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UNITED STATES NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING TO DISCUSS THE PART 53 RISK-INFORMED, TECHNOLOGY-INCLUSIVE REGULATORY FRAMEWORK FOR ADVANCED REACTORS RULEMAKING -- TECHNOLOGY-INCLUSIVE ALTERNATIVE REQUIREMENTS FOR COMMERCIAL NUCLEAR PLANTS

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THURSDAY

OCTOBER 28, 2021

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The Public Meeting convened via Videoconference, at 1:00 p.m. EDT, Robert Beall, facilitating.

NRC PRESENT

ROBERT BEALL, Meeting Facilitator, Office of Nuclear Materials Safety and Safeguards

AMY CUBBAGE, Senior Project Manager for Advanced Reactors, Office of Nuclear Reactor Regulation (NRR)

WILLIAM RECKLEY, Senior Project Manager, NRR

JOHN SEGALA, Branch Chief, Advanced Reactor Policy Branch, NRR

BOYCE TRAVIS, Reactor Systems Engineer, NRR

ALSO PRESENT

FRANK AKSTULEWICZ, TEUSA

ROBERT BUDNITZ, Public Participant

CYRIL DRAFFIN, U.S. Nuclear Industry Council

PETER HASTINGS, Kairos Power

EDWIN LYMAN, Union of Concerned Scientists

SARAH FIELDS, Uranium Watch

MIKE KELLER, Hybrid Power Technologies

PRASAD KADAMBI NARASIMHA, Public Participant

MARCUS NICHOL, Nuclear Energy Institute

ADAM STEIN, Public Participant

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

1:01 p.m.

MR. BEALL: Good afternoon, I want to welcome everyone and thank you for participating in today's public meeting to discuss the risk-informed technology-inclusive regulatory framework for advanced reactors, or the Part 53 rulemaking.

My name is Bob Beall, and I'm from the NRC's Office of Nuclear Material Safety and Safeguards. I'm the Project Manager for the Part 53 rulemaking and will be serving as the facilitator for today's meeting.

My role is to help ensure today's meeting is informative and productive. This is a comment-gathering public meeting to encourage active participation and information exchange with the public to help facilitate the development of the Part 53 rulemaking. The feedback that the NRC receives today is not considered a formal public comment so there will be no formal response to any of today's discussions.

Once again, what are using Microsoft Teams to support this public meeting on the Part 53 rulemaking. We hope that the use of Microsoft Teams will allow stakeholders to participate more freely

during the meeting.

Next slide, please. This is a continuation of a series of topical public meetings on various sections of the Part 53 rulemaking. The agenda for the day includes a discussion of technology-inclusive deterministic options for commercial nuclear power plants as part of the Part 53 rulemaking. There will also be an open discussion of the other publicly released Part 53 preliminary proposed rule language. We will also have a 15-minute break this afternoon.

Next slide, please. I would now like to introduce Rob Taylor. Rob is the Deputy Office Director for New Reactors in the Office of Nuclear Reactor Regulation. Rob will give the opening remarks for today's meeting. Rob?

MR. TAYLOR: Thanks, can you hear me?

MR. BEALL: Yes, we can.

MR. TAYLOR: Welcome everyone, I appreciate the attendance of today's meeting and the continued and ongoing dialog we're having on these important topics. So, I'd like to thank and welcome everyone and thank you for participating in the public meeting to discuss the ongoing development of Part 53.

We strongly value the stakeholder input

that we are receiving and are considering it and making the appropriate changes that we identify throughout the rule. We may not agree with all the comments we get but we attempt to take into consideration those that we do and make appropriate changes. Due to frequent stakeholder engagement and by considering your feedback early in this rulemaking process, we will develop a more useful and more effective regulatory framework. And that continues to be one of our primary goals.

Our vision for Part 53 continues to be to establish a transformative regulatory framework for advanced reactors that provides at least the same degree of protection of public health and safety and the common defense and security for advanced reactors that is currently required for the existing generation of light-water reactors. The goal for this operational framework is to provide technology-inclusive, performance-based requirements in lieu of existing prescriptive technical requirements, reducing the need for regulatory exemptions for advanced reactors, taking credit where appropriate for the potential enhanced safety features that advanced reactors may possess.

That includes giving operational

flexibility where appropriate in these advanced reactor designs once the demonstrative margins of safety have been shown. We continue to consider and address stakeholder feedback and we have already made changes to the primary proposed rule language in civil areas based on stakeholder interest.

In developing options for demonstrating the safety case, we strive to provide predictable licensing paths that can accommodate a variety of approaches. The Staff is developing options that vary the level of reliance on PRA and licensing of advanced reactors and believes the options under development largely encompass the diverse views of the stakeholders that it presented to us.

Today the Staff will be discussing a technology-inclusive approach using PRA in a traditional role that will better align with IEA standards. We will continue to work with stakeholders to further develop and evolve this and other alternatives and to develop associated key guidance.

Thank you for your continued engagement on this very important topic and we look forward to very productive and rich dialog today. Bob, I'll turn it over back over to you.

MR. BEALL: Thanks, Rob.

I would now like to introduce the NRC staff who will be leading the discussion of today's topics. Myself as the meeting facilitator and from the Office of Nuclear Reactor Regulations, we have Boyce Travis. We also have speakers at today's meeting from the U.S. Nuclear Industry Council.

If you are not using Microsoft Teams to attend this meeting and you would like view or have a copy of the presentation slides, they are located in the NRC ADAMS document database, on regulations.gov, and I have also placed a link to the slides in the Teams chat window for today's meeting. The ADAMS extension number for today's presentation is ML21295A245.

Next slide, please. The purpose of today's meeting is to exchange information, answer questions, and discuss the Part 53 rulemaking. Today's meeting will focus on the preliminary proposed rule language that will support the technology-inclusive alternative for commercial nuclear power plants as part of the Part 53 rulemaking.

I have placed a link in the Teams chat window for this meeting to the preliminary proposed rule language. In addition, there will be an open

discussion of other preliminary proposed rule language that has been made public.

This is comment-gathering public meeting, which means public participation is actively sought as we discuss the regulatory issues. Because of the number of attendees, we may need to limit the time for an individual question or discussion on a topic to make sure everyone has a chance to participate. After everyone has had a chance to ask their question, we will circle back and allow people to ask additional questions as we have time.

Today's meeting is using a workshop format so the number of formal presentations and the corresponding number of slides have been reduced to allot more time for open discussion on the various topics. This will require all of us to continuously ensure that we have our phones on mute when we are not speaking and do our best not to speak over each other.

In addition, please turn off your camera when you are not speaking to the staff. This will minimize any Internet bandwidth issues during the meeting.

To help facilitate the discussion, we request that you utilize the raised hand feature in Teams so we can identify who would like to speak next.

The Staff will then call on the individual to ask a question. The raised-hand button, which is shaped like a small hand, is along the top row of the Teams display area. You can also use the chat window to alert us if you have a question. Please do not use the chat window to ask or address any technical questions about the Part 53 rule. The chat window is not part of the official meeting record and is reserved to identify when someone has a question or for hammering any meeting logistical issues.

To minimize interruptions, the Staff will call on participants who have used the raise-hand feature or chat window to identify when you have a question or comment.

If you're joying the meeting using the Microsoft Teams bridge line, you may not have access to these features. If you would like ask a question or provide a comment, you would need to press star 6 to unmute your phone. The staff will pause at the end of each topic to ensure all participants have an opportunity to ask questions before moving onto the next topic. After your comment has been discussed, your phone line will be muted again.

If you would like ask additional questions on a future topic, you will have to press star 6 to

unmute your phone. If there is a particular topic you would like discuss, please send me an email after the meeting and we can try and include it in a future public meeting.

This meeting is being transcribed so in order to get a clean transcription and to minimize distractions during the meeting, we ask everybody to please mute their phones when they're not speaking, and to identify themselves in the company or group they may be affiliated with. A meeting summary and a transcript of today's meeting will be publicly available on or before November 26, 2021. Finally, this meeting is not designed or intended to solicit or receive comments on topics other than this rulemaking activity. Also, no regulatory decisions will be made at today's meeting.

Please note that towards the end of the presentation there are slides containing acronyms and abbreviations that may be used during this meeting and a set of back up slides that may contain additional information about the Part 53 rulemaking.

Slide 5, please. With that, I'd like to turn the meeting over to Boyce who will start today's discussion on the Part 53 rulemaking. Boyce?

MR. TRAVIS: Thanks, Bob. Before I begin

there's a hand raised.

MR. BEALL: Yes, I see that. Ed Lyman, you have a question?

MR. LYMAN: Yes, I do, thanks. Before we get started, I'd just like to clarify since I'm already confused.

Part 50 on your title slide refers to advanced nuclear reactors and Mr. Taylor described the advanced reactor criteria policy statement. And now you're talking about Part 5X, which would be for commercial nuclear plants.

MR. BEALL: You went on mute. Yes, I think Ed's dropped off for a second.

MS. TRAVIS: Should we just move on?

MR. BEALL: Let's just move on for now. Let's start the presentation and hopefully Ed will sign right back in.

MR. TRAVIS: Thanks, Bob. My name is Boyce Travis. I'm a reactor system engineer in the Advanced Reactor Technical Branch, one of the Advanced Reactor Technical Branches, in the Division of Advanced Reactors and Non-power Production and Utilization Facilities in the NRC's Office of Nuclear Reactor Regulation.

If you could move on to Slide 6.

As part of today's meeting, we'll be discussing what's being referred to here as the Part 5X supplement, which is the technology-inclusive alternative requirements for commercial nuclear power plants. I will try to address what I think your question was, seeing the comment in the chat, as part of this slide.

So, proposed rule texts that have been provided as part of this meeting was developed in response to stakeholder comments suggesting probabilistic risk assessment [PRA] should not be required in legal for licensing.

As part of the discussions surrounding that issue, some stakeholders have also expressed the desire for a streamlined application to be used for both the U.S. and international design. As a result, the staff developed this initial rule language that's intended to provide an updated licensing pathway that uses PRA in a more traditional role to support a deterministic design philosophy. It is consistent with broader international standards for design.

The goal or outcome here is to provide a framework that offers an equal standard of safety to the existing regulatory framework while streamlining requirements to accommodate different technology types

and potentially different international approaches that are rooted in a deterministic methodology supported by PRA.

This is part of the rulemaking effort being done as part of the overall Part 53 umbrella, all of which is located under the direction of Congress in the Nuclear Energy Innovation and Modernization Act [NEIMA]. And so we view this effort as being another option under that Part 53 umbrella.

The rule language that's presented here was done using Part 50 as the baseline, substituting the requirements they were provided in the proposed rule text in order to provide draft language to be able to get public comment and feedback on the draft language. The language that's been provided and the location is not yet determined by the NRC and could reside in Part 50, Part 53, or a new part, but our view is this is another option that is being performed under the broader umbrella of the Part 53 rulemaking.

And again, there will be an opportunity to ask further questions at the end of my presentation and at the end of the presentations today. Hopefully, we can address specific comments in more detail at that time.

One piece of feedback we're particularly

interested in as part of this rulemaking is from developers that are looking to leverage an approach like this one that are evaluating another international regulatory framework, and whether there are any disconnects between this proposed approach and a particular international market.

Because one of the goals we're trying to serve with this framework is to streamline or not require additional exemptions or discrepancies between an internationally submitted design and a U.S. submitted design with the exceptions of specific U.S. rules and laws that are in place for nuclear power plants. And so that's the background for what we'll be talking about today. The proposed language I believe is linked in the chat in addition to the slides. If we could move on to Slide 7.

So, the goal here is to include as a supplement to Part 53 a traditional deterministic option for advanced reactors that leverages flexibility by considering some of the performance-based options that are either part of ongoing rulemakings or part of what's being considered in Part 53, while leveraging shared aspects between Part 50 and 53. The goal is to update and build on existing deterministic framework while allowing the

use of the appropriate Part 53 provisions that can be fit in that framework and involve performance-based standards that stay within this overall framework that's being proposed.

The goal is to make the requirements as technology-inclusive as possible and I'll note that it may be necessary that the requirements are not technology-neutral in all cases due to a need to avoid conflict with existing requirements.

We'll discuss that in further detail when we're looking at some of the specific requirements.

If we could move on to Slide 8.

So, Slide 8 contains the general layout of the draft language on the slide. The current proposed rule language includes a section for applicability, definitions, requirements, principal design criteria, anticipated operational occurrences and design basis accidents, beyond design basis events, severe accidents, functional containment, and design requirements.

Another piece of feedback that we're looking for in particular is what do appropriate locations for this preliminary proposed rule language or an approach that looks like it is, like I said, earlier, whether that's Part 50, Part 53, or a new

part.

The draft language that's being proposed here is provided the use of Part 50 as a baseline so that we could issue initial draft language exceedingly that is consistent with the philosophy and vision of a deterministic philosophy but is not indicative of any particular final plan for the location of this rule text. We're exclusively looking for feedback on what the most appropriate location for the rule language is, recognizing that there are various pros and cons to the options.

Can we move on to Slide 9.

MR. BEALL: Boyce, can we go back?

MR. TRAVIS: Yes, we can.

MR. BEALL: I think this might be an appropriate time for Ed to ask his question again before we get into the details.

MR. TRAVIS: That's fine with me.

MR. BEALL: Ed Lyman, do you want to restate your question again, please?

MR. LYMAN: Sure, so my question is what is the standing now of whether Part 53 and this Part X supplement apply to, quote, advanced, unquote, nuclear reactors as characterized in the policy statement as opposed to any nuclear reactor application. And as I

pointed out, you've been using these words interchangeably with Rob Taylor talking about advanced reactors, the title slide specified advanced reactors, and now we're switching to commercial and I don't know where things stand.

Thanks.

MR. TRAVIS: So, I'll try to address the question and I suspect that I will get some help from the rest of the staff. First of all, the definition of advanced reactors in the NRC's policy statement is not necessarily consistent with the definition that's been expressed under NEIMA. And so resolving that discrepancy, I'll say, would prove difficult, if not arbitrary in its application. And so as part of the Part 53 rulemaking, the staff made the decision that the requirements that are specified under Part 53 would effectively create the gate for what constitutes an applicable reactor.

