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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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REGULATORY RULEMAKING, POLICIES AND PRACTICES: PART 53 SUBCOMMITTEE

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THURSDAY

MAY 19, 2022

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The Subcommittee met via Video Teleconference, at 8:30 a.m. EDT, David Petti, Chairman, presiding.

COMMITTEE MEMBERS:

DAVID PETTI, Chairman

RONALD G. BALLINGER, Member

VICKI M. BIER, Member

CHARLES H. BROWN, JR. Member

VESNA B. DIMITRIJEVIC, Member

GREGORY H. HALNON, Member

WALTER L. KIRCHNER, Member

JOY L. REMPE, MEMBER

MATTHEW W. SUNSERI, Member

ACRS CONSULTANT:

DENNIS BLEY

DESIGNATED FEDERAL OFFICIAL:

DEREK WIDMAYER

ALSO PRESENT:

CYRIL DRAFFIN, USNIC

PAUL HARRIS, NSIR

JORDAN HOELLMAN, NRR

WILLIAM JESSUP, NRR

STEVE LYNCH, NRR

WILLIAM RECKLEY, NRR

JOHN SEGALA, NRR

EDWARD STUTZCAGE, NRR

MARTIN STUTZKE, RES

NANETTE VALLIERE, NRR

C-O-N-T-E-N-T-S

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

8:30 a.m.

CHAIRMAN PETTI: Good morning everyone, the meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards and Radiological Rulemaking, Policies and Procedures, 53 Subcommittee.

I'm Dave Petti, chairman of the subcommittee. ACRS members in attendance Ron Ballinger, Joy Rempe, Charlie Brown, Greg Halnon, Matt Sunseri, and myself in the room, and I see Vesna is online. Vicki, are you online?

MEMBER BIER: Yes, I just joined a couple minutes ago.

CHAIRMAN PETTI: Okay. Jose is not here, so. Dennis, are you online?

DR. BLEY: I am.

CHAIRMAN PETTI: Okay. And our consultant, Dennis Bley, is also. Derek Widmayer of the ACRS staff is the designated federal official for the meeting.

The purpose of this subcommittee meeting is once again to hear from the staff concerning preliminary rule language for 10 CFR Part 53, license and regulation, of advanced nuclear reactors.

The agenda for today includes discussions on the second iteration of all subparts of the Part 53 rulemaking language, with one exception. Staff will not be presenting any revised language in Subpart F requirement for operations. We anticipate that will be in June.

The subcommittee will gather information and --

DR. BLEY: Dave, I lost you. Are you still there?

MEMBER DIMITRIJEVIC: I lost him too. Dave?

MEMBER BIER: Yeah, the problem is on their side. I --

CHAIRMAN PETTI: Okay.

MEMBER BIER: I hear -- oh, I guess --

CHAIRMAN PETTI: Oh, I'm back.

MEMBER BIER: Great.

MEMBER REMPE: The problem was on our side but somebody muted our thing, and so please quit doing that. Okay? Whoever's muting our room. Which is Thomas's name. Okay.

MEMBER REMPE: Okay?

CHAIRMAN PETTI: Okay. The subcommittee will gather information, analyze relevant issues and

facts, and formulate proposed positions and actions as appropriate.

This meeting is running a series of subcommittee meetings to be held to discuss Part 53. The ACRS was established by statute and is governed by the Federal Advisory Committee Act, FACA.

The NRC implements FACA in accordance with its regulations found in Title 10 of the Code of Federal Regulations, Part 7.

The committee can only speak through its published letter reports. We hold meetings to gather information, perform preparatory work that will support our deliberations at a full committee meeting.

The rules for participation in all ACRS meetings, including today's, were announced on the Federal Register on June 13, 2019.

The ACRS Section of the U.S. NRC public website provides our charter bylaws, agendas, letter reports, and full transcripts of all full and subcommittee meetings, including slides presented at the meetings. The meeting notice and agenda for this meeting were posted there.

As stated in the Federal Register notice and in the public meeting notice posted to the website, members of the public who desire to provide

written or oral input to the subcommittee may do so, and should contact the designated federal official five days prior to the meeting, as practicable.

Today's meeting is open to public attendance, and we have received one request from USNIC to make an oral statement at the meeting.

Time is provided in the agenda after the presentations are completed for this statement and for spontaneous comments from members of the public attending or listening to our meetings.

Today's meeting is being held over Microsoft Teams, which includes a telephone bridgeline allowing participation of the public over their computer using Teams by phone.

A transcript of today's meeting is being kept, therefore we request that meeting participants on Teams and the bridgeline identify themselves when they speak and to speak with sufficient clarity and volume so that they can be readily heard.

Likewise, we request that meeting participants keep their computer and their telephone lines on mute when not speaking to minimize disruption. At this time, I ask that team members make sure that they're muted so we can commence the meeting, and with that we will now proceed.

And I call on Steve Lynch, acting branch chief of the Advanced Reactor Policy Branch in the Office of Nuclear Reactor Regulation, for any opening remarks.

MR. LYNCH: Good morning, this is Steve Lynch. I want to thank the members for taking the time to meet with us again on Part 53.

The dialogue that we have with the members is valuable to the NRC staff as we continue to strive to develop technology inclusive framework for advanced reactors that is responsive to the needs of stakeholders and appropriately considers meeting the needs of the public health and safety.

This will be our twelfth subcommittee on Part 53 since we began interactions with the ACRS in mid-2020. We have also had three full committee meetings since that time.

Since our last meeting with the ACRS in December of 2021, the NRC staff has restructured Part 53 to include Framework A, which is a PRA-centered option, and includes the subparts that the committee has previously been introduced to in our previous meetings.

The NRC staff is also now in the process of developing a second framework known as Framework B,

which follows a more traditional approach to licensing for advanced reactors consistent with using PRA in a supporting role or using a bounding event analysis.

While the NRC staff will provide a brief overview of the structure of Frameworks A and B, we will only be discussing in technical detail the PRA centered option, or Framework A at this meeting.

And we will focus on the changes that have been made to Framework A and its associated subparts since we last met with the subcommittee in December 2021.

The changes that have been made to Framework A since we last met with the members have been in response to external stakeholder feedback and ongoing internal reviews.

As previously mentioned, we will be covering all subparts associated with Framework A with the exception of Subpart F, related to operations, which the NRC staff will again engage with the ACRS members on in our scheduled June subcommittee meeting.

At the June subcommittee meeting, this is where NRC staff will also go into technical detail on the contents of Framework B. Our next subcommittee meeting on Framework A will be in the fall when we bring the complete proposed rulemaking package to the

subcommittee. That will also include Framework B.

So again, I want to thank the members for their time this morning and this afternoon, and at this point I will turn over the presentation to our technical staff, senior project manager Bill Reckley, senior project manager Nan Valliere, and project manager Jordan Hoellman.

MEMBER DIMITRIJEVIC: But before we do this -- this is Vesna, I'm sorry I have a very bad sound connection -- can you again define for me what's the difference between Framework A and B?

MR. LYNCH: Sure, I'll answer this quickly and I will let the staff -- I know we have some slides too that will cover this too in some detail.

But Framework A is the framework that we have been discussing with the members for the last two years, and this is the PRA-centered option and includes all of the subparts that have been previously presented by the ACRS.

In response to stakeholder feedback, the NRC staff has also developed a secondary framework with alternative analysis methodologies that a developer may choose to use instead.

And this includes using a more traditional or deterministic approach or developing your

application, and this would be most similarly to the licensing processes currently followed under Parts 50 and 52. Or as a subalternative, if certain entry criteria are met, then in lieu of a PRA, the NRC staff may consider a bounding event analysis acceptable.

But I'll let our staff go into more detail on these, but that is the high level description of the differences between the two frameworks.

MEMBER DIMITRIJEVIC: Is it mostly the same subparts? I mean, it's not just difference like in licensing subparts, the Frame A and Frame B all have the A through K subparts?

MR. LYNCH: So, and again I think this will be best answered when the staff put up some slides with some factorial representations, but we have -- to the extent practical, not all subparts in Framework A rely on the use of PRA, so to the extent there are certain subparts that do not need a certain analysis methodology.

In Framework B we rely on those same subparts that have been developed in Framework A. So to the extent that we could point to previously developed subparts, we are taking full advantage of that. So not everything that we are starting from scratch for Framework B.

MEMBER DIMITRIJEVIC: All right, thanks. I will be paying attention to this, then, this framework. Okay, thanks.

MEMBER BROWN: Hey, so this is Charlie Brown. I wanted to springboard from Vesna's, just to confirm. My memory is we have not seen anything on Framework B yet. Is that correct?

MR. LYNCH: That is correct. So I'll --

MEMBER BROWN: Okay, that's what I thought. I just wanted to know where we were.

MR. LYNCH: Yep. We've got a two day subcommittee meeting scheduled on June 23 and 24 where we will be covering Framework B.

MEMBER BROWN: But to springboard a little bit more off of Vesna's question, the part A through K, you commented that some will be similar, Framework A is not all PRA. There are some subparts that will reflect the Framework B fundamentally. Is that what you said initially also?

MR. LYNCH: Yes, that is correct.

MEMBER BROWN: Okay, but the structure will be the same. It wouldn't be like the old structure, even though it's -- the fundamentals will be relative to the old structures?

MR. LYNCH: Correct, correct.

MEMBER BROWN: Okay, thank you.

CHAIRMAN PETTI: All right. Steve, just a question, and you may want to pass it to the staff. Maybe it's a legal approach. So, what you really have are two racing stripes, if you will, right? Framework A and Framework B.

Whereas I guess in my mind initially I thought you'd have one racing stripe and then it would split, but just the parts that are different, and then come back together for other subparts where it's the same, so you end up duplicating a lot of the same words.

Why is it done that way? Is there some legal reason that you want it all to stand alone or something? You know, each option?

MR. LYNCH: Well, it is closer to the second way that you described it, that yes, there are different frameworks, there are different entry criteria that may be applicable, especially if a developer chooses to use a bounding event analysis, but I think you used a really good analogy, that for some subparts they will be the same for Framework A and Framework B.

We are not trying to recreate, you know, subparts where we don't need to, but we are following

the general idea of going methodically through each subpart in Framework A, deciding can we leverage this language?

Sometimes in full in Framework B. Sometimes there might need to be slight changes made. Sometimes it doesn't suit the needs of what we're doing and something new needs to be developed.

So it is a combination, but everyone will enter Part 53, make a decision on how the analysis methodology they are choosing to use, and based on that will follow certain pathways that, in some cases will be the same subparts regardless of the licensing pathway chosen.

And in other cases there will be some unique considerations for each framework.

MEMBER BROWN: This is Charlie Brown, can I ask one more -- Dave, you're finished?

CHAIRMAN PETTI: Yeah.

MEMBER BROWN: Okay. On the PRA side, we've made -- well at least I have, and I think at least one other member have noted the absence of something -- I forget what appendix it is -- a general criteria appendix. Is that Appendix K? A. I'm sorry, Appendix A.

And that now, or at least I've made the

observations, right or wrong, that in this version that we're doing right now that it seems like general design criteria, there is no Appendix A, it's just kind of scattered throughout, and a couple others noted that that seemed to be counterproductive in our own minds, but is Framework B going to mirror a little bit of the initial where what we have in Appendix A with the general design criteria, so it's more oriented towards that general structure for a licensing approach?

CHAIRMAN PETTI: So, you know, we're getting into details on B, which they haven't talked to us yet --

MEMBER BROWN: Well, I guess so.

CHAIRMAN PETTI: So I don't want us to get the cart before the horse.

MEMBER BROWN: All right, I'm sorry.

CHAIRMAN PETTI: So, I know, we're all really interested in B because it's new. I have all these questions too, but I'm holding back from asking --

(Simultaneous speaking.)

MEMBER BROWN: All right, I'll reign myself in. They'll just take that in the thought process since we've talked about it before, so.

CHAIRMAN PETTI: Let's get into the slides, whoever is leading us, yeah.

MR. RECKLEY: Okay, good morning. You know, this is Bill Reckley, so I'll start and go through some of the slides, and we'll touch on some of the questions that have come up already. Billy, if we can go to Slide 2?

So, our plan today is to provide some discussion of the overall Part 53 structures, some of which we've already talked about, the two frameworks. Our focus will be on Framework A.

As has already been said, we plan to return in June to talk about Framework B, and then as you'll note on this slide, and Dave mentioned, Subpart F, and in particular the content related to operator licensing and staffing, those things that were discussed in the February full committee meeting.

We're still working on those, finalizing some thoughts, and we'll come back in June to pick up Subpart F within Framework A.

MEMBER HALNON: So hey, Bill, real quick, this is Greg. So the language that we get given to us for this meeting has Subpart F in it.

MR. RECKLEY: Oh, yeah. That --

(Simultaneous speaking.)

MEMBER HALNON: You should ignore that? Is that what you're saying?

MR. RECKLEY: The language in the second iteration that was released just a couple weeks ago has the same language that we released in February, and so it is what you guys saw and commented on in the December meeting, of the subcommittee meeting, and in the February full committee meeting, but that's currently being revised.

And so when we have the second iteration of that text, we'll release it to support the June meeting. So I guess the short answer, Greg, is yes, please ignore the Subpart F that's in this second iteration.

MEMBER HALNON: Got it, thank you.

MEMBER REMPE: Bill, since I interrupted you --

MR. RECKLEY: I will say at least the middle part of Subpart F -- if you remember, Subpart F is broken into what I call the plant, the people and the programs.

And the plant part, the first sections of Subpart F really are not undergoing major changes.

Neither are the last set on the programs, but the one that's really getting looked at and will

have revisions from what was released will be the middle part related to staffing and operator licensing and engineering expertise on shift, and those things that you really had a large interest in in your letter.

MEMBER REMPE: Bill, since we've interrupted you, I have a curiosity question. I looked at the stakeholder slides for March before we were sent our slides, and it constantly refers to the statement of considerations.

It seems like with Part 50, 52 we learned that that's becoming the preamble. Are you guys going to do a preamble or a statement of considerations?

MR. RECKLEY: I think the official name will be preamble.

MEMBER REMPE: Okay, just curious. Thanks.

MR. RECKLEY: All dogs. Most of us still refer to it as the statement of considerations but the official name might be a preamble.

Our original plan when we set up this meeting was to have the Framework F material included -- Subpart F. With that being removed, I'm not sure how long this meeting will take. I'm pretty certain it won't take the whole day. We're going to summarize

the various sections in the slides.

We have readily available the actual rule text, the PDF file that we provided, and so we can go down into the specifics as much as a member might want, or if we think pulling up the rule text would help answer a question. But otherwise we're going to be going through as this agenda says.

Basically the Framework A subparts in order and highlight what we think are the major things that have developed maybe since we talked to the ACRS Subcommittee about those elements.

And as Steve and Dave both said, you know, we've talked to the ACRS Subcommittee about Framework A all during 2021, and so in addition to some changes, we recognize that you guys look at a lot of materials. It's just one of the things on your plate.

And while we're working on this every day, you're not, we know, and so if we just need to refresh your memories on some elements of Framework A, we're certainly wanting to use this opportunity to do that.

And then once we get through all of the subparts, we have a few slides to talk about guidance. That's been brought up numerous times, both in our discussions with the ACRS and others. We recognize the importance of the guidance documents and we'll

talk about that once we get through the subparts.

So Billy, if you can go -- the next slide I think was just the welcome slide, so we can, yeah, go past that one. And talk about the schedule a little bit.

And this goes to what Steve was saying. You know, for us the next major milestone is the February 2023 date in which we are to provide the draft proposed rule to the commission.

And so, in support of that we have already scheduled today's meeting of course, and then the June meeting on Framework B and the staffing sections of Framework A.

Then the staff's thinking is, after those meetings in June, we'll have a discussion with Chairman Petti and others as to what the needs of the subcommitee are, but really we need to write the rest of the package, the statement of considerations or preamble, the regulatory analysis, the actual SECY paper.

And our plan is to have all of that ready in the September timeframe so that we have the whole package, Framework A, Framework B, and all the supporting documents that go in a rulemaking package, ready to support an interaction with the ACRS in

October and November.

So our working plan, and of course this is -- we have to talk to you and it's largely up to you, but we would suggest an October subcommittee meeting and a November full committee meeting to basically finalize our interaction on the proposed rulemaking package, which then would have to go through the last stages of internal review, the legal review, management review in order to get it to the commission in February.

So, that's the challenge. To some degree, we can take some comfort in that this is a draft proposed rule package.

You can see the rest of the figure or whatever you want to call it, the serpentine belt that we have represented there, that.

Following giving that package to the commission we will await the commission's decision and then have to address public comments, and start interactions with the ACRS on the draft final rule to the commission, which is scheduled to be provided by December of 2024. So.

MEMBER HALNON: Hey Bill, this is Greg. The only thing I see on this that gives me pause is the 60 day public comment period for the proposed rule

and draft items that -- much smaller rules have come back several times for extensions on that, so you might have a contingency there as you go through the summer.

MR. RECKLEY: Right, and we have identified the same issue when the commission direct -- when the SRM came back on the rulemaking package, and we settled on a December 2024 date as opposed to the original rulemaking plan that just reflected the NEIMA requirements that took us out to 2027.

It's a tight schedule, and so we basically had to take -- in terms of internal concurrences and interactions, as well as what you just mentioned, the stakeholder comment period, down to the minimums and we identified that to the commission as a challenge. And we know that there is a possibly we would get requests for extensions.

One of the rationales for having a short comment period is, for good or bad, what we've lived through for the past year and a half where we've basically developed this rule in plain view. So we'll see if that pays any dividends when we get to the comment period for the proposed rule.

MEMBER REMPE: Bill, you've got a lot of guidance if I look at the slides near the end of this

presentation that you're developing to support this package, and when will be the first time that ACRS would see any of this guidance?

Because are you planning -- it just seems like it's going to be an important aspect of this rule and for us to fully understand the language and the rules. Sometimes it helps to see that guidance.

MR. RECKLEY: Right.

MEMBER REMPE: And they may have some significant comments. So when will we see the guidance?

MR. RECKLEY: And the interesting part is some of the guidance you have already seen or in the process of looking at. I'll give you an example that just happens to be timely. You're going to talk tomorrow about the reliability integrity management component of the ASME code. That could be useful guidance for Part 53.

You've already interacted with the PRA standard, non-light water reactor PRA standard, so a fair amount of the material you're already engaged, the ACRS is already engaged.

Other elements we'll just have to negotiate with you on what you look at and when you look at it.

I would say when we get to those slides at the end, however, the majority of those guidance documents are already on the radar of the ACRS and interactions are ongoing or planned already. But --

MEMBER REMPE: Well, what about manufacturing facility guidance? And some of the --

MR. RECKLEY: Yeah, that's -- well --

MEMBER REMPE: And some of the things like that I think might be interesting to review so we fully understand what's in the language.

MR. RECKLEY: They may, and that particular one, as soon as we start working on it we'll start interactions with you and schedule the interactions.

So, some of them we haven't really even started yet on, and when you look at the one in the column for future activities -- so.

MEMBER REMPE: Yeah. It might be good for you, Dave, to think about the various types of guidance and when would be a good time for us to really see it and understand it?

CHAIRMAN PETTI: Yeah. So, my concern is the near-term schedule and just as you described it -- at least the lines in my mind -- you know, say up to when you have to have the draft moved close to the

commission, so I think that's good.

MR. RECKLEY: Yeah, that's our immediate focus. And some of the guidance documents will be ready by then and we can point to them either having been issued, for example, the Non-Light Water Reactor PRA Standard, or they are being released more or less at the same time as this proposed rule, and that would be the expectation.

I know we're talking about the staffing stuff in a month or so but some of the staffing related guidance might fall into that camp, so, anyway, we'll get to that when we get to the guidance slides.

So, anyway, this is a challenge, of course, we understand it's a challenge for you and I think you understand it's a challenge for us, but that's where we are so we'll start working with Derek and Chairman Petti to work out the details of the interactions. In the later part of the year, again, our working thought was October, November, and then also between our meetings today and in June on Framework B, what, if any, other interactions might be held during the summer.

MEMBER BALLINGER: This is Ron Ballinger, In looking through all this stuff, will you folks

produce what amounts to a roadmap through this system when all is said and done? In other words, the guidance consists of all kinds of documents and, you know, you mentioned 1.246 which nobody would know, so will there be a, what amounts to a roadmap through each one of these, through A and B?

MR. RECKLEY: I think that the preamble will do some of that and we have in some respects the parallel activity, kind of the umbrella guidance, the Advanced Reactor Content of Application, or ARCAP, that, in the one you just mentioned, that activity has produced some tables where available guidance for various sections of the application are identified. So it comes -- I don't think it'll be as clear as what you suggest but it's a move in that direction to provide a, as you would call it, a roadmap of what available guidance is available in which technical areas.

MEMBER BALLINGER: Well, forgive me if I'm not quite satisfied. When this all said and done, when you have two complete and approved paths, my guess is it would be a nightmare to go through this if an applicant didn't have a clear roadmap of where the guidance is. Because if they have to go out and start reading different reports and looking at the guidance

that's in the appendix and the data report, and the like, it just seems like that's just going to be almost impenetrable. I mean, I'm -- correct me if I'm wrong here.

MR. RECKLEY: No, I understand what you're saying, and that will be -- again, we'll document, and have documented, what we can in this time frame, the pre-application interactions that we'll have with any particular applicant can also help in that regard.

You know, our experience, and I don't want to necessarily overstate it, but the reactor developers are as sophisticated and knowledgeable as we are. That's the hope, and it better be pretty close to the reality. And so, if they're looking at something, like, what guidance is available within the ASME code, they better have staff who are pretty familiar with that already, and they do.

And so, I understand what you're saying but our experience is also that the designers are sophisticated and they know this stuff, and they know where to look and where to find it. So I understand what you're saying and I agree with you, but at the same time, our need to give them a roadmap, I don't put the emphasis on it because they better already know what they're doing and where they're headed

without us, on the technical side, having to give a lot of guidance.

Where we really think we need to explain stuff is on the regulatory and licensing side, and what they need to give to us to support an application. And again, we'll try to do that within the rule-making package in places like the statement of considerations.

But I'm not trying to argue with you, Dr. Ballinger, I agree with you and it would be nice to have all of those things, I'm just, I'm not sure in the time frame what we'll have available. But we can point to things that are similar or that somewhat support the discussion, like, what all the work we've done in ARCAP.

And that was a fair amount of work, and it did a lot of what you suggest in terms of saying, here's the content to application and here's available guidance. In that lane, some of that might have been aimed at Light Water Reactors but it was either, generally applicable or it's Light Water Reactor specific and somebody has to develop the equivalent for another technology.

So at least you can point and say, here are the issues that will need to be addressed, but it

would be up to either, the developer or a group of developers to do it for a particular technology.

CHAIRMAN PETTI: Bill, just before you go, I wanted the Court Reporter to know that Member Kirchner is now online. He had some computer issues. Thank you. Go ahead, Bill.

MR. RECKLEY: Okay. So that's the schedule related, the challenge related to the schedule. Billy, if we could go to the next slide.

This goes into what's already been discussed in the introduction remarks, the way we have laid out Part 53 in terms of two frameworks, Framework A, which we'll talk about today and we talked about throughout 2021, and Framework B, which, as Steve mentioned, is the more traditional approach.

So I have this and the next slide, I'll try to give, again, just a high level discussion. Some of this you've heard a little bit about in terms of, for example, the presentation that Marty Stutzke gave to the subcommittee in December, but you'll see the actual material in support of the June meeting in regards to Framework B.

So we do think there'll be a set of common requirements, and this is the general provisions that are in subpart A, things like, where you mail an

application. On the administrative side, the fact that you have to be honest in your applications, the equivalent of 50.9, all the general provisions that are basically generic to any regulatory activity we'll try to address within subpart A, because there's no reason to have a distinction. But then --

MEMBER KIRCHNER: Bill, this is Walt Kirchner. I apologize for joining late, I did hear Chairman Petti's question to you early on. And when I look at what you're showing us right now, does this make for potential a lot of extra work for you in the standpoint -- just looking, starting with construction through quality assurance on both sides of the ledger.

Other than the licensing process with the alternate evaluation of risk insights, what would be materially different between Framework A and B when one got to construction, operations, maintaining the license, QA, etcetera? Does this create some of the problems that you've had with reconciling 50 and 52?

Would they deviate substantially? It would seem to me that branch point that the alternate evaluation for risk insights would be right up there in front of Framework A, and then would march through, one would march through all the rest of the subparts.

MR. RECKLEY: Right. And what you'll see

is that -- and take the last one on the list, quality assurance -- if you hold up Appendix B to Part 50, Subpart K and Subpart U, you'll see very little difference. And actually, in the technical area our goal was that you would see no difference.

But because of things like internal references it is actually easier, at least our preliminary assessment is, it's easier to repeat it and put in the appropriate internal references than it is to refer back to what would might be called a common subpart, and include within the common subpart the internal references to either framework.

So technically they are the same but, from a tracking standpoint and a ease of use standpoint, our thinking is, it's better to repeat them than to refer to them. Now, that may, as you say, in the future if there's an issue and something needs to be changed, we'd have to change it in three places perhaps, or if it's just Part 53 we might have to change it in two places, that's true, but we, again, in our assessment think that it's actually easier to repeat it and then have -- again, in the areas where you'll see that they're basically repeated, a big reason for that is just because of the internal references back and forth between sections.

And I think, for ease of use, it was better because once an applicant has chosen to go Framework A or Framework B that is, from our point of view, two distinct approaches, and they're not able to kind of go back and forth and say, well we're going to take licensing basis events out of Framework A but we're going to do safety classification in accordance with Framework B.

The things are intertwined so that once you pick a framework then all of the subparts and all of the material is intertwined within Framework A and the same is true within Framework B, so --

DR. BLEY: Hey, Bill?

MR. RECKLEY: Mm-hmm?

DR. BLEY: This is Dennis Bley, go back to Dave's racing stripe thing, a single racing stripe up there for Subpart A. It looks like, in that single area, Subparts B, C, and D ought to be there. You got to do those in Framework B, don't you? Or are they somehow built into that Subpart N you've got over there?

MR. RECKLEY: They're largely -- again, and I know we're jumping ahead, and this is okay --

PARTICIPANT: You knew it would happen.

(Simultaneous speaking.)

DR. BLEY: Just want to understand how it'll work.

MR. RECKLEY: No, I did and then I'm also going to ask somebody from Framework B to definitely jump in if I misstate something, because we have two teams working on this, so, Bill Jessup or Candace, if you're on and you hear me misspeak, please correct me, don't let the misstatement stand.

Much of that would be in Subpart R actually, and that reflects -- again, this is a traditional approach, so where were we drawing a lot of that material? Definitely, where possible, it was drawn from Framework A, but the technical requirements and the design rules, or the design approach, and things like that where we address them in Framework A, under Subparts C and D, if you look at Part 50 a lot of that is in places like 50.34, Content of Applications.

There are some specific technical requirements, like the ECCS rule, 50.46, but a lot of the material is within Content of Applications. And so, for that reason, instead of trying to condense all of that into the equivalent of Subpart B, it kept Framework B organized as it (telephonic interference) more along the lines of the traditional approach,

which is, again, a lot of that's going to be found in 50 or 52.

DR. BLEY: Okay. Just a heads up for your Framework B folks, those three issues that are in Subparts B, C, and D for Framework A, you're going to get a lot of questions about that, under Subpart R, I guess, when you come in. So we'll have to wait and see what that looks like. Thank you.

MR. RECKLEY: And I -- in public meetings, and I believe ACRS -- this is my memory failing me -- some of those technical requirements you saw in a quick summary of what was at the time called 5X, and I think we gave a quick summary of that late in the year to the ACRS, but --

DR. BLEY: You did. My memory doesn't, isn't specific enough to recall that that stuff was embedded in 5X, but we saw that. So that's --

MR. RECKLEY: Some of those concepts will show up in Framework B.

DR. BLEY: Okay.

MR. RECKLEY: So -- but anyway --

CHAIRMAN PETTI: Yeah, actually that .X is in the package you guys sent to us, so, but it's actually a part of Framework B is what you're saying?

MR. RECKLEY: Yeah. That's now been

incorporated into Framework B. And modified, I mean, that was an early draft.

So that is the structure, the frameworks, as Steve mentioned, Framework B, we are working and this is, again, Marty Stutzke gave a presentation in December on a possible approach where you use a bounding event and that might justify not having a full-blown probabilistic risk assessment performed, that's called the Alternate Evaluation of Risk Insights, or AERI, and it's shown on the Framework B slide as a possible approach that would be built into the subparts, primarily Subpart R, in terms of Framework B. That'll be discussed, again, more in June.

MEMBER DIMITRIJEVIC: You know, this is Vesna, you have answered most of the questions so far but you really never specifically told us, why did you do this? So just to introduce these alternate evaluation, you have actually duplicated everything into two frameworks.

And also you said something, which may be explanation to that, that you want to keep these two application totally separated but I don't see reason for that because sometimes the combination, as you also said, that you do things very smart you can find

novelty to the approaches which may be applicable. So can you tell us specifically why did you decide to totally separate those two frameworks?

MR. RECKLEY: Sure. And, Billy, the next slide will help, I hope, but what we received as part of the feedback is that some developers were interested in using a traditional framework. One significant reason that they would want to do that is because the international marketplace will often rely on something like the International Atomic Energy Agency standards and guidance. And that international guidance reflects a traditional approach, it has, as part of its foundation, the NRC's Part 50, Part 52 kind of approach.

And another set of developers had planned, and were interested in using an approach like the licensing modernization project that we -- again, we talked to the ACRS in previous years as we developed Reg Guide 1.233 which endorsed NEI 18-04, which was the licensing modernization project, a process that had been developed over decades, largely from the community of gas reactors, but also expanded over the years to include other technologies.

Now that methodology differs from the IAEA standards, it differs somewhat from our existing

structure, as we talked about with the committee as we went through that licensing modernization activity. It ends up, we think and we've said many times, to give you equivalent safety and very often it gives you the same result in terms of a design feature and a requirement that would be put upon a particular piece of equipment, for example.

