the examples, not connected to NuScale. And if the staff had referred to -- just simply referred to that instead of to the old appendices, it would have been a generic report and would apply to anybody who can meet the criteria.

I feel it's kind of silly not to have something that would be more general when in fact it was sitting there in front of you. The other piece we had in the added comments is about that recommendation about risk-significant things popping up. And we just pointed out that there are multiple ways to handle such a situation. You don't have to actually throw them in the bin like the other things. You could redesign some aspect of the plant. If it's an artifact of the modeling you could revise the modeling. Or you could come in with an exception and deal with it.

So making it specific that you have to meet those criteria seemed to -- a step beyond what was necessary. So that's the gist of it. And the other three people apparently agreed and signed on.

COMMISSIONER BARAN: Okay. Anything else on that? That's all I had.

ACRS MEMBER CORRADINI: No, he did a marvelous job.

ACRS CHAIRMAN BLEY: But we didn't disagree with the -- the topical was fine for application to NuScale.

ACRS MEMBER CORRADINI: The only thing I guess I would -- that probably others of us didn't join in is I think it's hard to guess what the next passive reactor is going to look like. So I kind of fell on the other side of it that for NuScale-like designs, which the appendices indicate -- it's good enough for NuScale and for that at that point, that's good enough for now.

And then if something pops up that's appropriate they can

show it either fits or doesn't fit these tables, 3.1 and 3.2, in terms of their conditions. So.

COMMISSIONER BARAN: All right. Well thank you very much. I appreciate it.

CHAIRMAN SVINICKI: Thank you. Commissioner Burns, please proceed.

COMMISSIONER BURNS: Well thanks. And I appreciate our opportunity to meet with the Committee in these sessions and get the insights from various reviews. It's been an interesting discussion thus far. The Chairman noted in terms of sort of the history on the ACRS that I actually consider punishing myself or something like that this time. I had agreed to write an article on -- on licensing.

And it was interesting because I went back into the 1950s in terms of the original, you know, original licensing. You know, the ACRS' had that role. In fact, at one point in time, I can't remember whether it was in connecting with some of the 1962 amendments to the Act which created a licensing board, which of course is unusual in administrative bodies because it includes technical members as well as legal members on it.

CHAIRMAN SVINICKI: Is this article available?

COMMISSIONER BURNS: It will be soon.

CHAIRMAN SVINICKI: Oh, okay. Thank you.

COMMISSIONER BURNS: Being published by the NEA. But one of the things actually was talking about eliminating the ACRS, as an efficiency reform. I will tell you today, having gone through this, I am not advocating for that. I actually think the ACRS provides a, you know, large service to us. In particularly, you know, not only in the generic technical

issues -- and some of them which seem to persist, like GSI-191 --

(Laughter.)

COMMISSIONER BURNS: My hair was a different color, I think, when that first started coming up. But also in terms of --

ACRS CHAIRMAN BLEY: I had more hair.

(Laughter.)

COMMISSIONER BURNS: Okay. But also in terms of the individual application. So actually, as they say, it was kind of interesting, just sort of delving back into some of the early days and, you know, sort of remind myself of the -- of various things. But one of them is the important role that the ACRS has had over the years.

Speaking of GSI-191, I guess a couple questions, and Dr. Corradini may have, I think, sort of touched on this and answered some of my colleagues' questions. But I guess, in terms of going forward, I mean, this was an important application, I think, the STP application, particularly risk informed. And I know the South Texas Project has been sort of a leader in this area.

I guess my question might be both for the staff side or the industry -- and the industry side going forward, are there particular things that you all may have seen that perhaps would make the process more systematic? Or particular challenges that new applicants might have? When I say challenge it's because South Texas is particularly focused in this area on the risk informed. And whether some of the others are able to sort of go for it ---

ACRS MEMBER CORRADINI: The Chairman wants to help me out. So ---

COMMISSIONER BURNS: Oh, absolutely.

ACRS MEMBER CORRADINI: So I am going to defer to him.

ACRS CHAIRMAN BLEY: And this goes back to the conversation that you had earlier ---

ACRS MEMBER CORRADINI: About the systematic evaluation?

ACRS CHAIRMAN BLEY: Yes. If you had followed the earliest stages of the South Texas work in this area, they started out with very grand plans and did lots and lots of things -- some of which they later, for various reasons, was overkill and they just shouldn't do all of that. But they had already done pieces of work that they then put together to -- and tied together to provide their report.

Somebody following that approach now would aim at those pieces they ended up with and not do all the others.

COMMISSIONER BURNS: I see, yes.

ACRS CHAIRMAN BLEY: That's why it's a little -- scattered is not the right word, but it came together as a process of working out how they were going to do it. I think the next one to do it -- aiming at the way they ended up -- could do it very systematically and be easier to follow.

ACRS MEMBER CORRADINI: I mean, it evolved.

ACRS CHAIRMAN BLEY: And be less work than was done in the first place.

ACRS MEMBER CORRADINI: But I think, in terms of as we wrote in the -- we tried to write in the letter -- or tried to be clear in the letter, we definitely wrote it -- is that there were pieces of the specific analysis that they did that we had to delve in to understand. And so in the understanding

we said well, you could have done it this way. You could have done this way.