For the proposed language we're talking about here, the goal is a framework that is largely more similar in philosophy to the existing Part 50 and Part 52 approach, such that we can also, say, bring in and leverage generally accepted international approaches in as far as we can under our legal and regulatory framework that exists, while also

leveraging the portions of Part 53 or rulemakings that are in progress that are performance-based in nature.

And so lacking under the existing Part 50 and Part 52 framework, there are no restrictions to the reactor type that can be submitted. Given this approach is consistent with that, we felt it would not be appropriate to limit, for this specific approach that we're talking about today, applicability.

And if anyone else from the Staff wants to provide additional context, I would appreciate it.

MR. RECKLEY: This is Bill Reckley, I'll just weigh in that in Part 53 and in the discussions today, in part what you're seeing is an evolution and discussions internally, and as we put them out for stakeholder consideration, external discussions as well about what the scope is. As we said on Tuesday and as Boyce reiterated today, our thinking there wouldn't be a gate to either of these in terms of defining a reactor class or a set of reactors that could use one method or the other.

In terms of our terminology, as it evolves we will slip, I'll be honest. We will slip in terms of continuing to use advanced reactors because that's the name of the rulemaking, that's they were they referred to in NEIMA. But basically, going forward,

what we're looking at is a methodology or a couple different methodologies and approaches that could be used for any future application.

But just to be honest, you will find us slipping in our terms and sometimes using advanced reactors as the group of future plants to which this will be addressed. But again, that's just because we've been talking that way for a couple years and we'll continue to slip on occasion and use the term.

MR. LYMAN: Okay, Bill, I don't know what to make of that but these slides should have been revised to reflect that.

Frankly, I think the path you're going on, as someone who followed NEIMA and testified twice on the bill, I pretty much am sure that the congressional intent was that this rule would be to promote licensing of advanced reactors, that is those that would have demonstrably improve safety features in every generation. I know that's not consistent with NRC's philosophy but I think that was the intent of the rule and I think you were going down a path there where you may be really getting in hot with congressional intent for one thing.

But also, it's starting to make even less sense why you would even be going down this path when

you already have Part 52, which, as you just said, is perfectly sensible for any reactor.

MR. RECKLEY: We do continue to encourage and fully expect that future plants will pay attention to and follow the advanced reactor policy statement. That's been generally true of what we've seen and that's the expectation. So, those attributes that are listed out in the advanced reactor policy statement I think we are seeing in the proposals that are coming down. So, with that and to avoid going off on too far of a tangent.

MR. LYMAN: It's not a tangent, I think it's fundamental and I think you need to revise and it's best to go back and look at the Federal Register notice from a year ago. But you may need to actually revise that rather than just extend the deadline, thinking they need to revise it at this point.

MR. RECKLEY: Okay, thanks, Ed. Boyce?

MS. FIELDS: This is Sarah Fields and I'd also like to make a comment on this.

MR. BEALL: Go ahead, Sarah.

MS. FIELDS: Going back to some of the earlier documents such as SECY-20-0032 of April 13, 2020, which is the rulemaking plan for risk-informed technology-inclusive regulatory framework for advanced

reactors. And all of the Federal Register notices and the earlier documents all relate to a new regulatory framework for advanced reactors. Now, if you're going to make this regulatory framework for any old reactor, because there is really no such thing as an advanced reactor, then you've got to put that into SECY language and take that to the Commission. You need to revise your Federal Register notice, you need to revise a lot of documents and not only that, you need to explain why you're doing this. I'm not a particularly educated technical person and I find this, at this point, extremely confusing. The NRC staff just made some major decisions related to this rulemaking and it's not reflected in the SECYs or the Federal Register notices. Thank you.

MR. BEALL: Mike Keller, you had your hand up?

MR. KELLER: Yes, I do. I have a purely administrative question. What's the vehicle percent of comments in on this, the regulations.gov under topic 0062 or is there something else?

MR. BEALL: No, this is all under Part 53, Mike, so you would still use the same docket I.D.

MR. KELLER: Thank you.

MR. BEALL: No problem, sir.

MS. CUBBAGE: If I may, it might be helpful to note -- this is Amy Cubbage, NRC staff, that we're early in the rulemaking process here and they'll be opportunities to formally comment on the proposed rule when it's approved for publication by the Commission.

I also wanted to clarify, just to help with Sarah's question, I didn't want there to be left any confusion. I think, Sarah, you said any old reactor. I want to make sure it was clear this is for new reactors only. And the advanced reactor policy statement when it was published many years ago and updated in 2008 was referring to new reactors that were more advanced than those that were currently operating. So, that basically encompasses any reactor applications that we've seen in decades and I just wanted to make that point. Thank you.

MR. BEALL: Thank you, Amy. Boyce, do you want to continue on, please?

MR. TRAVIS: Sure, I'd be happy to. So, just to recap again, Slide 8 contains a general layout of the proposed rule language. As Amy noted, and thank you for that, this is very early in the rulemaking process. This is not at the comment period yet. We're providing this language in order to

solicit early feedback so that we can produce the best possible set of language that we can considering that feedback. And so there would still be a formal comment process on the text that's being proposed here today. Bob, my preference would be to try and get through the presentation but do we want to take questions?

MR. BEALL: Mike, unless you have a real quick question, we'd kind of like to get through the slides.

MR. KELLER: It's a quick question. Are you're saying that you don't want any comments on what you're proposing at this time?

MR. TRAVIS: No.

MR. BEALL: Not really, no. What we're saying is, like Amy said, this is an early process for getting initial stakeholder feedback on the various subparts that we've had with Part 53. But the formal comment period will be when the staff issues after Commission approval the proposed rule, which would be next year.

MS. CUBBAGE: But we certainly welcome, and that's why we're here today, to encourage and solicit informal feedback through your verbal comments today and if you choose to, through regulations.gov. I

think as Bob mentioned at the outset, we just won't be formally responding to these comments. We'll be taking them and addressing them as appropriate in our development of the proposed rule for Commission consideration.

MR. BEALL: Right, because we're trying to make the best proposed rule we can when we submit it to the Commission based on getting early stakeholder feedback.

MR. KELLER: That's fine, we just need a vehicle to provide the comments, that's it, really.

MR. BEALL: Regulations.gov is the formal method so if you continue to do that and I know, Mike, you've made use of that, then that's a very appropriate way to do it.

Go ahead, Boyce, continue on, please.

MR. TRAVIS: Okay, thanks. So, if we could move on to Slide 9.

Each of these slides is going to go through some of the specific sections and I'll talk about the sections in detail as we go through.

5X.210 is just an applicability statement for the proposed rule text.

5X.220 contains a set of definitions that are either necessary for the proposed rule text or

necessary to resolve a conflict with existing rule texts that is being referenced. And so specifically in this case, areas like the reactor coolant pressure boundary and safety-related were necessary to be resolved as these definitions were not sufficiently technology-inclusive or technology-neutral such that we could proceed with trying to create a rule that doesn't scope out an existing technology.

5X.230 provides some overarching requirements for the entirety of the proposed rule text as in an applicant applying under these provisions would need to meet the requirements in 5X.230. These include single failure criteria and the requirement to have a PRA consistent with the text in Part 52 and consistent with the Commission's expectations for PRA that are being revised in the Part 50, 52 rulemaking and defense in-depth, which is called out explicitly here as it's going to be referenced in the analytical requirements that follow. But the approach taken is consistent with Commission policy and more information can be found in various NUREGs and NRC Commission policy statements.

We will note that defense in-depth can be addressed through various methods in part through existing requirements that already exist such as the

principal design criteria or general design criteria for LWRs and other regulatory requirements.

If we move on to Slide 10.

Slide 10 discusses 5X.240 which is principal design criteria requirement. Because of the nature of the existing requirement of the GDC, we felt it best to clarify the role of principal design criteria. Design criteria themselves are in the staff's view fundamental in the deterministic approach in the initial goal-setting for what the scope of the design is. The goal of writing this section was to allow for use of, for instance, an internationally utilized set of design criteria such as the IAEA's SSR2/1 as a set of design criteria that could be used under this section.

5X.240 also calls out the distinction between Non-Light Water Reactors and Light Water Reactors. As it stands today, light water reactors are required to use the general design criteria in Appendix A as the baseline for their principal design criteria, if applicable.

We'll move on to the next slide, Slide 11.

So, Slide 11 goes into the first set of analytical requirements that are designated under this set of proposed rule text. We group here the

anticipate operational occurrences and design basis accidents as the first set of analytical requirements, the inner ring, as it were. And you'll see as we go on, this is in part an effort to be consistent with an international philosophy for defense in-depth and utilization of various standards for analysis as you proceed out through the rings of whether it's defense in-depth or analytical requirements, however you want to phrase it.

And so this section is largely consistent with existing regulations that are drawn from Parts 50 and 52 with the exception of that we've tried to make the requirements as technology-inclusive as possible, recognizing that some of the 50 and 52 regulations that are referenced are based on light water reactor [LWR] technology. And so going through this part, which is fairly substantial, applicants are required to provide analyses and acceptance criteria for safety-related SSEs because safety-related SSEs are what's being used to defend against this classification of events.

The remainder of the requirements are largely consistent with what's in, for instance, Part 50.34(a) for the FSAR requirements or with the exception of we've added or revised some language to

provide for technology-inclusive application and made some editions that clarified some cases such as Item 6, which allows for a grouping or bounding of analyses in this section to provide a single analysis that encompasses a set of analyses that would otherwise be required.

And to provide a parallel or corollary to 50.46 in Item C of this section. 50.46 is, I'll say, legally applicable to LWRs only, LWRs with a specific fuel type only, at the present time but the technical basis inherent behind 50.46 is not a technology-specific one. And so as part of a deterministic process, we brought that here at a higher level.

So, if we could move on to Slide 12 I believe.

5X.260 discusses beyond design basis events and so this is one section in particular where we would be looking for additional feedback. We made an effort here to consolidate existing requirements and make them technology-neutral because there are some beyond design basis events explicitly called out in Part 50 and 52.

The expectation is that not all designs in the space that we're looking at, i.e. there's a wide

spectrum of LWR and non-LWR designs that would reflect the same scope of what constitutes important beyond design basis events. But we do recognize there are specific initiators in this space that could challenge plant safety for a given design. And so we felt that we provided language here to allow for substantial flexibility on a design-specific basis to address and deal with beyond design basis events. But we also recognize that this area is one of the ones that would benefit most from stakeholder engagement.

This section also provides for the components SSEs and things relied on in this section would not be safety-related but would meet some kind of supplementary protection to mitigate whatever the recognized beyond design basis initiators are before the given design.

So, we'll move on to Slide 13, I believe.

5X.270 in this section refers to service accidents and again, the nomenclature here is not as important as the requirements and provisions that are being communicated under the section. And so the severe accident requirements and inherent requirements in 50 and 52 are Light Water Reactor-specific. We break out what light water reactors in 5X.270 would be expected. And then allow for a more design-specific

consideration of what constitutes a severe accident conditions, including the use of engineering judgment and/or info from probabilistic risk assessments as applicable to inform the design for a set of severe accident conditions.

There is also a requirement to analyze defense in-depth. We think this is consistent with the international approach for this section. That philosophy is consistent with the NRC's policy statement. There are no specific requirements here for what would constitute that defense in-depth philosophy or analysis and so we felt this requirement was appropriately placed here. But again, this is another area where we were looking for additional feedback. And so this section also contains the requirements for analyzing fission product release and the effective dose at the site boundary and EAB.

If we can move on to Slide 14.

Slide 14 has 5X.280 and 290. 280 is functional containment. We felt a requirement was necessary based on the kind of inherent expectation of a containment throughout Parts 50 and 52. In order to create a technology-neutral requirement and consistent with existing Commission policy on functional containment, we set out what we felt were appropriate

requirements for establishing the SSEs and features relied on to create functional containment for a given design, and establish requirements for those features and SSEs.

And tie that back to 5X.260. 5X.290 talks about design requirements. This is a catchall for where we would augment existing requirements or modified existing requirements for this section. Our expectation is that this area would develop based on feedback and comment from stakeholders because although we don't believe there are necessarily other requirements that would need to change, we recognize that as this ruling which develops and further understanding of what's being done here develops, there may be other requirements that need to be modified in order to create a more technology-inclusive framework here. And so the expectation in 5X.290(b) is that there we will be additional SEs, et cetera, there would be additional requirements that could be added based on feedback if there were concerns about the technology-specific nature of the requirements that already exist.

If we could move on to Slide 15.

And so at the end of the proposed rule language there is a list of additional areas from Part

53 that are being explored for use in this framework. These areas include the items that are listed on this slide. Part of the reason that they are not called out specifically in rule text is because the Staff is still in the process of exploring how best to provide these options to applicants pursuing the proposed path.

Issues identified here are representative examples of areas in Part 53 that were rules that are being proposed and staff feels can be offered as part of this framework due to the relatively performance-based nature and acceptance criteria associated with them. How they are referenced or implemented will be dependent on a number of factors, including where this proposed rule language is located as well as specific language that's being referenced as part of these issues.

But these are examples of areas that as this rule develops, we would be looking to provide an alternative approach with consequent acceptance criteria based on the performance-based nature of these rules.

And so if we move on to Slide 16, that concludes my presentation on the technical areas.

The next steps for this

preliminary proposed option is engaging stakeholders, the various levels of NRC management, and the Commission on what the most appropriate approach is here, assessing the placement of where this option is going to be located and reviewing the impact, based on what approach is chosen, of how developing that framework is going to impact the schedule for the Part 53 rulemaking. Because we feel that providing these options is a means for being responsive to stakeholders and providing the most fulsome Part 53 that we can. That concludes my presentation.

MR. BEALL: Thanks, Boyce. Next slide, please. So, before we get into this open discussion, the U.S. Nuclear Industry Council would like to present some slides on what we just went over.

Cyril, are you ready?

MR. DRAFFIN: I am. This is Cyril Draffin with the U.S. Nuclear Industry Council and we actually have 20 slides, so we tried to take you there in terms of asking for input, so we are doing that today.

So, if you would move on to the next slide, we thought we'd first raise the issue of what to call this.