But it approaches it slightly different, and different enough that you have to kind of think about it as a different framework. So this slide is trying to lay out at a high level the two frameworks, and under Framework B on this slide you can see we actually used, for ease of use, the IAEA graphic that shows how you address concerns under that traditional approach.

And you have the traditional Anticipated Operational Occurrences, Design Basis Accidents, the associated need to address those accidents with safety related equipment, the need to include as a design criteria things like the Single Failure Criteria, a whole set of rules -- and going to Charlie's comment earlier -- a whole set of rules that have been laid out in large part in Appendix A, the General Design Criteria for Light Water Reactors, and then in specific rules within Part 50 or Part 52.

And then over the years added onto that original structure of AAO, Anticipated Operational Occurrences, and Design Basis Accidents, were added additional considerations for things like station blackout and anticipated transients without scram. The NRC has traditionally called those beyond design basis events, the IAEA graphic here calls them design extension conditions.

But basically it is a set of events that says, hey, based on experience maybe we need to assume another set of events where the actual safety related equipment fails, the diesels fail. You know, the DBA assumes that the safety related equipment works, it provides protections and things like the Single Failure Criteria to address some of that concern, but maybe not the whole concern, and so additional requirements were added, for example on station blackout, in case the diesel generators fail.

And then in the last column an additional layer was added to the requirements to address severe accidents, these are ones where, in the hierarchy of events, not only did the diesels fail but whatever I put in place to address station blackout also didn't work and I ultimately melted the core, should I not have one additional level of protection. So the NRC

did that through the severe accident policy statement, the IAEA has an additional layer to address design extension conditions with core damage --

DR. BLEY: Hey, Bill?

MR. RECKLEY: Yes, Dennis?

DR. BLEY: I don't want to really get ahead on this but I want to at least set up a flag for the people who will bring us Framework B, the last iteration of the standard for non-LWR PRA did a nice job, or the nicest job they've done so far, in providing some supplementary guidance into how to be more complete in searching for accidents and initiating events.

The design extension conditions over here all fell out of peculiar issues with LWRs, with new designs Framework B's got to give some kind of guidance on how to be more complete in finding all of the accident sets, and we'll be looking for that. So don't need a comment back on that, I just wanted to raise that for those folks who I think are with you today.

MR. RECKLEY: Okay --

MEMBER REMPE: So, if I could also add to that, like yesterday we heard a discussion from the staff and an applicant about if, even though they went

with a maximum hypothetical accident, if they hadn't done the analysis of all the other types of events as they searched for initiating events staff wouldn't have had confidence that the MHA was indeed a bounding event. And guides ought to have something along those lines too, in my opinion.

MR. RECKLEY: Okay. And I don't think either one of those are surprising to the guys that'll be presenting in June on Framework B, so -- in terms of both, guidance that's being considered and worked on, as well as what the content of Framework B will address.

So that methodology, the traditional methodology, and again it's what we use in Parts 50 and 52, so it's a, we're not trying to, in the development of Framework B -- I mean, A, I'm sorry -- the development of Framework A, we're not trying to say there's fundamental problems with that.

That is an approach, as Dennis and Joy, you mentioned, in doing searches for these events and determining whether they fall in a category of Anticipated Operational Occurrences or Design Basis Accidents, or into the design extension category, probabilistic risk assessment or another methodology like process hazard analysis, failure modes and

effects, the traditional ones that have been used will also come into play to look at and identify the events that are used to test a particular design.

So that's Framework B and, again, the reason that we did it was because there were applicants who thought that they preferred to use that traditional approach, and the outcome of that, as it says on the slide, is there's a focus under that traditional approach of showing that you meet design criteria, and those design criteria as they're defined in Appendix A, the General Design Criteria, are already there.

And they're already there because people in the past did those exercises, they did failure modes and effects, they did PHAs, they did PRAs, and developed that framework, and so --

(Simultaneous speaking.)

DR. BLEY: And they had accidents.

MR. RECKLEY: And they had operating experience.

DR. BLEY: Which won't be true for the new ones. At a very high level, can you give us just a little hint, before we get to Framework B, about what'll be different between Framework B and Parts 50, 52? What are we adding?

MR. RECKLEY: To me --- and again, Candace or Bill, or Boyce, whoever might be on -- to me the primary difference is it's technology inclusive, okay? The 50 and 52 construct is largely adopted within Framework B. However a lot of the work is to take what is in 50 and 52, which is very often Light Water Reactor specific, and to turn the requirement into a technology inclusive approach.

And this has been, you know, and you can go back to our previous reviews of PRISM, MHTGR, other Non-Light Water Reactors, and you can see the equivalent of this exercise being done for something like Design Basis Accidents, right? You have to make it technology inclusive, whereas you might have a rupture of a primary coolant pipe as being a similar event, you're not going to use peak clad temperature for a sodium reactor or a gas reactor.

You have to come up with different events in many cases and you have to come up with what are the acceptance criteria for those events, and so to me that's the major activity. And it's not a minor undertaking to take the framework that's in 50 and 52 and try to make it more technology inclusive.

MEMBER BROWN: Bill, this is Charlie Brown.

Why do you say part or Framework B, or

Part 50 and 52 aren't technology inclusive? I don't understand that.

We've evolved numbers of systems that have moved all the way from vacuum tubes and mag amps, all the way up to microprocessors in the electronics control systems, regulators, governors, and everything else.

And, the only thing that's the same is a motor is a motor, and a pump is a pump, and a valve is a valve, and a pipe is a pipe.

You know --

(Simultaneous speaking.)

MR. RECKLEY: I, no, yes --

MEMBER BROWN: -- to say it's not technology inclusive, and the only way you get that is by going to Framework A with PRAs and all the rest of the risk metrics, doesn't, that doesn't sit.

MR. RECKLEY: Yes, no, again --

(Simultaneous speaking.)

CHAIRMAN PETTI: Charlie, Charlie, hold on. We've argued this point. Our official letter is our official letter.

But let me just argue the point that the core is completely different. Bill's point --

(Simultaneous speaking.)

MEMBER BROWN: I don't understand that.

CHAIRMAN PETTI: That's what's not technology inclusive. Yes, there may be some parts that are, but when the reactor core itself is not, which is what we care most about --

MEMBER BROWN: I understand that.

CHAIRMAN PETTI: Yes.

MEMBER BROWN: I totally understand your point.

CHAIRMAN PETTI: Okay.

MEMBER BROWN: And, I don't even disagree with it, okay?

My point is, you know, I walk through all whatever, 50 or whatever the number of general design criteria are.

And, a good percentage of them, a large percentage of them, are going to apply to any type of advance reactor we would produce.

A lot of them won't, okay, but you just, it's when you're using a process, or an approach, like Part B, excuse me, like 52 or 50, that doesn't preclude, that doesn't mean you have to use every one. You can make a decision not to use those.

CHAIRMAN PETTI: Yes, but then you have to file an exemption. And, the ground rules for this,

was to minimize exemptions.

MEMBER BROWN: But you're never going to predict all the exemptions you may need for these advance reactors, when you don't know all the nuances of what you're going to have to deal with.

CHAIRMAN PETTI: And, I just have to say that there are, there are advance reactor design criteria, that were accepted by NRC --

(Simultaneous speaking.)

MEMBER BROWN: I know but --

CHAIRMAN PETTI: -- and those were all the Reg Guides, right.

And, in fact, they are being used. I mean I have seen many of these advance reactor designs, and they're all gravitating to those advance reactor design criteria.

So, I think it was a worthwhile investment to do that.

MR. RECKLEY: Yes, and I think, thanks Dave.

And, I think that probably proves both points, that when we went through the exercise and developed Reg Guide 1232, the advance reactor design criteria, to Charlie's point, many of them were equally applicable.

Required only no change, or minor change, and some of them were adapted to a particular technology.

And, then I always like to emphasize there was also a need to add additional criteria, for some designs, right.

Because you have an event, or an interaction when you're dealing with sodium, for example, that you need to add criteria for that.

And, that was agree, that was a great exercise to develop Reg Guide 1232.

So, I think that again, reflects kind of both points. Yes, it can be adapted. The over, and that's the point to some degree, Charlie, that the overall framework is, can be applied.

What again, and this is what Dave was emphasizing, there are, however, a number of things that are light water reactor specific, and that's what Framework B will be revising, in order to make it more technology inclusive.

So, that's Framework B, and why we're --

(Simultaneous speaking.)

MEMBER BROWN: Bill, I had one other question --

MR. RECKLEY: Sure.

MEMBER BROWN: -- I lost it momentarily.

In the beginning of your comments, and as you talked about the loss of power. First you lose offsite power, then you lose, the diesels don't start.

And, then right now we've faced that before, you still got all your battery backups that operate for some period of time.

But then there's been also the mechanism for bringing in external sources of power to hooking them up in the plants, to address the issue of how do you get power to the plants within two or three days.

I've forgotten what the name of that program is.

MR. RECKLEY: Depending on who you talk to. So, that FLEX or --

(Simultaneous speaking.)

MEMBER BROWN: FLEX, thank you very much, yes, FLEX program where now you tote in, you know, these additional generators and fire them up and just, and you already have the connections available.

So, we have a, the weaknesses of loss of power have been addressed based on past quote poor, poor circumstances, that we just have not seen.

But I'm just saying, it's, the system has been very responsive to addressing things, and coming

back and making things so that you don't have a big problem in the future.

But I'm not, I'm always a little bit, I'm always a little leery of walking into a new, new world where we have no experience with it. That's the only, you just need to be careful, that's all.

MR. RECKLEY: I understand, and of course, and this goes to Dennis' point. You know, some of those changes were made after operating experience. And, some of it not very good operating experience. Like our development of FLEX.

So, so anyway, that, that is, that is Framework B, and the structure within Framework B will mirror that traditional approach.

And, again, the only reason I used the IAEA presentation is I thought it was better than the ones that we have, that tries to explain how Parts 50 and 52 work.

So, that is contrasted if you will, by Framework A, and we're going to talk about Framework A for the rest of the day.

But it has as its underpinning, that you set out in a kind of a performance based approach, the, the risk metrics that are in Subpart B, and again, we'll go into each Subpart and address

questions, and explain what changed since last we talked.

But it sets out the risk metrics in Subpart B, and then lays out the design and analysis approaches in Subpart C, based on those, those risk metrics.

And, has less reliance on pre-established design criteria. Because in order to meet the risk metrics, each developer would need to say what safety functions do I need?

And, from that then, what design features do I need to accomplish those functions, and what requirements or functional design criteria, need to be defined for each design feature, in order to make sure it is reliable, and capable of performing its function.

So, it's a slightly different approach in that it sets out acceptance criteria, and then requires the developer to go through the exercise.

That is the same exercise that you go through in order to come up with the design criteria. It's just in Framework B, or under our current 50 and 52.

It's largely that that work is, is kind of behind the curtain, if you will, in what people can,

considered when they did the development of the GDC, or any particular additional requirement like, like station blackout rule, or the Atlas rule.

So, you often end up in the same place. And, this is, you know, this has historically been to me anyway, one of the hardest things to explain is there are, there's differences between the Frameworks, but there's also similarities. And you will, you often end up in the same place.

So, but we're going to talk about Framework A for the rest of the day. But that, that's primarily the difference of the fact that you start within Framework A, on the risk metrics, and within Framework B, you, you start with design criteria.

And, then you have to do a whole, in both cases, you have to do a whole lot of back and forth between considering whether you've caught everything.

And, I think the ACRS has been great at emphasizing that that's in the end, what you need to, to have confidence in, is that not only have you come up with a design, but you've, and the analytical space and then the testing space, you've challenged that design with a wide range of challenging events such that you have confidence that, that it will operate and respond to an accident in an appropriate way.

So, within that, one difference, and this is often the way it's explained, is in the role of probabilistic risk assessment.

And, Framework B, because it has the design criteria as somewhat the starting point, uses PRA for insight.

It uses PRA to do the conformations. In some areas it might use the PRA to do things like identify appropriate design features, to address severe accidents.

But the basic structure is that the PRA is a supporting tool. Because Framework A is based on risk metrics, that assume that a PRA is a central part of the process, the role of the PRA is elevated.

So, that's another distinction, and that's the way some people tend to characterize it. I tend to think of the PRA as the tool, but it ends up being in many cases, how people distinguish between the two is in regards to the role of the PRA.

Dennis, I see your hand is up?

DR. BLEY: Yes, can you back up one slide, Bill? I think it's one. Sorry, yes, that one.

I haven't seen anything yet. Do you, right now, do you envision having to revise Subpart A to be general and apply to both of them, or is it okay

as is?

MR. RECKLEY: The majority of it is okay as is because again, they are general provisions that --

(Simultaneous speaking.)

DR. BLEY: That's okay.

MR. RECKLEY: -- to be quite honest.

But most of them we cut and paste out of the 50 or 52, because, because they were applicable.

The biggest challenge within Subpart A will be the definitions. And, there will be some definitions that are the same, and there will be some definitions that may not be applicable to one Framework or the other.

And, we're trying to get --

(Simultaneous speaking.)

DR. BLEY: That kind of gets to what I was going to ask you. Framework B begins with a purpose definitions Subpart. It seems like Framework A needs the same thing, for the very reason you're just talking about.

MR. RECKLEY: Yes, we, when we put them together, I imagine that we're going to have a lot of insights like that one where, that we'll have to make some changes to Framework A to make them fit, and make them a consistent format in any, in any case.

DR. BLEY: And, then I think I promise this is the last thing I'll ask you about Framework B. If the revision to Parts 50 to reconcile it with Part 52 goes through as of the last time we saw it, both 50 and 52 will require a PRA, although it's not the basis for the approval.

And, it looks like Framework B will not do that because it will have these things that were in the old .X section, or something like that.

Am I right in guessing that way?

MR. RECKLEY: Framework B, and again, you can go back to, to the presentation Marty gave in December and please --

(Simultaneous speaking.)

DR. BLEY: Yes.

MR. RECKLEY: -- again, Bill or Candice, jump in.

But basically, the way Framework B is set out, is that you have an option as to how to prevent, how to present your risk evaluation.

And, it can be done through APRA, which would be the common practice of what currently exists in 52, what's going to exist in 50, and most definitely what's in Framework A.

So, you could do a PRA. That would be the

most common approach. Or the approach that is common among all of the reactor related requirements, at that point.

But what's, what is new in Framework B, is this proposal to add an alternative evaluation mechanism through this, through the use of a bounding, bounding event.

DR. BLEY: Okay. Thanks.

MR. RECKLEY: Okay.

DR. BLEY: Go ahead back where you were.

MR. RECKLEY: Okay.

CHAIRMAN PETTI: Hey Bill, as you're moving, I just wanted to reinforce this concept where you think you'll end up in the same place.

I have been involved in a few of these advance reactor designs, and people using different options, and they do get to the same place.

I mean in practice, in the advance reactor world, I think that's true. You know, as people are digging in and really developing their designs.

MR. RECKLEY: Thank you, Dave.

And again, I've looked at a number of these over the years, and the reason you end up is because in most cases, you're trying to solve the same problem, right, like heat removal. And, so you're

going to end up needing a heat removal mechanism.

Now they may differ in how they work based on the technology, but the, the underlying requirement to, you know, this goes to what we've talked about.

Actually, it's in Subpart B, the need to control power, the need to control reactivity, is part of that. The need to control heat removal. And, ultimately, the need to have a system to contain the radioactive materials.

You know, those things, they're so well established that, you know, control, cool, contain, right?

I mean they're just kind of underpinnings, and they will be to, to both Frameworks.

So, thank you and again, I think that's why you usually, you can come up with different mechanisms, but basically you are trying to control the same physical phenomena, and so you come up with similar answers.

So, Billy, if we can I'll just say any, any additional questions on this slide I will --

(Simultaneous speaking.)

MEMBER KIRCHNER: Yes, this is Walt.

I had the same comment that Dennis had on the purpose definitions. It would seem to me that you

would want to do that above.

And, I'm trying to think of which definitions would be conflicting from, going from Framework A to Framework B.

MR. RECKLEY: I'll give you one, Walt.

MEMBER KIRCHNER: Safety related or?

MR. RECKLEY: Yes, that's actually one. The event categories. They could be, they could be the same.

But in Framework A for example, we abandoned the use of design basis event, which is an NEI 1804, the licensing modernization.

But we abandoned that because it's used in Part 50. And, we call it unlikely event sequences.

Since the traditional Framework in, in Framework B, and I don't know this so I might have picked a bad example, but they could use the same definition as design basis event from Part 50.

We avoid using it in Framework A to avoid that. Safety related might have even a different definition because under Framework A, we, it's very similar but it's different enough that we might have a different definition.

Within Framework A, we've come up with the terminology of, of function design feature, and

functional design criteria.

And, we try to use that consistently and by doing that, we've avoided using the word design basis.

And, the reason for that again is, that's a well established term in Part 50. And again, because Framework B is using a traditional approach, they may choose to use the term design basis, and have it be very similar to the way it's used in Part 50.

So, that's why there may be, we're certainly hoping to minimize the number of cases where the same term has a different definition in Framework A, and Framework B.

But what you might see is us going to a lot of trouble to avoid using a word that is defined in one of the other Frameworks, and might have a, might be misleading if we tried to use it within one Framework or the other.

So, Bill, I think you wanted to weigh in --

(Simultaneous speaking.)

MR. JESSUP: Yes.

MR. RECKLEY: -- Bill Jessup.

MR. JESSUP: Thanks, Bill, this is Bill Jessup. I'm working on the Framework Bravo side.

Bill, I appreciate that you covered pretty much everything that we're doing, very well. I just wanted to add on to the definitions that the definitions that are specific to Framework Bravo as currently drafted, is a very small subset.

And, they're driven largely by the key differences between the Frameworks. Things like how licensing basis events are classified, and NSSCs are classified.

So, things like anticipated operational occurrence and safety related, those are just two of probably of three or four definitions, that we are currently proposing in Subpart N.

So, I just wanted to add on to that, Bill.

MEMBER KIRCHNER: Well, what I was thinking as safety related, is well defined in the 50/52 vernacular.

I was wondering whether you were looking at trying to rephrase that in a more generic way, so it does what Bill was, Reckley that is, was saying is the functionality of the definition that's used in 10 CFR 50 is specific to LWRs.

But one could foresee or could see how you could rewrite that definition to be of more generic applicability, to other advance reactor designs that

might want to come on under Framework B.

MR. JESSUP: That's correct. That's been our general approach is to start with what are, what are the provisions in 50 and 52, and where necessary, adopt some technology inclusive version of that requirement. Or in this case, a definition.

So, you're correct.

MEMBER KIRCHNER: Thank you.

MR. RECKLEY: Okay, so Billy, if we can go. I'll just, I think this is important so, you know, we're willing again without going down into the, to the details, which you'll hear in June.

Any additional questions on the, the general structure of 53 in our use of Framework A, and Framework B?

Seeing no hands, of course we can come back if you think of a question.

So, Billy, if we can go, we'll start getting into Framework A specifically now.

So, what makes this a little complicated for us, of course, is we've been living this for the last 18 months, or so.

And, we forget who we, well, I'll just use first person. I forget who we talk to when, about things.

And, so we did put out a consolidated Framework A. All the Subparts A through K in February. And, that was to support a March meeting, as well as just as an intermediate step for us.

We continued the internal reviews, and we put out a second iteration of that consolidated Framework A, just a couple weeks ago.

So, what we'll talk to today with the subcommittee, includes all the changes we've made up to that version.

And, as we've mentioned several times as a caution, Subpart F within the second iteration, is the same as the first iteration, and it's currently the subject of a lot of internal discussions.

And, as we resolve that, our plan is to address it in a future meeting, hopefully the meeting already scheduled for, for June.

So, with that Billy, if we can go to --

(Simultaneous speaking.)

MEMBER REMPE: Bill, this is Joy.

I had some questions about the definitions that are in what we were given the last week, the version.

But I think when I look at my questions, they relate to the changes that I guess, are still

coming from part, Subpart F.

For example, there's some definitions that discuss load following, and then I'm just curious how that's going to work with a certified reactor operator.

So, perhaps I can wait, but will there be a time to discuss the definitions? And, if we have questions later on, and that's the best place to wait until this next meeting?

MR. RECKLEY: If it's a general definition, I would say let's do it today if you have a specific question.

If it's something within Subpart F, which load following was one of those terms, then I would say the next meeting on Subpart F again, tentatively the June meeting, would be the best place.

MEMBER REMPE: Yes, okay, so that's what I'm thinking too, but I may as I go through more carefully in these definitions, have other ones that will draw back on Framework A.

But I think it's better just to wait and discuss the definitions then.

MR. RECKLEY: Okay. And, ultimately, you know, our work over the summer, and then when we bring the package in that October timeframe, is where we

will have had the chance to look at Framework A, Framework B, and throughout all of the material.

And, include a good, consistent section on definitions, so.

But we'll talk, actually we'll talk about a couple of the definitions today even, just the ones I thought we might highlight.

So, so you'll see again, this slide is basically what we're going to go through today. We've already talked about this a number of times, Subparts A through K.

Now actually, Subpart K is what we added in the consolidated version that we released in February, so it was something that we had I think talked to the ACRS about, but you may not have seen.

Throughout 2021, the thought was that we would take the individual criteria from Appendix B, of Part 50.

Again, our intent was not to have any significant changes to those QA requirements, but we were distributing them as part of the life cycle.

So you saw the QA requirement for design show up in, in Subpart C. The QA requirements that would be applicable for construction, to show up in Subpart E.

And, an observation from stakeholders was that the existing Framework in, in Appendix B to Part 50 works. And, there's a lot of the infrastructure that's built around that. So, it would be better just to, to keep that structure.

So, what we did, and if you were to do a redline and strikeout from some of the material for example on Subpart E, that we presented to the ACRS, you would just, you would see a lot of strikeout because all of the QA requirements that we had included back then in Subpart E, were just moved to Subpart K.

And, by and large, then each Subpart now just says, and you'll meet the QA requirements in Subpart K.

So, when we get to Subpart K, we can talk about the specifics of it, but largely from our viewpoint, this is a, it's a significant change but it's also largely a formatting change.

Because we, at least from what we intended. We didn't intend to change the QA requirements. We, again, the early thought was just that we would inject them into the appropriate life cycle stage.

Again, in response to stakeholder

feedback, we added Subpart K. So, we'll get to that as we go through the, the changes to the Subparts.

So, Billy, if you want to go to the, go to the next slide.

MEMBER KIRCHNER: Do you want to take any comments, Bill, as we go?

MR. RECKLEY: Oh, sure.

MEMBER KIRCHNER: I, for one, think this is a significant improvement. And, you know, we saw and were aware of the stakeholder input that you are receiving, on the topic of quality assurance.

But I think by doing this, the reason I think it's a significant improvement isn't just that it's consolidated in one place. You clearly make a stand here as to what your expectations are.

Such that if some other applicant comes in and wants to propose using another QA program, ISO or whatever, then the onus is on them to demonstrate that their QA program, meets your requirements as now spelled out in that last appendix.

So, for one member's opinion, I find this a significant improvement in the document, and in the regulatory approach.

MR. RECKLEY: Okay, thank you.

And, when I say stakeholder, the ACRS from

our standpoint, is, is in that group, right? Some of the changes we made were in direct response to ACRS comments, even if we didn't receive them from, from others.

And, we'll get into some examples as we, as we go through the, through the Subparts.

But yes, this was, this was fairly, this was a wide ranging observation from stakeholders, including ACRS, that, that it would be better to do this.

So, we'll acknowledge that and reflect it in this, in this change.

So, okay, on this slide is just some of the changes that we made. Again, some of these date back changes we made from the first iteration of Subpart B, which would have been over a year ago.

But it, you know, it still comes up in conversation. And, when we look through comments that we received over the period of time, we're looking at them that go all the way back that far, 18 months ago.

So, the first one there is the one we just talked about, that we consolidated the QA into one Subpart, Subpart K in Framework A.

There were some other comments about the program section in Subpart F. And, that some of the

requirements were perhaps duplicative, or could be combined to be more efficient.

And, so although we didn't make many changes to the programs, we do acknowledge in Subpart F, that if anyone wants to combine programs, they're, you know, they can do that as they present them.

And, I'm not an expert at this, but when you talk tomorrow, or when the subcommittee talks tomorrow about the reliability, and integrity management proposals from ASME, you might see some of this as an opportunity.

For example, one of the comments from stakeholders is we have, we have in Subpart F, and also in the design area, a need to look for degradation mechanisms.

And, some said well, that could be get picked up in normal other design activities, as well as in-service inspection programs, when it comes to the monitoring.

And, I'm not, again, I'm not very much an expert having done little more than leaf through it, but I think the REM program can move in that direction in terms of looking at both degradation mechanisms, and in-service inspection, and how one might combine it.

We did also in the area of the manufacturing license, with the increased interest in activities at DOE, as well as other federal agencies of doing complete reactors, transportable reactor or micro reactor.

We expanded the manufacturing license provisions to support the loading of fuel at the factory.

That's something different than you would find in Part 52, and maybe something different than in our first iterations of the manufacturing license provisions in Framework A.

We haven't had it for a while, but there was a general dislike of tier 1 and tier 2 safety criteria. So, that was removed relatively early in 2021, actually.

But again, as we go through comments, there were a lot of comments on that, albeit they were from more than a year ago.

Codes and standards. We've tried to include flexibility, one of which might be what Walt mentioned, the use of ISO standards as an alternative to NQA-1.

We don't call out specific standards. There's, that's an area that we would foresee getting

picked up in key guidance documents.

The ASME section on high temperature materials would be, be an example where we don't call that out as a need to use ASME pressure code within the regulations as it's currently done in 50 and 52.

But we do call out that it, they should where possible, use consensus codes and standards approved by the NRC.

So, that's how in Part 53, we will pick up consensus codes and standards. And, we'll talk about that in a little bit, when we talk about the design material in Subpart C.

Again, it's been a while, but early on we had back actually when we still had tier 1 and tier 2 within the proposal, also mixed normal operations with unplanned, or licensing basis event requirements based on stakeholder feedback.

We split those apart so that its more clear, we hope, it was our intent, much more clear as to what the requirements were related to normal operations.

Things like effluents, normal effluents. And, those things that were put in place for licensing basis events.

Another change, it's been a while and we

still are kind of toying with various proposals on how to characterize this, but for the last couple releases, have been consistent in, we hope, of referring to the applicable reactors in Part 53, as commercial nuclear plants, or commercial nuclear reactors.

There were some proposals to extend it to include research and test reactors. To date, we're not proposing to do that.

And, the other change from early on, is commercial nuclear plant replaced the, the use of the term advanced nuclear plant.

And, we just found the use of the word advance nuclear to be problematic. The definition in the Nuclear Energy Innovation and Modernization Act, is quite broad and includes both technology, as well as policy, and economic criteria.

And, so we thought the easiest thing was to, to just stop using the term.

So, Nan, did you have anything you wanted to, to add in on this slide?

MS. VALLIERE: Well, just maybe just to give a little context to the subcommittee, that we've received over 1,500 individual public comments on the Part 53 preliminary proposed rule language to date.

We have sorted those comments by topic areas, and the staff has been going through all the comments, and considering this feedback as we are refining the rule language and drafting the statements of consideration, to help us gauge some areas where some more discussion might be worthy to address stakeholder feedback, in the statements of consideration.

I apologize, I'm an old dog like Bill, too, so I haven't quite transferred over to the preamble term yet.

And, I think as you're aware, the staff did hold a public meeting on March 29 to discuss some key areas of stakeholder feedback, like those that are shown here.

So, just providing a little context for the subcommittee.

DR. BLEY: And, Nan, since you brought up the statements of consideration and the new name, somebody at a recent meeting told us they were coming along pretty well, and we would see a draft soon.

Any idea when we'll see that?

MS. VALLIERE: You will see it when we provide you with the material for the full rulemaking package, before the fall subcommittee meeting.

DR. BLEY: Okay, not until then. Okay.

MS. VALLIERE: Right. Yes, it is coming along, but it is still very much a work in progress.

MR. RECKLEY: The only thing I would add to that, Dennis, is if you look at the discussion tables that we prepared as we released text throughout 2021, and some of the other material that, that we've prepared, I mean we're using that as the starting point for the statement of considerations for preamble.

And, so a lot of that material does exist. We just have to incorporate it and reflect the evolution, and changes we might have made since then, and put it together into a coherent explanation of the whole Framework.

But yes, as Nan said, it will, that's our major activity for this summer.

CHAIRMAN PETTI: So, just a point of clarification for members. My personal approach is that we get through Framework A and Framework B this summer, with our letters.

And, then really, the preamble/statements of consideration will be focus in the fall. And all the other stuff sort of around those Frameworks.

Otherwise, we're just never going to get

through it. That's how I see it going forward.

MR. RECKLEY: Okay, so Billy, we can start to dive into the, the individual Subparts.

MR. WIDMAYER: Excuse me, it's Derek. You guys want to take a break?

DDD: Absolutely.

MALE SPEAKER: Yes, please.

CHAIRMAN PETTI: Okay, okay. I was going to wait till the top of the hour. That's fine.

Let's break then until the top of the hour. We'll do -- oh, sorry, sorry, sorry. I misread my watch.

Yes, let's say 10:35 on break. Thanks.

(Whereupon, the above-entitled matter went off the record at 10:21 a.m. and resumed at 10:35 a.m.)

CHAIRMAN PETTI: Okay, folks, break is done. Bill, keep on going.

MR. RECKLEY: Okay, thanks, Dave.

And, you know, from this point forward, I think we're just going to highlight some things within each Subpart.

So, if there are specific questions or whatever, please chime in. Otherwise, I think maybe that the next slides will start to pick up the pace a

little bit.

So, within Subpart --

(Simultaneous speaking.)

MEMBER REMPE: Oh, I'm sorry, go ahead, finish the slide, Bill. Sorry, I had a question about the slide.

MR. RECKLEY: Okay.