But if you had explained it or done it in a systematic manner, A, we would have gotten it without keeping you and us there for a long time understanding it. And 2, the next applicant would say gee, this is a pretty clear approach. Because over those couple years as they were evolving -- and as Dennis was saying, they got to this risk over a deterministic approach, which I think is quite novel, quite innovative. And assuming that it's followed by others, I think this would really help a number of the licensees -- the applicants. So, is that a fair?

ACRS CHAIRMAN BLEY: Yes. I agree.

COMMISSIONER BURNS: Good. Let me turn to Dr. Rempe in terms of the consequential steam generator tube rupture. I think one of the -- in the report it -- I will quote the report to us. It's saying the forthcoming staff guidance is essential for using methods described in NUREG-2195 and for identifying associated limitations and uncertainties of these methods. So is this the RASP Handbook update?

ACRS MEMBER REMPE: Yes.

COMMISSIONER BURNS: Okay. And do you know where the staff is? And are they going to be coming to you with respect to that?

ACRS MEMBER REMPE: I am trying to remember what meeting it was at, but it was within the last month I remember discussing it with the staff and they said they anticipated that it would be issued around December.

COMMISSIONER BURNS: Okay.

ACRS MEMBER REMPE: I don't believe it usually comes

to us. But I would be interested in seeing what they write.

COMMISSIONER BURNS: Okay.

ACRS CHAIRMAN BLEY: It has not. We have been informed about it at various times.

COMMISSIONER BURNS: Okay.

ACRS CHAIRMAN BLEY: Some of us have looked at it. But we have never looked at it as a Committee.

COMMISSIONER BURNS: As a Committee --

ACRS CHAIRMAN BLEY: No.

COMMISSIONER BURNS: Okay. All right, thanks. I think my colleague, Commissioner Baran, hit a number of my questions on the NuScale. Well that -- that's good because it says that we were looking at some of the -- sort of the same things.

I was out at the NuScale facilities and in August, apparently during the hottest days of the year out there that they'd had since quite some time. Everybody was complaining about the heat. But during the visit I got a little bit of an earful about the review -- the staff's review of the topical report. Some of these issues I think are mentioned on slide 40. And one of them had to do with GDC-15. And I guess NuScale talked about where they think the staff was going beyond what the GDC-15 requires and expands margins and GDS didn't mean defense in depth.

And I don't know if that -- did that issue come up before you during the Committee review?

ACRS CHAIRMAN BLEY: No, and was -- I don't know which topical. I mean, they have a whole group of topicals.

COMMISSIONER BURNS: Yes.

ACRS CHAIRMAN BLEY: We might not have looked at this topical they were concerned with yet.

COMMISSIONER BURNS: So I think it was direct coolant ---

(Simultaneous speaking.)

ACRS CHAIRMAN BLEY: But we haven't looked at that.

ACRS MEMBER CORRADINI: No, I think -- I think I know where this --

(Simultaneous speaking.)

ACRS MEMBER CORRADINI: Let me take a crack at this one. So if my understanding is right, the staff -- well, the way in which certain -- and again it goes back -- so I am going to put a plug in for these appendices that were very NuScale specific.

So in the examples in the appendices they said if I get myself in a situation in a particular transient, I can then essentially depressurize and essentially -- create essentially a path for adequate and sufficient decay heat removal by essentially having the containment be the -- the location where I essentially take the decay heat by condensation through -- to the pool.

And so staff's point was they were concerned there was an over-reliance on -- on essentially depressurizing the reactor coolant system and essentially leaking a path to decay heat removal by containment and out to the pool. And that's where GDC-15 fits into this. And so I think -- now again, I am interpreting my -- this is my understanding is that staff was concerned there was an over reliance on the containment as a final barrier. And they wanted to have a proper balance.

That's what led them to this condition that -- that -- I am going

to have to read it because I will -- if I try -- if I try I will get it wrong any way. Is that you don't want to have this sort of depressurization and this pathway to be of a frequency that's of an AOO. You want to show that the reactor coolant system and way to remove decay heat with the reactor coolant system intact is sufficiently robust that I don't defeat it to essentially get to an AOO frequency. That's where the GDC-15 fits in.

COMMISSIONER BURNS: Okay, okay.

ACRS MEMBER CORRADINI: It's a containment.

COMMISSIONER BURNS: Okay, all right. Good.

(Simultaneous speaking.)

COMMISSIONER BURNS: Okay, thanks. Thank you, Chairman.

CHAIRMAN SVINICKI: All right, do either of my colleagues have any additional questions? If not, again, I thank the presenters and all members of the Committee. I think we have had a very constructive exchange on these topics and other products that the Committee sent over the past six-month period.

Just for the reminder of the members of the Committee and my colleagues on the commission, we will take a brief photo after the meeting. So please don't disburse too wildly. Thank you very much, and we are adjourned. That was widely, not wildly.

(Whereupon, the above-entitled matter went off the record at 11:19 a.m.)