We think it's a risk-informed approach, unless someone thinks differently, an agreed-upon term

might avoid creating confusion as the organization shares similar goals in getting this done. We've had a little bit of discussion earlier in the meeting on not quite agreeing on terms. So, I thought I'd just put out five NRC terms, the traditional deterministic technology-inclusive alternative, the alternative design supporting rural traditional methodologies.

They gave some examples, commercial nuclear power plants, Part 5X, and then on Slide 6 today it's technology-inclusive with PRA in a supporting role. So, there's a couple different terms the NRC's used. And we don't have one we're strongly recommending, we're using internally a risk-informed approach using PRA in a supporting role.

I also would point out that the Canadians, CSC, use a term or phrase of complementary role of probabilistic safety analysis for deterministic safety analysis. So, I just mention this as something to consider as we go forward in terms of can we come up with a term that most parties agree is a good way of describing this approach.

On the next slide, I'll say that it's good that NRC has considered ways of improving the Part 53 preliminary language. We certainly appreciate Boyce and the other members of the NRC Staff to address this

issue and provide options. We in the industry had requested alternatives to the current Part 53 language that it has PRA baked into it and we think it's important to allow flexible alternative approaches to allow a range of technologies.

We'll give you an update on that during the presentation. So, today we're trying to provide some initial thoughts and we don't represent all the industry because not everybody's had a chance to comment. We also tried to at least be responsive and provide some detailed comments and questions on the preliminary language. We hope to make the language, if incorporated, in Part 53 guidance or rule language as clear and as appropriate as possible.

So, the next slide, we might start off with some overall initial thoughts based on the preliminary text we've seen. We think that the draft provides a sound framework for regulatory language that is high-level and flexible. And it's more flexible and it provides a path for using bounding assessment. But we don't think the Part 5X stands on its own yet, there's uncertainties as to which requirements from Part 50 or Part 53 would be replaced. There's ambiguity on whether beyond design basis events and zero accident analysis can be

excluded from design basis and there's no provided items that were brought up today by the NRC Staff where there's some uncertainty and questions about how to go forward.

This is I think an important point to say that it shouldn't be binary thinking between you have, on the one hand, Part 53 teach out fully risk-informed and a separate Part 5X deterministic approach. Because, really, future applicants are going to probably have a mix, they'll rarely have an application that's fully risk-informed or fully deterministic. And handling that gradation of what designs would warrant and be appropriate I think is part of the process that we're all grappling with.

It may be that a preferred solution is to bring the good parts of what we've seen today on Part 5X into Part 53 and shed the prescriptive Part 53 requirements around QHOs and event frequencies and, if appropriate, make a little more robust guidance to address that. And you pointed out that you wanted to consider other countries. I think that's appropriate. The data that U.S. Nuclear Industry Council had from developers this year is that probably two-thirds or more plan on using applications in both the U.S. and Canada, and also considering IAEA SSR-2/1 is

appropriate as you try to look for industry that's going to be international in scope.

So, the next slide, provide some thoughts on an alternative way and then we'll provide some detailed comments later in our remarks.

A alternative way of addressing this range of technologies and approaches, and might be preferable, would be to modify Part 53. The Nuclear Energy Institute, in their September letter, stated that relatively straightforward changes to the Part 53 preliminary rule language, by removal of unnecessary prescriptive detail usually found in guidance, NRC can establish a Part 53 that allows a variety of risk-informed licensing approaches. And, therefore, it may be an appropriate path, rather than to consider Part 52 independently, would to see if they could be blended. And if you made the changes which I'll mention on the next page, some conforming changes, all risk-informed approaches could be allowed. If that's true, then it may not be necessary to expand too many resources on Part 53 as the standalone alternative, and that could be a distraction from fixing Part 53 preliminary language.

So, on the next page, for those of you who haven't seen this and might be interested in the

detail, there are at least two main requirements in Part 53 language that could be excluded. And, also, there's other items, such as the change control process, would also have to be evaluated and perhaps modified. But the two items would be 53.450 and 53.220. So, changes of those requirements and re-examination of other items to remove detail typically found in guidance or NRC policy statements would enable Part 53 to be used by all risk-informed licensing approaches.

For the first one, to remove the mandate that PRA must be used as the primary basis, rather than complement, as directed in the PRA policy statement. This would allow PRA to be used in a more balanced way, in a primary basis and in a supporting role and still establish safety.

The other item would be the removal of QHOs from the rule language and to continue to apply it through the safety policy statement. And, therefore, the guidance would be used to the extent that risk criteria for QHOs are needed, but without locking it into the language. We can certainly have a discussion on that and people can provide more details for this approach rather than keeping two separate alternatives going in parallel.

So, we might go onto the next slide, and that's the start of specific comments that we had on the language. And I do point out that it's been early in the process, and therefore we haven't had a chance to really look into all of the language in detail. This is kind of an overview of our first look at it from some of the developers. In the course of the presentation, I'll stop a couple times to see if people want to augment what I'm saying.

So, I might start with definitions, but, before we get to that, I wanted to raise a couple of broader things in 50.200. We've heard a discussion already today on a commercial nuclear power plant. You might even consider the technology-inclusive alternative technical licensing requirements for utilization facilities and using utilization rather than the commercial nuclear plant.

On Part 50.210 there is a question if the advanced reactors still have to have exceptions to other parts of Part 50 would defeat the purpose and that burden of inserting the 5X requirements. So, I think it's important, as we mentioned slightly earlier, to delineate if you do go forward with this path what would be dropped from Part 50 so you're not just adding things on, you're making modifications to

other language. And I think that's important to avoid the complexity of language and maybe you need to follow more than one path than in Part 50. For Part 53 we mention that a preferred approach may be to modify Part 53. It does not describe a particular approach but is flexible and would avoid having to be particularly detailed on it. So, we've got a couple notes on the slide for background.

On the next slide we there was a discussion on AOLs and DBEs that Bruce had raised, which I guess you call it the inner ring. So, we have some initial reactions to NROs. The definition seems to be added because the NROs are not required in Part 50. Perhaps you could restrict it to PECs or even leave it out of the rule language. The wording indicates applications should provide analysis for AOOs and features used to mitigate these events should be safety-related. Some developers do not include analysis for AOOs and do not consider equipment responding to AOOs as safety-related based on what's been done in the past. So, AOOs need to be assess but we'd like to see a justification for elevating their analysis to a rule. For DBEs and DBAs there is a question on whether you need to revise the language. They seem to be used interchangeably and if this is

the case, it could be a little confusing for someone not strictly following LMP. So, probably some clarification on that would be appropriate.

And other definitions and approaches much different than the way they're being used in LMP, where DBE is the only private SR SSCs. So, I think there's some clarity that might be needed.

Also, regarding pressure, usually we operate in atmospheric low pressures and there's a pressure component in the definition that suggests you still have to consider how it's associated with large pressurized reactors and releases, if appropriate.

And then for safety-related DBAs, it's appropriate to distinguish DBAs. So, I'll just pause there and see if there's any other members from the NRC would like to add on to these particular topics?

MR. HASTINGS: Yes, Cyril. This is Peter Hastings. I apologize. It took me a second to get off mute. Peter Hastings with Kairos Power.

I wanted to echo Cyril's remarks. Among other developers, Kairos has been vocal within the developer community, with NEI, with USNIC and in some cases directly in the NRC's past meetings, that we really need simpler language that's not prescriptive on the use of PRA. Some of the concepts in 5X seem

responsive to those kinds of concerns and so we want to acknowledge that.

It's not clear to us that employing parallel paths, say between Part 53 and 5X makes sense. And we think the logical place for the new language to land is in Part 53. But, you know, the details matter. And as Cyril indicated, we need to do more digging into the specific language. But it is worth acknowledging that in many cases the language is at least prototypic of the kinds of changes we were hoping to see in Part 53.

I want to particularly amplify Cyril's remarks about not being binary. That is the sort of portrayal of you're either all in a TICAP type approach under Part 53 and, you know, what's been purported to be a PRA leading role or on the other end of the spectrum in what's been labeled what I think everybody recognizes somewhat inappropriately as "deterministic." I don't think that's really what we mean. But I get the clunkiness of the terminology. The point is it's not binary. And our own execution of the LMP process fits more into the category of what's been described previously as PRA confirmatory, another clunky language that we're sort of all to blame for frankly. The distinction between that and

the sort of full blown TICAP process is really in many ways artificial. So the more we can do to sort of dissolve the notion that, as Cyril indicated, those are sort of binary states, the better. And it occurs to me, again without having completely dissected all the language, that baking some of these concepts from 5X into a revision of the Part 53 language would be the best way to go about that. Thank you.

MR. DRAFFIN: So I'm not sure the best way of proceeding. I'm sure we're going to have lots of comments on the way. And I see a couple people with comments.

MR. BEALL: Hey, Cyril. This is Bob Beall. We'll just keep going. We will come back to the comments. You have a number of slides still to get through. So go ahead and keep going with your slides and then we'll come back to the questions at the end. Okay?

MR. DRAFFIN: Okay.

MR. BEALL: All right.

MR. DRAFFIN: So let's go to the next slide. So regarding definitions, the definition of safety relatedness is a little more technology inclusive. That's good. But it still has some common elements that could be specific to a technology. And

we might revisit some of the language.

We've given a couple examples where we think that it might be a little prescriptive and fast reactors sometimes don't require an active shutdown function. And so it's -- we have a question about why the definition in this is different than the more performance-based Part 53 definition of safety related. I know you pulled it out of 50, but ultimately it's supposed to be you're looking for a risk-informed performance-based activity. So I'm not going to go through all of the details, but you're certainly welcome to look at the slides as we go. And we can have further discussions later.

On the next slide, it deals with 230. And defense-in-depth is built into the rule language, which seems to make it unnecessary to have separate defense-in-depth evaluations. There's already -- we've listed, you know, design criteria, single active failure criteria, evaluation of DBEs. And so there's already these things built-in, so why does it need to be mentioned twice? And if it isn't, then we probably need some clarification.

Prevention, mitigation doesn't appear to apply to all of the design basis events but only a smaller subset. And so it's a little unclear there.

Also the requirement for beyond design basis events is a little unclear. The language could be read to permit the use of flex equipment, you know, diverse and flexible mitigation capability as an appropriate strategy for addressing design basis events and maybe that's what is intended, but I just wanted to be clear on that.

On the next slide, the scope and definition of this design criteria is being discussed in TICAP, and it hasn't been resolved. There's some ongoing discussions even late in the process that there hasn't been resolution. And so that still needs to be considered as you go forward with this. The language would eliminate the need for special exceptions and that's good. But the purpose for Paragraph (b) is unclear and needs to be addressed.

Next slide. Some of the complexity could be avoided if it was modified. So I'll just quickly run through and then I'll pause and see if anyone wants to elaborate it from USNIC.

So how would this language be met at the construction phase to truly follow -- these requirements are followed or not expected to be completed there, and it's always a preliminary analysis. So how do you clarify that?

SSCs are required to mitigate against anticipated operational occurrences [AOOs] and design basis accidents [DBAs] must be classified as safety related can be confusing because the direction of AOOs does not include the performance of non-safety related SSCs.

LCOs provide conditions that preserve margins of safety during normal operations but not necessarily analysis of mitigating SSCs. It probably seems to limit discussion only to AOOs and DBEs.

What's the licensing basis under these provisions and what subject did change control processes for the one and in core analysis of the design and objective to assess the risks to public health and safety and that -- and so those are examples of what our issues are there.

So I'll pause to see if anybody else from USNIC wants to augment these comments.

MR. AKSTULEWICZ: This is Frank Akstulewicz for Terrestrial Energy. I think this highlights some of the questions that we had when we were looking at this in that, you know, it is a set of important events that need to be addressed under 5X. It is clearly limited to AOOs and DBAs. And then you have the separate sections on beyond design basis. So

is the set of analytical events under this section inclusive of exposures to beyond design basis events?

And then the other piece of this, I think, I'm not sure, but I think this is where -- maybe I got it wrong. Maybe it's later. But it would still come out as part of this discussion anyway. And that is the limitation of the radiological consequences for beyond design basis events to the safety limits that are assigned for design basis events. I think that's a significant interesting topic to discuss as to why that is the case. And there's no such limit that's currently being proposed in the Part 53 environment.

So I'll pause there. I think the other point that I think has been important is the use of only safety-related equipment to mitigate the progression of anticipated operational occurrences. I don't know if that was intentional or not. I'm not sure. But even in today's LWRs, AOOs are mitigated by non-safety related equipment. And so I'm not sure why that scenario couldn't also be acceptable for advance reactors.

MR. DRAFFIN: Thanks, Frank. If anybody else doesn't have a comment, then we'll on to the next slide.

Also in 250, the complexities could be

avoided if it was modified. The requirement for the use of limiting parameters as consistent with the current LWR but the language in the rule about the evaluation may not be realistic and raises the question of how realistic and accurate it would have to be to satisfy the staff.

This is one of a number of points where the line of demarcation needs to be clarified. And it introduces a new reporting change. And this new requirement modeled after 50.56, the scope here seems ambiguous. And the requirement to report each change and its effect in a separate report annually seems excessive. So this has the potential for a major burden addition. I'm not sure that was intended. But that may have the -- that's a ramification, and it ought to be reconsidered. And additional clarification about the scope, this requirement is required or perhaps it could be deleted.

So on the next slide, now on non-design basis events, and since you were looking for some feedback from industry, so why would beyond design basis events analyzed in the design? And there's language saying you must perform additional assessments and analyses. But we suggest adding some clarifying language saying what does that mean? And

we're suggesting maybe using best estimate methodology, including consideration of uncertainty so otherwise you know what analyses need to be done.

And the requirement that they meet those criteria or some other basis why a scenario is not physically possible is too open ended. And the level of review and information required is uncertain and therefore needs to be tightened up a bit. So essentially there's no limit on where to stop, and it seems to be more restrictive.

On severe accidents, I think you can just read the language yourself. We disagree that the language included there is a requirement. And we like to see why the language of radiation dose in excess of 25 rem effective is needed.

On the following slide, they seem to be more restrictive than the analytical requirements in Part 53. And we've given some specifics that we think that they're more severe than in preliminary Part 53. And then also there's questions about why safety features should be in this particular section rather than someplace else. And then how can it demonstrated that dose requirements would not be required? So there's a number of places where we think some clarity is needed.