So the first one is general provisions. We've talked about that some. The most sections within Subpart A, or the generic material.

An important focus is the definitions. I picked just a few that I wanted to highlight, just because they are either new, or slightly different.

So, the first is commercial nuclear plant. We use that in many times throughout Framework A.

And, the reason we use that is a change under Framework A, from the traditional approach, is that the analyses supporting the licensing, is done on a plant basis. Multi-unit, multi-source.

This has been the practice within the methodology under the licensing modernization project, and the ones that pre-date that.

We brought that into Part 53. So, that's a difference.

In Part 50 and 52, most of the analysis

that's done is on a unit basis. We do distinguish the commercial nuclear plant, which is multi-unit, multi-source, against the commercial nuclear reactor.

There still will be things that are defined on a reactor basis, and so we needed to find that, that term.

So, commercial nuclear reactor is just a single unit that's addressed within Part 53, Framework A. But again, the analysis is done considering multi-unit, multi-source.

The other definition that comes into play, is because of our changes, or additional flexibility in the area of manufacturing license.

We had to try to come up with terminology. This is the current working model. If somebody has better terms, we're open.

But in the case of manufacturing licenses, the distinction is, where does the reactor meet special nuclear material.

And so a manufactured reactor as we are using it in Framework A, is a reactor or major portions of the reactor, that might be made elsewhere and brought to a site.

And, the special nuclear material, the fuel, is loaded at the site.

So, the reactor is made using a standard design, using standard manufacturing processes that are addressed in the manufacturing license. But the fuel is inserted at the deployment site, at the site of the commercial operation.

To address the concept of loading fuel into a manufactured reactor at the factory, and needing to make a distinction, we introduced the term manufactured reactor module.

And, so again, all we mean by that is that it's a manufactured reactor, but it's loaded with fuel at the factory and transported fueled.

There are some other definitions that we'll get into in some of the other Subparts. The event categories, definition of defense in depth, which we didn't change from previous.

But, so that's really all I wanted to touch on, just because there's a few places where the definitions reflect other changes to other areas within Framework A.

So, Joy, did you have a?

MEMBER REMPE: Sure. When I was looking through the text that we were given about a fueled module, I was, you were clear to say you can't operate it until you get to the site where it's deployed.

But I'm thinking about how do you make sure the thing will go critical? And, let's think back to the EBR-1 where they made all the fuel, shipped it out from Chicago to Idaho, loaded it in the reactor, and it wouldn't go critical.

And, then for some reason then they had to ship it back, and then make some additional fuel and ship it back to Idaho, and that took a while.

And, so the question is, is, you know, how do you know for sure the thing will work when you get it deployed?

And, then sometimes things happen during shipping and if it doesn't go critical, what will happen? Because they can't open it up at the site, I guess, because I would bet their license won't allow that.

And, they'll have to ship it back to wherever it's made and all of that. And, I'm just wondering where those kind of situations will be addressed.

And, of course people say oh no, we know what we're doing. But things happen, and we have history where things have happened in the past.

Even one of the design developers in the last 10 years was designing a reactor that I believe,

that some colleagues at MIT pointed out wouldn't go critical.

So, I mean it's not an unreasonable question, and is the answer going to be clearly resolved in the guidance, or I'm just, you understand where my question is coming from, Bill, and or did I give enough of a clue?

MR. RECKLEY: Well, I'll take a shot.

And, the idea of doing physics testing in the factory, is something we're exploring. There, because we knew in the beginning that there would be licensing complications for trying to do that, we didn't include it within our initial plans.

But we have talked to stakeholders and micro reactor developers, and understand and for some of the reasons you just mentioned, that doing physics testing in the factory might, might not only be helpful to them, it might be a good idea from an overall safety perspective to do it in the factory, under controlled conditions versus shipping it to a site and then finding out at the site, that something's wrong, which would then mean you have to ship it back, and so forth.

So, we're exploring that. Whether we're going to be able to do that this round is, is one of

the things we're discussing.

We're, so it's not that we're specifically precluding that by this rulemaking, but we may not be supporting it in this rulemaking.

It all depends on whether we can kind of come to a consensus, as to how that might work within a licensing Framework.

So, no promise --

(Simultaneous speaking.)

MEMBER REMPE: That helps me that you're thinking about physics testing at the factory. That's a better way of putting what I was trying to get to.

MR. RECKLEY: Right.

MEMBER REMPE: The other question I've been thinking about is, additional margin during shipping might be a good idea.

Because again, I keep thinking about things happen during shipping that I buy and all, so I, that's another question I'm wondering if you're exploring.

MEMBER KIRCHNER: Well, this is, Joy, this is already done. When you have a spent fuel cask, you have to ensure the sub-criticality of it. And, an additional poisons are part of the design of the, of the shipping cask.

The analogy here is for if it's a fresh reactor, by the way, you're going to have to have a startup source, and loaded.

So, you are going to do physics.

MEMBER REMPE: But --

MEMBER KIRCHNER: By key people --

MEMBER REMPE: -- but Walt, I mean that's --

MEMBER KIRCHNER: -- and second design, you design a positive with sufficient shutdown margin, and it's positively physically locked in place if it's a control rod.

I can't imagine doing it with a liquid fuel reactor, but this has been done before, and you demonstrate that you have sufficient margin.

If the thing gets dropped in the drink and floods for a light water reactor, you demonstrate that you are sub-critical in that configuration, and et cetera.

So, there's precedent for doing this. This is, and as Bill --

(Simultaneous speaking.)

MEMBER REMPE: There may be precedent --

MEMBER KIRCHNER: -- said earlier, people who know what they're doing, will actually design for

this.

MEMBER REMPE: But there's precedent, Walt. But is there guidance for a, a fueled reactor for shipping?

That's where I'm going, okay? There's precedence, but do they have a clear path, okay?

MR. RECKLEY: And, part of this, I mean and we are working and talking to stakeholders in this particular area.

And, I'm not personally involved, but we also have NMSS working with developers in the Department of Defense, on the Pele Project, in regards to what would be the requirements in terms of the reactor, and additional packaging requirements for a reactor.

So, yes, there's a lot of activities underway here. We believe that we can go at least in this round, as far as loading the fresh fuel. We have talked to the Part 71, the transport people, as Walt mentioned.

It will be a little different than traditional shipping of fresh fuel. Stringent requirements will be in place, would have to be in place, to make sure that the control rods, or whatever other mechanisms are being used, are secure and

wouldn't be affected by crashes, and other potential transportation accidents.

So, anyway, there are a lot, there are a number of activities ongoing, and in some cases like Project Pele, some actual demonstrations and designs, that will help us develop not only potential changes to the requirements, but changes to guidance documents.

MEMBER REMPE: So, that's where I was coming at the very beginning, my question about when will we get the guidance.

And, some of the guidance I think is very much necessary to understand the text, and the rule. And, I did cite the example about manufacturing.

So, again, I believe that let us have a ample time to understand the guidance, as we try and interpret the rule.

MR. RECKLEY: Right. As much as we can, just the, and in some cases, and this isn't surprising, and this is what happened on light water reactors as well.

You know, some of the guidance will be developed as we work with individual developers, and work through not, not established per se, as a pilot or a test, but just out of the reality that they're

developing it at the same time that it's being introduced to us as a regulator.

And, so the mutual experience between the developer and the regulator, produces guidance that might help other developers.

So.

MEMBER REMPE: I agree.

MR. RECKLEY: Okay.

So that's really all I wanted to go over again. There will be more definitions and things, as we talk about other Subparts.

So, Billy, if we can go to Subpart B.

You know, this Subpart is the one that, that we've probably talked most both in public meetings, and also with the subcommittee.

There hasn't been fundamental changes to Subpart B since the last time we, we spoke about this to the subcommittee.

It's still laid out relatively short and simple section, to say what are the highest level objectives; what are the criteria for design basis accidents; what are the criteria for licensing basis events, other than design basis accidents.

The need to identify safety functions and to meet those criteria; the need to identify licensing

basis events; the need to provide defense in-depth; and then requirements in place for normal operations; normal operation related effluents, for example.

And, the Part 20 type requirements. And, then similar provisions for the protection of plant workers.

So, Billy, if you go to the next slide, I'll lay out, and this is, this is a slide that when we first used with the subcommittee maybe a year or more ago, that kind of adjusted to find how Part 53 Framework A sees this top down approach, which is what I just went through.

Within Subpart B, we define certain safety criteria, and require the developer then to identify what safety functions are needed to meet those criteria.

And, then largely in the next Subpart on design and analysis, the requirements come into play for defining what design features and are needed to provide those functions.

And, what functional design criteria are needed for each design feature, in order to actually show that it has the capability and the reliability, and is otherwise qualified to, to support the assumptions in the safety analysis.

The performance requirements to show that you're meeting all of the above requirements, in regards to the criteria and the safety functions.

So, and again, you can go into what Charlie was saying. By the time you get all the way down to the bottom, if it's a relatively typical component that's used within the design, be it an electrical or a valve, or whatever, you might end up in the same place.

And, it very likely you would end up in the same place as the existing structures. It's just more of a top down approach to get there.

So, I see, did somebody?

MEMBER DIMITRIJEVIC: Yes, Vesna. I just -- and you start answering to this. So does this subpart, the same Subpart B would be applicable for Framework B?

MR. RECKLEY: No.

MEMBER DIMITRIJEVIC: So would the Framework B have Subpart B?

MR. RECKLEY: No. And again, we'll cover the details in June, but the traditional approach -- I don't want to oversimplify because -- but the traditional approach basically has the safety functions and even to some degree designed features

built into the design criteria that are defined either in the general design criteria for light water reactors or the advanced reactor design criteria in Reg Guide 1.233 -- 232. Sorry. And so there would not be really the need to have Subpart B within Framework B. So I'll leave it there. Bill Jessup or anybody can chime in.

MEMBER DIMITRIJEVIC: So safety requirement either?

MR. RECKLEY: Well, the safety requirements are there. You would just need, as they are in Part 50, to construct what are the criteria for any particular requirement that's being imposed. And so --

MEMBER DIMITRIJEVIC: Well, you said that we were discussing PRA role between Framework A and B use. And the PRA has a confirmatory role in the Framework B, right? And you would assume that that confirmatory role would be to confirm the safety requirements are met.

MR. RECKLEY: Well, the PRA in Framework B would not in my mind confirm the actual meeting of regulatory requirements or criteria established for a particular requirement. It does confirm the overall risk profile. It does confirm the event selections to

see if maybe another sequence should be addressed somewhere in the licensing of a plant.

So if I can give an example in light water reactor space, the PRA is not used to confirm that you meet 2,200 degree peak clad temperature required by 50.46. That's a specific requirement. And you would have something that looks like that for a design-basis accident for another technology. It's not going to be 2,200-degree peak clad temperature, but there has to be some design-basis accident and there needs to be some criteria that's defined in a deterministic-type approach for that design-basis accident.

But the PRA can look and say given I have an ECCS, given I have all of -- given I've met all of these other design requirements that are in the GDC or ARDC, is the risk to the public what I thought? And in a confirmatory role; again, we'll get to this in a second, does it meet the qualitative health objectives, although that's -- in traditional space that's kind of a confirmatory check.

So Framework B that's the way it would be.

In Framework A the safety criteria defined in Subpart B are a risk-oriented set of criteria. So the qualitative health objectives; again, we'll talk about in a second, are to some degree elevated from a

-- confirming that the deterministic approach actually has resulted in a risk profile that we thought it did to bringing that thought into the actual criteria and saying the risk profile of the plant is -- that's what we're governing by the regulations in Framework A.

MEMBER DIMITRIJEVIC: Well --

MR. RECKLEY: I might have confused --

MEMBER DIMITRIJEVIC: Yes, yes. Yes. Yes.

MR. RECKLEY: That might have been more confusing than helpful.

MEMBER DIMITRIJEVIC: Right. Yes, but I'm confused on much higher level. I mean it is really confusing. And the question -- when things become so confusing, then the question is is the solution good, you know? But let's see. Let's follow it then. All right. Thanks.

MR. RECKLEY: Okay. So again --

(Simultaneous speaking.)

MR. RECKLEY: Go ahead.

(Pause.)

MR. RECKLEY: Okay. So again, and we've addressed -- just using this slide to reinforce what was on the previous slide in terms of content, we have criteria for the design-basis accident and the

licensing-basis events other than the design-basis accident. Then it goes down and says you have to identify the safety functions necessary to respond to the licensing-basis events. And then on top of that you need to provide and ensure that you have defense-in-depth.

And within all of this we've tried to take an integrated approach and say when we're doing this assessment what's the role of the structure systems and components, the equipment, what's the role of personnel, and what's the role of programs in tying things together. And so that's something we can talk about as we go through each subpart. But we've tried to do that in a slightly more integrated fashion than was the current framework.

So, Billy, if we can go to the next one? One of the things the Subcommittee was interested in is some of the areas that have been discussed in public meetings and stakeholders, some with this Subcommittee. Two of the largest ones are the use of the qualitative -- quantitative, sorry -- quantitative health objectives, QHOs, and the role of as low as reasonable achievable, largely at the design phase of the life cycle. So the next couple slides go through what we've done in those areas.

Billy, if you go to the next one? So in the area of the use of the quantitative health objectives, the QHOs, that's been maintained up through the most recent release and iteration. The changes we've made to hopefully clarify is that we've tried to reinforce that this is a measurable parameter meeting the QHOs. And so including in the requirement -- the earlier drafts just said meet the QHOs more or less. I'll not recite the numbers for prompt and latent effects, but we basically said the design needs to meet the QHOs.

And some of the observations were that there's a lot of uncertainties associated with health physics. There's uncertainties obviously in the PRA, not only in the consequence assessment, but the frequency assessments, and that that had the potential to open up everything in how this might be met in terms of public interactions and so forth.

So in order to try to address that, what we've done is change it to say you meet the QHOs as they are analyzed in accordance with the Subpart C analysis. And that would then bring in the NRC review and approval of whatever models are going to be used. Some of this could end up getting addressed in consensus codes and standards. You would use dose

factors as they're issued by the Environmental Protection Agency, so forth.

So yes, there's uncertainties associated with that, but the requirement and the measure is to how it's calculated. And so that was what we changed. Again, no underlying or fundamental shift in how we thought you would meet this, just clarifying that this metric would be assessed using the same methods that we do to address every other analysis require.

I mean, there's -- since the 1970s peak clad temperature has been a fundamental requirement and tenet and basis for regulating light water reactors. Well, there's uncertainties associated with those calculations, but we've basically said here's how you calculate. Here's the requirements on the evaluation model. And if you do that and it shows less than 2,200 degrees, then it's okay.

So we're trying to parallel that kind of thinking here. I understand it's perhaps more complicated, but there will be a model to evaluate within the consequences coming out of the PRA. We think we can narrow it down to say it's done this way and you're going to use these standards and that's how you meet this requirement, albeit there are uncertainties.

Then the other change we made is we had previously talked about it in terms of health effects and then even went through one iteration where we said life-threatening health effects, and the feedback from stakeholders was it's better just to stick to the terminology in the Reactor Safety Goal Policy Statement. And so this last iteration just mirrors the policy statement and uses the term prompt fatalities and cancer fatalities.

MEMBER DIMITRIJEVIC: Bill?

MR. RECKLEY: Yes?

MEMBER DIMITRIJEVIC: Hi, this is Vesna. Well, I mean it's not how I feel about that, so I would like to engage in a short discussion with you on this. I don't really -- I mean, I definitely have a strong feeling that we're quantitative goals. I think that qualitative goals which are expressed in the Commission's Safety Goal Statements are perfectly good, and I think we should stay on that level. This is I want to engage in the discussion just to show you it's not just uncertainty and how this relates.

But let's say -- so we are talking about prompt fatalities and prompt -- early fatalities and cancer fatalities as quantitative health objectives. And currently in industry that the substitute measures

for those are core damage frequency and large early release or large release. Is that true statement? I mean, I assume it is. Everybody knows it's a true statement.

So let me just ask you this: So the core damage frequency is based on cancer -- that QHO, right? Cancer fatalities QHO. Right?

MR. RECKLEY: Yes.

MEMBER DIMITRIJEVIC: Okay. So cancer fatality. That QHO is basically the 2e minus 6 per year, right?

MR. RECKLEY: Right.

MEMBER DIMITRIJEVIC: Less than 2e minus 6. But what is core damage frequency? I mean, you've been talking about temperature and things like that. I know definition of core damage frequency. But core damage frequency is risk measure. Is damage of the core with what is status of containment? Containment is either intact or it has a small leak, right? That's the definition of core damage frequency. Because if you have a release, large release, that's measured by large release frequency, right?

So when we measure core damage frequency, that implies in most of cases that containment is either intact or has a small release. Is that a true

statement?

MR. RECKLEY: I'll call on --

MEMBER DIMITRIJEVIC: My question is -- yes, okay. If you want to object to some of my statements, object to --

(Simultaneous speaking.)

MR. RECKLEY: No. No, I'm only going to ask Marty Stutzke or somebody smarter than me to object if --

MEMBER DIMITRIJEVIC: All right.

MR. RECKLEY: -- or if they want to. But I --

MEMBER DIMITRIJEVIC: Okay. We had accidents in history. I mean, we had the Three Mile Island which didn't have a large release, right? And we have a Chernobyl which had the large release, things like that.

So let's say -- let me ask you this: How can we relate core damage frequency with containment intact to cancer fatalities? What factors relates that? Does that make sense?

MR. RECKLEY: Yes. And again, I'll ask Marty to weigh in. The measures you talk about from -- for light water reactor: the core damage and large release or large early release, a lot of that work was

being done in parallel with the development of the Safety Goal Policy Statement. And I know in NUREG-1860 there was an example of how they are generally consistent. I won't go as far as to say the CDF and LERF frequencies were actually derived from the Safety Goal Policy Statement, but they were all being developed in similar time frames. And Dennis --

MEMBER DIMITRIJEVIC: But that's history. That's history.

MR. RECKLEY: Right, that -- well -- but it --

(Simultaneous speaking.)

MEMBER DIMITRIJEVIC: -- based on -- is it based on reproductable fact? Does it make sense?

MR. RECKLEY: And -- yes --

MEMBER DIMITRIJEVIC: Because what does this prevent us -- if we just look like -- let me just finish -- let's say that qualitative goals make perfect sense. Individual member of the public should be provided the level protection from the consequences of nuclear power plant operation such the individual bear no significant additional risk to life and health. And suddenly we are talking cancer and we are talking prompt fatalities. Why do we want to talk that? We don't really know those connections to it.

And I am strongly against that. So I hope I will be able --

MR. RECKLEY: Okay.

MEMBER DIMITRIJEVIC: -- to convince Committee on that. You know how it is translate which I always some magical mathematical thing changes that? Condition of probability of the -- or let's say cancer. So condition of probability of cancer given the CDF is 40 minus 3. So 40,000 individual given the core damage frequency with containment intact will get the cancer. This number totally doesn't make sense.

So we historically introduce this to somehow connect the dose goals, but let's not do it again. Let's just talk on qualitative goal, not the -- don't introduce big additional risk to the public and then let the industry translate that to whatever they want that, in the rems, in the amount and whatever. Why do we have to talk about this, you know, pretending that we actually know what radiation causes prompt fatalities and how the core damage frequency relates to cancer? That doesn't make any sense. It's not really -- just not smart.

So the thing is, which I wanted to say, make it to the higher goal and let industry talk about what presents the risk to that.

MR. RECKLEY: Okay. And that --

(Simultaneous speaking.)

MEMBER DIMITRIJEVIC: -- well-established in next slide. That's not true. It's just mention in both Reg Guide 1.2. Have it in Reg Guide 1.247. I can read to you. Just gives you definition of qualitative goals, but there is nothing well-established there. Those guides about CDF and LERF.

MR. RECKLEY: Okay. I understand. And moving the numericals to guidance is one of the things that has been proposed. Again, this is outside my area, so I ask an expect to weigh in if they want to, but these qualitative -- these specific qualitative measures have been around since the roll-out of the Safety Goal Policy Statement.

(Simultaneous speaking.)

MEMBER DIMITRIJEVIC: -- but you're talking quantitative measures. Those are not --

MR. RECKLEY: No, the quantitative measures that we're citing here have been around since the roll-out of the Safety Goal Statement.

MEMBER KIRCHNER: Yes. Bill?

MEMBER DIMITRIJEVIC: Yes, but that measure has a CDF and LERF. A CDF and a LERF.

MR. RECKLEY: For light --

MEMBER KIRCHNER: Those are surrogates though, Vesna. This is Walt.

MEMBER DIMITRIJEVIC: But all the measures which are use are dose. And that is -- these are connected. So this talks about this, but nobody is actually quantifying that QHOs.

MEMBER KIRCHNER: Vesna, this is Walt. I would -- in general I agree with you. I think it would be better to use the qualitative goals. I'll give you an example: If we look at prompt fatalities, I mean the way I would go about doing that mechanistically is do a mechanistic source term, do a release, and then look at the exposure based on the population zone where the reactor is sited, and then use LD50 as my definition for whether or not you have a prompt fatality.

That one might be a little more straightforward. The second part is really, really uncertain what -- how much exposure would cause a cancer fatality because it could be -- it could take 20 years for the cancer to develop and then have the fatality.

So when you get into that part, when you don't have an acute dose and you're looking at latent-kind of effects of exposure, it's very problematical.

I mean the critics who say this opens the door to potential contesting of the licensing basis I do believe have a point. So agreeing with you, Vesna, if these were the qualitative goals, then it leaves it -- just like the reasonable assurance determination it leaves it to the staff to convince the Commission that this particular reactor, this applicant, this design does provide that reasonable assurance and it does meet the qualitative goals.

But these specific goals highlighted in green can -- could lead to a contentious process if that's an absolute measure for making a determination of reasonable assurance.

MEMBER DIMITRIJEVIC: Right. Yes. So the point that you make, Walt, is very valid. I was concentrating the point on the the core damage frequency is -- when we calculate the core damage frequency is released, that's applies the containment is intact. Before containment fail there is additional probability which results in release, large release. So core damage frequency measures just core damage, not release. So saying that core damage within the vessel causes a cancer doesn't make any sense. Could cause a cancer 10 miles from the plant. So there is both this cancer controversy on the

exposure and also how do we distinguish between core damage frequency and large release frequency?

So I would just say even -- the current qualitative goals have some element on quantitative, say you should present point 1 of that current risk from all other sources or other industries. So I think that that's where it makes much more sense to stay on that level.

MR. RECKLEY: Okay. Marty, I see you have your hand up.

MR. STUTZKE: Yes, this is Marty Stutzke with the staff. I would offer two points here: One is the non-LWR PRA standard does not use the risk surrogate metrics of core damage frequency or large early release frequency. Those are specific to light water reactors.

The second thing I would make to Dr. Kirchner's (audio interference) is several years ago the staff received several petitions to eliminate use of the linear no-threshold model and the Commission rejected those petitions I believe in 2019. So in fact we do know how to compute these numbers with acceptable methods.

MEMBER KIRCHNER: Oh, I don't doubt that. I wasn't contesting whether or not you can calculate

them according to the formula that you specify. So Bill's highlighted thing in accordance with 53.450e certainly makes sense, but Vesna raises a more fundamental question about -- if these are -- well, I'll just stop there. Yes, I know one could go about calculating -- although the second half of the calculation could be very contentious based on cancer statistics.

MR. RECKLEY: Okay.

MEMBER DIMITRIJEVIC: Yes, but I mean 1.247, it doesn't have a risk measures, but 1.200 Reg Guide is based on the -- so I'm -- and, you know, in all Regulatory Guides, 1.174, everything is based on LERF and CDF.

MR. RECKLEY: Dennis?

DR. BLEY: Yes, thanks, Bill. To help the Committee, I hope Vesna will write out here objections.

I know you did it once before, Vesna, but this is a new time.

In our letter from a year ago we pointed out that it might be worth taking a look at the alternative integral risk criteria that was laid out in the technology-neutral framework as an alternative to the quantitative health objective approach.

Thinking way back to that time most of the effort had been on the integral risk criteria, but then in the final report it got kind of flipped and the QHO got the front line. And that got relegated to an appendix, which is still pretty clear.

We'd recommended that you at least consider that. Can you tell us if you did and why you decided to stay with the QHOs?

MR. RECKLEY: I'm trying to recall the letter from last May. We did consider and have a lot of the same discussions that we're having here. And one of the reasons; and I hear the arguments maybe saying it's not as clear as we wanted, was that the QHOs have been used -- and even for the existing designs: the most recent AP-1000, NuScale, the QHOs are addressed in Chapter 19, the safety goals.

One of the elements that we were trying to do within Part 53, or one of the tenets was that we weren't going to create new technical requirements. And so for the DBA we continued to use the 25 rem at the exclusionary boundary. For the overall risk profile we thought the QHOs, since they have been used and in our view kind of established is why we wanted to use them.

I get in the next slide -- actually,

Billy, if you want to go to the next slide?

We could probably go through this relatively quickly, Dennis, and then get back to your specific question.

Or, Marty, do you have a recollection? I might just have to say, Dennis, we'll get back to you because I'm failing open on --

DR. BLEY: Okay. That's fine with me.

MR. RECKLEY: Okay. So let's go through these bullets. Again, we've already talked about most of these, so I'll go quickly through them.

The basis for the QHOs, since it's been one of the more controversial elements of Framework A, is if you're going to have a performance-based approach, you need some metrics that are either measurable or calculable. We think a risk-informed approach benefits from having a cumulative risk measure. One of the things -- again, this is done as an overall check under the existing framework, but we in Framework A are bringing it forward as an actual requirement to include a cumulative risk measure.

I've heard the arguments otherwise, but the QHOs we think have been used in regulatory decisions. Yes, for light water reactors the analyses are such that CDF is usually used as the primary

metric, but there have been decisions related to even light water reactors where we needed to or elected to go beyond CDF and use the QHOs.

Since my earlier job at one point was the follow up to the Fukushima accident, we used the QHOs in the decision making for both the expedited transfer of fuel from the spent fuel pools -- because the spent fuel pools were not going to be amenable to a core-damage-frequency-kind of assessment. So what is left is actually using the QHOs. And we likewise used it for the BWR engineered filtered vent decisions, analyses done by both industry and the staff, where the ultimate decision was supported by QHO-related decisions, not simply CDF and large-early-release-type frequencies. So --

MEMBER DIMITRIJEVIC: So, Bill, if I can just understand you, do you consider when they use release, this to be QHO? Because I'm sure they did not talk about early fatalities.

MR. RECKLEY: Well, early fatalities in both cases were assessed. The more usual parameter that comes into play is latent cancer versus prompt fatality, but both were assessed when we looked at those decisions that needed to be made.

Somewhat to the point of Vesna and Walt is

the notion that actually including the QHOs in the rule ends up being more predictable and stable than if we, for example, put in the quantitative and then required the applicant to define the qualitative. I understand the people who --

MEMBER DIMITRIJEVIC: You mean backwards? You put qualitative --

(Simultaneous speaking.)

MR. RECKLEY: Yes, I'm sorry.

MEMBER DIMITRIJEVIC: -- and require applicant.

MR. RECKLEY: I'm sorry. I'm sorry. Yes, if we put the qualitative in the rule and required the applicant to define quantitative, it would just open up -- it moves the argument one down the road to the application. And then you would have potentially different applicants proposing different numerical measures. If you're going to include even the qualitative, the need to address it within the analytical space is still going to be present.

It might make it more general, but the arguments -- and from a licensing engineer point of view the possibility of those items coming into contention is basically the same. So we thought and continue to think that having the actual quantitative

numbers in the rule provide a stability that is better than having just the qualitative requirements.

So if we go to the next, it just continues another set of bullets. We again can point to some -- I know again that they've traditionally been used not as a front-line methodology, more as a supporting -- or even in the case I cited from the Fukushima, as supporting for a regulatory decision, but that the methodologies are there. The computer codes, the dose conversion factors, the other things are out there and can be built into a methodology that the staff could find acceptable under Subpart C.

And then that would basically then provide the vehicle to show that you're doing those calculations in an acceptable way. And we've given an example that although the standard doesn't specifically include things like the dose conversion factors, the non-light water reactor PRA standard does call out to develop the mechanistic source term and do the calculations of consequence and then as the acceptance criteria in the form of dose consequences such as meeting the Safety Goal Policy Statement.

In terms of surrogate measures we have said and we'll say straight out in the Statement of Considerations that to the degree that a designer or

a technology wants to define surrogate measures, we'd be amenable to that. As has been said here many times now, the CDF and LERF-type parameters are used throughout the light water reactor PRAs, the surrogates for the QHOs. That's kind of well-established.

But those same surrogates wouldn't apply to other technologies and so you'd have to come up with some other surrogate for even gas-cooled reactors, or molten salt reactors, or liquid metal sodium-cooled fast reactors, for examples.

We'd need different surrogates than has been developed for light water reactor.

And then I mentioned last couple bullets here of we did change it to calculated risk to hopefully narrow it down and tie it to the analytical methodologies and use fatalities to align with the Safety Goal Policy Statement. And given the interest in the topic we'll have quite a bit of discussion on the use of the QHOs for the licensing-basis events other than the design-basis accident as one of the criteria.

So I see a hand raised.

CHAIRMAN PETTI: I don't think so, Bill. I don't see one.

MR. RECKLEY: Oh, okay. All right. So that's really the discussion of QHOs.

The other topic that, in engaging with public stakeholders, there's been a lot of discussion about is the ALARA and in -- so, Billy, I'm sorry, if you'd go to the next slide -- the as low as reasonably achievable provision that we include in Subpart B for normal operations. And very similar language for occupational exposure. So basically paragraph A cites the Part 20 requirements. These are the numbers like 100 millirem in a year.

And then paragraph B is a broad statement. It's generally applicable throughout Framework A. For anybody -- and across the life cycle. So it brings in the designers, for example, if you were going to apply for a design certification. And that's where a lot of the contention has come in. But basically as a general requirement Framework A says the combination of the design features and programmatic controls must be established to keep the effluent releases to the public. And again, in a similar statement under Section 270 it says for occupational exposures that combination needs to keep the dose to workers as low as is reasonably achievable.

And the definition for as low as

reasonably achievable would be from Part 20, and that basically says take into account the state of the technology, the economics of possible changes. For example in Subpart I, which is very old -- Subpart I to Part 50, that was $1,000 per person rem. More recent calculations, and what's in at least a draft of NUREG BR-58 on doing regulatory analysis, that number is up around 5 or $6,000 per person rem.

But anyway, those are kind of the calculations that you would do to see whether something was reasonably achievable.

So, Billy, if you go to the next slide, we'll just kind of go through some of the discussion and the basis that we've provided.

The primary argument is that we are carrying this requirement forward as its currently included in 50.34a, which says that an applicant for a design approval, design certification, or manufacturing license has to meet the requirements that were set out for a construction permit. And the construction permit requirements are listed at the bottom of that box, which says provide a preliminary design of the equipment to be installed to keep the effluents and the public dose as low as reasonably achievable. And that really follows from the

evolution of the requirements in Parts 50 and 52.

If you think about a construction permit, which is supported by the original set of regulations, the design would have been included in the construction permit and subsequent movement to the operating license. The design was part of the application along with the programmatic controls. And so the rules were written that way that tell us what design is going to contribute to ALARA, tell us the programs under Part 20 would also be applicable to a licensee.

Enter Part 52 and you now have a regulatory decision based on the design, be it in a design approval, a design certification, or a manufacturing license. And so you've separated the ultimate licensee -- in regulatory space you've separated the licensee who is subject to Part 20 from the designer who is submitting something for us to certify and give finality to. And so that break in how things fit together was fixed by 50.34a that said if you're applying for a design cert, you need to give us a description of how your design contributes to ALARA.

So that's the history at least from my vantage point. That's all we were trying to in place

in Part 53. And so we included in Subpart B that a combination of the design and the programmatic requirements needed to keep doses to the public and doses to workers as low as reasonably achievable.

MEMBER HALNON: Bill, this is Greg. In 260 if you -- if that combination, design features and programmatic controls, applies with the Part 20 suggested in A of that section, is that acceptable or is there room for going lower and lower than what A requires?

MR. RECKLEY: Well, A is the 100 millirem.

MEMBER HALNON: Right.

MR. RECKLEY: And so traditionally -- and we're looking at language to put in to --

MEMBER HALNON: Well, yes --

MR. RECKLEY: -- provide --

MEMBER HALNON: -- looking at it from a designer's perspective --

MR. RECKLEY: The performance goals -- if you look at Appendix I to Part 50; and by the way, if you look at the EPA regulations, the performance goals are going to be less than 100. They're numbers more like -- and I can't remember of the top of my head what the numbers are in Subpart I, but they're single-digit, maybe 10 millirem performance goals. So

they're less than 100 by quite a bit.

MEMBER HALNON: But you see from a designer's perspective they're trying to design their plant and they can meet A with their design and programmatic controls. After you meet requirements of A and going into the requirements of B do they have to make their design even more -- I don't have the right word -- more effective I guess from a dose reduction perspective? And then what target are they going for?

MR. RECKLEY: Well again, you're going to the performance goals for a light water reactor that are in Appendix I. That's likely to get revised because that rule hasn't been updated for a long time. Or you can look over at the EPA regulations which set it at -- God, again at numbers like 10 or 15 millirem.

MEMBER HALNON: Then why have A in there at all?

MR. RECKLEY: Well, A is applicable to licensees and it's looking and saying between your programmatic controls and your engineered features the dose has to be less than 100. And if it ever exceeds that, there are things that fall into play, reporting requirements. That's a big deal. We've never had a plant do that. So that's somewhat of a maximum requirement that you would not expect to happen.

The ALARA goes -- it's kind of what the term phrase, is you're trying to keep the dose as low as possible, as low as practical. I'm sorry, not possible. And that's where again Appendix I -- and how we would envision it would be done under Part 53. You do a cost assessment of how much effluent am I going to put out? And using a number like 5 or $6,000 per person rem is it practical, reasonably achievable for me to get the effluent lower?

Now again, the performance goals in Appendix I are in the single-digit rem -- millirem numbers. So at some point once you get it down to a certain point you would argue I've got it as low as reasonable achievable because it's already some low number.

MEMBER HALNON: I guess the subjectivity of that's the hard part to design to because right now ALARA really aims towards the practices of the REM Program and how you design your work packages and those types of things, because you're already given the design. The equipment's there. You can't change it.

MR. RECKLEY: Well, once you get into the -- once you -- once you're in operations, once you're the licensee of operating the plant, there are

practical limitations on what you can do to change the design, although 20.1101 might still have you look as to whether a change to the design is reasonable for either effluent release, which is uncommon, or worker dose, which might be more common.

But that is kind of exactly the point. If the designer gives no thought to ALARA and you are a licensee that then has to adopt a program to keep the dose as low as reasonably achievable, and there was no onus put on the designer to take that into play, what then would an operator be able to do? And given I've given finality to the design as part of the design certification, I've given up the most effective way to limit the dose to workers and to the public, which is to incorporate it into the design. So this --

MEMBER HALNON: Yes, and I want -- there can't be argument with like what you just said. I think it's the implementation of the subjectivity and --

MR. RECKLEY: Right.

MEMBER HALNON: -- at what point do you stop? And that's --

MR. RECKLEY: No, and --

MEMBER HALNON: -- part of the problem.

MR. RECKLEY: Well, and it has --

MEMBER HALNON: So you're --

MR. RECKLEY: It has been historically.

MEMBER HALNON: And your guidance will be very important, so I guess --

MR. RECKLEY: Right, and --

MEMBER HALNON: -- the guidance that you get to on this, a designer is going to have to put pen to paper and figure out what's going to be acceptable to staff. And that's where --

MR. RECKLEY: Right. Exactly.

MEMBER HALNON: Where do you stop it? I mean, you can make it zero.

MR. RECKLEY: Oh, no, this -- exactly. And that is the underlying assumption, or underlying issue with a lot of risk-informed approaches, right, of when is enough enough? And so yes, the guidance -- and the next slide talks about that we have worked on guidance as part of the advanced reactor content to application process and try to allow a more integrated approach where at -- even at the design stage the designer would be able to tie it in with what ultimately will be the programmatic controls in order to support the application and limit the amount of analysis that the staff does independently. All of that is included in the ARCAP guidance.

So, Billy, if you can go to the next one? And again, some of these points have already been made. Again, we are -- think we're being consistent with the regulation as they're currently laid out. We'll acknowledge that this has been an issue in the past, an area of contention between designers and the staff. We've tried to address that through the guidance, the ARCAP guidance. And we'll have much the same discussion in the Statement of Considerations again given the degree to which we've had to talk about this with stakeholders.

So, if there's nothing more on Subpart B, we can go to Subpart C.

MR. STUTZCAGE: Bill, could I just add something? This is Ed Stutzcage at Radiation Protection.

MR. RECKLEY: Oh, please do, Ed.

MR. STUTZCAGE: Just real quick. Yes, I think what we're trying to do is -- like Bill said, is very similar to the way it's done in 50 and 52. And just to talk about the public dose real quick, for example, the -- I lost my train of thought. I'm sorry.

So the requirement for the dose limit is there, and you have to meet that. And then like Bill

tried to mention, Part 5, Appendix I has numerical design objectives along with 50.34a, which then references Appendix I -- has numerical design objectives which kind of give dose values that are low enough to meet as low as reasonable achievable. So I think that maybe partly answers your question as to what's low enough?

Now we're thinking of may having a little bit more updated criteria potentially than what's in Appendix I, but that's kind of how -- what kind of lays the groundwork for when is your design good enough to meet ALARA for the public dose? Does that help?

MEMBER HALNON: Yes, it does. Thanks, Ed. And I think the key thing, as you nailed it, is where does the designer stop? I mean clearly every time -- if they have to RAIs and other things to negotiate where that stopping point is, that's significant in the design aspect of the plant. And I realize you can add programmatic aspects in it, but many of the programmatic aspects are not set this early in the design aspect of it. So you might be promising some programmatic aspect that either can't be done down the road or maybe a commitment that they can't meet or don't want to meet because of staffing issues or

whatever the case may be.

So that disconnect there puts the designer in a very precarious position. Try to figure out do I under-design and then see where I go with it or do I over-design and hope that I get it through the staff review? So that's kind of the point I'm trying to make.

MR. STUTZCAGE: Right. Okay. Thanks.

MR. RECKLEY: And again, part of the challenge -- and it's also part of the opportunity that we have in taking a more integrated approach is -- even at that design stage. Again through the ARCAP guidance we're trying to say you can point and have perhaps a more logical hand-off at the design stage b telling us what you envision that the operator is going to need to do. And that allows us to have a smoother, hopefully a smoother path through the whole life cycle, which is what we were trying to achieve because -- anyway, I'll leave it there.

I know it would be a little different, but again a more integrated approach where the designer can say we took it this -- we take it this far. We know there are programmatic requirements and here are a couple of the high-level needs of that programmatic requirement. And then the staff can way, okay, we

know how that would work. And that can get carried then through ultimately down the road where an operator has to put those programmatic requirements in place that would hopefully confirm what the designer was laying out in the beginning. So --

MEMBER HALNON: Right. And that would be a licensed operator, not a certified operator?

MR. RECKLEY: Oh, this is -- I'm sorry, operator --

MEMBER HALNON: (Laughter.) That was a --

MR. RECKLEY: I know. I know.

MEMBER HALNON: -- a prelude to June.

MR. RECKLEY: I know. I know. Operator in that -- licensee of --

MEMBER HALNON: Yes, okay.

MR. RECKLEY: -- this. Anyway, okay.

CHAIRMAN PETTI: So, Bill, just a quick comment. My view looking at this through an advanced reactor lens is that design plays a role and programmatic controls play a role and that -- let's call it that ratio could be very different in the advanced systems than in the current fleet because the technologies are different and in fact better at retaining radionuclides.

I always joke about how Fort St. Vrain,

you know, the gas reactor, you really didn't need the film badge for the workers. You had to have it by law. It's a very clean system. I think some of the other systems will be that way, but then still others I'm still trying to think through may be more difficult. What I always thought when I read this is it's this combination of the two and the historical practice of how much of each may not be what the right answer is in the advanced reactor space.

MR. RECKLEY: Yes. I mean, that will be the challenge that every technology, every design has to really give this --

CHAIRMAN PETTI: Right.

MR. RECKLEY: -- thought. And you're right, light water reactors have history. We kind of know what -- where the radioactive materials go and where you have to be careful in which -- but -- and gas reactors would be different. And molten salt reactor is going to be a different animal all together, right?

CHAIRMAN PETTI: Right.

MR. RECKLEY: So yes, everybody will have to give it some thought.

CHAIRMAN PETTI: And there are designs out there where they're putting the reactors sort of

inside hot cells. I mean because they recognize that what's in the coolant is quite radioactive.

MR. RECKLEY: Right.

CHAIRMAN PETTI: Okay. Thanks.

MR. RECKLEY: Okay. All right. So, okay, we'll go to -- Billy, if we go to the next one? Hopefully -- Dave, just process-wise I think we can get Subpart C and then you can make a decision for whether we want to take another break.

CHAIRMAN PETTI: Well, yes, lunch is normally at noon, but if we can get through C, that would be really good.

MR. RECKLEY: Okay. We'll see.

So again, C is design and analysis requirements. The layout was unchanged. It goes through that -- again through that figure. You have design features for licensing-basis events. And for each design you would have to lay out what are the functional design criteria for each of those design features, for DBAs, and then for licensing-basis events other than DBAs?

Dennis?

DR. BLEY: Yes, Bill. And C is where this comes up. In our letter from a year ago we pointed out that in an effort to come up with something less

than a full PRA the discussion on selection of licensing-basis events and design-basis events became a little -- well, I'll say unclear. It led to situations where you could really be having a problem with increasing risk.

I think that by separating out -- what are we calling them, attachments -- Attachment B from Attachment A you've gotten rid of most of that language and that area now reads very much like the -- I forget what NEI the report number is, but the --

MR. RECKLEY: 18.04. Right.

DR. BLEY: Yes, okay. Reads pretty much like the guidance there.

MR. RECKLEY: Right.

DR. BLEY: If you can talk about that as you go through --

MR. RECKLEY: Yes.

DR. BLEY: -- or do I have it kind of right?

MR. RECKLEY: No, I think that's the way we've moved. Yes.

DR. BLEY: Okay.

MR. RECKLEY: Walt?

MEMBER KIRCHNER: Yes, Bill, could you point out now where the advanced reactor design

criteria would be invoked? How do they fit now in this outline that's in front of us? Where do they come in?

It's a two-part question. The second part is the extent that you for regulatory certainty would refer to those as the basis for doing your preparation of your SERs, for example?

MR. RECKLEY: Okay. So within Framework A the ARDC, the advanced reactor design criteria, would be a logical place for a designer to start to look at what are both the safety functions and the design features, and to some degree some of them even creep down into functional design criteria, and include or consider those as they're doing the design of the plant.

Ultimately the criteria that they would need to meet are that echelon that I gave before. And so we would in that context with Framework A not be referring to the ARDC. We'd be saying that that design has shown that it meets the performance metrics under Subpart B and that they've adequately defined the design features and the functional design criteria to show that they've met those, along with some other requirements that we have imbedded in Subpart C that we'll get to in a minute. But we would not be

referring to the ARDC.

Now in Framework B, a more traditional framework, they may very well point to that and say that is part of the basis for meeting the regulations.

MEMBER KIRCHNER: There wouldn't be a requirement for the applicant to define their principal design criteria?

MR. RECKLEY: Not in Framework A. But again, if you go back to that echelon; and we talked about this last year, that echelon figure, when you go through the exercise you end up doing that. It's kind of like which is the horse and which is the cart? In a traditional approach experts over the years have defined those design criteria and a designer can pick them up and say I'm going to show I meet these. The collective body of knowledge has said this is what I need to meet and if I meet this, I've got a good design. And then not to oversimplify, then we add on bells and whistles like do a PRA to confirm it and so forth.

Coming from on the other direction, Framework A says redo all of that work that's incorporated into the body of knowledge that formed the GDC and come up with the necessary functions and design features and functional design criteria to meet

the risk metrics in Subpart B, some of which are the same metrics that are used in the traditional approach.

And that's what Dave and I were talking earlier, you very often end up in the same place because it is a similar exercise. It's just from a designer's point of view. You're picking it up at a different point. In the design criteria realm that we're used to you're picking it up in the middle, and the middle is there because the body of knowledge has already defined it for you.

In Framework A we're telling people go back one additional step and redo some of that work to come up with things like design functions, safety functions. So I know it's kind of hard to follow that logic, but it is why we don't cite the pre-existing general design or principal design criteria within Framework A.

It's also a reason -- although they will basically be similar when you're coming to the design of a particular component in regards to like a purchase specification. When I'm developing a purchase specification for, as Charlie said, a particular valve or motor, the functional design criteria that are coming out of this exercise will

support that purchase specification the same as the principal design criteria route. We avoided calling them that just so that we would keep straight that you came at it from a slightly different direction.

I know that's -- it's almost philosophical, but it's -- and it leads to probably more questions than what I was trying to answer, but that's why we --

(Simultaneous speaking.)

MEMBER KIRCHNER: -- following you.

MR. RECKLEY: Okay. That's why we don't cite the principal design criteria within Framework A.

MEMBER KIRCHNER: Okay. But now I'm trying to play this out. By default the applicant will in effect have to define -- let's take a function. Containment, or reactivity, or electric systems, or whatever. They will have to have a higher level -- not using GDC -- a principal design criterion for that safety function. And it would seem to me efficient from a regulatory standpoint that they borrowed from Reg Guide 1.232 or the GDCs. And that in your engagement with the applicant from your side there's general agreement on the applicability of these higher-level design requirements so that there's more certainty in the regulatory review process.

I mean there's the PRA numbers. I get all that. You can review that, you can peer review it, and then your staff can independently review it and so on. And you come to agreement on the different events, et cetera. But now you actually have to design and build and procure -- design, procure, and put together a constructed reactor. And at that point the PRA has done its fundamental job. Now you're into more conventional engineering.

And it would seem to me from the standpoint of you and the applicant, the staff and the applicant being of a similar mind these higher-level -- agreement on those -- so you would then, when you do your SERs and do your review, like you currently do, you cite these higher level requirements like reactivity control or containment or whatever. And then there's a common ground both sides to -- what the applicant has to provide you and what you are going to be looking at to convince yourself that this particular structure system or component meets the functional requirements such that you have confidence that the PRA numbers are right. Did I say that well?

MR. RECKLEY: Yes.

MEMBER KIRCHNER: Oh, I did?

MR. RECKLEY: And I think that's the way

it will work and we expect it to work, that people aren't going to ignore all of that work and all of that history. And you pick a good example of reactivity. Let's pick that one.

So I'm a designer. GDC and ARDC say you'll have these reactivity control systems. And part of the logic for having that is that in the absence of having that my backup cooling system has to remove 1,000 megawatts of heat for a 300-megawatt reactor, right? Well, that's not practical. That's why I have a reactivity system to bring the heat demand from our heat removal system down to a manageable number, decay heat.

So that kind of logic is built into the GDC and ARDC.

And for Framework A it will logically fall out that unless I want to have a backup heat removal that can bear the full capacity of the reactor, I'm going to need a reactivity system to shut the reactor down. And we point that out, but we say you identify the function and fully expect that it will give you the same answer. And all the history is for reactors of much size, meaning hundreds of megawatts, it comes out the same.

We will see when we get to microreactors

if some of those rules start to change a little bit in terms of what are the functions and what are the role of the different functions? But anyway. So I think we're in agreement.

MEMBER KIRCHNER: We are, but I'm thinking in the absence of citing principal design criteria, then when you conduct your review would you fall back on Reg Guide 1.232 and use those as the basis for structuring your SER? Because currently that's -- to first order that's what you do with the GDCs. You cite applicable regulations. Here it could be 53.410 plus ARDC -- I forget the numbers for reactivity -- 27.

MR. RECKLEY: Yes.

MEMBER KIRCHNER: You're looking at their reactivity control system. Is that what you would do if they don't provide you --

MR. RECKLEY: Well, this --

MEMBER KIRCHNER: -- explicit principal design criteria?

MR. RECKLEY: Something similar, but again not in the terms of the principal design criteria, but the safety functions that they have defined. And the way I think that this would evolve -- I mean, you're talking about safety evaluations and we're a ways away

from that yet, but if you look at the work that's being done under the Technology-Inclusive Content Applications Project, the industry-NRC exchanges, the FSAR is proposed to be reorganized and to reflect what the role of -- how they did this process and then what are the roles of particular structures, systems, and components in meeting those safety functions? And then that determines how much those structures, systems, and components need to be described in the SAR.

I would think our safety evaluation would be revised to follow a format more like that that would come from the top down to say look, here's the general discussion of the design, here's the safety functions that have been defined for this reactor design, here's then the design features and functional design criteria that have been defined for those and follow a structure like that. It's somewhat similar to what you're saying. It's just following that top-down logic of the earlier figure.

Dennis, you have your hand up.

DR. BLEY: I do, and I want to say a little bit about what Walt said, and then, I want to come at this from a little different direction. And maybe the TICAP stuff he just talked about fits in

there well. I haven't completely reviewed where that sits lately.

Walt kind of talked about, if you have a PRA, and then, you go to design, well, now you've got to -- if this works right and you use PRA in the design process, it's all part of the design team. So, somewhere you come up with a preliminary design, and these concepts are around and you need to think of them as you do that. And then, the PRA tells you places where you can improve the design. And it evolves.

And in the end, I agree with you, Bill, when you've done all this, if the risk ends up high, you can't live with it. If it doesn't, you've probably met all of those things.

But let's go back to the Principal Design Criteria and the GDCs. They didn't exist in the beginning. They didn't exist in the fifties; they didn't exist in the sixties. In the late sixties, there started to be drafts of something like this, and ACRS kind of pooh-poohed it saying, gee, that's just kind of general knowledge stuff at the time.

But where it came from -- and those of the older folks around will remember what became known as the "regulatory ratchet" -- people would submit the

questions, and the questions were kind of never-ending. And folks said, hey, is there a way we can come up with something that will help curtail these unending questions? And the GDC came out that way, such that, if somebody could show they met the GDCs, then the questions in that area were pretty well answered ahead of time.

Now what I wanted to suggest to you is two things. One is the designers are going to be using something like that from the start. Otherwise, the risk numbers are going to come out crazy. And it's part of the general knowledge.

But that idea that it kind of helps in communication between the regulator and the applicant might come back here. I would also suggest, if I were a reviewer on staff, I would pull out the Applicable General Design Criteria or Principal Design Criteria that I would have selected for this plant. And if some of those weren't met, I'd start saying, "How could the risk be good if this isn't met?" and really make sure I understood that.

I don't quite get the logic for not having people eventually state their Principal Design Criteria, other than you don't really need to. And I think that would give some common discussion grounds

along the way. And I don't think it would be a burden because you will have already had to have done something like that in this whole process.

So, that's a long ramble saying maybe it wouldn't be a bad thing to say, eventually, you need to define what your Principal Design Criteria are and why they're a good thing, but I'm not really saying you need to change anything. I'm saying just something to think about.

MR. RECKLEY: Okay.

MEMBER KIRCHNER: Yes, Dennis, this is Walt. I didn't mean to just put the PRA in a corner after you had used it. Of course, what you suggest is the optimum thing to iterate and keep improving the design, getting the risk down.

I was thinking, I was approaching it more what you said at the end, was in my mind. It's that, if there's agreement upfront in the engagement between the applicant and the staff on the PDCs, I think it would provide a lot more regulatory certainty and probably efficiency in getting to the end game. That's my kind of overriding concern. So, that it's not all freeform; that there's general agreement amongst the applicant and the staff that, yes, these are the criteria we're looking for to control this

function or that function, whatever it is, unique to this particular design.

If there isn't that kind of mental common ground, then I think there will be trouble down the road in getting to closure or endless AIs. Just an observation, not a question, Bill.

MR. RECKLEY: Yes. Okay.

CHAIRMAN PETTI: Bill, I think at this point we might as well take a break; we might as well do lunch.

MR. RECKLEY: I was going to say, Dave, I was overly optimistic. So, yes.

CHAIRMAN PETTI: Let's break for one hour. Be back at 1:15 Eastern.

Thanks.

(Whereupon, the above-entitled matter went off the record at 12:14 p.m. and resumed at 1:15 p.m.)

CHAIRMAN PETTI: Okay, folks, we're back.

Bill, are you out there?

MR. RECKLEY: Yes, sir.

CHAIRMAN PETTI: Okay.

MR. RECKLEY: Okay.

CHAIRMAN PETTI: Let's hope we can go faster here.

MR. RECKLEY: I was just getting ready to

say, historically, Subpart B garners the most attention. So, I think we will be able to pick up the pace, as we go forward.

So, we ended on this slide with just the kind of table of contents for Subpart C. Little has changed. I'll get to the last item on earthquake engineering on the last slide for this subpart.

So, Billy, if we could go to the next one?

Just a few things to point out. Again, not necessarily major changes, but things you might have noticed, if you looked at the second iteration of the consolidated text.

We clarified references to use of consensus codes and standards, primarily by adding the fact that they needed to be in some form accepted by the NRC. That's just a requirement that we cannot kind of have an open reference to something like a consensus code and standard without closing the loop and saying that the NRC has found that to be acceptable.

We added or clarified the aircraft impact requirements. Again, this is just bringing over the requirements from Part 50, Section 150, and incorporating it into the design requirements.

In the February version, I believe we

added a requirement, 440(k), to address chemical hazards related to licensed materials. This was primarily in response to ACRS observations kind of early in our interactions, and then, also, reflects even recent discussions. For example, in your April 4th letter following up on the meeting we had on source terms, the ACRS made a mention of chemical hazards. And so, we did add a requirement, a design requirement, that chemical hazards needed to be considered, along with the radiological hazards of a release. We plan on pulling in guidance as much as we can from fuel cycle facilities that already include a requirement in this area.

And the last bullet on this slide, we picked up something we had missed early on, and that is that the design needs to address the requirements in Part 20, Section 1406, that during the design it has to consider and minimize the contamination, largely in support of longer-term decommissioning of the facility.

So, Billy, if you could go to the next one?

One of the changes that Mike had picked up on, if you looked through -- and I'll address this on the next slide -- is we clarified the need that, in

addition to the cumulative risk metric that we talked about earlier in Subpart B, the quantitative health objectives. When the analysis is done, you need to define acceptance or evaluation criteria for each event that you're analyzing.

And that was always intended. That's reflected in the Licensing Modernization Project and Regulatory Guide 1.233. It's just that we wanted to clarify and emphasize that. So, there's now a sentence. I'll show it on another slide.

And then, another thing within Subpart C is, with the consolidation of all the QA requirements in Subpart K, we clarified within the section related to the categorization of structure systems and components that safety-related equipment are required to meet the requirements in Subpart K, and non-safety-related, but safety-significant equipment can or may cite Subpart K when that is needed to provide either the capability or reliability of that particular system or component. So, one is a requirement for safety-related, and one is an "as appropriate" for non-safety-related, but safety-significant SSCs.

That's just to clarify matters. That's generally consistent with how it's done now. Safety-related equipment meets Appendix B equipment that is

relied on for beyond design basis events. It usually has an allowance to use Appendix B, but not a requirement and such. We've used terms like augmented quality to differentiate between simply commercial grade equipment. But, anyway, again, generally consistent with current practice.

Billy, if we can go to the next --

MEMBER DIMITRIJEVIC: Can I ask you a question? I have a question.

MR. RECKLEY: Sure.

MEMBER DIMITRIJEVIC: Are these the same requirements from Framework A and Framework B?

MR. RECKLEY: Again, since we're reflecting in large part the traditional approach, I would say it's very consistent. When Framework B is presented in June, they can maybe provide a little more detail. But generally consistent, yes.

MEMBER DIMITRIJEVIC: Okay. Because you said that Framework A is the PRA base. So, I wondering, are you going to use pure deterministic criteria to determine a safety classification? And you are telling here we are using the same criteria we always use and only going to consider the --

MR. RECKLEY: Oh, yes, I guess maybe I should be clear. The criteria for the designation of

safety-related equipment might be slightly different. However, the treatment -- and that's what I meant on this slide; I apologize -- the treatment of that equipment that is categorized as safety-related would be the same between the two because they're both picking up the requirements based currently in Appendix B to Part 50 and in Subpart K in this current discussion. So, the criteria for entry might be slightly different, but, once categorized, the requirements would be the same.

MEMBER DIMITRIJEVIC: Well, you know why I asked you. Because if you use a PRA categorization, then they will not be safety-significant, SSCs which are not safe activity, right? All safety-significant SSCs could be designated the safety -- I mean, that was my question, you know, because I was always against having this category if we are going to use the risk insight in categorization of safety, and then, you know.

MR. RECKLEY: Uh-hum.

MEMBER DIMITRIJEVIC: I thought that that could be the difference between A and B, but it's not. So, okay.

MR. RECKLEY: Okay. So, Billy, if we go to the next slide?

This just highlights that sentence that I mentioned, that the analysis -- this is in the analysis section, 450 -- "The analysis of licensing basis events, other than design basis accidents, must define the evaluation criteria for each event or specific categories of licensing basis events."

And I'll just kind of quickly show that on the next slide. Using the Licensing Modernization Project as an example, and using slides back from the day when we were presenting these to the ACRS, this is, basically, all we're trying to say with that sentence, is that all of the event sequences categorized as anticipated operational occurrences would have to define some acceptance criteria within the NEI 18-04 methodology. That's generally the consequence limits from Part 20.

And if you go down to the next slide, Billy, it just goes up by category. Then, for under LMP, what was called design basis events, we changed that to "unlikely event sequences" within Part 53, but, generally, the same meaning.

And you have some alternative -- you have another set of evaluation criteria. In this particular case, it would be a sliding scale, based on frequency, ending at the maximum dose of 25 rem, at

the exclusionary boundary at a frequency of once in every 10,000 years.

And then, again, continuing the example for -- and, Billy, go to the next slide; yes, thank you -- under LMP, what was called beyond design basis events, what Part 53 refers to is very unlikely event sequences. You have the frequency consequence target for those lower frequency events.

So, all this is saying is you need something like either the frequency consequence target figure or some alternative to judge each event sequence that's being identified. And then, in addition to these, you need to meet the cumulative risk metric from Subpart B.

So, Billy, if you'd go to the next one?

And again, I'm not spending much time. This has really not changed since either the LMP discussions with the Subcommittee or our discussions last year. Whenever I'm talking about licensing basis events, I do like to emphasize that, in addition to those analyzed as part of the probabilistic risk assessment -- those were the previous three categories-- licensing basis events does include a more deterministic evaluation of design basis accidents. That is required in Part 53 under 450(f).

And again, this has not changed since our last discussions with the Subcommittee; that the role and nature of the design basis accidents is the same.

So, Billy, if you want to go to the next slide?

This is just the words out of LMP. And again, just not a change. Whereas, in Part 53, we're trying not to limit the approach and the requirements to exactly that of the LMP, it does mirror in many respects the Licensing Modernization Project, because we have always said that our goal was to make sure that that methodology would be one acceptable way to meet Part 53, Framework A.

So, Billy, with that, I think we can go to the next slide.

MEMBER KIRCHNER: Bill, this is Walt Kirchner.

MR. RECKLEY: Yes?

MEMBER KIRCHNER: Can you go back two slides?

MR. RECKLEY: Sure.

MEMBER KIRCHNER: Just there is a foot -- yes, this one here. The safety criteria in 53.210, those include the QHOs, right?

MR. RECKLEY: No. For design basis

accidents and the safety criteria in Section 210, this would be referring to the 25 rem --

MEMBER KIRCHNER: Oh, okay. Yes.

MR. RECKLEY: -- at the exclusion --

MEMBER KIRCHNER: Right.