So, again, the goal of this today -- we'll go to the next slide and that will be the end of our specific comments. You had asked for some input and so we wanted to provide that on a real-time basis if we could.

On 280 you find containment integrity and where exemptions are required, but there's additional requirements. They're now safety-related. And one of the provisions seems unnecessary. And in 900, it really depends -- we think it's good to allow multiple technologies. but how that's going to come to pass is unclear.

So let me pause here for the last time to see if there's any other or any USNIC members would like to augment what I've said so far. If not, let's go into the last few slides.

You asked the question should it be in 50, 53 or if it's not needed. If NRC wants Part 53 to be risk-informed, technology- inclusive, this approach seems part of that. So the intended language is to be inclusive and therefore this approach ought to be incorporated in Part 53. And we've offered a suggestion that it might be easier to modify the current language, drop some of the more restrictive portions of it, of the current preliminary language,

and to allow this approach without having to do two separate concurrent activities. So I think 53 would be the answer we would have in terms of where it should be located for this approach.

On the next slide, I just wanted to cover some data to provide context. See we presented this back at the August stakeholders' meeting. And this is from developers, 17 of them, which is a very substantial cross-section of all the major developers in the United States. And it gives a distribution of how they plan on using PRA. And similar to LMP, similar to a regulatory framework, similar to a maximum credible accident approach or they plan on taking a different methodology on part because they're going to a different country or in one case it's because they're a fuel developer.

And you'll see it's pretty evenly split between the major ways of PRA being used and if you think medium or minor. And therefore, it's important to have that flexibility built into the rule, which you're doing. And so we, again, commend the work that Boyce and others are doing to think through this approach because it is important to be inclusive.

On the next to the last slide, I guess we'll have some thoughts on another approach. And

that's basically that the conservative bounding analysis, which is the third one that's kind of mentioned in the previous one, is also important. I know there's some activity that NRC is working on, but it might be best to also incorporate that in the current Part 53 language.

So I think that's the end of the slides. And I'll go on just to be sure. And this is where I guess we have covered where it should be. So I open it up for discussion from anybody on this and by passing to Marc Nichols or perhaps if NEI would like to comment.

MR. NICHOLS: No, go ahead, Cyril. Finish yours. I was going to make comments. So I don't know if the staff had anything to respond to you.

MR. DRAFFIN: Okay. So I'll first give an opportunity to the staff to comment on any of the points I've made.

MR. TRAVIS: I have one very specific question on a bullet if we could go back a few slides. Keep going. Sorry. I can't see the bottom number on the right on my screen. Keep going. One more I think. Yes. This slide. Thank you. So could you provide some additional context on the second to the last bullet on this slide?

MR. DRAFFIN: The safety engineering in the facility? That came up because it's appropriate for severe accidents but it's also for the other parts.

MR. TRAVIS: Wrong bullet. I apologize. The second to the last bullet that starts with how.

MR. AKSTULEWICZ: So, Cyril, this is Frank. I think this relates to -- and I don't have the specific language of 270 up in front of me. I think there was a provision in there that said you would have to do the dose calculations if it could be demonstrated that they would not be required. And so the question was put forward well how would you be able to demonstrate that the dose calculation wouldn't be required because you have a requirement to perform the dose calculation?

So the requirement in the language seemed to be at odds with overall construct of the regulatory language where you have to do the dose calculations but then sometime later for severe accidents, you wouldn't have to demonstrate that you could meet 25 rem or something like that. So it's more of a consistency question. If there's a language in the rule that says that there's an option to not have to do something, then from a performance-based kind of

thing you would have to include the how you would be able to demonstrate you would have to do that. That's all. What performance standard would have to be demonstrated in order to show that you didn't have to do the dose calcs? But that's that bullet.

MR. TRAVIS: Okay. I think that there's a misunderstanding then because to my knowledge, and I'll have to go back to confirm this, that is not something that would be allowed under this approach. The expectation is always that there would be a dose calculation performed because that is kind of fundamental and implicit in the NRC's, you know, statutory mission let alone what's in the regulations.

MR. AKSTULEWICZ: And I agree with that. It's just, like I said, I don't have the language up in front of me, but it seems that there was this provision available that you could kind of opt out of doing it. And it's just more of a comment to go back and validate that.

MR. TRAVIS: Okay. I mean, certainly, I'm going to go back and look because it was never the intent to suggest --

(Simultaneous speaking.)

MR. AKSTULEWICZ: Yes. I was surprised to see that myself.

MR. DRAFFIN: Other comments, questions?

MR. SEGALA: This is John Segala. I was just wondering if we had the rule language up there, I was wondering if Frank could point to the specific item that might help us address that comment.

MR. TRAVIS: Someone put it in chat. And I think it's just a misunderstanding in how this is -- it's something (b). And (b) is laying the barrier for the extent of the analysis that needs to be performed not to say that there isn't dose analysis. Like there wouldn't be a dose analysis required but that dose analyses for events beyond the criteria laid out in the section that's identified, yes, in the paragraph here. Not to say that you don't have to do dose analysis, but you don't have to do dose analysis outside of this paragraph.

MR. AKSTULEWICZ: Yes. So since (b) is up there, like, okay, how would you demonstrate this event, right, and what would be the expectation for a demonstration that there's no plausible scenario that leads to the consequences? You only know that if you did all of the analysis anyway.

So just make sure that this language if it's going to stay that it's clear over here in the right-hand column what the purpose of this particular

effort is. And, again, this gets to the whole concept of constraining beyond design basis accidents to the siting criteria consequence values, which, you know, the point that I made earlier about why there's no such prohibition in Part 53 when the events are identical.

So I think that needs to be examined. If you're going to restrict severe accidents radiologically in 5X, then there better be a really good explanation for why you're not constraining them similarly under Part 53 because they are the same accidents.

MR. TRAVIS: Yes, I guess. I think I disagree to an extent. And I want to respond to that directly because there's -- for a given accident, they may be the same accident. But in an approach that uses a deterministic framework that's driven by top level design goals at the outset, you're making more straightforward analytical assumptions that are bounding in exchange for doing a less comprehensive exploration of the event space.

And so as such that -- in using a PRA to more fully explore the event space, you hone the margins of what the analysis and the acceptance criteria are.

And so I think that there may be a nomenclature issue in titling these severe accidents. That was not explicitly the intent of what's being laid out here. But it was to draw a parallel between the accident criteria that are set forth in Part 50 and 52, which are not exactly a design basis accident. And I think we'll agree to what the criteria for analyzing that dosed accident is. And so without doing that fulsome exploration of the event space, you are inherently going to have to make some assumptions on what you're actually analyzing, right?

If you're not going to do the -- it's a question of how much work you do upfront to assess margins in analysis space versus how many sacrifices you want to make in analytical assumption space and what your design is capable of, you know, withstanding, given that you've made those assumptions. And so the intent here is not to -- I'll say I think this is a different discussion from Part 53 and is more akin to looking at what, if any, there are discrepancies between this and the approach that's done under 50 and 52 because that's really what this was trying to get at.

MR. AKSTULEWICZ: I appreciate that, Boyce. But I think this discussion we're having are

the types of discussions that I think the industry has been looking for in terms of the details, you know, philosophically going back and forth. And we can continue to have this discussion probably for the next half hour, and I don't think that's purposeful because I don't know that we'll ever get to a common endpoint. But you can make arguments for -- and, again, one of the things that -- the other comment was that there appeared to be an inconsistency between what the source term had to be, whether it had to be conservative, non-mechanistic release versus a mechanistic source term.

And so I would ask you to go back and look at the relationship there within the rule because it appears that there was a conflict there. Because here it says applicants not electing to use mechanistic but above earlier in the rule it says you had to use a non-mechanistic source term.

And, again the argument that was provided in terms of why you could not put limits on severe accident consequence values under Part 53 is an interesting one. I think you can make a similar argument that because you're narrowing in on the margins then your uncertainties on those margins are much greater. We would also want to have more

constraining limits than what's currently proposed under Part 53. So we can have those discussions. I mean, the uncertainties are in the frequency not in the analytical models that are being discussed under LMP. So this is attempting to bound the analytical models and not the frequency of the events. And I appreciate that. But Part 53 does not have a similar construct in terms of bounding the parameters that are used analytically not just on the event frequencies. That's a whole other discussion.

So I'll give the mic back to somebody else.

MR. TRAVIS: Thank you. We appreciate the comment. And I think -- I'll just note that this is draft language, you know. As much as I wish it was perfect, I recognize that it is nowhere close to that. And so those are the kind of inconsistencies we are, you know, looking to correct.

MR. AKSTULEWICZ: So I think this has been a great discussion. I appreciate the discussion.

MR. BEALL: Okay. Thanks, Frank. Ed Lyman, you had your hand up for a while. So please go ahead and ask your questions or comments.

MR. LYMAN: Yes, sorry, what one? We will now take questions from the NRC staff. But first, Mr.

Draffin, in your set of slides, something about AOOs not being covered? I'm not sure what he meant by that because I'm looking at 50.34, and it sure looks like they are, that they do require analysis. That's my first question.

MR. TRAVIS: Give me one second. So I think the distinction is that AOOs, there's analysis required of AOOs. The specific requirements for AOOs are usually going to be located in the GDC. And the GDC are intended as guidance for non-light-water reactors. And so our goal when writing this section was to bring in a consistent level of analysis to the GDC for AOOs.

I recognize based on some of the comments there may be some nuances that the language doesn't capture there in terms of responding to the AOOs. But part of what we were trying to do was bring it out at a higher level instead of getting specific on, for instance, reactivity transients versus secondary upset transients and what's required in the GDC.

And so analysis is required of AOOs. Whether the components have to be safety-related or not, I think, and I'm going to defer this a little bit, is dependent on the type of event and how it's analyzed. And so the intent was not to depart

significantly from the existing framework in 50 and in the GDCs but to put that into the regulatory language without directly relying on the GDCs themselves.

MR. LYMAN: Okay. And my second question, you said something about the digital product release postulated in the footnotes in the 50.34 are worse than a design basis accident? Because that doesn't comport with my understanding.

MR. TRAVIS: So --

MR. LYMAN: I thought that's what the definition of the design basis accident for doing the Chapter 15 analysis.

MR. TRAVIS: So I think that there is a distinction to be made in that -- there is an -- it is expected that for a design basis accident that's analyzed in Chapter 15, there will not be core damage that leads to a release. But the requirement to analyze an event in Part 50 and 52 uses a footnote that indicates an assumption of core damage.

So when I speak to design basis accidents, it's the types of events that are analyzed in Chapter 15 not the event that is analyzed for the site boundary and offsite dose release, which I think I will say from an analytical perspective are different.

And, again, how that's brought out in this

language, you know, this is a first iteration. This may not be the exact correct way to phrase that. But the event that requires you to look at or is generally expected that core damage will occur in is not the same as those that are analyzed in Chapter 15, but both are subject to dose requirements.

MR. BEALL: Okay. Marc Nichols, do you have your hand up?

MR. NICHOLS: Yes. Thanks, Bob. And thanks, Boyce, for going through your Part 5X. I want to make several comments, maybe have a few questions. So hopefully this can be a little bit more conversational than one directional.

So first I want to thank the NRC for looking at how Part 53 could be more inclusive to other risk-informed approaches. And we submitted a paper at the end of September that provided four examples.

It's not everything under the sun, but it sort of gives an example. It sort of illustrates the range in which the PRA could be used and what we would consider all is risk-informed approaches. And so I want to preface my comments with saying I understand how you went about to develop Part 5X sort of separate from what's in Part 53 right now. I'm not second guessing

or judging your process. But I want to make the comments more in terms of how we look forward and where we go from here.

So with that, I also want to say that some of my comments are based on conversations we've had with the task force in terms of those risk-informed approaches that we put in our PRA paper and the September paper and how they could work under Part 53 and then the specific valuation of Part 5X requirements are more my own thoughts.

But first, I think we've been consistent in saying that we think Part 53 rule language could be modified in I'll just say subtle ways to be able to allow all of the risk-informed approaches. So since we think that that is possible, that's our frame of reference is how do we get what you developed in Part 5X into Part 53?

So there's a couple nuances with that. One is it means that what this Part 5X, whatever happens to it and whatever -- actually, I should say the risk-informed approaches that would be able to use it, should be able to use the majority or almost all of Part 53. The reason that's important is because there are a lot of benefits. There are a lot of good features in Part 53. I know most of these meetings we

point out the things we don't like in Part 53, but we shouldn't lose site of the fact that there are good things in Part 53. So we think everybody should benefit from those good things. And that's more in the modernization. And that's why sort of if going from here, whatever happens with 5X it should be translated into how does it build off of Part 53 not how does it stay anchored in Part 50 and 52.

The other is that because -- Cyril went through the two main requirements that need to be changed in Part 53 to enable that. And it's really the PRA requirement. There's a lot of detail on specific usage that in our evaluation isn't necessary. All of the other Part 53 requirements can work without having that specific usage. You could use all of those four approaches. We mentioned through all the requirements -- specifically in the paper we evaluated several -- we evaluated -- actually, we developed the descriptions around the NRC's safety paradigm for the design. So the safety criteria in 53.210, 220, the safety functions, the LBEs, the defense-in-depth, the design features and functional design criteria, safety categorization, all of those work for all four of those approaches in the paper.

And then as you look at the operational

requirements, tech specs, ISI, all that sort of stuff, they all work. You may get different benefits out of those requirements based on how much PRA you use. But there's nothing inherent in those requirements that couldn't be used by those four approaches. So that's why we say that the goal should be making Part 53 more flexible not developing two independent parallel pathways.

So with that in mind, I did want to go through some specific thoughts on the Part 5X. And I reviewed it in terms of how does it fit in Part 53? I think putting it in Part 50 is not even something that I would consider a good option. So how do we put it into Part 53? And recognizing that if we just make those subtle changes in Part 53, most of Part 53 opens up into flexibility. I really compared Part 5X requirements to the equivalent of Part 53 requirements.

In many cases, Part 53 requirements were more flexible and performance based, not even in those areas where they are, you know, I would just say slightly better that we couldn't learn from what was done in Part 5X. We certainly could. But just for the most part, the Part 53 requirements, once you get them flexible to be used by everybody, they're

generally a little bit better in that department.