MR. RECKLEY: -- at the exclusionary boundary.

MEMBER KIRCHNER: Okay.

MR. RECKLEY: Yes.

MEMBER KIRCHNER: All right. Thank you for the clarification.

MR. RECKLEY: Okay.

So, Billy, I think we can go to, yes, this one.

So, one change that is kind of significant that was not talked about in 2021 with the ACRS, but this showed up in the version we released in February and in the most recent second iteration of the consolidated text, was the addition of a section in the Design and Analysis Requirements, Section 53.480. And this relates to earthquake engineering and reflects the traditional importance of seismic in the assessment of risk and in the design of nuclear power plants.

So, what the section on earthquake

engineering is trying to support is a more risk-informed approach, as reflected in more recent codes and standards issued by the American Nuclear Society and the one referenced here, more specifically, the American Society of Civil Engineers, in the Standard 4-19, Seismic Design for Structures, Systems, and Components.

And this has been under discussion with the ACRS in regards to Draft Regulatory Guides 1.251 and 1.252, which involves the use of seismic isolators.

DR. BLEY: We haven't had that discussion with you yet, Bill. That's been put off.

MR. RECKLEY: Yes, I know. So, maybe I should have said, "Some initial planning discussions have been held."

And our thought would be that those Reg Guides would be a better vehicle than today to kind of explore this with the Committee.

All we're trying to do in Part 53 is to allow that type of approach, within Framework A, allow that kind of approach, if someone wanted to use it. If they want to use the traditional Appendix S approach, we think that can be accommodated within the Framework A, but we also wanted to allow this other

approach that allows you to consider the seismic design categories and the limit states or damage states. That can vary based on the importance of the equipment.

We are in the process of issuing a white paper on this with a little more specificity than our previous. We had issued, two years ago, a white paper and had a couple of public meetings and a workshop. We're preparing to release another white paper, which is actually in the format of these Regulatory Guides, and use that as a vehicle to engage stakeholders, have a public meeting, and engage the ACRS. So --

DR. BLEY: Bill?

MR. RECKLEY: Go ahead.

DR. BLEY: Since, at least from where I live, seismic risk has been part of the PRA and has evolved over the years like many other parts of PRA methodology, it's not clear to me why you need this, something special on earthquake engineering. Can you specify it a little better? I mean, if they've done a PRA --

MR. RECKLEY: Yes.

DR. BLEY: -- a seismic PRA that meets the standards for seismic PRA, why do we need this?

MR. RECKLEY: This goes more -- and I

apologize; the experts on this weren't available today, but I'll give you my brief explanation, and then, we might have another IOU for you, Dennis.

But the reason to have this is the translation, if you will, from the PRA to actual designers, so that they can actually reflect, if you will, the fragility of equipment and, for a particular piece of equipment, define what the damage state might be, and within the civil engineering world, what kind of model I can use. Can I go beyond inelastic/elastic, those kind of discussions, in the assessment? And to define a design category, so that I can translate that, again, over into a specification for an actual piece of equipment.

But Marty or somebody else might be able to give a better explanation than I have.

But it is to be consistent with the PRA; however, to help in the translation of the PRA over to the actual procurement and design of a piece of equipment.

DR. BLEY: Well, my confusion comes from the fact that those kind of earthquake experts, both in structures and in geology seismicity, developed the whole approach for seismic PRA --

MR. RECKLEY: Right.

DR. BLEY: -- from the design over. And why they need this coming back, I'm not --

MR. RECKLEY: Okay. All right.

DR. BLEY: -- it isn't completely clear to me.

MR. RECKLEY: Okay. And I'll just say that those same experts are involved in this part of the activity. And so, I don't know if anyone else on the staff might be on to help in this regard, because I probably already passed my point of comfort.

DR. BLEY: And if need it here, do we need it in other areas?

Marty's not jumping on this one.

MR. RECKLEY: Yes. And again, Cliff Munson, Jim Xu, the people that could answer your question specifically, they just weren't available today.

DR. BLEY: Okay.

MR. RECKLEY: So, as the last bullet said, future interactions with the ACRS we expect to have. And I've heard, potentially, even later this year through the guidance documents. And so, we'll close the loop there.

All we were trying to do in Part 53 is to make sure we could accommodate this kind of an

approach. So, if you get a chance to read that section, certainly, we'd be open to any observations that the Committee might have or members might have.

So, Billy, if we can go to the next one?

Now we get into some of the other subparts that have built off of the foundations that are in Subparts B and C.

So, Subpart D was the siting requirements. We presented that in the middle of last year, I believe, to the Subcommittee.

There's not a lot of changes, even in this second iteration. Keeping in mind that Framework A decided to include Subpart D on siting as an alternative to going into Part 100 and making changes to Part 100 to try to accommodate Framework A, so Framework A doesn't refer to Part 100. It, instead, has Subpart D. But many of the requirements are taken from Part 100.

So, we have the need to identify external hazards, identify site characteristics, things like meteorology, the water table. Again, nothing new under Framework A, as is needed to support the traditional framework really.

Some population-related considerations, again, still taking from Part 100, and then, the need

to identify interfaces between the siting and the analysis and design features of the plant.

The changes we made since probably presenting last year to the ACRS:

We had missed that some siting activities are actually related to safety-related equipment or needed to support safety-related equipment, and if so, then those activities would need to be captured under the QA requirements now in Subpart K. So, that's just, again, part of the internal review and catching where we had missed something.

And then, there are some changes, based on the subject I just talked about, under the design, where a couple of changes were made to Subpart D to reflect the earthquake engineering section in Subpart C.

So, those things need to get looked at in parallel. And again, I'd propose that, in terms of interactions with the ACRS, that would be done under your pending look at Draft Regulatory Guide 1.251.

DR. BLEY: Is it fair to ask you a question about that?

MR. RECKLEY: It's fair to ask. I'll tell you if I can answer or not.

DR. BLEY: Okay. We were confused by what

was going on there and found those interesting.

When you say you're writing a white paper, I was thinking back to the ones you wrote in the Fukushima effort, which, then, kind of took over and rewrote some existing guidance and expanded it. Is your white paper going to be like that or is it just explaining these two documents a little better?

MR. RECKLEY: No, again, the white paper we're expecting to release is, basically, an early version of the Regulatory Guide. So, it goes into the same level of detail that a Regulatory Guide would.

Part of the issue that we had in trying to move forward on these Reg Guides is that this would be an alternative to Appendix S under Parts 50 or 52.

DR. BLEY: Uh-hum.

MR. RECKLEY: So, in terms of being able to support it in the actual regulations without requiring an exemption, the first opportunity we would have is in Part 53. Well, we can't issue a Regulatory Guide to a rule that doesn't exist yet. So, we just got caught up in process here about how to move forward on these Reg. Guides.

The work was basically done. The staff in Research and NRR, working with the Southwest Research Institute, had basically done the work, but we were in

a quandary as to how get it out to the public, given it was guidance to a rule that didn't exist yet. So, that's why we're going to this white paper route, and then, we'll bring it to the ACRS.

DR. BLEY: Okay. Bill, will there still be two Reg. Guides? Will there be two white papers or is it integrated?

MR. RECKLEY: There's, basically, Attachment 1 and Attachment 2 to the white paper.

DR. BLEY: Okay.

MEMBER KIRCHNER: Okay. So, Bill, just for clarification -- this is Walt -- since I have the responsibility for this, I've shared the previous information you've had that's not publicly available on the, quote-unquote, "trial" versions of the two Reg Guides.

So, basically, what you're saying is the white paper likely will just attach those two draft documents at this point and --

MR. RECKLEY: Yes.

MEMBER KIRCHNER: Because at least 1.251 looked fairly complete to me --

MR. RECKLEY: Yes.

MEMBER KIRCHNER: -- in its initial draft version.

MR. RECKLEY: Yes. Again, what we were faced with was how to move -- it was more a process than a technical question.

MEMBER KIRCHNER: Okay. All right. Thank you.

MR. RECKLEY: So, we backed up a step and we're going to issue them through this white paper, but it will look a lot like what you've seen. Okay?

So, I think we can, if there's no more on siting or earthquake engineering -- and again, we'll be in touch with Derek on how to move forward on those Regulatory Guides. And we'll let you know when we schedule the public meeting to discuss them, so that members interested can listen in on the public meeting.

MEMBER KIRCHNER: Yes. Just for a note, Kent Howard is the ACRS staff --

MR. RECKLEY: Okay. Thank you.

MEMBER KIRCHNER: -- on that, but he works closely with Derek. So, that will be fine.

MR. RECKLEY: Okay.

MEMBER KIRCHNER: Thank you.

MR. RECKLEY: All right. Thank you.

All right. So, we can go to Subpart E. Again, if you were to look in the redline/strikeout

version compared to what you saw last year, most of the changes would be the removal of the QA requirements because we moved them to Subpart K. So, not actually changing the technical requirements or the QA expectations, we just moved them and consolidated them in Subpart K.

Another change -- and this was, again, just internal review -- we added a section on the slide here, second bullet or second section, 605, on the reporting of defects and non-compliances. That was carried over, largely unchanged from the current requirements in 50.55(e), just to reflect the importance of keeping the NRC informed of any problems encountered during construction.

And then, within the sections on manufacturing licenses, we elaborated and expanded a little bit on the earlier drafts on the loading of fuel and added more specific references to Part 70, which is the handling of special nuclear material, as the primary vehicle that we would use to support the loading of fuel inside the manufacturing licensed facility to support the manufactured reactor modules.

So, I think we had talked about this -- I know we did in public meetings -- that Part 70 provides a lot of controls, and all we really intended

to do in this revision was to capture them, to cite them more directly as being the measures we would use to support an application and do the review of anyone proposing to load fuel in the factory.

Any questions on that?

I know that was a fairly hefty document that we released, and members may not have had a chance to look through it all. But, for those that have a particular interest in this manufacturing, I would just refer you to that 53.620, and it's at the back of that section where we talk about the loading of fuel in a factory.

MEMBER KIRCHNER: Bill?

MR. RECKLEY: Uh-hum.

MEMBER KIRCHNER: This is Walt again.

Reflecting on the earlier conversation this morning on nomenclature, it just struck me, one, you've already reviewed an applicant's submittal that uses the word, in their case, "power module." I think you know who I'm referring to. It might be useful to add an extra word and say, "a fuels module," to be very, very clear what you intend in that section and where --

MR. RECKLEY: Okay.

MEMBER KIRCHNER: Just an observation

because their nomenclature already has wide circulation in the open literature.

MR. RECKLEY: Okay. Thank you.

This is an area we struggled with, to be honest. We tried to use a word other than "module." Well, we could just --

MEMBER KIRCHNER: No, module I think is fine.

MR. RECKLEY: Okay.

MEMBER KIRCHNER: It's just I think maybe you just elaborate with one more word.

MR. RECKLEY: Okay. We'll take under --

MEMBER KIRCHNER: Yes.

MR. RECKLEY: It sounds good on the first suggestion. So, we'll go back and look at that. Because, again, we understand that the word "module," "modular," related words, have been used so much, that we did really search for an alternative. And every one we could think of had some other issue that made it worse. So, thank you.

MEMBER REMPE: But, Bill, when we did our letter on emergency planning, we discussed -- I think that was that letter -- about how you'll deal with how many modules can be delivered to a place where it's being deployed.

And if we think about earlier this morning when I was asking about what happens if it has to come back to the manufacturing facility because it didn't go as planned when they tried to deploy it, and in our response to the letter, or the staff's response to our letter, they said, oh, well, a site will be licensed after a certain number of number of modules.

I'm wondering about the manufacturing facility also, because how many can they have -- you know, I assume that where they fabricate the module will be a limited space. And as they're doing production, how many can be parked outside in the parking lot before it can go on the road to a site?

And then, if the site sends it back, will you guys have some sort of siting requirement on how many fueled modules you can have at a manufacturing facility, and where would I find that in the guidance? Because, I mean, right now, some of this stuff I only know about is in something the staff sent back to us in a response to our letter. Where would I find that kind of information, if I was trying to get a facility licensed?

MR. RECKLEY: Currently, there's two things, I think, that would address this, but this is a discussion, I guess.

One is, one thing that we are limiting this current iteration is that the fuel loaded is unirradiated, right? So, we're not capturing at this point any reprocessing that could reflect that the fueled module is anything other than fresh fuel.

That is intended to somewhat limit the need for how much protection needs to be provided in terms of radiological releases. You still have to be analyzed for specific events and prevent criticality, and so forth, but at the factory it will be limited to fresh fuel in this round.

If down the road there's a desire to consider closing the fuel cycle and bringing them back and refurbishing, and things like that, that is being discussed in some circles, that might be done in the future, but this round is only addressing the loading of fresh fuel.

The other aspect of that, we don't currently have a limit built into the rule, but I would envision that the manufacturing license application would be an opportunity for us, if we needed to say you're limited to a certain number of fueled modules in storage, or whatever.

MEMBER REMPE: That would be a good place for the second question. I liked that response and I

hope it's somewhere understood in some documentation.

But, with respect to your first response, remember, I asked you earlier about what you've termed as "physics testing." Is that still considered fresh fuel, if you've done some physics testing on it?

And then, I would be careful of somewhere, like in the preamble or the red test at the beginning of these documents, you clearly state we're only considering fresh fuel. Again, if they didn't run it, if they try to bring it critical, it's going to come back. Or maybe they only run it for a few hours and something doesn't work. Is it still considered fresh fuel?

MEMBER KIRCHNER: Joy, I think the answer is no. But what would be --

MEMBER REMPE: I'd like the staff to respond. Okay?

MEMBER KIRCHNER: Yes, but, okay, but I want to point out something, if I may, please.

That is, if they were with the fresh fuel -- I'll let Bill answer your question -- if they were to do any kind of critical physics testing, what you will do, and what has been done, is you go and you make an approach to criticality, but you do not take it into the power range and generate a fission product

inventory. And that's typically -- I shouldn't say, "typically" -- these are special cases that were done in the past.

But, to answer part of your question --

MEMBER REMPE: Well, Walt, is that in the guidance anywhere? I'm not asking for the actual answer. I'm asking, where does one find out the answer? Okay, Walt? And I don't think there's any guidance that says this clearly, right?

MR. RECKLEY: Right. So, if I can, first of all, we're jumping ahead insofar as what's currently in 53 doesn't allow physics testing at the factory. So, if we go there, some of these are the questions. And to be honest, some of these are the hurdles that might keep us from getting there because we need to answer all these questions.

But, for both of you, I guess the answer is probably, once you've done some amount of operations, it wouldn't be considered, quote, "fresh fuel" anymore, although, to Walt's point, the plan I don't believe would be to generate significant inventories of fission products during this limited testing that would be done in the factory.

There would be some, of course, but not -- but all of that, we would -- again, all of that is

what we would have to address, either in the summer, if it gets included, or perhaps in a subsequent action, if we're not able to close that loop to support physics testing in the factory.

Joy, your other question of, "What happens if it gets shipped back?" -- let us take that as a takeaway, because I don't have an answer, to be honest.

MEMBER REMPE: Yes, and again, it's something that the design developers will lead you. I agree with what you said on what issues have to be addressed in Part 53. But, on the other hand, if they haven't had much experience with this, helping them think about some things that they might want to think about, so that they're not stuck without -- you know, I don't think people expected that EBR-1 wouldn't go critical when they tried the first time, is why I brought that example up today.

MR. RECKLEY: No, no, and this is good. And again, it's one of those rare opportunities, I think, where the whole concept is being developed, not only on the regulatory side, but on the technology and vendor side kind of at the same time.

So, some of this, as we have any idea, we'll have to solicit feedback from them and other

members of the public, and vice versa. As they kind of develop how this might work, then we can look at it and say, "Oh, now we have a better idea of how to develop a regulation."

That's why, speaking selfishly, it's kind of nice that DOD and the Pele Project might be an opportunity to learn some lessons. Again, from our point of view on the regulatory side, that's being done in the transportation arena, but we can also look at it on the reactor side to see what we might need to do.

MEMBER REMPE: Thank you.

MR. RECKLEY: Dennis?

DR. BLEY: Yes, sir. Thinking back to earlier this morning, Walt and Joy had a discussion about these issues. And while I agree with Walt that we've done stuff like this before, looking at your section that you sent us to, 53.620, and the section that deals with loading fuel, it says, if you're going to do that, you have to have three things in place: radiation monitoring, criticality monitoring, and procedures, equipment, and personnel to handle fresh fuel, load it, and monitor the activity.

I'm kind of surprised you didn't have a fourth about a means to control the reactivity in

whatever shipping form this is in. And that kind of goes to where Walt and Joy were talking earlier.

MR. RECKLEY: Yes, and I'm not an expert. That would get picked up in Part 71. It's either already there or the requirements would already be there under Part 71.

DR. BLEY: Well, that's probably true for all three things that you already include in the --

MR. RECKLEY: Well, but 71 is for the transport. The things that we were listing would be what you need to do for the factory floor. And then, in addition to those things that are relatively high-level, again, we would point to Part 70, and that's where they would be required to do their safety assessment; make sure they had contingencies for criticality protections against inadvertent criticality. And so, by reference, we're bringing in all of those from Part 70.

DR. BLEY: Okay. And in your transportation section, you do refer to Part 71 and 73 for that. Okay.

MEMBER REMPE: So, I'm not sure -- and I haven't looked at 71 and 73 -- but, today, we were talking about the fact that, even though spent fuel is transferred, they don't have control rods in the spent

fuel. And if something were to happen where it -- I mean, you said verbally, "Yeah, I think we'll have to have extra controls to make sure the control rods don't jiggle around unexpectedly." Is that kind of information going to be in Part 71 or 73 or a hook that will make people go look --

CHAIRMAN PETTI: It's there.

MEMBER REMPE: -- for the guidance?

It's in there and --

CHAIRMAN PETTI: They have to remain subcritical, even if submerged in water.

MEMBER REMPE: Okay, but --

CHAIRMAN PETTI: So, that's very reactive. So that they have to make sure they have rods at the --

DR. BLEY: Yes, I believe they do.

CHAIRMAN PETTI: And they have to do drop tests to make sure that everything holds together, so that things don't move where they shouldn't move.

MEMBER REMPE: And that's in 71 or it points to the guidance? I mean, I wouldn't think 71 would say you've got to do drop tests. It just says maintain criticality --

CHAIRMAN PETTI: No. Well, I don't know if it's in the guidance to 71, but drop tests are

required.

MR. RECKLEY: Yes, that's in 71, or at least the need to address certain foreseeable transportation accidents in there.

CHAIRMAN PETTI: If I have a fire.

MR. RECKLEY: Right.

MEMBER KIRCHNER: Right. You have fire, puncture tests, drop tests --

MEMBER REMPE: And so, well, the guidance needs to be --

MEMBER KIRCHNER: -- and criticality.

MEMBER REMPE: Won't the guidance need to be updated to support that for a reactor?

MR. RECKLEY: It may be appropriate, Joy. It's not -- I mean, the systems now rely primarily on geometry and poisons that would be in the casks.

The transport of a reactor and the reliance on something like control rods will be a change. Our discussions -- and again, I'm not an expert in this -- our discussions with NMSS to date have been they think they can accommodate that within the general requirements that Dave was mentioning, although that's not typically done now. Because, again, you're relying on poisons within the casks and geometry to resist things, like Dave mentioned, the

addition of water or moderators.

So, yes, it will be different, but that's one of the reasons that, even now, we have discussions ongoing between the Department of Defense, through the Pele Project; DOE, and DOD, and Pele, with NMSS on the transportation issues. And I'm really hoping -- selfishly, I guess -- that that will address a lot of the questions you have.

And once they solve it for that, which might get looked at as an isolated case, because they will have down-selected by that point -- at some point, they will down-select it to an individual vendor.

But the issues and the work with that vendor will lead to what you're suggesting. And I'm not arguing that it's not appropriate to do guidance, but that work is being done kind of in parallel. And that's an opportunity for us to actually look at a real-world case and use that, then, to develop guidance.

MEMBER REMPE: And those real-world cases are considering one or two types. What about other types? For example, they keep talking about adding water in a sodium environment. They're considering, will have to consider a broad range of types of

chemicals and materials.

CHAIRMAN PETTI: All I can tell you is, at least from the Project Pele perspective, there's a team of expertise from the laboratories supporting the project. And although the designers aren't happy with the requirements, because they are extremely difficult, nobody is saying, "Oh, there's no way to meet it. You know, it doesn't work."

The requirements are written in a way that you can apply them. Yes, it's not a cask. It's a package.

MEMBER REMPE: So, those are DOE or DOD requirements --

CHAIRMAN PETTI: No, no, no, no. These are NRC requirements. These are people -- DOE has a whole bunch of people who support transportation, and they brought those experts in to help the project side get ready and have some of these discussions with NRC.

And there's nobody saying, "Oh, no, it won't work. We can't make it work for a reactor." Yes, we can. The designers won't like it, but the rules are written in a way that they believe they can apply them, at least, you know, for this first of a kind. As Bill said, you'll, then, want to learn and clarify some things, but it's not like fundamentally

there's a problem with it. They think they can do that.

MEMBER REMPE: Yes, I don't think there's a problem. I just don't think we've thought about all the guidance to support it, is where I'm trying to think about it. And again, I haven't looked at what the guidance clearly says at this time, but that's where I'm going. And it's hard to say the rule is adequate when you can't see the guidance.

MR. RECKLEY: Okay. So, Vicki, you've been very patient. Thank you.

MEMBER BIER: Hey, everybody else is going to have to be patient. I hate to do this, but can you go back slide 14 on QHOs? I will try and keep this brief and maybe address anything through written followup next week, or something, if needed.

MR. RECKLEY: Okay.

MEMBER BIER: All right. So, the language on slide 14 I think was briefed to ACRS a year ago, which would have been like probably my first meeting. So, maybe I was overwhelmed and not catching it.

But the Part B, which is where it gets quantitative, it strikes me that what is appropriate for, say, a 1,000-megawatt facility may be very different than what is appropriate for a microreactor

that is powering, say, a single factor, or whatever.

And the previous slide just says that these revisions were made based on feedback. But, given that a new QHO is really a major policy statement by the Commission, I'm wondering if there's a white paper that supports this or if the written feedback from stakeholders that critiqued the earlier version is available, or where these numbers came from exactly.

MR. RECKLEY: Yes. Again, these numbers that we're using here came directly from the development and the time period of the development of the safety goals and would have been in the companion NUREG. And I'll apologize --

MEMBER BIER: Like ages and ages ago, you're saying --

MR. RECKLEY: Oh, yes. Oh, yes. Yes.

MEMBER BIER: Okay. Because the .1 percent, or whatever, is what I would have recognized.

MR. RECKLEY: Right, right.

MEMBER BIER: So, you're saying that this is from the supporting document at that time?

MR. RECKLEY: Well, it's from that time, and then, we have it probably in other places as well, but I know because I was involved in the Fukushima

work --

MEMBER BIER: Uh-hum.

MR. RECKLEY: I revisit to see if the numbers were still holding, especially the cancer fatality numbers.

MEMBER BIER: Yes.

MR. RECKLEY: And the assessment that we did at that time was, yes, those numbers, this number here that the --

MEMBER BIER: Okay.

MR. RECKLEY: -- the two in a million years still held as the appropriate number, when one translated the .1 percent over to this.

MEMBER BIER: Okay. That sounds fine.

So, there is no change to the QHOs being proposed now? It's just scavenging a different set of wording from the original --

MR. RECKLEY: Right, and as we've moved forward, we keep getting closer to closer to actually -- and this is pretty close to a quote from the reactor --

MEMBER BIER: Got it. Okay.

MR. RECKLEY: -- from the safety goals.

MEMBER BIER: All right. Thank you very much for the explanation.

MR. RECKLEY: Okay. All right.

Billy, if we can go back?

So, that's that. Subpart F. Yes, the next one, Billy.

Again, we'll be back to talk about the changes being made to Subpart F, again, primarily in the area of staffing. And that was the subject, of course, of the meeting and your letter in February. So, stay tuned.

We can go to the next one, Billy, Subpart G.

I don't believe we ever brought Subpart G specifically to the ACRS. We added this to the integrated -- we developed it and added it to the consolidated package. Again, I'd have to go back and look. I don't believe we had brought the details to the Subcommittee.

However, on the other side, this is really bringing in the requirements from 50.75 and 50.82, Termination of License. We did not, at least we did not intend to make any significant changes. We did in some places need to address the fact that even some of the decommissioning requirements were light-water-reactor-specific. For example, 50.75 has some tables that were done from previous studies of pressurized

and boiling water reactors on decommissioning costs and the contributors to waste from areas like waste disposal and labor.

Given those were developed for that technology, in the section that says how much you need to have to support decommissioning, how much money you need to have to support decommissioning, we would simply add something that says that the applicant and the licensee needs to do a decommissioning cost estimate, because we don't have generic numbers for non-light-water reactors. But, other than that, because we didn't have the numbers, we still require a cost estimate. We still require annual adjustments to the funding.

We have the same mechanisms in terms of the financial instruments that would be available to support decommissioning. We still require the same reporting and recordkeeping, but, largely, the reporting of those. That's currently in 50.75.

The requirements on the termination of the license after decommissioning, and the need to do surveys and meet the Part 20 requirements, are carried over. And what we have there is Section 1070 on the termination of a license. And the same reference to Part 20 for the release of a site for unrestricted

use.

So, again, I don't think we had brought this forward before, but it is one of those subparts that is, basically, the same. Some of the terminology, the internal references, and so forth had to change, but our intent was, basically, to move it intact as much as we can from the current requirements.

MEMBER HALNON: So, Bill, the only thing -- this is Greg -- electric utility you talk about is 53.020, and the definition is not in there. So, no one has checked that.

MR. RECKLEY: Okay. Yes, we have the same exception, but you're right. We will look and make sure we pick up to make sure as needed. That's a defined term.

MEMBER HALNON: Yes, it's pretty antiquated, too, because it was back when most electric utilities were regulated and they had rates. They recovered their decommissioning cost through their rates. Not many are like that. Some in the Southeast might, but -- "might".

MR. RECKLEY: Right, right. And that, well, yes, then that's -- yes, that is a distinction between those structured, quote, "electric utilities"

and an emergent plant, even if, from the outside, it looks like it's being run by an electric utility.

MEMBER HALNON: Okay.

MR. RECKLEY: Okay? So, with that, Vicki, is your hand up from earlier or did you have another question?

MEMBER BIER: Sorry, that's just from earlier.

MR. RECKLEY: Okay.

MEMBER BIER: I'll take it down. Thank you.

MR. RECKLEY: No problem.

Okay. Well, with that, you'll be happy to hear I'm going to shut up, and Nan is going to talk about Subpart H.

MS. VALLIERE: Thank you, Bill.

Yes, I will provide a brief overview of Subpart H.

Subpart H addresses the types of the licenses, certifications, and approvals available under Part 53 as well as the required content of each application type.

We have discussed Subpart H with the Subcommittee previously, I believe at two separate meetings last year. As we discussed in those

meetings, there's not a whole lot that's new in Part 53, in Subpart H, when compared to the licensing processes in Part 50 and 52.

Part 53 offers all the same licensing, certification, and approval options currently offered under both 50 and 52, as you can see from the list on the slide.

We've highlighted two of these processes; namely, for early site permits, or ESPs, and for the design certifications, to indicate that these sections are used as building blocks for the remaining sections in Subpart H.

Because the requirements for the content of any application that requires a review of the commercial nuclear plant site will be largely the same, we spell out those requirements once for an ESP, and then, refer to the ESP requirements for the other licensing processes.

Likewise, for the design information, we lay out those requirements once in the design certification section, and then, refer back to the design certification requirements for the other licensing processes.

Next slide, please, Billy.

Slide 35 highlights some of the key

changes that have been made since we last briefed the Subcommittee on the preliminary proposed rule language in December.

The first bullet is the item I just mentioned, that we consolidated the information, so that key siting and design content requirements only need to be listed once, and can then be referred to in the other sections.

The second item here refers to requirements that we carried over from existing Section 50.11 related to the exempting of Department of Defense facilities from NRC licensing requirements. We were convinced that inclusion of this provision was necessary, given that Part 53 only applies to commercial nuclear facilities, but, out of an abundance of caution, we replicated the requirements in Section 53.1120 under Subpart H.

Finally, in the latest iteration of the preliminary proposed rule language that was released just last week, we removed provisions that would have allowed a construction permit applicant to reference a manufacturing license. And the reason for this stemmed mainly from the Part 53 expansion of activities that could be allowed under manufacturing license, as we have been discussing here today, to

include possible loading of fresh fuel into the reactor module at the manufacturing facility.

This expansion added some complications because a fueled manufactured reactor could not be delivered to a site that did not hold an operating license under the CP/OL process. And at the same time, we do not believe the NRC would issue an operating license without the reactor being onsite and installed. So, it would have created a bit of a Catch-22.

In addition, we thought this would have been a very unlikely path for an applicant to pursue because, if they were far enough along in the design process that they were ready to get a manufacturing license and start producing reactors, it wouldn't make much sense to use the CP/OL process. A combined license would appear to be the most advantageous path at that point.

The remaining changes that were made in Subpart H really related to filling a few gaps that we identified when Subpart H was compared to the Part 50 and 52 licensing sections to make changes to be consistent with revisions made in other subparts in Framework A, and then, just to format the subpart consistently for each section, given that, originally,

Subpart H was publicly released in two separate pieces.

Next slide, please, Billy.

So, slide 36 provides an overview of all the licensing processes covered in Part 53. And we presented this figure the first time we discussed Subpart H with the Subcommittee last year. The graphic includes all the licensing process in both Parts 50 and 52 and shows their relationships. It also provides some linkages between processes that are not currently laid out in the existing regulations, and those are the ones shown by the dotted lines.

As we noted the last time we discussed Subpart H, Part 53 contains a proposal to allow a design certification applicant to reference an issued operating license or custom combined license. The staff is proposing that a design certification applicant be allowed to leverage the staff's Safety Evaluation from such an issued operating license or combined license in the design cert application, and to grant that safety review finality like that provided for a licensed applicant referencing a standard design approval.