Specifically, I just point out PDCs. Part 53 has PDCs. They're not called PDCs. They're called functional design criteria. But if you look at the definition of functional design criteria, it's the exact same purpose and intent as PDCs. So it's not that PDCs don't exist in Part 53, they just have a different name. And so there are slight differences in how they apply just because the framework is a little bit different in terms of design features and that sort of thing.

There's also defense-in-depth in Part 53. And specifically, it seems to be a little bit more performance based. It has this no single failure criteria. And it comes in a different form. It's called no single layer or something else. But it achieves the same purpose so, you know, there's that.

I would note that the Commission in SECY, what was it, 19-0036, it happened to be a NuScale design issue, but the Commission directed that the staff apply it in every area that they regulate, which is when a strict prescriptive application of a deterministic criteria was actually a single failure criteria in that instance. If it's not necessary from a risk perspective then for reasonable assurance, you

shouldn't have to apply it. So I think that is a good nugget to bring into Part 53.

There are some areas in Part 5X that I would say are better than Part 53. Certainly, the PRA requirement is more flexible and performance based. You know, the explicit statement, the bounding analyses could be used. That's a helpful thing. So there are things from Part 5X we can weave into Part 53. But I think fundamentally, we don't need two parallel frameworks. We just need to improve Part 53's framework. And I think that's certainly possible to do.

There was an area of concern. I know there was some discussion just now about beyond design basis events [BDBEs] and severe accidents. And I want to ask a question, but I'll preface it by saying there's a difference between including BDBEs in the licensing basis and including it in the design basis.

The design basis is a subset of the licensing basis. The design basis is those things that you have to design to prevent and withstand and historically have always been focused on design basis accidents.

The Part 5X brings the beyond design basis events into the design basis rather than continuing to

treat them in the licensing basis as mitigation. And so I'm wondering why the staff is making that change in Part 5X and why not continue just treating it as a licensing basis issue with mitigation rather than including it in the design basis?

MR. TRAVIS: So this is Boyce again. From my personal perspective, I don't view them as being part of the design basis in the same way the design basis accidents are part of the design basis. The goal behind calling the BDBEs out in the way that we did was we were trying to consolidate the existing requirements and make them technology neutral.

If there was -- I mean, as an alternative, what we could have done is write a rule that's based on the -- write into the rule a text based on, for instance, ATWS and SBO, you know, the technical genesis behind those requirements, and scope it in that way.

But I think there was an expectation that not all designs would have the same BDBE space in that we, at this present point in time, do not have enough information to fully appreciate what constitutes an event that is not within the single design basis of the plan but is something that needs to be defended against in the same vein as an ATWS or an SBO for an

LWR today because recognizing that these technologies are very different and there are specific initiators in the space for these other designs that could rise to the same level as, for example, an SBO or an ATWS for a non-light-water reactor design.

And so we wanted to afford the designers the flexibility to say we looked at this. You know, we're addressing ATWS in this way. We don't need to address SBO because of our design features. We don't think there are any other beyond design basis events in this specific space we need to look at. And so that's why we provided the language we did that afforded that flexibility. If there was a -- you know, the preference is we would rather have an SBO or an ATWS rule for non-light-water reactors that steps it back, you know, to the technology neutral top level. You know, that's feedback we're happy to take and could be incorporated into this rule.

MR. NICHOLS: Okay. Well, that's helpful feedback. And you mentioned that this is the first iteration. So it could just be in terms of the nature of the language. There are words in there that say like designed to prevent or designed to withstand. And the way it's sort of open ended, it could bring in things like, you know, a Fukushima type of event,

which means you have to actually design against it rather than just provide mitigation for it. So maybe more clarity on that.

And I would say if the staff's intent is to bring in similar considerations to what's already in Part 50, that the better way to do it would be to figure out what are the characteristics of those things that could be generalized. And then describe it that way and allow mitigation to continue for the rest of the beyond design basis events.

And the Commission has looked at this even recently in the mitigation of the beyond design basis event rule. The NRC had said that they didn't want -- that there wasn't a reason to do more than mitigate beyond design basis events or to have new design requirements for new reactors, specifically they said that, or to have requirements for severe accidents. So I think it would be wise to be consistent with the direction in that SRM.

I would note, and this crosses over to Part 53, that there is, and it may be based on your response, there is maybe an unintentional effect of Part 53 that does bring the beyond design basis events into the design basis. And it happens because of the way the QHOs are in the rule and how the rest of the

downstream design requirements relate back to them. So as you follow that through, the safety functions and design features all the way down to fundamental design criteria, it leads you into having to design the plant to prevent and withstand beyond design basis events.

So if it's the intent of the NRC, it would be helpful to know that. If it wasn't the intent of the NRC, then I think that's another argument for taking the QHOs out of the rule.

MR. TRAVIS: Marc, if it's okay, I want to go back to talk about single failure briefly. Because I think the last comment you made, I have to marinate on a little to fully get to where I could provide a coherent response.

But the reason single failure is called out here as a -- you know, we think that in both cases, 53 and here, we are being consistent with the Commission's policy. Here it's called out because the place that's currently ensuring it is the GDC, which is LWR specific. But that function is a fundamental tenet of a deterministic approach. I mean, we surveyed the international landscape and drew on concepts there in developing this. You know, is there an overarching single failure requirement versus the

specific requirements that are inherent in the GDCs?

And our impression was that providing flexibility in the PDC space was something that was desirable. So we carved that out separately here. The motivation, again, going back to the initial discussion, the motivation here was to provide a technology neutral deterministic implementation that was consistent with the spectrum of international standards that would allow for compliance with, you know, a broader set of standards while remaining technology neutral.

And the way that, you know, the risk and specifically the PRA informs that is why there's, you know, kind of a different set of requirements in Part 50 versus Part 53.

MR. NICHOLS: That's helpful. And I'm not going to critique that approach specifically. But I do want to point out, and it was raised by, I think, Cyril and Peter. This is my assessment. What the NRC has created with Part 53 and Part 5X is a binary choice on how you use the PRA, and it has to be in the maximum extreme of either end. So Part 53 is sort of the maximum use of a PRA, and it is required that that's how you have to use it. And then Part 5X, it allows the minimal use of a PRA, but it prescribes so

much of the deterministic analysis and design philosophy that it gives little incentive to do more than that.

So if I were a designer and I've got to do all of this deterministic stuff that's already in the Part 5X requirements, why would I use a PRA? There's no benefit to it beyond that. And so somebody had made this comment as well. That's just not how the world works or how design and analysis for advance reactors work. Design and analysis for these days now use deterministic and PRA tools so collaboratively. It's an iterative process. Some use PRA a little bit more. Some use a little bit less. They're all on this, I'll just say, a spectrum. None of them are at either ends. They're all in the middle.

And so that's why we're so focused on a Part 53 that's flexible, that allows you to use PRA and deterministic rules along that spectrum rather than sort of forcing you on the extremes of maximal or minimal PRA because that really binds up the design of these reactors. And it really, well, stifles innovation. It prevents the ability to sort of optimize the designs not just from commercial perspectives but from safety perspectives as well.

So I think that's really key for us to try

to get across, which is we don't want two parallel pathways that are binary and pushing you to the extreme one way or the other. We want Part 53 to be modified so it's flexible. You can sort of play it on this spectrum and land where it makes sense for you. And you can achieve it really easily. You can achieve it by modifying those two requirements we mentioned already. And none of the other requirements are sort of held up by the changes that we're proposing. All of the requirements still work. So it's not like we're trying to pull the foundation out of Part 53. We're just trying to make it a little bit more flexible.

If you want more detail, you can put it in guidance. If you feel that there is a specific -- if you don't use PRA in a specific way, you have to have a single failure criteria, you can build that into the requirements by saying, hey, if you didn't use PRA this way, you have to use the single failure criterion. Or if you think there's a specific feature of Part 53 that you can only obtain by using PRA and a specific use, you can say, well, if you use PRA this way, then you can get this additional benefit.

We don't think there's any of those exceptions. But if the NRC thought there were, it's

easy to build in. So that's why I really hope to impress on the NRC to look beyond a binary 5X, 53 rule and sort of look more out of the box into how do you make it flexible so that people can move up and down this spectrum? So sorry to go off on that tangent.

I would be interested if the NRC has reviewed our PRA paper from September to assess how those different approaches work specifically within Part 53 since we think they all work there.

MR. RECKLEY: Boyce, this is Bill. I guess I can -- yes, we've looked at it. And we're evaluating. I take issue, really, with the whole notion that this whole argument is about PRA. PRA is a tool, and it will be used in both 50X as Boyce talked about and it's obviously used in Part 53.

To me the bigger difference, and it's more fundamental, is that Part 50, 52, Boyce laid out a 50X option here that's a technology inclusive approach to the same basic approach, is that that methodology is based on design rules that are established at the beginning. So is here a definite similarity between GDC and PDC in Part 50 and the functional design criteria in Part 53? Yes. But they are defined in different times in the design and the licensing process.

Under Part 50, you start with them. In Part 53, which is an iterative process, you derive them from the higher level criteria as we currently define them in Subpart B. So it really is a different type of design and licensing approach between the two. Similar tools, often you'll have similar outcomes. But from a regulatory standpoint for the Part 50 or 52 or 50X or IAEA SSR 2/1, the challenge for the regulator is the burden is on us to set those design rules. And that's why you have the GDC. You have the single failure criteria. You have the ASME Code. You have a whole bunch of what is usually called accurately prescriptive requirements because the regulator is setting the design rules.

Then analysis is done to confirm them. Often the postulated initiating events are just a way to finish out the design rules. Yes, I need protections. But what's the flow rates? What's the heat removal capacities? What's any number of parameters that end up being called design basis parameters under Part 50?

So those things work together to provide you this integrated approach. But you start with a set of prescribed design rules. Part 53 reflects or allows a more iterative design process where the

regulator is setting out the high level criteria, Subpart B, things like QHOs. And the designer is given the flexibility to then define their own functional design criteria for whatever the design features they want to build into their design and credit to perform certain safety functions.

And so, yes, the PRA is the tool that we've used for that assessment. That's just where we are in terms of what we thought was the appropriate tool.

But the fundamental difference isn't PRA is used this way or that way. It's the bottom line design licensing process and what is the burden on the regulator? Just the high level criteria or -- which, again, when we set out the high level criteria, and you guys have made observations on some of these being the aspects of Part 53 you don't like, but when the regulator only sets out the high level criteria, then the rest of the rule is assigning the responsibilities on the designer on what they need to do.

So you don't have a requirement in Part 50 to come up with functional design criteria. That's already been done. It's in Appendix A. So it really is more fundamental. And I would ask people to just take a step back and not paint everything in terms of

the PRA. It is more fundamental in terms of the differences and what we're trying to accomplish.

And under this 50X proposal, again, really what we're trying to do is primarily provide a technology-inclusive approach for that approach that is based on design rules. And that, as Boyce mentioned earlier, is really to marry up with the international standards because that was the request that was made of us. So I'll leave it there.

MR. NICHOL: No, Bill, that's great. I think we're really getting somewhere in terms of understanding each other. So, I really appreciate that.

And so, I'll address that. So, I'm glad that you also see Part 53 the way I see it, which is, it's not about the -- it shouldn't be about the specific use of the PRA. It's more about the NRC setting the high level standards and then setting, I'll say, the boundaries. And then the designing having to come up with, you know, their design process to meet those. Rather than the Part 50, 52, which was, we're going to start with sort of the deterministic design parameters. So, that's good, because I think all of the ranges of PRA want to use the Part 53 approach to that. That's where we think the benefits

are. That's why we're advocating that all the approaches.

And so, if I take your statement that it's not about the PRA, the PRA is just a tool, which we would agree with, then I think that supports our argument that the PRA requirement in 53.450, doesn't have to be so detailed and prescriptive. You can take out the specific, the PRA shall do this, shall do that, shall do this, because that's not what's important. It's this sort of mixture of how you get there.

And the PRA is one tool. You could use a different tool to get there. It's sort of the process. So, I think we would agree with that. I don't know if the NRC is yet agreeing with us on, you know, not needing so much detail in the PRA requirement there.

I would say if the whole point of developing Part 5X was to be consistent with the IAEA, we may need more discussion around that. Our intent when we said that we wanted an approach that was compatible with the IAEA wasn't one that was, I'll say, very similar to IAEA. It was more of on the output, we don't want to develop a safety case in the U.S. that has to be completely redesigned

internationally. And so, it wasn't that the rules had to look exactly like the international rules, just the fact that the U.S. rules wouldn't cause you to come up with a completely different safety case.

We think that Part 53, the way it's been written, is largely compatible with the IAEA. We have that, one of those as an example in our PRA white paper.

So, you know, the changes we're talking about for Part 53 would achieve that desire on the IAEA side. So, you know, that may desire, or require more conversations. But if the only reason you're doing Part 5X is for the IAEA, then that may not be necessary.

I'll pause there. I've been talking a lot. I know I've seen a lot of hands up. So, why don't I pause there unless you have any responses to me. And I can come back later if I have more.

MR. RECKLEY: No, that's a -- I share your view, there's hands up. So, we need to get to some other people.

MR. BEALL: Okay. Marcus, do you have anything else?

MR. NICHOL: Not at this time. Go to somebody else. Yes, sorry, I forgot to put my hand

down.

MR. BEALL: Okay. All right, thank you, Marcus. All right, Robert Budnitz?

MR. BUDNITZ: Hi, this is Bob Budnitz. Can you hear me?

MR. BEALL: Yes, sir.

MR. BUDNITZ: I want to -- this is just me talking, not any affiliation that I might have. I want to make a comment about the use of the three letter word, PRA in the last two-hour discussion. Generally, in the context of whoever was talking about it, I have understood what they meant when they used the word PRA. But, I want to remind people that sometimes the way it's been used in these discussions, and even in the slides and in the -- and in the written stuff, sometimes it's ambiguous. And I think we need more clarity about what you mean when you talk about it.