Those finality provisions provide that an improved design must be used by, and relied upon by,

the staff and the ACRS in their review of an application referencing that design, unless there exists significant new information that substantially affects the earlier review decision.

This new connection between licensing pathways will be described in the statements of consideration accompanying the proposed rule.

So, that concludes the discussion of Subpart H and changes since we last discussed Subpart H with the Subcommittee.

Are there any questions or comments?

MEMBER KIRCHNER: Nan, this is Walt.

Could you just walk through one more time, for me at least, this dotted connection inside the box here of this slide? You could use, I think if I heard you correctly, you could use an existing COL or OL to develop a subsequent DC. You would do this in the case where the COL or the OL did not have a DC?

MS. VALLIERE: Right. So, we're talking about an operating license or a custom combined license. So, we use that term "custom combined license" to refer to someone who comes in with an application for a combined license when they haven't already gotten a design or a site approved. So, a custom COL or an OL could be used as the basis for a

design certification application.

So, we think this could be used for someone who's pursuing a first-of-a-kind design and they sort of want to work through the process on the first application before they really lock down the design and the design certification.

MEMBER KIRCHNER: I'm trying to logically figure out, if someone already has an OL or COL, then the actual safety case and design, and such, has been reviewed by the NRC. But you're saying there could be a case where that particular design does not have a DC --

MS. VALLIERE: Right.

MEMBER KIRCHNER: -- a DCA?

MS. VALLIERE: Right.

MEMBER KIRCHNER: Okay.

MS. VALLIERE: Yes, exactly.

MEMBER KIRCHNER: So, you would generate a DCA based on that, but, then, when the person went to a new site, you would still have to get an amended COL or --

MS. VALLIERE: So, the COL or the OL is very specific to the site.

MEMBER KIRCHNER: Exactly.

MS. VALLIERE: Right. So, yes. So, in

the DC application, they would have to sort of genericize some things.

MEMBER KIRCHNER: Okay.

MS. VALLIERE: So, for example, in the custom COL or the OL, they would only be interested in the site characteristics for that specific site. So, in a design cert application, if they wanted to broaden that site parameter envelope, they may need to, you know, make some changes.

MEMBER KIRCHNER: Right.

MS. VALLIERE: To do so for the design certification to come up with the generic design that could, then, gain finality and could, then, be referenced in any future COL applications.

MEMBER KIRCHNER: Okay. Is that an expected path forward? It seems like a little bit convoluted.

MS. VALLIERE: Again, we thought it could be a possible path for someone trying to bring forth a first-of-a-kind design that wanted to work through the full process, you know --

MEMBER KIRCHNER: I see.

MS. VALLIERE: -- all the way to operation --

MEMBER KIRCHNER: Yes.

MS. VALLIERE: -- before locking down the design and the design certification.

MEMBER KIRCHNER: I see. Okay. Thank you very much.

MS. VALLIERE: Sure.

MEMBER REMPE: So, they would actually take their FSAR and do some mods to it, and then, start from scratch? And if I think about it, usually, there's an owner-operator of a plant, but, then, it would be the design developer for that owner-operator who would take the COL and scrub -- or the FSAR and take the COL and change the FSAR for the COL to submit for the DC, right?

MS. VALLIERE: That's right, except that, for some of the advanced reactors, the designers will be the owner-operators. So, it's not always going to be the case that a designer and an owner-operator are two separate entities.

MEMBER REMPE: Yes, but, I mean, I'm thinking of the established vendors. Westinghouse has never been -- or GE has never been owner-operators of a plant.

MS. VALLIERE: I agree, but that's true of the established vendors.

MEMBER REMPE: Yes.

MR. SEGALA: Hey, Nan, this is John Segala from NRR staff.

It could be likely that, if a developer or an applicant wants to use this concept, what they could do at the custom COL stage is actually develop a design that's more robust than the actual site characteristics at that one site. So that, later, when they turn it over into a design cert, that design already envelopes a whole bunch of other sites out there. So that it would make this process go more smoothly. Is that something that could work?

MS. VALLIERE: Certainly. Yes, certainly. I mean, the whole point of adding these dotted-line pathways was to provide additional flexibility. So, trying to provide maximum flexibility in the way an applicant could choose to use the various licensing processes to best meet their needs. So, yes, I agree. If the needs could be met by expanding the first COL to be a little bit more robust than for that particular site, that might serve someone well, if they were going to plan to, then, use that Safety Evaluation in a design certification application.

Any additional questions or comments on Subpart H?

If there are no more questions, I'll now

turn the presentation back over to Bill to discuss Subpart I.

MR. RECKLEY: Thanks, Nan.

Billy, if you want to go to the next slide? Thank you.

So, Subpart I is the subpart that addresses maintaining and revising the licensing basis information, and includes sections on the control of the license and tech specs, and how to ask for amendments. It has sections on the updating of the Safety Analysis Report and the evaluation of plant changes under the equivalent of 50.59. In our section, that's 53.1550.

And then, it also addresses the program-related documents, such as the Quality Assurance Program and emergency plan, security plan, some of which are addressed in 50.54(a) now, the Condition of Licenses, or in some other cases might be in another regulation associated with a particular program.

And then, it has, also, the sections on transfer, termination, backfitting, and so forth.

So, we had provided this to the Subcommittee. In many cases, like backfitting, termination, formations of information requests, largely brought those requirements over from Part 50

and 52.

One area in Framework A -- Billy, if you want to go to the next one? -- that we needed to think about how it was done within Framework A was in change control for both the FSAR and programs. An earlier draft kind of left open how we would control programs; what kind of criteria we would use for when a licensee would need to submit proposed changes to something like the QA plan.

So, in this second iteration that we just released, we basically have defaulted back in many areas to the existing requirements and the way to evaluate changes to those program documents. So, if you look, you will see the addition of change control and evaluation techniques for QA. That was carried over from 50.54(a); the same for emergency planning. And a decrease in effectiveness that would warrant submission for NRC review of a proposed change reflects the Part 54, the 50.54 provision for that, and security is the same that we just brought forward.

The logic in just bringing those over was there is guidance that's been developed over the years. And although the terminology is "decrease in effectiveness" within the rule, which might sound vague, there has been both guidance developed and

experience gained on how to implement that. So, we decided that the best thing forward would be just to maintain that and largely copied those provisions over for the established programs. The three most often cited are QA, emergency planning, and security.

Within the equivalent of 50.59, we also, from the earlier version, added criteria related to, if a change to a facility affects the design basis accident analysis, and also, if it could impact -- that's a bad word -- if it could affect, adversely affect, the aircraft impact analysis that's, likewise, required under Subpart C related to design and analysis requirements.

And then, we added some of the generic licensing conditions from Part 50 that we had, basically, overlooked on our first iteration.

So, Billy, if you can go to the next slide?

The only real topic I wanted to talk about and present, just because it gets a fair amount of discussion, is the 50.59 equivalent. So, again, we didn't make major changes -- I know this font is small -- but, basically, the change here was to change the questions as they are in 50.59 to reflect the analysis sections of Part 53. So, it just, generally, since we

know that the analysis is going to include actual estimates of consequences and frequency, we were able to have a more specific question in regards to evaluating a plant change.

Our first proposal here is that we take values that are currently in guidance and we include them in the rule language in terms of margin reductions. For example, under little (i), you'll see that 10 percent reduction in margin for the licensing basis events in terms of decreasing margin associated with the frequency or consequence. That's still somewhat a matter of discussion as to whether numerical criteria like that are better in the rule or better in guidance, as we go through those interactions up to including even after we do the proposed rule. Maybe the current language of "more than minimal" some people might prefer, and then, have the 10 percent in guidance.

So, all of these criteria are the same as we presented before.

Billy, if you'd go to the next page?

The ones we added are 6, 7, and 8 on this slide. Basically, again, capturing the design basis accident and including a criteria of whether a plant change could, in effect, generate a new design basis

accident or decrease the margin, again, by 10 percent between the analysis results and the criteria in 210. Again, that's the 25 rem at the EAB.

And then, Item 8 was just to add a provision, because we didn't have it elsewhere, to address or require that a licensee evaluate plant changes to make sure it did not undermine the aircraft impact assessment or how the design protects against the impact of a large commercial airplane.

So, another reason to just bring this out is there's another industry activity. This is a cost-share between the Department of Energy and Southern Company to look at 50.59 for the LMP, the Licensing Modernization Project. And they have submitted, and the staff is just beginning to look at, their proposals to have the equivalent of 15.50 for the use of the LMP, either under Parts 50 and 52, possibly with an exemption to 50.59, and maybe for Part 53.

But we're just starting those discussions, and those discussions might lead us to make some tweaks to this section, as we go forward, just sharing views and seeing if they have some good concepts we might want to capture. And hopefully, vice versa, that if we have some thoughts here, maybe that guidance.

But that would be something I would expect the ACRS to maybe look at down the road, given that we might capture it in a Regulatory Guide down the road.

MEMBER DIMITRIJEVIC: Question?

MR. RECKLEY: Sure.

MEMBER DIMITRIJEVIC: All right. My question here is, what changes are discovered by that? Like the previous slide, it says it shouldn't be changed to technical specification, right?

MR. RECKLEY: Well, that's an existing requirement. Basically, any change to technical specification needs NRC approval. And so, as does 50.59, that's the first trigger of, does it involve --

MEMBER DIMITRIJEVIC: All right. Yes, so let's discuss what type of the changes are then covered. Changes to design? Changes to safety classifications? Changes to ITAAC? What changes are covered out of this?

MR. RECKLEY: Well, this would be post-operation changes to the facility or the facility procedures.

MEMBER DIMITRIJEVIC: So, facility, maybe you can change their design?

MR. RECKLEY: Sure. As you can now within the limits of 50.59. The question being answered by

both 50.59 and 53.1550 is, when does a change to a facility require NRC approval?

MEMBER DIMITRIJEVIC: Right. And what they're trying to incorporate here, we have risk-informed applications which includes changes to -- so, I'm trying to combine two different modes here. So, you have a 50.59, which is also risk-informed applications, right? And then, you have risk-informed applications which include changes to testing; inspection; specifically, you know, the QA program; a technical specification. So, those currently ongoing risk-informed changes in the future will also require the approval?

MR. RECKLEY: It's possible. Again, for programs, I don't have the criteria, but they are largely the existing programs and the existing change control mechanisms that are defined under 50.54(a), 50.54(p), for example, and the associated guidance as to when does a change trigger the need for NRC review and approval.

Likewise, 50.59 has seven questions and provides the criteria for when a change to a facility, whatever the change is -- the changeout of one pump for another pump; the installation of a new system; the removal of a system -- all of those things can be

captured, and then, assessed under 50.59. And all we're doing under Section 1550 is giving criteria that are more reflective of the analysis requirements under Subpart C. That's our intent, in any case.

So, I'm not sure I answered your question.

MEMBER DIMITRIJEVIC: Yes, I have to think about that because it is my -- yes. If you allow the change, adding or removing some system, I don't see why would you require a technical -- we satisfy all of those things. Why wouldn't you require changes in technical specification will satisfy all of those things, see, or these other risk-informed applications --

MR. RECKLEY: Oh, yes. It's --

MEMBER DIMITRIJEVIC: -- that might be ongoing?

MR. RECKLEY: Right, right. And that's the first trigger, right? If any plant change requires a tech spec, change to the tech specs, then it would require NRC approval. But there could be other plant changes, and many -- in current practice, most plant changes don't affect the technical specifications. Where the licensee can continue to comply with tech specs, they still need to evaluate the plant change, and they use the criteria in 50.59

or, under Part 53, they would use the criteria under 1550, to evaluate that change and say, is this change going to make the consequences or the frequency of any licensing basis event more -- increase the consequence or increase the frequency? So, that's all we're trying to --

MEMBER DIMITRIJEVIC: Yes, but okay. All right. I have to think about that. This doesn't really, this moment, it doesn't really make sense to me, but I have to think about.

Okay. Thanks.

MR. RECKLEY: Okay.

MEMBER HALNON: Hey, Bill, on license renewal, that one sentence leaves me wanting 53.1595. Is that going to be expanded somewhere or are we going to be going back to 54? Or how's that going to work?

MR. RECKLEY: Our expectation is it will be expanded.

MEMBER HALNON: Okay.

MR. RECKLEY: The earlier version just said to be determined, I think.

MEMBER HALNON: Yes. Now you say it can be renewed.

MR. RECKLEY: Now we say it can be renewed, but we don't say how.

MEMBER HALNON: Okay. That's fine. If you're going to get it later, that's fine.

MR. RECKLEY: Yes, that's the intent, is to come back and revisit that. To some degree, we might be able to take advantage of 54 or we might have to come up with another series of sections that would address renewal.

MEMBER HALNON: It's probably time to do that.

MR. RECKLEY: We just, in prioritizing, thought we would address issuing before renewing.

MEMBER HALNON: Okay.

MR. RECKLEY: Okay. If there's nothing more on Subpart I, we'll move over and Jordan Hoellman will talk about Subpart J.

MR. HOELLMAN: Okay. Good afternoon, everyone.

So, I think we only briefly covered Subpart J before, and I'll briefly cover it again.

So, Subpart J addresses the reporting and other administrative requirements. It requires each applicant or licensee, under Part 53, to ensure NRC inspectors have unfettered access to sites and facilities, licensed or proposed-to-be-licensed; requires the maintenance of records and report-making

to the NRC. It requires licensees to meet financial qualification reporting requirements and obtain and maintain required financial protections in case of an accident.

Some of the things to note. There's not many.

In 53.1645, we continue to maintain a section for periodic reports, and we're considering whether to make or whether to include all the periodic reports in this section or to keep it, keep them where they exist now.

Right now, 1645 only includes effluent reports. And so, over this summer, we'll be working to either consolidate reporting, periodic reports, in this section, or renaming the section to be more specific to what's currently there.

Another thing we did in the later consideration is, similar to what Bill mentioned in Subpart I, we looked at 50.54, which is Condition of Licenses, to ensure that all the requirements are captured in 53. And we tried to find a logical place within Part 53 for each of these items. Some of them ended up in Subpart J, and the example is the bankruptcy requirements.

Other than that, not much change, In

review of stakeholder comments submitted related to Subpart J, we've identified some areas where we need to expand in the statements of consideration or preamble. But that's pretty much it for Subpart J.

So, I'm not sure if anyone --

MEMBER HALNON: Yes, Jordan, this is Greg.

What was it? Four years ago, we undertook an admin review of, or a review of admin procedures and reports and requirements. Did that report or that effort get factored into this section? Because this is the one that's primarily affected?

MR. HOELLMAN: Yes. So, I think in the first iteration, yes. But, Bill, please correct me if I'm wrong. I'm pretty sure we captured that stuff in the first iteration. I'm not sure if there's anything specific that you saw not included there --

MEMBER HALNON: I was looking at the reports, you know, the licensee event reports, and other things. I don't see a real big change to what we're doing today, but I know that that was a huge comment from the stakeholders during that review period. Did they make any of the comments on this proposed language relative to LERs and other what we would call 50.72 reporting requirements?

MR. RECKLEY: Right. Greg, this is Bill.

Part of that -- and we probably should have mentioned it or maybe even emphasized it more earlier -- there are a number of activities, and I'm pretty sure that reporting requirements is one of those in which there are rulemakings either underway or under development. And I think the one you're mentioning -- and I apologize, I don't remember the status -- but I know we're looking at changes to 50.72 and 50.73.

And within our construct of Part 53, we were faced routinely with what to do with all the rulemakings underway, the 50.52 rulemakings. And actually, Nan has a slide coming up on this, the 50.52 rulemaking, the decommissioning rulemaking, and so forth.

And by and large, what we did was to stick with the current requirements, even though we knew another rulemaking was underway. And we will talk about in the preamble that these other activities are underway.

I'll have to go back -- I apologize -- I'll have to go back and look at where that reporting requirement rulemaking is in order for us to describe how it relates to this one. I don't think that's one we have listed under concurrent

rulemakings, but it probably should be.

MEMBER HALNON: Yes, and that's why I mentioned it. I think that, especially from a technology-inclusive perspective, some of these are pretty antiquated and may or may not apply. So, there could be some caveats put in the rule language that, if applicable, or whatever the case may be, so that people aren't stuck making useless reports. And I think that was the whole point of the rulemaking, was to try to modernize it. It was written back when fax machines were really, really cool.

MR. RECKLEY: We might still have a facsimile reference or two within our Part 53.

(Laughter.)

MEMBER HALNON: No doubt, no doubt.

But, anyway, that's just a real good place to modernize some of the requirements. These admin requirements in Subpart J are quite expensive to maintain continuously, and we're not going to be looking at huge admin staffs for some of these technologies. So, we want to be able to do what's necessary, especially since they may or may not have an onsite resident inspector. Depending on the inspection regime, some of this stuff is picked up in the inspections as well. So, all that needs to be

kind of balanced with flexibility and comprehensiveness that makes sense.

So, it will probably be a further discussion down the road, when we get the rulemakings out and we start modernizing some of the existing rules.

MS. VALLIERE: So, maybe I can just add a little bit. I did take a look at this. So, it's the non-emergency event reporting, rulemaking, or a name similar to that. And that rulemaking is just getting underway. So, that's why you won't see it listed on the slide on rulemaking coordination.

It appears we're going to be ahead of that rulemaking, but certainly would want to coordinate anything that comes out of that. And definitely agree that we recognize we need to go through, you know, another time to remove some of these either antiquated or very technology-specific requirements.

MEMBER HALNON: Right, or put the necessary caveat in the language that --

MS. VALLIERE: Yes.

MEMBER HALNON: -- allows some flexibility in it.

Thank you.

MR. HOELLMAN: Yes, and, Greg, just to

follow up, while Nan and Bill were addressing your question, I did look through my notes, and we do have comments in our working version that say we need to follow that rulemaking or address it in the SSC.

MEMBER HALNON: Thanks, Jordan.

MR. HOELLMAN: Uh-hum.

MEMBER KIRCHNER: Jordan?

MR. HOELLMAN: Yes?

MEMBER KIRCHNER: This is Walt Kirchner.

MR. HOELLMAN: Yes, go ahead, Walt.

MEMBER KIRCHNER: I know we're not talking about Subpart F today, but, to the extent that -- and correct me if I get the terminology wrong -- the Facility Safety Program. It struck me, when I looked at that, that would actually require, beyond the licensee event report system and other things listed here, could require -- I shouldn't draw a conclusion -- but I had the feeling it could require an extensive amount of reporting to the NRC, particularly if that still exists when we see it next month, updating the PRA, et cetera, et cetera.

Greg triggered this in my head because he mentioned, you know, there may not be resident inspectors, et cetera. Would those requirements there be more based on inspection and audit rather than

reporting?

MR. HOELLMAN: So, I'm not sure. It's been a while since I've looked at the requirement on the Facility Safety Program. I'm not sure if -- this is one of those things that I was talking about may fall under the periodic reports. I think there are reporting requirements in the specific Facility Safety Program section.

MEMBER KIRCHNER: Yes, that's what I remember as well. And I just was looking to see -- I haven't read the entire -- as Bill said, it's a rather big reading assignment. I didn't get into this level of detail on Subpart J.

MR. HOELLMAN: Yes. So, my understanding is there's the periodic reporting requirements in the specific program requirements for a Facility Safety Program, as it's currently drafted.

As I was mentioning earlier, we do have a section called "Periodic Reports" in Subpart J, and over the summer, as we're working to finalize the draft proposed rule package, you know, we're considering whether it would be easier to consolidate all those periodic reports in one section called "Periodic Reports" or if it makes more sense to include the specific program reporting requirements

within the program requirements. Does that make sense?

MEMBER KIRCHNER: Yes, it makes sense.

MR. HOELLMAN: Okay.

MEMBER KIRCHNER: I guess one advantage of consolidation is that you get a bigger -- you get one -- how should I say it? In one place, you get to look at the depth and breadth of reporting requirements --

MR. HOELLMAN: Uh-hum.

MEMBER KIRCHNER: -- rather than trying to sort them out of individual subparts. Just an observation, not a question.

MR. HOELLMAN: Yes, I appreciate that, Walt. That's similar to how we were thinking about it, too. We just hadn't got there yet, I guess.

Anyone else have any questions on Subpart J or comments?

Okay. I think we can move on to the next slide, and I think I'm turning it to Nan, I believe.

MS. VALLIERE: That's right, Jordan. Thanks.

MR. HOELLMAN: Uh-hum.

MS. VALLIERE: So, this is the final subpart in Framework A, Subpart K, on Quality Assurance. And we should be able to cover this

quickly because we've already talked about it a fair amount.

As Bill already mentioned at the beginning of our presentation today, Subpart K was added earlier this year, and prior to that, the QA requirements had been spread out throughout the various subparts.

We have received feedback from both internal and external stakeholders indicating a preference for consolidating the QA requirements in one place, as they are currently in Part 50, Appendix B.

So, as shown on this slide, the requirements in Subpart K align directly with the QA criteria in Appendix B to Part 50. The requirements in Subpart K are identical to those in Appendix B, except where wording changes were needed to align with the Part 53 terminology.

As Bill alluded to, this is an --

MEMBER BROWN: Excuse me. What does that mean, "align with" -- this is just "QC".

MS. VALLIERE: Yes. So, you may have heard us discuss earlier the fact that we are trying to avoid in Framework A some particular defined terms from Part 50 that don't carry over.

MEMBER BROWN: Such as?

MS. VALLIERE: Such as design basis. So, where those words appear in Appendix B, you'll find we have substituted the words "functional design criteria," which are the Framework A sort of replacement for that term.

MEMBER BROWN: For "design basis"?

MS. VALLIERE: Right. So, it's those type of issues. For example, in Appendix B, it talks about, "Nuclear power plants and fuel reprocessing plants include structures, systems, and components that prevent or mitigate the consequences of postulated accidents." And we say, in Framework A, "commercial nuclear power plants and manufactured reactors include structures, systems, and components that prevent or mitigate the consequences of licensing basis events."

So, it's that type of terminology change where you will see differences. But, otherwise, the QA criteria are identical.

CHAIRMAN PETTI: So, they are more conforming changes --

MS. VALLIERE: Yes.

CHAIRMAN PETTI: -- for the definitions in Part A?

MS. VALLIERE: Exactly.

CHAIRMAN PETTI: So, they don't get confused with the definitions in the other parts?

MS. VALLIERE: Exactly.

MEMBER BROWN: They're the same thing?

MS. VALLIERE: Yes, the same meaning. No change in meaning intended.

MEMBER BROWN: It just seems people have to adapt to another set of words, when the functionality -- they're all the same. It's just an interesting -- I just wanted to know what you all were talking about here.

Thank you.

MS. VALLIERE: Certainly.

Yes, and as Bill alluded to earlier, this is an issue that the industry is sensitive to because of the potential impact to the supply chain if the QA requirements are different in Part 53 than they are in 50 and 52. So, for this reason, we're being very careful --

MEMBER BROWN: I understand that.

MS. VALLIERE: Yes.

MEMBER BROWN: They ought to be the same. A nuclear power plant is a nuclear power plant, regardless of how you want to refer to it --

MS. VALLIERE: Yes. So, we are --

MEMBER BROWN: -- or what it looks like. Okay.

MS. VALLIERE: We are trying to be very careful to maintain consistency with the existing Appendix B QA requirements.

MEMBER BROWN: Yes. No, that's great. Thank you.

MS. VALLIERE: Any other questions related to Subpart K?

CHAIRMAN PETTI: Yes. So, Nan, earlier, in an earlier slide, there was supposedly flexibility for different codes and standards. So, would it be acceptable to use ISO quality standards, or does this really force them to, basically, NQA-1?

MS. VALLIERE: So, what you'll see, if you look at places where we mention consensus codes and standards within Part 53, you will see that it says that a licensee should use or could use "generally-accepted consensus codes and standards that have been found acceptable by the NRC."

So, either that means you are using a consensus code and standard that the NRC has already endorsed through some mechanism or, if not, you are seeking the NRC approval of that consensus code and standard through your application.

CHAIRMAN PETTI: Okay. I was wondering about the second part because I know certain designers are talking about ISO and certain designers talk about using Section 8, instead of Section 3, of the code because specific materials are there, but not in 3 yet. Those are some of the things I think you might actually see kind of flow --

MS. VALLIERE: Exactly.

MEMBER BALLINGER: This is Ron. This is Ron Ballinger.

But does that, in effect, mean that -- is there one that takes precedence? For example, if ISO 9000 and whatever the number is a criteria or standard language which is different from Appendix B, does Appendix B take precedence? Is there an overriding standard?

MR. RECKLEY: If I can, Nan?

MS. VALLIERE: Sure.

MR. RECKLEY: So, one of difficulties that I think we face in this area is that NQA-1 and its predecessors grew up, if you will, with Appendix B. And so, there's this alignment of the guidance and the requirements that's well-established.

However, we do have an activity underway. NEI is sponsoring a working group to look at ISO

standards to meet Appendix B. And so, the answer to your question, Ron, is that, under that activity, they'll show, or will try to show -- and hopefully, be able to show and the staff can approve -- that there are ISO requirements that align with these 18 criteria. This will be, as Appendix B is, the requirements.

And so, as they bring in the various ISO standards that they may want to show equivalency to NQA-1, or otherwise show that that ISO standard meets Appendix B, then that's the way that will be done. It's not as if ISO 9000 -- the difficulty is it might be structured somewhat differently. So, it may not be as clear an alignment as NQA-1 is because NQA-1, again, they were built to go together; whereas, ISO 9000 was built for broader purposes.

But they'll bring that in and try to show how the various aspects of a particular ISO standard meets Appendix B.

MEMBER BALLINGER: Yes, I mean, for example, as Dave sort of alluded to, if you compare ASME Code Section 2 materials, and the allowances in Section 3, Section 8, and Division -- now I'm going to get -- Section 3, Division 5, you'll find that the same material would have different limits.

So, if somebody wants to use Section 8, there would be a more expanded -- I'm pretty sure. Usually, Section 8, the range of temperature applicability is usually wider than for Section 3 for the same material.

MEMBER KIRCHNER: But I think, Ron, it would be incumbent on the applicant and the design team to make a compelling case to -- let's just pick something rhetorically -- the reactor vessel, whether you call it a pressure vessel or not, it's one of the main lines of defense in Bill's schematic diagram about containing fission products.

If that's relied on for the safety case, it would probably be a difficult argument to use Section 8 instead of Section 3.

MEMBER BALLINGER: Oh, for sure. That's why Section 8 exists.

MEMBER KIRCHNER: Yes, but, I mean, it is for like merchant ships --

MEMBER BALLINGER: Yes.

MEMBER KIRCHNER: -- and land-based boilers and such --

MEMBER BALLINGER: Well, fossil oil is used.

MEMBER KIRCHNER: Yes.

Since I interrupted, I just would like to make this observation to my colleagues. I think what the staff has done here is a distinct improvement. I worry about how the lay public looks at this 10 CFR 53 -- probably from the eyes of those different than we do in the business. We're looking for flexibility. We're addressing the Congress' requirements. I shouldn't say, "we." The staff is, et cetera, et cetera.

But, from the public -- and I've heard this a few times in stakeholder meetings -- they're looking for a comparable level of safety, as is afforded by 10 CFR 50 and 52. So, I think on this -- pardon the use of the word -- "critical topic," that 10 CFR 53, essentially, adopts the same quality assurance criteria as is required in 10 CFR 50 and 52. It is a very significant statement. So that the public couldn't erroneously draw the conclusion that there was a lesser level of quality assurance required for a reactor being licensed under 10 CFR 53 versus 50 and 52. So, I already said it this morning. I applaud this development.

And then, as far as ISO, then it's incumbent on that applicant that wants to use ISO -- is it 9000 or 900? I forget. -- to demonstrate

comparable quality assurance.

MEMBER BALLINGER: Yes, this is Ron Ballinger again.

As another example, the U.S. Section 2 and Section 3, the limits are, for the same material, if you go to the French code, you'll find that they're different, yes, and expanded.

CHAIRMAN PETTI: So, there's an inconsistency if someone comes in with --

MEMBER BALLINGER: Yes, yes.

CHAIRMAN PETTI: -- a design based on RCC-MR, the French code.

MEMBER BALLINGER: Yes.

CHAIRMAN PETTI: Yes.

MEMBER BALLINGER: And that will be especially true with Division 5, Section 3, Division 5, where it says, "the high temperature materials" stuff. It will give you plenty to do.

MS. VALLIERE: Okay. Do we have any other questions or comments related to Subpart K?

DR. BLEY: No, but is this your last one?

MS. VALLIERE: It's the last subpart. We have a couple of other topics.

DR. BLEY: Okay. I wanted to sneak in, too, and maybe those are the ones you want to talk

about.

CHAIRMAN PETTI: Well, I was thinking we might want to take a break.

DR. BLEY: Oh, okay.

CHAIRMAN PETTI: We've been doing this for a couple of hours. And between now, and then, these other topics would be a natural.

So, why don't we break until 3:30? And then, we'll pick it up from there.

(Whereupon, the above-entitled matter went off the record at 3:13 p.m. and resumed at 3:30 p.m.)

CHAIRMAN PETTI: Okay, we're back. Bill or Nan, I don't know who's going to lead the discussion. Go ahead.

MS. VALLIERE: Yes, thank you. So, are there any other questions on any of the Subparts in Framework A before we move on to other topics?

CHAIRMAN PETTI: So something that hits us, and maybe you could help us here, this Part 53 is going to be quite large. I mean, what you've given us is 400 lines. Or 400 pages. I don't know how big Framework B is going to be. And the preamble/statements of consideration.

I just worry, sort of optically, that 53, I think there is some expectation that it would be

streamlined and simpler, but it's not there. So I expect that will be a comment somewhere. You guys ought to think through.

And how big, you know, the other thing is we spent a year, a year and a half, on what is now Framework A. And Framework B, we'll have less than two weeks to look at. Given the schedule.