For example, and we all understand, in the LMP, and in Part 53, the PRA that's at -- that one talks about, is a full scope, all modes, all initiators' PRA that goes out to level one, two, and three. It's the whole PRA. But, there are other times in the discussion and in some of the requirements that people are proposing, in which the PRA that they're

proposing, or they're wanting to use, or are wanting to talk about insights, is not that. It's something less.

And in fact, for some of the proposals that I've heard, and I think it's sensible, we talk about using PRA tools without doing the entire PRA. And that's fine too. What I'm pleading for is, when you're -- it's okay in jargon, we sometimes talk about PRA insights and that sort of thing. But, if you're trying to make a specific proposal about something specific, it is necessary for the proposer to be clear about which they're talking about. Are they talking about the whole, you know, all modes thing that the LMP requires? Or are they talking about something less?

For example, and I'll just give you an example. Sometimes we talk about using the PRA only to identify the important accident sequences and the components that are in it, without doing all of the quantification all the way to the end. And that's okay. Those are called PRA tools, which then lead us to insights, PRA insights. But don't necessarily mean the whole thing. And so I'm just, this is really a plea, but I think it's -- it will help everybody. If when you're writing something down and asking the NRC

or if the NRC is writing something down and trying to propose it for the -- for the whole community to look at, if you -- if in some -- in many instances you can be clear that the word PRA doesn't mean, or maybe it does mean, the whole thing. That would help clarify various proposals in a way that would make the dialog more useful. Thank you.

MR. TRAVIS: And thank you for that comment. I think it was extremely insightful. And I think that's something that we would all benefit from. And I do think it highlights the fundamental difference behind this systematic approach that's being proposed for the current Part 53, and the use of cap -- almost capital PRA versus PRA insights that are used to inform the design at various stages along the process.

For instance, the term initiating events, explore what constitutes the appropriate analysis space versus -- and in this case what's being done in the Part 5X that's proposed, versus the Part 53 that is proposed. And so, thank you for your comment.

MR. BEALL: Okay. Thank you, Bob. Prasad, you have your hand up next.

MR. KADAMI: Thank you. This is Prasad Kadami. I'm speaking here as just a consultant in the

field. There are multiple ways that the staff could have addressed the issue of using the PRA, and I'm using the term PRA the way Boyce said, lowercase PRA maybe.

And then the PRA should not be required as a leading role for licensing. And this has been raised as an issue by several developers. And I think it's a very legitimate point. But, if the PRA is being required just to make clear how the licensing basis events are developed, then I would say that a performance-based approach for that would be that you leave it up to each designer to come up with a set of licensing basis events. And you have the responsibility and the authority to review those licensing basis events. And they may or may not use the PRA.

But, you know, this approach of the 5X rule, I think, and other people have said it, is less than optimal in order to accommodate the kind of need that we're talking about. So, along the lines of other comments that have been offered, I would suggest that the construct of Part 53 should be such that it has sufficient generality that each of the technologies and designers becomes just a special case of the application. So, that should be the general philosophy of the rule. And this is what I think it

means to be performance-based.

And I would say that the outcome of this construct of the rule should be what the Commission has said in their -- this item to SECY-98-144, the White Paper on risk informed and performance-based regulations. So, if you keep that in mind as the construct of the rule, then I think a lot of these debates would become unnecessary.

So, that's my comment. I don't really expect that there is a need for any response. But, I'd love to hear if somebody on the staff would respond. So, thank you.

MR. BEALL: Okay. Thank you, Prasad.

MR. RECKLEY: Yeah. I would only -- this is Bill, Prasad. And I would only caution that the other thing we were trying to balance was predictability and clarity in the requirements. And not to have basically such high level requirements that everything became case by case assessments.

And so that's -- that's part of the motivation for the granularity that you're seeing in these proposals. Is just to meet the principals of being clear and predictable. So, but I understand what you're saying. So, thank you.

MR. BEALL: Okay. Mike Keller, you have

your hand up.

MR. KELLER: Yeah. This is Mike Keller with Hybrid Power Technologies. On Section 230, on single failure proof, or single failures in defense in depth, it appears that the staff is equating the AOOs and DBAs that are clearly vastly different in terms of risk to the public. I'm not sure what the legal precedent is for such an approach. Wouldn't it be prudent too commensurate with risk with the AOOs? The danger I see is the -- the NRC requiring defense in depth and single failure proof in the power generation part of the power plant, as well as requiring -- putting in extensive requirements for rad waste portions of the nuclear plant.

The second item involves the Section 260. Shouldn't there be a floor for the beyond design basis events in terms of probabilities and you know, frequencies, that sort of thing? It seems to me you fall into a never-ending game of chasing issues with vanishingly small likelihoods. And for instance, you could have a plant that actually happens to have diverse and redundant passive systems that you never actually get out of the DBE area. Yet, you may end up having to perform all kinds of analytical efforts for no particularly good reason.

Are there any replies to that?

MR. RECKLEY: I --

MR. TRAVIS: Sure.

MR. RECKLEY: Go ahead, Boyce.

MR. TRAVIS: No, I was just going to say that part of -- I mean, in response to both comments, part of the difficulty that we have in creating this approach is, there is a desire not to have a prescribed role for the PRA. And as soon as you bring in frequencies specifically, and coupled to consequences, that inherently creates a reliance on a certain level and scope of PRA for a given event. And so, I don't think that there is an intent to -- well, I'll say that. There is not an intent in the Part 5X to go beyond the scope of what is being done in the Part 50 and 52 rules.

We are just trying to craft the language such that the requirements are technology inclusive. And can be aligned in some sense, with international standards. And so, there is a push and a pull between requiring the PRA and considering frequency and consequences directly in what we're talking about.

MR. KELLER: Well, how do you -- you know, you're involving non-nuclear portions of the power plant on the beyond design basis events. And it seems

to me that opens up an entirely new can of worms in terms of, you know, what is the NRC staff going to require in terms of having these -- these systems available? You know, are there special QA requirements involved? I mean, it gets to be pretty messy. And my thinking is, maybe can avoid the whole damn thing. Where the beyond design basis event really isn't that -- isn't really relevant, you now, in the context of the risk to the public.

MR. TRAVIS: I think that in that sense, we'll have to agree to disagree. I mean, that's not the intent of what's being done there. And if the rule language says that, as we know, this is a first iteration. And you know, maybe there's room to improve on what the rule language says. But, we're not regulating beyond the scope, with this part, beyond the scope of what exists in Part 50 and 52. I mean, period.

MR. KELLER: How about the AOOs and DBAs? Am I reading that wrong? That you're equating them together?

MR. TRAVIS: So, from an analytical perspective, they have historically been analyzed in the same vein of from a -- both exist in the plane of what's traditionally been called Chapter 15. And so

from an analysis perspective, they're held to a similar rigor. And so that's really what we're looking at here from that perspective. They're grouped because honestly, historically they've been grouped. They have different requirements associated with them. And if the current rule text doesn't sufficiently recognize that, I mean, that's on us, and we need to go back and fix it.

MR. KELLER: I mean, like defense in depth and the rad waste systems, I mean, that can be a huge new area if you follow the -- what's written, at least in its current version. It seems to me that's where you end up. And it's like, do we really want to go that way?

MR. TRAVIS: I think there's an extrapolation here that is neither the intent nor the text of the rule. And I think we understand and appreciate your comment, that's not the goal of what we're doing. And, I mean, I don't know really how else to address that, other than to say, you know, this is draft rule text. And you know, it's supposed to be in line with what's in Part 50 and 52. And as I said, if that's not the case, you know, then that's on us. And we should -- we need to go back and fix that in the rule text.

MR. KELLER: But I just advised that you need to be careful on what you put down in writing, because it can be used to go in all kinds of different directions if it's not clear. In directions that nobody intended.

MS. CUBBAGE: This is Amy Cubbage. I'd just like to chime in with something. I think, you know, kind of building on what Bill said earlier, you now, it was recognized that when we were being presented with non-light-water reactors, it's difficult to license them under Part 50. To do this technology inclusive way is difficult, because you need to establish the design rules at the front as Bill mentioned.

So, that's why we, you know, went down the path of a true technology risk-informed, performance-based approach in what was originally proposed in Part 53 language, and also with LMP. And that provides a systematic and also predictable path forward to establish your licensing basis events. And I think to do it in a technology inclusive way deterministically, there's a cost to doing that. And that's that you're going to have more conservatisms.

So, we're trying to balance both ends of the spectrum here. And it kind of sounds like no

matter which way we go, we're getting complaints. And so, we're really struggling with what ultimately is wanted, and who the users are, and what they need.

MR. KELLER: But, you've already established frequencies and doses for the AOOs.

MR. RECKLEY: Yeah. And if you want to see how this would play out, I mean, things have evolved a little bit. But, basically what we're doing here, played out before. And if you go back to NUREG-1338 for the MHTGR, or NUREG-1368 for prism back in the 1990s, this is a kind of approach that was used after our development of the advanced reactor policy statement and the submission of non-light-water reactor designs.

At that time, back in the '90s, we basically applied a Part 50 approach to our review of those designs. A liquid metal design, and a gas-cooled reactor design. And then there were even other designs. But you can look and see both at the SAR content, and how those companies laid it out. You can look at the pre-application safety evaluation report that the NRC put out. And again, the NUREG-1338 or NUREG-1368, and you can kind of see what this looks like. This isn't a mystery. And it's not really new. Actually, this is -- this again, would be

just what we did in the 1990s.

So, if you actually want to see how this plays out, including beyond design basis events, which is a term we used back then, and how we came up with equivalent beyond design basis events for those non-light-water reactor designs, I just would recommend people go back and look at those historical documents.

MR. KELLER: I'm familiar with those actually. But, my point is, you're now dealing with the Code of Federal Regulations and ostensibly high level requirements. And I think you need to be careful when you set those elements in place for unintended consequences.

MR. RECKLEY: Okay. Then let's --

MR. KELLER: It looks to me like that's what you're on, a path you're on.

MR. RECKLEY: Okay. Well, we'll look again. As Boyce said, this is our first iteration. So, I'm sure there will be many changes as we go forward, so.

MR. KELLER: I do have one more comment, but I would like to hold it to the end of this session.

MR. RECKLEY: Okay.

MR. KELLER: If I can.

MR. RECKLEY: Okay Mike.

MR. BEALL: All right. Ed Lyman?

MR. LYMAN: Yes, hi. I'd just like to go back, and sorry to do this again. But, I need to close the loop on what a design basis source term is. And so, you know, the 10-14844 source term plus the maximum intact containment leak rate is the design basis source term, right? For siting, I found multiple references in NRC documents that it's not in the rule, because that doesn't say design basis. But, that's the design basis source term.

So, I have to agree with Nick here that this -- it does seem to be imposing more stringent requirements on severe accidents, which would be presumably with bridge containment for one. And so, although I appreciate that, you know, I actually think there should be more stringent controls on severe accidents then in the existing regulations. I do think it does go beyond them. So, I mean, Bill, tell me if I'm seeing something wrong here. I mean, that's -- it doesn't seem consistent. Thanks.

MR. RECKLEY: I do think, and I'll ask either Boyce or Michelle Hart, if she's on, to kindly weigh in.

This is a new variation of what we've done in severe accident space. For light-water reactors, the severe accident policy statement was basically implemented by saying those designs needed to include provisions to address molten cores on the floor, or to keep them in the vessel. To address things like high pressure ejection of a molten core. There were particular things that the light-water reactors were asked to do to meet the severe accident policy statement.

The difficulty that we have is that even at the time it was issued, the Commission acknowledged that it was focusing on light-water reactors. And we would have to do something for non-light-water reactors if ever the circumstances presented themselves. And so now they have. And so what we've proposed in 50X, because it's very hard to come up with a technology inclusive severe accident measure, right? As soon as you go technology inclusive, you end up at high level metrics like an offsite dose. And so what we proposed in this preliminary language, is to use the 25 REM. And so, it is, I think Ed, I think you've actually captured it well.

It is a somewhat new proposal, and to have a technology inclusive metric. The reason we picked

it is because it exists, and we have, by in large, tried not to create new metrics as part of this rulemaking.

But Boyce, if you want to weigh in. Or if Michelle Hart's on, maybe she can weigh in

MR. TRAVIS: Yeah. I'll just offer that I think there's a nomenclature issue. What you refer to as the design basis source term, is not the result of a design basis accident that's analyzed, traditionally been analyzed. And so the goal of what we've set forth here is, you know, we've established for LWRs what that looks like.

For non-LWRs, and maybe putting it under the heading of the severe accident, was not the correct pathway. But we felt like it was to be amalgamated there. The goal was to establish a similar requirement to analyze an accident that is akin to the same severity as what was done for LWRs for your specific design. Putting the responsibility to establish that on the designer.

And so, that -- I think, and if Michelle is on, I would let her weigh in. But, I think putting it in the same context as the design basis accident, is not capturing the analytical differences between a design basis accident and what's been done to analyze

dose and source terms.

MR. RECKLEY: Yeah. And part of that problem that is, is the way that the requirements evolved for light-water reactors. Right, that was a design basis source term to address containment. And then later really became design basis accidents for the pressure boundary and the fuel. And so, it's just an unfortunate result of the history and our -- and limitations on the number of words in the English language. And so, we've used design basis --

(Simultaneous speaking.)

MR. LYMAN: Right. So, it's basically 50.46 would not, you know, if you make those criteria, you're not going to end up with a core melt, --

MR. RECKLEY: Right.

MR. LYMAN: A full scale core melt. Right.

MR. RECKLEY: Right.

MR. LYMAN: Or a rod ejection. Right. Okay. Thanks.

MR. RECKLEY: Sure.

MR. BEALL: Okay. Prasad. You're next.

MR. KADAMI: I didn't have my hand up. But, you know, I really appreciate the discussion that has gotten this out. And what I gather is that

there's an attempt to limit the number of special cases, you know, as part of the Part 53 rulemaking.

I would rather not have the staff put constraints on how the generality works. And allow the actual applications to deal with that challenge. So, that's my preference. That's just a personal opinion. Thank you.

MR. BEALL: Okay. Thank you, Prasad. Marc Nichol?

MR. NICHOL: Yeah. Thanks Bob. I want to go back to something Bill had said. It was sort of a follow on to our conversation about, you know, how much PRA needs to be -- or how detailed the prescription of PRA needs to be in Part 53. And then Bill, your response to Prasad, where he was advocating for sort of the more flexible requirements.

I think your statement back was, well, there are some areas where we need to have more detail, because without it, sort of it's -- I'll use my own words in this, it's wild, wild west. You sort of, you can't even handle the -- it's too much flexibility, you can't handle it. So, I want to bring those two competing concepts to the PRA requirement in Part 53, the 53.450. And just see, because this is one of the ones where we think the detail in terms of

exactly how you have to use the PRA, really is counterproductive and not necessary.

So, I can understand if you need more detail in the regulations to define the measurable acceptance criteria, you know, so it's more performance-based, or more clear on the performance-based nature of it. Or, if you need more detail to sort of explain the scope of things that need to be done even in the analysis space. I can understand all that. But, based on our earlier conversation where you said, PRA is just a tool. And there could be other tools to use this Part 53, I'll say, or a different way of designing. Do you think the PRA detail, you know, that the detail to prescribe the PRA tool specifically has to do certain things, and not allow other tools to do it? Do you think that's really needed in 53.450? We don't. But, I'm just wondering why the NRC wouldn't allow other tools to be used.

MR. RECKLEY: Well, the primary reason that it's crafted as it is, is that the metrics that we've chosen, and this is because there's only limited numbers available, but, the metrics that we chose were risk-related metrics.

Outside of the DBA, which uses the

traditional value, the other metrics would be risk-related metrics. Things like QHOs. And I understand the comments that we shouldn't have the QHOs. But, upon picking them, then the PRA, and this is using it in the capital PRA vernacular, was the tool to do that. Because you're not going to get whether you meet the QHOs or not out of other approaches. And so that's why they went together. So, that was -- that remains the logic.

MR. NICHOL: Okay. That's helpful. And I know in our comments we suggested the QHOs shouldn't be in the rule language. It should stay, and you should replace it with something else that may not have that constriction. But, even if the QHO is in the rule language, would it not be possible just to narrow the PRA requirement so the PRA is just need to demonstrate the QHO? It doesn't have to be prescribed for all these other design functions?

MR. TRAVIS: Go ahead Rob. I got it. So, I guess I'll weigh in briefly. And if anyone else from the staff wants to weigh in after that, that's fine.

The part of the issue is, that we -- Part 53 was -- is, was and is, constructed around using a systematic process to go through the analysis, get to

the outcomes we're looking for. If every application is a bespoke application, it is an extreme challenge to do an efficient, effective, transparent, you know, durable review process. And so that is a large portion of the motivation behind why Part 53 is constructed the way it is, because the -- having confidence in the scope of what's being done is an important step, the staff feels, in tying everything together.

MR. NICHOL: So, I take that, and this is how I understood it, which is because you know how NEI 18-04 works, and the rule is sort of, I'll say, along that philosophy that -- and you don't know how any other approaches would work. You don't want to allow anything other than 18-04. That's how I heard it. I don't know if that's how you meant it.

MR. TRAVIS: So, an applicant is always free to come in and propose the process that they choose. By establishing a process, we have provided a vehicle and a roadway to go down that. But, that doesn't take away an applicant's ability to propose an alternative.

MR. NICHOL: Right. But, I guess our point would be, by crafting a -- by crafting Part 53 so -- around 18-04 in such a detailed manner that

you're sort of making sure that, you know, that's the process people use. The only way to come in with a different approach is to take an exemption in Part 53. And I don't think that that's the intent.

So, I think that's the whole purpose for our PRA paper back in September. So, I really encourage the NRC to think, you know, we're -- and NEI has offered to develop guidance on other approaches that could be used under Part 53, you know, in order to get more flexible requirements. We've already said that even, you know, you don't have to have guidance on all of the various potential approaches you could use under Part 53. Just having one guidance for one approach is okay.

I would encourage you, if that's the reason why you're constraining Part 53 so much. That you sort of think about different options. I mean, even Part 50, you could use a lot of different types of design and analysis approaches. And the NRC hasn't tried to constrain those. So, I just encourage you to rethink that approach.

MR. RECKLEY: Yeah. I would --

MR. TRAVIS: Yeah.

MR. RECKLEY: We can do that. I just again, come back to the construct of Part 53. Where

it was kind of a high level, or systems engineering approach. Where we started with the acceptance criteria. And as you're coming up with -- and we can do that in risk-informed space. We can do that in PRA space. We have well-established metrics. As you look at other approaches, you have to -- you have to think about what that approach is going to prove. What's the acceptance criterion?

And if it is something like reasonable assurance of adequate protection of public health and safety, that -- that's too broad. That's our finding at the end of day. But it has to be something more measurable, more meaningful. Yeah, well, something that we -- that an analysis can actually go to prove.

And so again, right now we're recognizing two ways to do that. One through established risk metrics for which a PRA would be used as the tool, because that's available. And the other way is these design -- design rules. The GDC/PDC approach, because that's been tried and tested over the years, and added to by things like beyond design basis events and severe accident policy statements. To say that if you meet that set of design rules, you likewise have an adequate design. So, just, you know, kind of throwing back over the fence. As you're thinking about it,

think about that as well.

MR. NICHOL: Well, I appreciate that. Because you're absolutely right. But we did think about it. And in the PRA paper we submitted in September, we have four approaches in there. All of them meet the Part 53 requirements. You know, we can -- well, except for the two specific ones that we think are overly prescriptive. That they otherwise meet the sort of design philosophy that you created in Part 53 for different ways. One of them is 18-04. The other three are different.

One of them is an IAEA. One of them is a bounding approach. And they all use PRA. In fact, when we talked to our members, everybody's planning on using PRA. The question is, whether PRA has to be in the NRC's nomenclature, leading which, you know, the way I would characterize it, means it's the primary foundation of the entire safety case. And with it, it brings a lot of different things. It brings, you know, more PRA information in the licensing basis.

For some people that's fine. They like to do that. For other people, they don't want to do that. But, even if they use the PRA in almost the -- you know, to accomplish almost the exact same thing in risk space, you know, they just want the flexibility

to not have to use one licensing approach.

MR. RECKLEY: And but -- again, I'm trying to reiterate here. The approaches that set out with design rules as the premise, which is, I'm going to base the design on the GDC or PDC.

When we do our review, we are comparing the design to the design rules. And so, it is -- and PRA is used, as you said, and everybody says, is used in a complementary, or whatever word you want to use, supporting, complementary manner. But, the design rules, like the GDC single failure criterion, ASME code, station blackout, severe accident policy statement, all of those things that are established design rules, are what we base it on. And then as you say, everybody benefits from the insights from the PRA.

MR. NICHOL: But if I could interject, Bill. But again, it just goes back to my earlier point about how, you know, the way design and analysis works in the real world isn't sort of that black and white.

Everybody is using deterministic engineering principals, PRA in this sort of interactive collaborative fashion. In fact, so I'll just say, so for those other risk informed approaches

which start with, let's say, the PDC, let's just say they take -- start with the ARDC and they go with that.

They'll use PRA to confirm them. And if they're not right, they'll adjust them. If the LBEs aren't right, they'll adjust them based on the PRA.

Now, on the other hand, everybody I've talked to that plans on using NEI 18-04, currently are looking at using the ARDC. They're not looking at using the -- they're going to start with it. They're going to end with it. They're not looking at using the PRA as -- from a blank sheet of paper to define what the PDC should be for it. So, I think you should keep that in mind. That, you know, that what you're constructing in rule language doesn't reflect the actual real world of now people design and analyze reactors.

MR. TRAVIS: I think we understand that. But, also recognize that the NRC doesn't really have a role in how the reactors are designed. The NRC has a role in the end point after the design has happened. And so, how --

(Simultaneous speaking.)

MR. NICHOL: I agree.

MR. TRAVIS: The design is made is not

necessarily -- we don't want to be stepping in there. That's beyond our scope.

MR. NICHOL: Thank you, Boyce. That's exactly what I would agree with. And that's why we're having such trouble with the PRA requirement that is stepping into the designer's shoes and saying, you have to use the tools in these specific ways. That's what we're pushing back against. We don't want you to come in and design our reactors. We don't want you to come in and operate them. We sort of what that flexibility for ourselves.

MR. TRAVIS: But, and I guess I'll rebut to say, that the demonstration of how the react -- like, the demonstration of what makes the reactor safe, is based on something. And that process that led to something, whatever the -- we get to the acceptance criteria, we have to establish some sort of acceptance criterion. And so as Bill's noted, there is -- we view that as two pathways. There is a deterministic, more deterministic set forth based on design criteria, and flowing from there, leading to, you know, what I call the three rings of, you know, leading to defending in certain levels of events. And then the more comprehensive process that currently, you know, is based on use of the PRA.

And so, I'm not going to dispute there might be other ways to get there, but lacking the -- like, lacking the ability to review and determine that, I think I'm stepping too far. I think it's well established what the NRC's position is on this subject.

MR. NICHOL: Yeah. No, no, it's okay, Boyce. No, you're fine.

So, I would agree that establishing acceptance criteria, you know, based -- you know, particularly based acceptance criteria based on radiological consequences to the public, we like that. That gives us a lot of clarity. I just advise you to go back and look at the requirements that we've mentioned. And especially the PRA one, and ask, is that an acceptance criteria? Or am I actually telling the designer how to use their tools? So, that's all we're asking.

MR. BEALL: Okay. Thank you, Marcus. Well, we're getting real close to having three hours for this meeting. So, let's take a quick 15-minute break.

Mike and Peter, I see your hands are up. We'll come back and get your comments right after the break. Okay? So, let's take a quick 15-minute break

here. We'll restart this meeting at 4:00 p.m. East coast time. Thank you.

(Whereupon, the above-entitled matter went off the record at 3:44 p.m. and resumed at 4:00 p.m.)

MR. BEALL: Welcome back, everyone. We'll continue our discussion on the Part 53 rulemaking and our discussion on the Part 5X preliminary proposed rule language. So, Peter Hastings, you have your hand up.

MR. HASTINGS: Yes. Thank you. So, you may have already heard Marc Nichol isn't going to be able to rejoin because of a conflict. But I wanted to -- and by the way, nothing I'm about to say is in conflict, intended to be in conflict with my earlier remarks about the effort that we think the staff made to incorporate some of our feedback into the concepts of 5X.

But I wanted to reiterate a point that Marc made that we tried to make before but that -- and I don't mean this to sound pejorative -- but the staff response is that you don't believe what we're saying, and that is that your talking in binary terms about approaches that are either deterministic or risk-based -- my term. And neither of those end points comports with how the plants are being designed.

Bill made a statement earlier that it's not about the PRA. And I agree; it shouldn't be. But the approach in the rule in some ways implies that it is. PRA is only a tool, I agree, but it's a tool that's getting a lot of sort of prescriptive attention in the rule language. This distinction between leading and confirmatory PRA is largely artificial. And things aren't as binary as we've suggested here. No one can, for example, nobody can prescribe a perfect set of GDCs and a set of deterministic design-basis actions for a design that's never been evaluated.

So, presuming that a safety case is deterministic when we know that the final GDCs are going to be iterative on the safety analysis is misleading. And maybe what's most important about that is that this is how we are executing NEI 18-04 under the existing regulatory framework. And there simply isn't this sort of fundamental difference between that approach and what we should be seeing in Part 53, except the language in Part 53 seems to indicate that there is a fundamental difference. And our theory is that the language in the rule prescribes an approach that doesn't comport to the way that people are doing their work. And so, people are not going to be

willing to use the rule because they know that it's dictating a design approach that isn't consistent with how we're doing the work. And my plea is that the staff should be receptive to language that we feel will accomplish what the staff is trying to accomplish. Focus on the acceptance criteria, not the specific methods.

And with that, I'll yield.

MR. RECKLEY: Well, thanks, Peter. But I guess what are the, what are the proposed acceptance criteria?

MR. HASTINGS: So, the public-based consequence at the AB. Right? The demonstration of acceptance under things that look like what's in 18-04, the risk consequence curve. Demonstrating compliance with those criteria is what the threshold should be. How that demonstration is accomplished shouldn't be memorialized in the rule.

MR. RECKLEY: Right. But 18-04 also includes the cumulative measure. And that's key. It wouldn't be acceptable without the cumulative measure.

MR. HASTINGS: Okay.

MR. RECKLEY: Which is the QHOs.

MR. HASTINGS: Well, and so, some of this is about degrees and how much of the specifics belong

in the rule versus in guidance. And we, we sort of thrashed that subject to death a while ago. But the presumption of how the PRA as a tool sort of rises to prominence and what it implies about the specifics of maintaining the licensing basis, and how much of the PRA results end up in the application itself, that's where we start down this, this sort of slippery slope and the discussion that begins to sound like the PRA is the tool used to design the plant. And that's simply not accurate. And I honestly believe that we're talking past each other. I really wish we could do more of this in the same room because --

MR. RECKLEY: No, I agree.

MR. HASTINGS: -- I think if we rolled up our sleeves and tackled the details, we'd find we're a lot closer than these sort of discussions imply that we are.

MR. TRAVIS: So, I want to go back to something you just said, Peter, that the PRA isn't the tool that's being used to design the plant to meet those acceptance criteria. I don't think we have any disagreement with that. The problem is on our end. That is the tool that's being used to demonstrate that the plant meets the acceptance criteria, regardless of how it was designed.

MR. HASTINGS: The PRA is one of many tools we use to make that demonstration.

MR. TRAVIS: I think I respect that. I mean, I don't disagree with anything you said. I just think that there are parts of the problem is or issue is that, you know, we're trying to ensure that -- and I'm going to paraphrase -- that the plant is designed, built, operated, and maintained, you know, such that it meets a certain set of requirements, acceptance criteria, et cetera. And the way we view NEI 18-04 is a PRA of a certain quality is required to demonstrate some of those criteria. Right? And so that's where we're coming from.

MR. RECKLEY: Right. And also built into a lot of the subtle differences between starting design rules as the premise -- or not, let's get away from design rules. Because as Boyce mentioned earlier, that's, you know, somebody else's business. We only care about the final design as it's submitted in the application. So, but the regulatory criteria that's currently reflected in things like the GDC, that, it's that when the submittal is made, and as Boyce was just talking about, throughout the cycle how the pieces fit together.