How long, how many pages is Framework B? How much homework do we have?

MS. VALLIERE: So that's a good question. And myself, don't have a good feel for how long. I don't think it's as long as Framework A, because for example, they don't have a separate citing subpart like we do in Framework A.

I guess if Billy or Candace are still online, if they want to offer a --

CHAIRMAN PETTI: Yes.

MS. VALLIERE: -- just a volume --

MR. JESSUP: Yes.

MS. VALLIERE: -- estimate?

MR. JESSUP: Sure, Nan. This is Bill Jessup from NRC Staff again. Working on the Framework Bravo side. So it's a good question.

Currently, the Framework Bravo draft preliminary proposed rule text is approximately 300

pages. However, as you saw in several slides before, a lot of that borrow from Framework Alpha. And we will be providing a crosswalk that indicates where a certain provision came from to assist in understand where things borrow from Framework Alpha, where they may borrow from elsewhere.

CHAIRMAN PETTI: Okay.

MR. JESSUP: Just to give you a slice of what it looks like.

CHAIRMAN PETTI: That helps. Thanks.

MEMBER REMPE: Are we going to the backup or the --

CHAIRMAN PETTI: Yes. Yes, we're going into the discussion stuff so go ahead guys.

DR. BLEY: Dave, you said we'll have two weeks to look at B. Is that right? They're not going to give us anything approaching our 30 days?

CHAIRMAN PETTI: Well that's a good question. Yes. I mean, some of us are pretty booked till the June committee. But when we'll we see Framework B? I've forgotten.

MS. VALLIERE: Bill Jessup, I'll let you answer that one was well.

MR. JESSUP: Sure. Thanks, Nan. Bill Jessup again. In working with Bob Beall, who is the

NMSS rulemaking PM, it's our understanding that that would be provided by June 10th. That's the date that I understand.

MEMBER REMPE: When you're subcommittee meeting?

CHAIRMAN PETTI: June. There is an extra week in June. It's June 20th. June 20th I think is our subcommittee.

MR. WIDMAYER: Yes. This is Derek. That provides two weeks.

CHAIRMAN PETTI: Two weeks. Okay. I thought I didn't misremember. Thank you.

MEMBER HALNON: Are we going to accept that? I mean, I won't have time to look at it at all.

CHAIRMAN PETTI: I don't know what, how else to do it. I mean, the schedule is heavily compressed here.

DR. BLEY: Well yes, but they're bringing it to us very late. In fact, we didn't know there was the Attachment B until fairly recently.

MR. WIDMAYER: So, you know, David, it's kind of up to you. We can press the Staff and try to reschedule the subcommittee meeting. I mean, it's a substantial bit to read 300 pages in two weeks.

MEMBER REMPE: And by the way, there is a

letter in July full committee meeting. So if you back off the subcommittee meeting, we need to understand the impact on the full committee meeting.

CHAIRMAN PETTI: I just don't see that the delay helps us. I mean, it's not like September, we're not doing anything. You know, this is the cost of compression we have.

DR. BLEY: Yes, Dave?

CHAIRMAN PETTI: Yes.

DR. BLEY: I think you're in good shape for Attachment A.

CHAIRMAN PETTI: Yes.

DR. BLEY: The idea that you would have a letter that would include something about Attachment B a week after the meeting, three weeks after we got to see anything seems a little beyond reasonable.

MEMBER SUNSERI: But isn't, I mean, didn't they just show us, I mean, some of these stuff are like the quality assurance.

CHAIRMAN PETTI: I think there is a lot of stuff --

(Simultaneous speaking.)

MEMBER SUNSERI: -- a section of that is the same exact section. You don't have to look at that --

CHAIRMAN PETTI: Most of it is going to be the initial purpose and definition section and that licensing process section for the Vogtle assembly, I think.

MEMBER REMPE: And when do we get Subpart F?

CHAIRMAN PETTI: I think the same time.

MEMBER REMPE: At the same time. So the letter would include any comments on that too?

CHAIRMAN PETTI: Yes.

MEMBER REMPE: Can any of this be provided to us early? Like, just not B, but there is also Subpart from Part A, right? If I got the parts and names correct.

CHAIRMAN PETTI: Yes. Subpart F --

MEMBER REMPE: Framework.

CHAIRMAN PETTI: -- is waiting for the legal guys.

MEMBER REMPE: It seems like --

CHAIRMAN PETTI: Is there any chance that could get to us earlier?

DR. BLEY: You know, with the kind of agreement we've had in the past that you'll give us a public version before the meeting, but we'd have one we couldn't share.

MR. RECKLEY: We can say we'll get it to you as soon as we can. And we can use the provisions you're mentioning, that we might give you something early. But it's May 19th today. And so, if we're able to give it to you we might be able to by a week or something like that. I mean, just as Dave said, everything is compressed.

DR. BLEY: Hey, Bill --

MEMBER BALLINGER: If I recall, Subpart F was a point of extensive and fairly energetic discussion.

MEMBER REMPE: Let's talk about Subpart F. If it's with the legal folks --

MR. RECKLEY: Okay.

MEMBER REMPE: -- can't we have that right away? Again, with the understanding we can't discuss it's publicly until it's been released. And there may be some changes they put in, and you'll identify to them. But I don't understand why that hasn't gone ahead and gotten to us for this next meeting.

MR. RECKLEY: Yes.

DR. BLEY: Associated with that, we got two weeks ago --

MR. RECKLEY: I'll just say that that subpart is still in flux. And so, as soon as we are

--

DR. BLEY: Yes.

MR. RECKLEY: As soon as we feel that it is steady, we'll work to get you something as soon as we can. But it would be counterproductive to give you something and then change it again. So, again, the best we can do is to say we'll get it to you as early as we can.

DR. BLEY: Related question, Bill.

MR. RECKLEY: Okay.

DR. BLEY: You got us one two weeks ago, which at least I didn't realize wasn't ready. Are there really substantive changes in what we're likely to see?

CHAIRMAN PETTI: There should be. I mean, we had specific comments on the operator part. I don't think there will be big changes on the, as Bill said in the beginning, the facility and the program pieces. The people --

MR. RECKLEY: The parts were --

MEMBER BALLINGER: But we may still be at odds.

MR. RECKLEY: Yes. The parts you are most interested in are those that are being revised.

DR. BLEY: Of course.

MEMBER BALLINGER: Okay.

MEMBER REMPE: I hope we have more clarity by the time we have our PMP in June because, again, the agenda for the July has to go out then.

CHAIRMAN PETTI: I think we should try our best to stick with the schedule. If we get into letter writing, we can't to a final letter, A, I mean, it could be something where we put in the letter that we're still going to provide additional comments later, or if we have a problem where we can't get to consensus okay, it won't get out in the July meeting.

MEMBER REMPE: And again, I don't think you're, there is not a hard deadline for the July ones. And just go ahead and go forward and get what you can --

CHAIRMAN PETTI: I think there is a --

MEMBER REMPE: -- and we can have a special web call.

MR. WIDMAYER: So one thing to remember is that they're going to come again in the fall with the language again. You have a chance to comment on it then.

CHAIRMAN PETTI: I'm just worried if there is anything big on Framework B, it behooves us to make sure that's in the July letter.

MR. WIDMAYER: So --

CHAIRMAN PETTI: Other issues where there's words or minor things, that's a different thing.

MR. WIDMAYER: So I think that you could, I think that, Dave, you could write a letter that says, here is the big thing from Framework B, but we're going to have more to say when we look at it again in the fall.

CHAIRMAN PETTI: Right.

MEMBER HALNON: And, Derek, there could be some pre-reading the IAEA stuff that it might be based on.

CHAIRMAN PETTI: I just them the email.

MEMBER HALNON: And we could probably start now if we can get that information. So the homework is good.

CHAIRMAN PETTI: I just sent Derek an email asking for the IAEA document that underlie that figure that he showed so people could, who aren't familiar with that enough, could get a leg up on it. So.

But yes. What you guys don't know is that I just got a couple more assignments that are coming up in early September, so it's going to be tough for

me too. Other things that have been delayed all of a sudden come up. Okay, please go ahead, Nan.

MS. VALLIERE: Okay. If there are no more questions on the Framework A rule language we can go on to Slide 44.

So the Staff has two additional topics to discuss with the subcommittee. Next slide please, Billy.

The first topic that we know is of interest to members of the subcommittee is rulemaking coordination. And Bill has already discussed, at a high level, how we are handling this.

Slide 45 lists ongoing rulemakings that are expected to impact related requirements in Part 53. These rulemakings include the final rulemaking on emergency planning for small modular reactors and other new technologies, which is currently with the commission.

The decommissioning proposed rulemaking, which is out for public comment. The Part 50-52 lessons learned proposed rulemaking, which is expected to go to the commission shortly. And the proposed rulemaking on financial qualification requirements for reactor licensing, which has been with the commission since 2018.

In general, under Framework A, as Bill mentioned, our approach has been not to try to parallel in Part 53 all the changes that are being proposed in these rulemakings, instead, we are including rule text in Part 53 that relates to provisions being affected by these ongoing rulemaking -- I apologize. Where we have included rule text in Part 53 that relates to provision being affected by the ongoing rulemakings, we have used the existing rule language, and have noted in our communications with stakeholders, that it is our intent to revisit those rule sections once these ongoing rulemakings are finalized.

This avoids the Staff having to constantly keep up with a group of moving targets with respect to these other rulemakings. I'll note that the one exception is the emergency panning rule for which we have included a direct reference to the new section 50.160, that will be added with the final EP rule. Because that final rule is already with the commission, we have greater confidence that it will be codified before Part 53 is finalized.

We plan to state our intentions with regard to these other rulemakings in the statements of consideration for the Part 53 proposed rule so that

external stakeholders are aware of our intention to conform Part 53 to changes made in those rulemakings where applicable.

Are there any questions about the way we are approaching our rulemaking coordination?

CHAIRMAN PETTI: Just, and I'm not totally worried about decommissioning, would be thrilled to have, about how 53 license plant go through decommissioning. Not urgent.

But on 50-52 alignment lessons learned, is there something in there that could affect 53?

MS. VALLIERE: I think the main piece from the 50-52 rulemaking that could affect Part 53 is they are making several or proposing several changes to the licensing processes and how they work. I know they're proposing changes related to design certification change processes and perhaps even terms of, you know, for design certifications, things like that. How long they are good for.

So those types of things would --

CHAIRMAN PETTI: It's more how than what?

MS. VALLIERE: Yes.

CHAIRMAN PETTI: Okay. I got it. Thanks.

MEMBER REMPE: So, while we're discussing that then, talk a little bit about the EP rulemaking.

Because I looked at your text and you explicitly call out for, for example, FEMA and how it would be done in consultation with FEMA. Are you planning to mimic what's in the other rule and change that text in your graph that we have in front of us?

MS. VALLIERE: And so right now, if you look at the EP programmatic requirements it will, it offers an applicant the option of either sticking with the existing, sort of Part 50 EP paradigm, or using the 50.160, what will be in the final rule, once approved by the commission. If approved by the commission.

So we are offering that option. The same option that exists under the EP SMR ONT rulemaking.

MEMBER HALNON: There's a branch that would --

MEMBER REMPE: Okay.

MEMBER HALNON: -- take it to the same place that Rule Part 50 is.

MS. VALLIERE: Okay. If there no further questions on rulemaking coordination, we can go onto the next topic which is guidance. And I will turn the presentation back over to Jordan.

DR. BLEY: Can I sneak my question in now, Nan?

MS. VALLIERE: Certainly.

DR. BLEY: I don't think you're getting to it. In the package we got two weeks ago there was a small Part 73 physical protection change. And there was a fitness for duty Part 26 change.

The Part 73 looks like it's just somebody's improving the English, as far as I can tell. Is there anything substantive there? I didn't see it if there is.

MS. VALLIERE: So there are three, three Part 73 sections that are being affected in the Part 53 proposed rulemaking. There is the physical security section, which is 73.100. There is a cybersecurity section, 73.110. And then access authorization section, 73.120.

They are all offering, I would say in many cases or more, a graded approach to these requirements than you might see existing under 50 and 52. And those are referred, if you look in the program section of Subpart F, you will see the references to those sections.

And offering, again, alternatives to use the existing requirements or the next sections being offered in the 53 rulemaking. If they meet the entry criteria.

DR. BLEY: Okay, thank you. All right.

MS. VALLIERE: Oh and, Dennis, I apologize.

DR. BLEY: It looked like it was just rewording that I saw. On Part 26, maybe you can tell us why fitness for duty needs to be updated, other than including certified operators, which could have been a one-word change.

Any other changes seem like they ought to be equally applicable to other people. But they're embedded in Appendix M, which only applies to Part 53 applicants. So I'm a little curious about that one.

MS. VALLIERE: Yes, so I'll attempt to very high-level overview, but realize the experts on fitness for duty reside in NSIR and aren't with us today, as far as I know.

DR. BLEY: I'm looking for high level, Nan. Go ahead.

MS. VALLIERE: Yes. So in general they took a, what I will call a transformative approach in fitness for duty and are offering under Part 53, again, a more graded approach to fitness for duty requirements. Again, depending on meeting some criteria.

So they have offered a separate program,

a fitness for duty overhaul, in the Part 53 rulemaking to try to be transformative. That would allow more flexibility for advance reactors and how they implement their fitness for duty program.

DR. BLEY: I hear the words, when I read it, the changes there seem like they would be very good for everybody. I'm just curious why it's locked into just Part 53 applicants?

MS. VALLIERE: Yes, that I really would have to defer to the fitness for duty experts to answer those questions.

DR. BLEY: You might pass it on to them. It just, it seems like it would be an opportune time to include those same things for everybody.

MEMBER HALNON: Hey, Nan, this is Greg Halnon. Could you take that as an action, to bring it in the June subcommittee when we're talking with operations and whatnot? Because I had the same question Dennis did, I didn't get that, you know, the fitness for duty for a reactor today should be the same fitness for duty that's for a reactor tomorrow.

And I don't quite, I couldn't get all the language in my mind how it was changing and how it was working. So maybe we can get the NSIR folks to come and explain that in the June subcommittee.

MS. VALLIERE: So I've just been informed that as a matter of fact, we do have our fitness for duty expert online with us, so I'm going to let Paul say a few words. Paul Harris.

MR. HARRIS: Yes, thank you, Nan. I didn't catch the whole comments. I was sitting here and I actually was not, I was on the call earlier, but not recently.

So I understand the question to be, why did we develop a brand new Subpart M for proposed Part 26 for advance reactors under Part 53 and why not did we just leverage what exists in Part 26 now or was the question different than that?

DR. BLEY: Well there were two parts. That was kind of the first part. The second part was, given what you've written, why wouldn't you just update this for everyone because some of the things in here seem like they would be equally useful to be able to come in under 50 or 52?

MR. HARRIS: Yes, I agree with you. The intent on -- the initiative that we have for Part 53 licensees starts from the fact that the radiological consequences of these reactors is lower than that of a large light water reactor. That's number one.

Number two, the human performance elements

of individuals is a little bit different as well. As you all know, the automated structure systems and components, passive safety systems tends to place a lower reliance on human performance requirements, you might say.

You know, the need for immediate actions aren't as high as it is at a light water reactor. If I could just summarize.

With those two elements, the human performance elements and the radiological consequence elements, based upon that, we made the conclusion that we can develop this fitness for duty framework based upon the fitness for duty program for a large light water reactor construction sites, like at V.C. Summer and Vogtle Units 3 and 4.

We considered the radiological consequences relatively the same because they're small. Smaller than operating reactors. And number two, the contribution of an individual at causing a radiological consequence is much lower during construction as well.

So we used the Subpart K regulatory framework, for fitness for duty programs for construction, as the model for Part 53 utilization facilities and manufacturing licensees who elect to

manufacture a manufactured reactor and/or fuel loads.

So, we started out with radiological consequences and looked at human performance and said, we can leverage Subpart K. Subpart K is very general requirements. I call them objective requirements.

Meaning, licensee go drug test your people, licensee implement behavioral observation. And a number of other elements. But we don't tell the licensee how to do it. And that's the model we used for Subpart K. Or Subpart M, for Part 53 licensees.

That is not the framework in the current Part 26 subparts that are applied to the Part 50 and 52 licensees. The FFD requirements for Part 50-52 licensees are much more explicit. They're much more robust. They're very detailed.

We actually tell the licensees how to do things. How to conduct a urine test, how to collect the specimen, how to transport a specimen. And the amount of detail is substantial compared to what we're proposing for Part 53 licensees.

DR. BLEY: Okay, thank you. If you were designing this for microreactors, that's one thing. But not all of the non-LWR reactors are going to be that low in power so --

MR. HARRIS: That's true.

DR. BLEY: -- that might be a big leap of faith here.

MR. HARRIS: Well --

MEMBER HALNON: Yes. Yes, Paul, this is Greg. You're making some assumptions that may not be true until after you have actually seen the application for the technology.

For instance, there may be a huge chemical hazard --

DR. BLEY: That's right.

MEMBER HALNON: -- that human performance could affect. And by making that assumption it's not always necessarily true.

So that comes back to, is human performance adequate for a nuclear facility, radiological and chemical protection of the public or is it not. And if it is, then we should have the same level for the existing light water reactors.

MR. HARRIS: Yes.

MEMBER HALNON: But this is an opportunity to tune it up. In know that there has been a lot of stuff going back and forth on work hours, in the fatigue rule.

MR. HARRIS: Right.

MEMBER HALNON: Fitness for duty. A lot

of learnings and a lot of difficult potential rule changes. And rule changes made for things that have been overly burden or not perspective enough. So it might be a good opportunity just to take an all look and fix it for everybody.

MR. HARRIS: Yes. That fixing it for everybody, I would love to do that. I've been in the agency a long time and that's something, that's one of my goals.

But I can assure the folks on the Board that the regulatory framework that we're proposing provides and equivalent level of assurance of not only that individuals are fit for duty and trustworthy and reliable, but these individuals -- I lost my train of thought.

That these individuals, we have the same regulatory assurance that these individuals will be fit for duty. We did not reduce any worker protections, we did not relax any drug testing requirements, except for the facility that can meet our FFD radiological consequence criterion. In which that would be looking more like, you might say a research and test reactor rather than a utilization facility generating a lot of electricity.

So the framework is there, the structure

is there. But we did not apply it to the large light water reactor community, like you notice.

MS. VALLIERE: And this is Nan. I just want to point out that it would be going beyond the scope of the rulemaking plan approved by the commission for the Part 53 rulemaking if we were to start to address issues related to the existing fleet.

MEMBER HALNON: Fair enough, Nan. I agree with that. Maybe there is an option to, almost like 50.160, to make it available for everybody if you can justify it. But I understand what you're saying.

DR. BLEY: And --

MEMBER HALNON: Maybe as we get through this we'll find different areas that, Paul, you can fix that 26 point less than 100 and 200s.

DR. BLEY: I did have one specific question. In 26.609, the last paragraph was added --

MR. HARRIS: Yes. I think I don't have that memorized, but I think 26.09 delta is what you're referring to. That's behavior observation in the control room. I think that's the one you're referring to.

MR. WIDMAYER: Yes. I think it's the video --

MR. HARRIS: Yes.

MR. WIDMAYER: Yes.

MR. HARRIS: Yes. Okay, so the Staff concern for that very specific element, and we briefed this through management, and this is the first independent look I'm hearing from others, so this is good.

The Staff concern is, is how do we ensure that individuals re under behavior observation? The rule doesn't say, continuous behavior observation, the rule doesn't say, two-man rule, like the military implement for weapons. It doesn't say that. It says, though shall be subject to behavior observation and all individuals shall conduct behavior observation.

However, if I have a facility that might be licensed and designed for a very small staff size in that the staff sizes available to operate the facility and there is not too many people there. How do I ensure that people are being observed in the conduct of their roles and responsibilities?

Let's say a licensed operator or a certified operator. Or someone at the controls. And that's sort of the, that's sort of the framework in which that delta paragraph is looking at.

If we have a small utilization facility that has few people onsite, there might only be one

individual at the controls of the reactor facility. And there might be other maintenance people around or security people around but no one else at the control. So how will you monitor what that individual is doing.

And it isn't just being fit for duty, but it also deals with the insider threat. We want to make sure that we're aligned with the behavior observation program within the security area and the access authorization program within the security area as well to ensure that that individual was at that control, has some sort of teamwork or peer review or management oversight in the conduct of activities that are being performed.

And that's why we're proposing that last paragraph in behavior observation section.

DR. BLEY: I apologize for disappearing, I lost the internet out here in Albuquerque, so I'll read the transcript to see what your answers were.

MR. HARRIS: Okay.

MR. WIDMAYER: So, hey, Greg, this is Derek. I had a huge box on my notes that we needed to bring FFD into the June meeting. Do you still want to have more presentation or is this adequate?

MEMBER HALNON: No, Paul did a fine job. I appreciate it.

MR. WIDMAYER: Okay, thanks.

MS. VALLIERE: Okay, thank you, Paul, for an impromptu presentation there.

MR. HARRIS: Yes, off the cuff I think. But we are standing by for any questions that the group might have. And be more than happy to answer any emails as well.

MS. VALLIERE: Okay. With that, if we have no more questions on the rule language, I think we can move on to the guidance discussion.

Can we go to the next slide please? And, Jordan, I'll turn it over to you.

MR. HOELLMAN: Okay, thanks, Nan. And good afternoon, again, everyone. I think we can move to the next slide.

My goal today is just to give everyone a sort of, continue our coordination with you all on the guidance we've been developing to both support early movers under the existing regulatory framework and to provide guidance, eventually, for Part 53.

Bill, you want to move to the next slide. I'll also be discussing the timing of when these guidance documents will be available. And sort of how we plan to reference them in the Part 53 proposed rulemaking package.

So as you guys probably know, in the Staff's rulemaking plan we proposed to build a regulatory framework from design through reconstruction and operation, and eventually to decommissioning, decommissioning a new part, Part 53, by December 2027, as directed and required by the Nuclear Energy Innovation Modernization Act.

The commission's SRM approved the rulemaking plan. And directed the Staff to provide a schedule with milestones and resource requirements to achieve publication of the final Part 53 rule by October 2024. And directed the Staff to identify key uncertainties impacting publication of the final rule by that date.

The timing of guidance document development was identified as a key uncertainty to meeting the commission directed schedule. And this slide covers the reasons and strategies the Staff would undertake to address this uncertainty.

So that basically we told the commission that this accelerated schedule would require us to focus resources on developing the proposed rule language and that the possible need to publish the proposed rule before completing draft supporting guidance, that was possible.

We told the commission we would continue to engage external stakeholders to ensure common prioritization of guidance documents. And that we would support early applications under Parts 50 and 52, such as the U.S. Department of Energy's Advance Reactor Demonstration Program.

So, Bill, you want to move to the next slide. Unless there is questions. And please interrupt me if there is questions. If that wasn't clear already.

Next. Yes. Okay. So, this slide sort of highlights a number of the key -- a number of the guidance documents that were kind of prioritized or considered key guidance to support Part 53.

As you guys know, the Staff has been identifying potential policy issues and gaps in the existing regulatory framework for advanced reactors for decades. And we continue to develop licensing approaches for advance reactors.

These activities in the past were done in parallel with, and sometimes interwoven, with the NRC's efforts to improve risk-informed and performance-based approaches within the agency.

In 2016 we interacted with stakeholders in the ACRS to develop the NRC's vision and strategy for

safely achieving effect and efficient non-light water reactor readiness in response to increasing interests and advance reactor designs.

In 2017 we issued the implementation action plans that focused on six strategies to achieve the goals and objectives stated in the vision and strategy. Based on input received from stakeholders and the ACRS that the Staff assigned priority to the execution of Strategy 3 and 5, which is resolving policy issues and ensuring flexible review strategies and developing guidance. However, activities were concluded and are ongoing to support all six strategies.

It is important to note that during this time we were focusing on closing key regulatory and licensing gaps for non-light water reactor technologies. The enactment of NEIMA in 2019 put additional emphasis on specific activities that the NRC had identified in the vision strategy NEIPs and directed the Staff to complete the rulemaking, or to complete a rulemaking for the technology inclusive regulatory framework by 2027.

NEIMA directed the NRC to provide reports to Congress on a number of these topics. Including increase the use of risk-informed performance-based

approaches establishing stages in the licensing process and developing guidance to account for the unique aspect of advance reactor technologies.

So while a number of these activities are being pursued to support advanced reactor applications under Parts 50 and 52, they are essentially, and I know that in some of our previous meetings you guys have pointed out that there are a number of, a number of the document titles have been for non-light water reactors. And I know that's caused some concerns from you all.

But that was our focus at the time under Part 50 and 52. And a number of our activities were done and developed with explicit considerations for the licensing modernization project methodology. Which is one of those documents that's says for non-light water reactors, although it is considered technology inclusive.

So, just to cover the items listed on this slide. A number of these you guys have reviewed. These will, the future and under development documents, some of which we've discussed under the various subparts earlier today, will come to you during the normal regulatory process for seeing these things. Or have already been planned to be presented

to you through the Part 53 rulemaking.

So I mentioned licensing modernization project in Reg Guide 1.233. We talked about citing. And earlier, or late last year we discussed the fuel qualification framework that we issued in NUREG-2246 in March of this year.

You guys have seen the non-light water reactor PRA standard. We presented to you on ASME Section 3, Division 5, for high temperature materials.

Tomorrow we'll present on you for ASME Section 11, Division 2, reliability integrity management. We have activities underway to support technology specific fuel qualification guidance.

There is work going on in industry to provide guidance for the PRA level of detail. There is the seismic design and seismic isolator white papers that Bill mentioned earlier today. There is emergency planning guidance moving with the final proposed rule that we just mentioned on the past slide.

There is an SNC led project on change process that ties into the licensing modernization project that Bill mentioned under the Subpart I discussions.

NEI is leading a QA alternatives project,

that we mentioned under Subpart K. And then we have a number of operator licensing and operator training program guidance that we're working to develop to support near-term applicants under Parts 50 and 52.

MEMBER BALLINGER: This is Ron Ballinger. I have what amounts to, I believe, is an administrative question maybe you guys can help us with.

If you look at Division 5 in Section 11, Division 2, when you try to get a hold of those things it's very convoluted. You have to do it on an individual basis from the library and you cannot upload these things to the SharePoint site from the ACRS without running the risk of doing jail time.

So, really, I'm wondering whether or not these ASME code sections that we're dealing with can be obtained in a way that we can put them on the SharePoint sites so members can actually see them without having to go through this convoluted exercise from the library where the individual code cases and codes and things are literally stamped with your personal name, and you can't do anything with it. You can't put it on the SharePoint site. That's just an administrative problem which we've come up against, which is a pain.

MR. HOELLMAN: Yes, Ron, I have the same observation you do. I don't know how to get around that. I'm not even sure I have access to the codes. I know there is a way to get access through the NRC's processes to get on the list. And I don't even know what the program is called that gets you access to them.

But I know I did get a warning, once, for someone noticing that one of these codes were on a SharePoint site and we needed to take them all down because they're copyrighted and whatnot.

MEMBER BALLINGER: Well, Division 5 is quite similar to other versions of the code. But Division 2 of Section 11 has got some really good stuff in it that relates to risk-informing and PRA, use of PRA. Well worth reading.

DR. BLEY: And, Ron, just a question for you and Chris. In our SHINE review they setup this box system which seems to be isolated and have more protections than others. Maybe that's the way you can get them to submit.

MEMBER BALLINGER: I think that's a, SHINE did that. Right? I don't think we did that. Yes, SHINE did that. So --

DR. BLEY: Never mind.

MEMBER BALLINGER: No. What I've decided, it's a little late, but what I've decided to do is to print a copy of Division 2 and leave it out. That you can do. You can print a copy, put it in the binder. And as long as you don't copy it, you can read it. But that's the only way I've figured out how to do it.

MR. RECKLEY: Ron, we'll take an action to talk to the technical library and see if there is anything we can do. But some of this is beyond our control.

MEMBER BALLINGER: I know it's kind of a mundane problem but --

MR. RECKLEY: No, no, it is. All the staff perfectly understands what you're saying. Again, the best we can do is say we'll talk to the technical library and see if there is an alternative to that.

Some of this is, again, is, as Jordan mentioned, it's setup by us or by ASME and there is not much we can do about it. But we will check. We will check.

MR. HOELLMAN: Okay, so moving to the Part 53 specific guidance. We currently have guidance underway for systematically evaluating initiating events. And for the quantitative risk estimate or

insights. That's part of Framework Bravo.

And that's efforts that, I think, Marty Stutzke has talked to you guys about stemming back for a while now. But definitely in the December subcommittee meeting. And we're developing similar to the seismic effort white papers to support those interactions with you all and external stakeholders.

And then similarly, the operator licensing stuff, human factor stuff, concept of operations and staffing falls within Subpart F discussions that we'll have later on.

In some cases these are supporting, well, I'm not sure the exact timing of a lot of these things. I don't know if the drafts will be available for when we have the Subpart F discussion or not, but they should be available by the, by your September or fall review of the entire proposed rule package.

Then we have items that touch on the Part 73 and Part 26 security and fitness for duty related portions of the proposed Part 53 rulemaking package. That it will be developed as well. Or are under development I mean.

And then the tech staff, and Danny was working to develop a materials compatibility interim staff guidance. Which essentially covers or addresses

parts of the regulation that aren't covered by ASME Section 3, Division 5.

That's things like environmental effects, coolant and the radiation items. Where Division 5 can't account for every coolant type or reactor type generically enough. So that work is also ongoing.

MEMBER BALLINGER: Yes. This is Ron Ballinger again. With respect to environmental effects and the like, have you looked at, I hate to keep mentioning ASME, but the ASME fitness for service code section?

It used to be an API 5, oh man, 579 and 580. And then ASME just basically wholesale adopted it and now it's called fitness for service dash 1 or something like that. It has several chapters in there on dealing with environmental effects. Not radiation effects but environmental effects.