So, single failure criterion is a

regulatory criteria or design criteria, and it gets reflected in things like two trains and you can only have one train out of service for a very limited amount of time. I mean, it's the subtle stuff that has evolved over decades. Under the Part 53 methodology, again, we've tried to come up with an integrated methodology. And, yes, the PRA is a simple tool in that because we did things like not include the single failure criteria by taking credit for previous Commission decisions that the single failure criteria could be replaced by a PRA, a risk assessment, an assessment of combinations of failures, and the establishment of reliability requirements, which we require in subpart F.

And so, you know, what you have is two integrated approaches. And it's very hard to start to pick apart individual things and say, well, take this out and maintain a coherency throughout the whole, the whole set of -- well, under Part 53, the whole life cycle of a facility. So, I mean, that gets, that gets to be the challenge without it being, you know, 20 different case by case assessments of how a designer put together not only the design, but also put together how they're going to implement things during operations.

So, I, anyway, I hear you, Peter. And I'm in the same boat as Boyce. I don't really disagree that both tools are valuable in both approaches. It's just one is the dominant in terms of how the process is integrated. So, anyway, we obviously are going to continue to look at this, and we'll see if there's another way of putting it together. But that's the challenges as we see it. It's not just the analysis, it's not just the design, it's the integration across all of the regulatory structure, including operations.

So, anyway.

MR. HASTINGS: And I, look, I recognize the challenge. And you've invited us to take a breath, step back, look at the fundamentals of what you're trying to do. And I respect that. And I think that's a reasonable request. My collateral request back to you is to do the same thing.

MR. RECKLEY: Right.

MR. HASTINGS: And take our inputs under the presumption that we really are trying to get to the same point.

MR. RECKLEY: And, yes, I know that. And we know that. So, it's just hard. And as you said, it would be, it would be a lot easier in the old days when we were just sitting around a table, so. Okay,

Bob.

MR. BEALL: Okay. Thank you, Peter.

Mike Keller.

MR. KELLER: Thank you. Maybe you guys could enlighten me. But maybe I have an over simplistic view of all of this, but it seems to me the designer who comes up with these safety functions provides the methodology for how he derived the safety functions, and then shows how the plant pulls off the safety functions and the methodology he used for that. Maybe that's an oversimplification, but it seems to me it's pretty straightforward. And then the NRC comes along and says, yeah, makes sense, or maybe not, and raises questions, whatever, asking more material. And it should, it seems to me it ought to go reasonably well, as long as the NRC doesn't dictate how things get done. The onus is on the designer, not the NRC. Have I oversimplified this?

MR. TRAVIS: I mean, I think that is a simple but effective characterization. I think the issue is the devil is ultimately in the details. Right? The how is generally not in the Part 53 approach, also, is not generally prescribed to a certain extent. But there are, there are tools that -- the acceptance criteria themselves for, or the

targets that are being requested to meet, in some cases inherently require use of a certain tool. And so, the regulatory process in terms of -- it doesn't necessarily stop at I need to identify the safety functions.

In some cases there are going to be overarching safety functions identified, or acceptance criteria numbers, e.g., 25 rem at the site boundary, that there are only certain ways to calculate and meet these acceptance criteria. And so I think that is ultimately an issue that has to be addressed somewhere in the regulatory framework. We have to have an understanding that there was a systematic, fulsome process used to get from A to Z.

MR. KELLER: Isn't that the designer's responsibility, to say this is how I did it and why it's okay? Can you guys pass judgment on it? I'm thinking that you're worried about details in the context of a Code of Federal Regulations that maybe you really don't need to worry about in the context of the Code of Federal Regulations.

Now, when you get down in the specifics, that's different. But you need to establish the basic boundaries with the Code of Federal Regulations, and not be that concerned about the specifics because,

ultimately, the designer has to prove his case. And he has to prove that the way he did it is acceptable, you know, in the context of what he used for putting this together, you know, industry standards or whatever. And I'm just reasoning that everybody's getting wrapped around an axil on details when that's really not what we need to worry about at this high level. It is a consideration for guidance and for implementation, but not really for the Code of Federal Regulations which sets the high level requirements.

MR. TRAVIS: So, I mean, I guess we understand your comment. And I guess the only thing, I guess you don't know this, is ultimately it's part of the regulations and will be processed. We have a legal responsibility not to have an arbitrary and capricious process in charge of what constitutes, you know, accept how we do a review and how we denote something as acceptable or not acceptable. And so, the regulations have to provide a durable framework that is repeatable in some sense. But I don't think that -- I guess that's where I'll stop.

MR. BEALL: Okay. Thanks, Boyce. Thanks for your comment, Mike.

Are there any additional questions about Part 5X? Peter, you have your hand up again.

MR. HASTINGS: Apologies. That's a legacy hand.

MR. BEALL: Oh, okay. No problem.

Mike, do you have another comment?

MR. KELLER: I do have one for the very end of this process.

MR. BEALL: Okay. I have that noted already.

MR. KELLER: Okay. Thank you.

MR. BEALL: Okay. Next slide, please.

This slide provides a list of the major Part 53 preliminary proposed rule language subparts that are currently out for public comment and their respective ADAMS accession number. The documents are also available on regulations.gov. The staff would like to see if there's any questions from the public on these subparts right now.

Cyril, you have your hand up.

MR. DRAFFIN: I do. I'm Cyril Draffin, the Senior Fellow of U.S. Nuclear Industry Council. And now that we've seen almost all the parts of Part 53 and have been part of the process for a year, I want to provide some personal perspectives.

The NRC staff are knowledgeable, cordial, and hard-working. I appreciate their work to develop

the new Part 53 rule based on congressional direction. I also appreciate the community of people that are on the call today, 80, and have been attending for many similar Part 53 meetings this year. These represent a talented group of NRC staff, developers, NGOs, government agencies, and private citizens. I think we all care about nuclear power, all care about safety, and all care about good regulations.

Good regulations offer the opportunity to ensure safety and provide reassurance to citizens. And bad regulations offer the opportunity to assure promising, safe, zero carbon technologies are never deployed due to excessive regulatory burden and cost.

As a stakeholder, the U.S. Nuclear Industry Council has followed NRC's direction to read and listen to what NRC is proposing in preliminary Part 53 language, and to provide stakeholder comments. For over a year, essentially from the time the rulemaking effort began, Nuclear Industry Council has engaged actively with the NRC staff and promptly identified our concerns and recommendations to the staff. We've participated in constructive dialog in the evolution of Part 53 toward a framework that is needed to establish timely, efficient, modern, cost-effective deployment of the next generation of

reactors to meet our nation's carbon reduction goals.

The U.S. Nuclear Industry Council has provided over 20 sets of comments from October 2019 until today. These include written and verbal comments at multiple Part 53 meetings, at stakeholder meetings, at advanced react -- at Advisory Committee on Reactor Safeguards meetings, and submissions to regulations.gov.

To date, most of our comments concern suggested language, changes, and questions have not been addressed by the NRC staff. And the NRC Part 53 summary language has not been substantially modified, although you're working on iterations. And in some cases the language is more confusing, such as subpart B, Region II, when reasonable assurance of adequate protection was eliminated as a safety objective.

We understand this is a new process of stakeholder involvement at the early stage of rulemaking. Interactions at public meetings like this, and particularly the more intensive one we had today, are helpful in understanding the direction of the staff for the preliminary language. However, our expectations for success of the interactive process have not been realized. Dialogue on central issues impacting this rule that we raised back in the early

part of 2021 have been very limited. And then today's PRA in-depth discussion is a definite improvement.

Our suggestions for improvements to the rule have not been implemented, nor explanations provided. At this point of the rule development process, our view is that the current draft of Part 53 rule remains seriously flawed. We hope that now that the NRC staff is close to the writing and release of almost all the plan subparts, they will stop and consider to respond to the extensive Part 53 input, including the issues raised today that have been provided to the NRC from stakeholders on the language and the approach.

We look forward to a Part 53 that is useful and used. But the current preliminary language does not achieve that objective. Thanks, all, for listening and seriously considering the many issues and concerns that have been raised.

I thought I'd provide that as just kind of perspective on our deliberations. And although there's a lot of detailed topics to go through, and that they merit special conversations and interactions on PRA and other, I think it's good to get to the heart of the issues. And we had hoped this would have occurred 6 months ago.

So, thank you. And we look forward to continued discussions.

MR. BEALL: Okay, thank you, Cyril. Also, Adam Stein wrote in the, well, windows chat or Teams chat, "Will the comment period be extended on regulations.gov to coincide with revised NRC timeline for public or stakeholder outreach?"

Adam, we have received a couple comments already to requesting the comment period to be extended. And so, the staff is currently reviewing those comments. And we'll be making a decision on that very shortly. So, it is under consideration.

I think Mike Keller, we're probably ready for your comments, please.

MR. KELLER: Okay, thank you. What is the legal basis for the NRC staff not providing responses to formal public and stakeholder comments? It strikes me that this is potentially an abuse of regulatory authority. However, going forward, why not provide broad brush responses for broadly grouped public and stakeholder inputs? I think that would defuse a underlying concern that's fairly extensive among the stakeholders and the public. We're just not in a position to necessarily state it.

But I come from the field, and I'm pretty

direct when I see a problem. I think this is a major problem that just can't be allowed to fester.

Thank you.

MR. BEALL: Thank you, Mike.

We in the FRN, Federal Register Notice, back in November of twenty, 2020, when we started the -- when we announced that we were having the preliminary proposed rule language being released on a regular basis, we did state in that Federal Register Notice that we would not be formally responding to any of the comments that we received of this.

We will be formally responding to public comment when the Commission approves the draft proposed rule and provides the, approves the release of the proposed rule. All comments coming in on the proposed rule will be addressed as part of the deliberations for the final rule that will be issued.

MR. KELLER: I think that's too late. I know we're raising the issue formally with the Inspector General. Thank you.

MR. BEALL: Okay. Thank you very much. Okay. Any final questions? The next slide, please. Next slide.

Any final questions or comments on the Part 5X? Bob Taylor, you wish to say anything?

MR. TAYLOR: I just wanted to close the meeting when we're ready.

MR. BEALL: Okay, you can go ahead.

MR. TAYLOR: So, I appreciate the discussion today. And I've been able to attend most of the meeting, and certainly appreciate the dialog that we're having. And, as always, in developing a rule there will be continuous and ongoing dialog. And any time we develop a rule, it's not surprising that we will have some different perspectives from the stakeholders. I think the key is to remember we're all well-intentioned on nuclear safety, and that we're trying to produce a rule that provides a reasonably predictable framework and process to license advanced reactors in a technology-inclusive, risk-informed manner.

What I've heard from some of the stakeholders today request changes to that. I think we have to continue to balance and recognize under the principles of the regulation has many elements that we must consider, including our independence as we develop these regulations, as well as the reliability and the approach that goes forward. So, we're in a constant state of ensuring that we meet those goals and that intent. And while we may disagree with some

of the comments that we receive from stakeholders, we do take them seriously and appreciate their involvement in the process. And we'll make the changes as we evaluate their approach in the path forward on each of these elements of the rule.

So, continue to have a dialog with us. Respect that we may have different perspectives than some stakeholders do. And that's okay. But where we agree, we'll certainly make revisions and changes to the rule, and we'll evaluate that. And then, ultimately, what we do is we put together the rule we believe best satisfies the intent that we directed to the Commission -- from the Commission, and we put that forward to them with the diversity of stakeholder views and perspectives that we have received, so that they can consider it in totality at the end of the day, and make a decision on where they want to go with the proposed rule.

So, they certainly could agree with us, or they could disagree with us. That's part of their deliberative responsibility as the Commission. So, our job is to give them the best advice that we feel is appropriate within this rule. So, as long as we keep motivation on both sides, that we're well-intentioned, and we both support that safe

nuclear operation is part of the NRC's mandate and mission, that there are multiple ways to get to this end point. And we just need to have confidence at the end of the day that the advanced reactors that can demonstrate that they have enhanced performance abilities, which is still something that needs to be proven, will get the appropriate flexibility, consistent with the Commission's advanced reactor policy statement.

And there may be multiple ways to get to that at the end of the day, but we will look at all the options as we consider them, and we'll consider what we propose to the Commission. So, thanks.

MR. BEALL: Okay, thank you, Rob.

Mike, you have one more comment?

MR. KELLER: I do not. My hand is lowered.

MR. BEALL: Okay. Thank you, sir. Slide 42, please. This slide provides an overview of the current Part 53 rulemaking schedule. As you see on this slide, we are still in the first milestone, with the staff performing public outreach, meeting with ACRS, and working with the draft proposed rule package. The staff has 6 months to complete these activities before the draft proposed Part 53

rulemaking package is submitted to the Commission in May 2022.

The staff is currently projecting that the Part 53 proposed rule will be published for public comment in October of 2022. Next slide, please.

The staff is planning to host additional topical meetings on the Part 53 rulemaking. The next public meeting will discuss the changes to Part 26, fitness for duty programs. The date of this meeting has been rescheduled for early December 2021.

All new and revised preliminary proposed rule language will continue to be posted in ADAMS and on regulations.gov under Docket I.D. NRC-2019-0062 prior to the public meeting.

The NRC staff is also continuing to meet with ACRS Future Plants Subcommittee to receive feedback on the Part 53 rulemaking. The next public meeting with the ACRS subcommittee will be on November 18th, 2021. Next slide, please.

If you have additional input or suggestions for future topics related to the Part 53 rulemaking, please send an email to Bill and I at the email addresses on this slide. Your interest and comments will provide -- will improve our rulemaking effort.

I also encourage you to monitor the Part 53 Rulemaking Docket I.D. NRC-2019-0062 on regulations.gov website for updates and important documents related to this rulemaking.

Finally, we're always looking for ways to improve our public meetings, and your feedback is important to us. At the end of the meeting, please go to the NRC public meeting webpage, click on recently held meeting button, and look for this meeting. The meeting feedback form will be at the bottom of the meeting announcement.

I'd like to thank everyone for participating in today's meeting, and I hope everyone has a good meeting. And this meeting is now closed.

Thank you for your participation.

(Whereupon, the above-entitled matter went off the record at 4:33 p.m.)