MR. HOELLMAN: Okay. I appreciate that, Ron. I will take that back to the team working on it. I am not an expert on every single one of these guidance documents, so I'm not, you know, I've been involved in a number of them but not every single one. So I can't confirm whether or not that's been considered.

I would assume, because I know that people

work in it are involved in ASME and the like. But I'll take it back to them and make sure that it is.

MEMBER BALLINGER: Yes. Section, with the fitness for service, Chapter 7 and 9. I got it. I dovetail pretty well with the Division 2 of Section 11.

MR. HOELLMAN: Okay. Okay. I'm sure the folks working on, you know, we have a whole working group working on this so I --

MEMBER BALLINGER: The fitness for service, or the FF, whatever they call it, is not part of the NRC library by the way.

MR. HOELLMAN: Okay. Okay. Well, I'll take it back to the team and either, you want me to get back to Derek to close the loop on that?

MEMBER BALLINGER: No, not necessarily.

MR. HOELLMAN: All right. Okay.

MEMBER BALLINGER: I mean --

MR. HOELLMAN: I mean you --

MEMBER BALLINGER: -- fitness for service one is well worth it.

MR. HOELLMAN: Yes. I mean, as we get closer these things will get flagged to you guys for, if you're interesting in looking at them per the normal processes.

And then for future guidance, and what we've tried to do is, in looking at industry prioritization, and as I mentioned before, coordination with all in the past, try to identify areas where we think we might need additional guidance in the future.

These are things that haven't been worked on yet but have kind of been kicked around. And so some of the items are, you know, analytical margins.

Chemical hazards, manufacturing, technical specifications. We think under TICAP and ARCAP that maybe we'll be able to rely on that for short-term, but longer-term Part 53 we think we might need something more.

Facility safety program and then content of applications for the Framework B side of the house. Which we --

MEMBER REMPE: Jordan, slow down for a little bit. I'm sorry, go ahead and finish what you're saying about Framework B, but then can we start at the very beginning and talk a little bit about what you're thinking about with analytical margin?

But go ahead. I didn't mean to interrupt you, I thought you were done.

MR. HOELLMAN: No, that's okay. So, you

know, the content of the application for Framework B is essentially like an ARCAP/TICAP type thing. And we've only, I think kind of developed an outline for now. But that was, I was pretty much done anyways, Dr. Rempe, so.

MEMBER REMPE: So, yes, actually since you just finished. It seems to me that if someone was going to use Framework B, that the contents of application would be something that want pretty soon. But let's start at the very top. And what are you thinking about with analytical margin that you want to generate?

MR. HOELLMAN: So, for the analytical margins, what, you know, essentially we've been kind of discussing is whether it's, or how we can kind of, you know, there is a requirement or an option to pick something more restrictive then the QHOs, for instance, as your cumulative risk metric and if someone would pick that, how would that carry through the rest of the framework. Is kind of where --

MEMBER REMPE: That helps. I was thinking more about, we looked at something recently where they didn't have data and they used a structured process to deal with the fact that there wasn't data. So I just wasn't sure what this meant. And that's why I was

curious about.

But you're talking at something pretty high level. Like the QHOs or CDF instead of the QHOs. We were looking at a light water reactor. Is that what you're telling me?

MR. RECKLEY: Yes, Jordan, this is Bill.

MR. HOELLMAN: Yes.

MR. RECKLEY: Another reason --

MR. HOELLMAN: Yes, go ahead, Bill.

MR. RECKLEY: Another straightforward example is, is if you look at the frequency consequence target figure within LMP, for beyond design basis events, it would theoretically allow for very low frequency events to have an offsite consequence in the tens of rems, for example.

But if you wanted to keep the consequence below on rem to justify either the citing relaxations or the alternate emergency planning zone, that would be the use of what we're calling analytical margin. Because you're establishing a more restrictive criterion to use and then to justify an operating flexibility like a alternate emergency planning zone.

So when we're thinking that guidance might be useful in this area, it was really, with that one example that has been developed pretty thoroughly,

what other areas might applicants want to pursue that might be similar to that. And how would you define the margins, how would you maintain the margins throughout the lifecycle of the plant. Things like that.

We've not gotten much response on additional uses of analytical margins beyond the ones we're already aware of. So whether we develop this guidance will be in part based on future interactions with stakeholders and having a little better idea of what proposals they may be making.

MEMBER REMPE: That helps. I just am curious about this. Then chemical hazards, are you trying to think about acceptable levels, and doesn't EPA already have something like that or what are you thinking about with that?

MR. HOELLMAN: So I think for near-term we think we can rely on guidance under Part 70. But we've been, you know, starting to have discussions within NRR and research and NMSS to sort of see if now is the time to do that or if it makes more sense to sort of rely on what's, what we have now and gain experience from early reviews before kind of, or to help inform what would eventually become guidance.

MEMBER REMPE: Okay. And then my favorite

topic about manufacturing facilities and their licenses. What kind of guidance are you thinking about developing and which guidance, you've heard my colleagues tell me that there is guidance out there and which guidance are you going to be modifying?

Can you give me some more details on what you have there? And then I'll ask Walt and Dave to identify what guidance they think that exists that should be modified or is just perfect for the situation.

MS. VALLIERE: So, Jordan, I can start out if you would like?

MEMBER REMPE: Sure.

MS. VALLIERE: So there was --

MR. HOELLMAN: Yes, go ahead.

MS. VALLIERE: There was, under Part 52 there was never really any guidance developed for the manufacturing license process. So that's data point one.

And then as of course as we have discussed throughout the day today, we are expanding even what would have been allowed under Part 52, to include things like loading of fresh fuel at the manufacturing facility. So it would be guidance for the manufacturing license applicant to help layout some of

what we've put in the Part 53 rule with regard to that.

And again, as Jordan mentioned on the chemical hazards piece the question is, in our minds at least, it would help us if we had a little more clarity on what applicants were going to pursue before we start making a serious effort at the guidance.

MEMBER REMPE: So again, I know Bill said earlier about, well, we may only limit it to fresh fuel this time around. But physics testing was something that he mentioned.

Matt had a deal with the maximum number of loaded modules at the site, and things like that. I mean, I heard good things mentioned by Bill today.

But I also heard, you Walt, mention that, oh no, we've got guidance for dealing with this and the definitions. What guidance are you referring to that's out there, Walt?

MEMBER KIRCHNER: You're misstating my points.

MEMBER REMPE: Okay. Then correct me.

MEMBER KIRCHNER: I never said there is a guidance. There is an existing set of regulations that would allow a design team to figure out its way and path through this, with existing regulations. And

in different instances in the past, these had been used for those purposes.

So the regulations that I'm talking about, like the transportation, et cetera, do exist. And they do credit to the regulators, they are framed often in a fairly generic or fundamental criteria approach, so that as we discussed earlier today, if you're shipping, whether it's fresh fuel or spent fuel, there are existing regulations for doing that. Obviously it's done.

When it comes to fresh fuel, criticality safety is a primary concern. Depending on the amount of fuel that's being transported, and the regulations address that.

On the return end things get a little more difficult because bringing back an intact module with irradiated fuel has the added complications of shielding and weight that would go with that. But in general, there is a framework out there that allows the industry to move fresh fuel and spent fuel. And the requirements that are specified are fundamental enough that they, for a good design team, they could figure out their way through this.

Now, to your point about guidance, that would be nice. I don't know where in the priority of

things the Staff's efforts should be. That's not for me or us to determine.

You don't want a tail wagging the dog situation where some outlining design is consuming all the attention of the staff as they try and make this, put this rulemaking forward. But the regulations are pretty robust when it comes to moving these materials.

There are some quirks, as you might have indicated. If indeed you put the, load the fuel in the reactor, not only do you need a physical and positive way of ensuring shutdown margin, with regard to criticality, you have some other things that aren't, I don't want to call them, well, they're complications in a sense, source term would be one area where you probably would not want to ship an entire loaded intact core without a source term. So you have some signal to reference, et cetera. But I think those are second order details.

You're correct. Physics testing at a facility that is mainly a fuel manufacturer, that's going beyond what is normally done in the current fuel fab plants. So there the manufacturing licensing would have probably specifically address that.

But in general, what I was asserting was that the regulations provide a robust framework for

doing this. Is it readily apparent, probably not. But I think a sophisticated design team who is going to attempt to do this, can find their way through it.

And yes, guidance would be nice. Is that the highest priority for the staff in implementing 10 CFR 53, I don't know. That's not my call.

MEMBER REMPE: So when we doing, which letter was it, where we, I think it was our Part 50-52 letter, right, where we talked about we were going to be looking at, the Staff was going to be looking at this in a holistic fashion and to look at these cases.

That's why I'm following up on this because I'm thinking about the holistic fashion. Maybe it doesn't need to be done early on, and it can be addressed in the preamble saying we're just starting to think about this fueled transportation and manufacturing of a fueled module, but I'm not sure that we're hearing yet how the holistic look is going, is the point I was trying to make today.

And I think that we're in agreement some guidance is needed to address some possible quirks. And again, it might be good to let some design developers know about the things that may be more difficult.

CHAIRMAN PETTI: I just want to say that,

from the design side, there is discussion. Again, not something for today or tomorrow, but longer term of risk-informing transport regulations. Like the rest of the agency is doing under the reactor licensing.

Which is an interesting concept and I think both NRC Staff and some of the design developers are starting that discussion. I think we'd be very interested in it when it matures.

MEMBER REMPE: So, again, I always think of worst case things. And Dennis brought up something too today that I was thinking about.

Okay. So you got a radiation monitor to decide something is not right, what do you do. What prevention is involved there as you start thinking about the risk and those kinds of things.

Okay, so, what if we had a situation where you transport something, and something happens. Yes, you'll know that something is not going right because, even though you did a drop test and everything like that, something got jiggled and things are not behaving like it should be and the thing is starting to produce some sort of radiation, how do you stop it on the move?

CHAIRMAN PETTI: It's producing radiation all the time.

MEMBER REMPE: Yes. But after --

CHAIRMAN PETTI: I mean, you're saying --

(Simultaneous speaking.)

MEMBER REMPE: -- reactor --

CHAIRMAN PETTI: It will produce radiation outside the reactor vessel.

MEMBER REMPE: -- levels of what you're wanting where that you are --

(Simultaneous speaking.)

CHAIRMAN PETTI: There are, yes. There are --

(Simultaneous speaking.)

CHAIRMAN PETTI: There are accommodations that if your dose is outside this, I can't remember if it's a couple meters, there is some number that's above that, you have to apply for an accommodation. Like a special escort.

MEMBER KIRCHNER: Yes.

MEMBER REMPE: So if there is an unplanned event --

MEMBER KIRCHNER: Well, Joy --

(Simultaneously speaking.)

MEMBER KIRCHNER: Yes, Joy, but the industry deals with these kinds of things already. For example, when you ship fresh fuel you obviously

don't want to drop it.

But when upon receipt inspection at a nuclear power plant, if there is obvious damage or there is the determination of leakage, then you go into a corrective action mode. It gets more complicated if you have an entire intact core and so on, I would admit that. But there are processes that the industry and the agency uses for things like, when you have damage and transport and so on and so forth.

And that's, you know, as a designer having gone through this once in the '80s, that was one of the biggest concerns. Because it turns out that the drop requirements and such that you might see, the transport loads, probably far exceed even the seismic loads that you designed for.

CHAIRMAN PETTI: Yes.

MEMBER KIRCHNER: So, were you to drop a module, for example, then you would have to go into an inspection mode and determine whether you had created, for example, damage to the fuel elements or functionality of the control system, and so on.

It adds a lot of risk for the person, the design team that's going to take that challenge on. And they're going to have to be prepared for that.

But the system that is in place has a

means to address that. We can't, it would be hard to outline specifics because we don't even know what these modular --

MEMBER REMPE: All I'm asking --

MEMBER KIRCHNER: -- look like.

MEMBER REMPE: -- is for some guidance because I think things may be a little more difficult than what people were anticipating when you're talking about fresh fuel. Okay?

MEMBER KIRCHNER: I should stop myself, but having gone through this again, conceptually, the most difficult thing is retrieval intact. Just trust me on that.

It's the complication, the fresh fuel doesn't need shielding, retrieval does. So it's very complicated, you're correct.

Guidance is certainly, would be very useful. And the designer teams that are proposing this, be forewarned, the challenges are significant.

MEMBER REMPE: That's where I'm going. The challenges are significant, you can't just try and drive it somewhere in a remote location sometimes if you're on the road. That's all of my questions. Thank you.

MR. HOELLMAN: Okay, thanks, Dr. Rempe.

Very insightful for me, I know that. And that's why it's on our list of future guidance I guess.

Do you want me to go through the rest of these? I sort of touched on technical specifications. We think some of the work going on under ARCAP helps us in the near-term, but there is a potential that we may need to do more to support Part 53 specific tech spec requirements.

Facility safety program, of course this is a new program we're proposing in Part 53. And so we think we'll need some guidance to associate to complete that.

And then content of applications is of course, we're starting to develop an outline for that and plan for that work.

MEMBER REMPE: If you can, yes, the people that are pushing for B, I think that they would want that real soon. But I don't know. I guess you guys are more aware of what they're wanting.

MEMBER HALNON: Yes, what does future mean? Still before the rule --

MR. HOELLMAN: Yes. Yes, so once we, the next few slides we'll talk about the timing for each one of these categories. But future essentially means we're not doing anything with it now. There is

potential is that we won't do anything with it to support the proposed rule. We may have time to work on it between the proposed and final rule, but that's kind of the goal.

But like I mentioned before, and as described in our vision and strategy IAPs and supporting near-term applicants under Parts 50 and 52, the light blue stuff is essentially a little more critical than future guidance specific for Part 53.

So let's move to the next slide, Bill, and you'll get a feel for how the next slide, how the next few slides will move. All right.

So here is, we have existing guidance. These guidance documents currently exist. They'll be referenced in the Part 53 rule making package, as key guidance.

Conforming changes will be needed to ensure they're applicable to Part 53. For example we talked about some of the terms used in NEI 18-04, which are a little different than terms we're using in Part 53. Such as beyond design basis accidents. And we used very unlikely events sequences in Part 53.

So we'll need some conforming changes in crosswalks to ensure the alignment. Additionally, we'll need to remove some of the things where we say

this is applicable to non-light water reactors and make it more technology inclusive.

But these revisions will occur between the proposed rule and final stages. Since these guidance documents are being leveraged by early movers under Parts 50 and 52.

So the next slide is the guidance documents that are currently under development. So the light blue here are near-term guidance documents that we're working on. Their primary objective is to support near-term applicants under Parts 50 and 52.

They'll be referenced as key guidance in the rulemaking package. They'll be issued on their own schedules to support near-term applicants. But we expect them to also support Part 53.

So they will, like the existing guidance documents, will need conforming changes to ensure they're applicable to Part 53, to ensure they're applicable to all technologies and the like. And we expect that those revisions will occur between the proposed and final rule stages.

And that's how they'll be described in the rulemaking package. Or that's how we envision them being described.

The Part 53 specific guidance documents,

these are ones that are currently under development. They'll be included with the rulemaking package. Like how the commission's expectation for rulemakings are carried out today. With the guidance moving with the proposed rule.

So that's how we envision these documents going on. Like I mentioned earlier, some of these things we'll put in front of you later this summer or before we meet again in the fall.

Is there any questions on how any of these -- okay.

So let's move to, I think it's the last slide. And this is the future. The future guidance documents. These are identified as future guidance that may need to be developed to support Part 53.

These guidance documents may be referenced in the Part 53 rulemaking package as under development. They're expected to be completed to support the final rule.

We also know that additional operational program guidance and reporting requirements guidance will be needed eventually. But obviously because they won't be needed for initial licensing, we think that they aren't, or shouldn't be, prioritized as high as some of the other guidance documents needs we've

identified.

The other thing to note is, NEI is working on a prioritization list themselves. And that will help inform if there is any gaps in what we've developed.

And sort of help us ensure we're tackling the proper things. As we communicated to the commission in our response to the SRM. And as we've been doing since 2016 in interacting with you all and external stakeholders on these activities.

So I guess the last thing I'll mention, and I know that you guys have seen, or the Staff has presented on TICAP and ARCAP in the past, I know there has been a question about sort of the overall content of application guidance. And so a lot of these things kind of get compiled into ARCAP and TICAP to form the content of application guidance in specific areas to inform that technical area.

It will point to some of these other guidance documents. And that's kind of, you guys asked, that's the closest thing, I think, to a roadmap that I think one of you asked about earlier today.

So with that, I think we can move on to the next slide. Or we can have any sort of other discussions you want to have, but I think that's the

end of my prepared remarks, at least.

CHAIRMAN PETTI: Okay, thank you, Jordan. Yes, 13 minutes early. Oh that's right, we've public comments. Sorry. Let's ask USNIC to go.

MR. DRAFFIN: Okay. This is Cyril Draffin from the U.S. Nuclear Industry Council. We have slides, which I sent to Derek earlier. Would he want to show it, or should I share screens or just do it without slides?

MR. WIDMAYER: You can share your screen as long as Billy, I think you need to give up sharing. And you should be able to share, Cyril. All right, Cyril, see if you can -- yes, there you go.

MR. DRAFFIN: So is that, can you now see that?

MR. WIDMAYER: Yes, sir.

MR. DRAFFIN: Okay, thank you. I want to give the results of the survey that we took. They were just publicly released last week at the NRC stakeholders meeting. And I will cover who they, who the people are that submitted, on the next slide, which I hopefully can see the companies presenting.

MEMBER REMPE: Cyril, can you put this in presentation mode? You know what I'm saying? Because the screen is hard for us to read. That's much

better. Thank you.

MR. DRAFFIN: Okay. So there are 22 companies that completed the survey. There were 15 questions, fairly detailed. This comprehensive survey was sent to the senior regulatory affairs personal of these companies that are potential applicants to the NRC.

And they really do represent the organizations that will determine if Part 53 is useful and efficient or should it be set aside and not used. So we wanted to get their reaction.

This is the raw data that's provided in back. But what I'm going to do right now is just summarize who they were. And then a couple of the key conclusions.

Just for background. In fact, there was discussion earlier today that some companies are going to be owner/operators and designer/developers. It could be X-energy, it could be Oklo. So there is a new kind of class if you will.

But of the respondents, 12 were owner/operators. And ten were designer/developers only. So we really wanted to get a broad swath of organizations that were members of USNIC or NEI and to get their frank comments on what they thought.

We checked in a couple cases whether there was a difference between owner/operators and designer/developers and there really wasn't. The ones we checked on basically have the same responses.

So I just wanted to immediately give you the lay of the land, if you will, of the kinds of people that responded. Because it gives you the sense of credibility or how useful and credible the responses are.

So this is the first of two sets of insights. It's a comprehensive survey, as I indicated.

Fifteen of the 22 respondents have submitted an application to the NRC, are in pre-app with the NRC. Or submitted a risk response to the NRC. So these are active organizations that are engaged with the NRC and would be the most likely candidates for using Part 53.

There is support for an interest in using Part 53, pretty related to whether they think Part 53 is going to be more efficient than Part 50 and 52 in receiving, achieving the same level of safety. And if it's not more efficient than it will probably just stick with Part 50-52 and the exemptions that are required to use those tasks.

They had -- they basically supported the comments that NEI and USNIC made. There was very detailed, you know, couple hundred-page comments provided to the NRC in the fall. And some additional comments earlier this year. And there is industry support from that for both the owners and developers.

Then we got into, and I'll show you a couple, I won't go through them all, but I'll just give you a couple example slides at the very end in the appendix. But I don't want to hold you up this afternoon by going through that level of detail.

But for instance, we asked whether there was significant concerns, and they could choose the ones they wanted. And then they rank ordered them in terms of importance.

And the ones that came up as being most significant was expanded ALARA to be a design requirement proliferation of unnecessary programs, increase regulatory burden for non-safety SSCs. Safety objectives different than the Atomic Energy Act, expansion design basis and a lack of measurable goals for regulatory efficiency.

They also identified four parts, where they though there was benefits. For instance, increased use of performance-based approaches for

security and technology inclusive requirements.

They also suggested innovations on improvements are needed. Like strictly streamlining the license reviews, the regulatory approvals and the program requirements. It's not just the regulations and the guidance we've been talking about today, but how is that going to be implemented. And that's a question they're interested in, in terms of efficiency.

The input provided to the NRC was given regarding what in Framework A should be included or not included. In Framework B, it says a lot of detail on that.

There is diversity use of the PRA. Most don't want the PRAs in the rule. And probably the most important one was that many of the goals for Part 53 were not met by the current language, but some of them met.

So for instance, proving regulatory efficiency, predictability, stability, clarity and flexibility were, they didn't think it had been met. And then in summary, it's a time-consuming process and we certainly had been engaged in that. But there is only limited support for the current language and many areas for improvements were needed.

There is a lukewarm satisfaction for the NRC rationale for the opposed approach. And high satisfaction with the opportunity to comment, but low satisfaction of NRC's feedback industry.

So I'll touch upon what they look like. And obviously you can look up and they might be available in the slides. They were also included in the read ahead background materials from the May 11th stakeholder's meeting.

But it gives you data for support for the language, for the applications. Those people are like are likely to use Framework A or not. And maybe a, but a quarter are likely to use, over a third are not likely to use. And the most are, you know, we haven't seen the benefits yet but they're waiting.

This is the listing of the approaches, which offer benefits. And so you can we see we added the data both in the numbers of companies and also the percentages. The same thing for where could you have additional benefits in the two-party, in the two approaches.

These are the ones where they were concerned. And so, again, it rank orders the ones, they had the greatest concerns. And innovations were recommended.

And if you use Part 53, what kind of licensing approach would you use. And how well do you think they met their goals.

In most cases the, only about a third of them thought that the key goals had been met. Which was disconcerting, I think, in terms of results. But I just wanted to give you a snapshot of the data.

Today, I know it's the end of the day, but I just wanted to alert you that this information was available. It does represent the people might be users of Part 53. And I think that's their key element of how Part 53 is adopted, or not adopted. And so, we just wanted to share that with you today.

DR. BLEY: This is Dennis Bley, Cyril. Have you written a report on this, and have you made available to the Staff, and to this Committee, both your questionnaire and the results, other than the slides you're showing today?

MR. DRAFFIN: In addition to what you've seen today, this represents maybe a third of the slides. So there is more information on it and data.

We could of course give you the questions, but they're basically re-stated at the top of each page. So there is, or the category. So we certainly can share that. But I don't think there is any new

information that's not already in the slides.

We did not have a report that we've done in addition to this. If there are particular questions you have, let us know. We can go back and look at the data. We're not disclosing any individual response, but we could try to clarify if there is something that you've seen in the data, that you want to hear more about.

DR. BLEY: Okay, thanks. And then as long as those questions at the top of each page are reasonably the same as the questions you asked, that's great.

MR. DRAFFIN: I think reasonably is like 95 percent. They might have been shortened just to fit on this slide.

And again, this is available to you. And if you have any particular ones you like to go through, I'm happy to do that at this time.

MEMBER KIRCHNER: Cyril, this is a difficult question. This is Walt Kirchner.

MR. DRAFFIN: Certainly.

MEMBER KIRCHNER: You represent a broad cross-section of the industry. Obviously some of your participants, thank you, have much more experience in dealing with, and engaging with the NRC, than others.

Is there any, when you look through your responses, and I know this is fraught with potential bias, but of the list here, of organizations and corporations that are frequently, have a long history of interaction with the NRC, was there any skewing of their responses that of the whole? Do you see where I'm going?

MR. DRAFFIN: Absolutely. The answer is, we did not do that. For a couple of reasons. One, it's hard for us to judge. This is a, you know, a more qualified company than the other one.

And also, Part 53 is supposed to last and be useful for decades. And so, it's not just the ones that are currently, have experience with NRC on 50-52, it's a number of the smaller companies which may not have a lot of experience in the NRC but want to, and therefore would be using Part 53. So that was the reason why we didn't split that because we didn't know exactly how to do that and whether it was useful.

CHAIRMAN PETTI: Thank you. Hey, Members, just so you know, we're breaking our rule of asking responses from public comment.

MEMBER KIRCHNER: Apologies, Dave.

CHAIRMAN PETTI: Yes.

MEMBER KIRCHNER: Thank you.

CHAIRMAN PETTI: Just, I think it would be nice just to make sure we have the slides for our information in our deliberations.

MR. WIDMAYER: So, Dave, this is Derek. The slides are included in one of the background documents.

CHAIRMAN PETTI: Oh, good. Okay, I missed that. Thank you.

MR. WIDMAYER: Yes.

CHAIRMAN PETTI: So let me turn now, is there any other public comments out there? If so, state your name, your comment. Make sure you unmute yourself. Okay, not hearing any.

Thank you, everyone. I thank the Staff. This has been a long day with a lot of information. And you've done a tremendous job getting ready for our meeting and I thank you for that.

And we'll be back the next --

(Off microphone comment.)

CHAIRMAN PETTI: Okay.

MEMBER REMPE: So the court reporter knows we're off the record.

CHAIRMAN PETTI: We're off the record.

(Whereupon, the above-entitled matter went off the record at 5:00 p.m.)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Advisory Committee on Reactor Safeguards (ACRS) Regulatory Rulemaking, Policies and Practices: Part 53 Subcommittee

10 CFR Part 53 "Licensing and Regulation of Advanced Nuclear Reactors"

May 19, 2022

Advanced Reactor Program

Agenda

Topic
• Staff Introduction

• Introduction to Part 53
• Framework A Subparts
  ○ A – General Provisions
  ○ B – Technology-Inclusive Safety Requirements
  ○ C – Design and Analysis Requirements
  ○ D – Siting Requirements
  ○ E – Construction and Manufacturing Requirements
  ○ G – Decommissioning Requirements
  ○ H – Licenses, Certifications, and Approvals
  ○ I – Maintaining and Revising Licensing Basis Information
  ○ J – Reporting and Other Administrative Requirements
  ○ K – Quality Assurance Criteria
• Key Guidance

Welcome and Introductions

Welcome:

- Steve Lynch, Office of Nuclear Reactor Regulation (NRR)

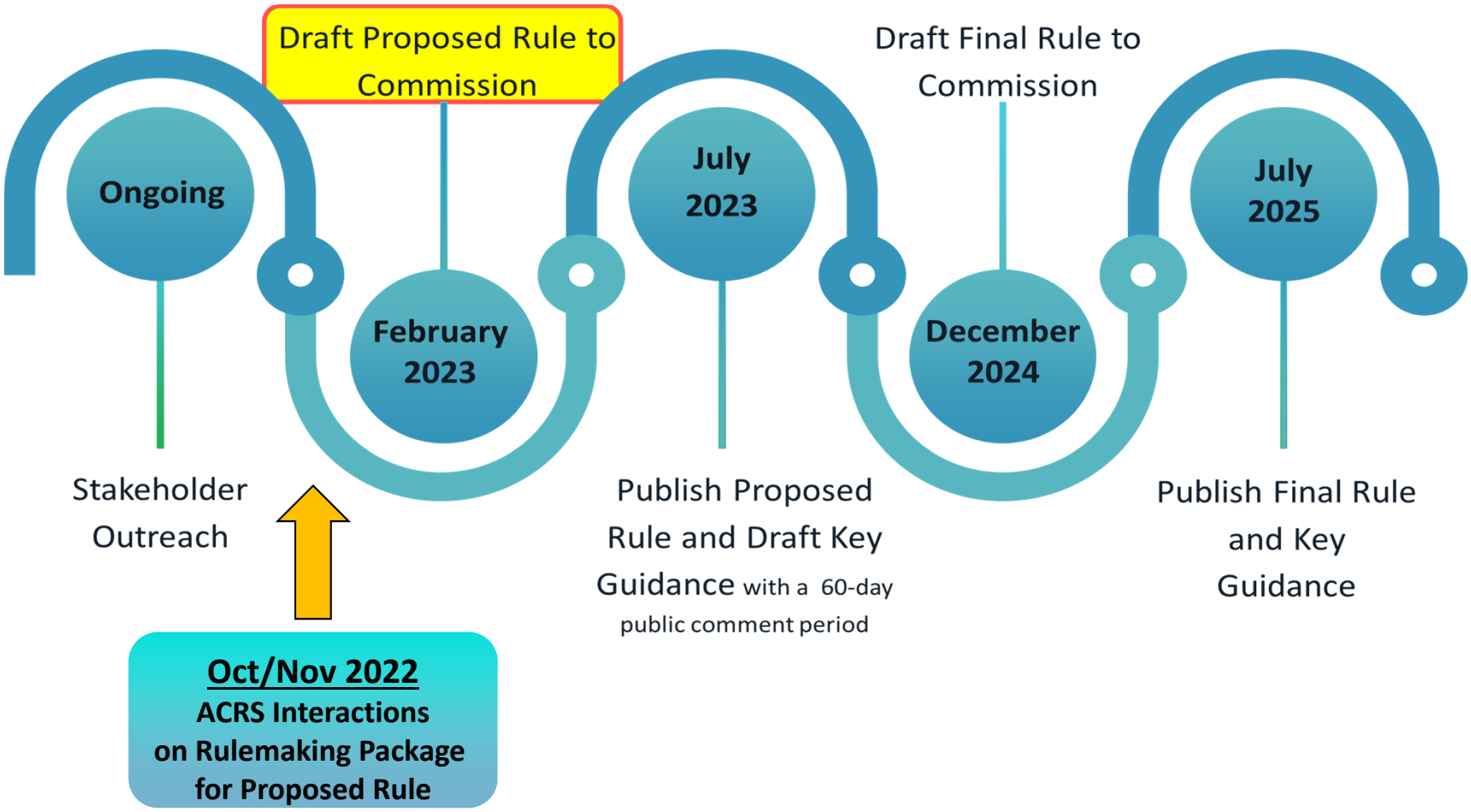
NRC Speakers / Presenters:

- Bill Reckley, NRR
- Jordan Hoellman, NRR
- Nan Valliere, NRR

Meeting Slides:

- ADAMS Accession No. ML22125A001

Rulemaking Schedule



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Part 53 Licensing Frameworks

Subpart A – *General Provisions*

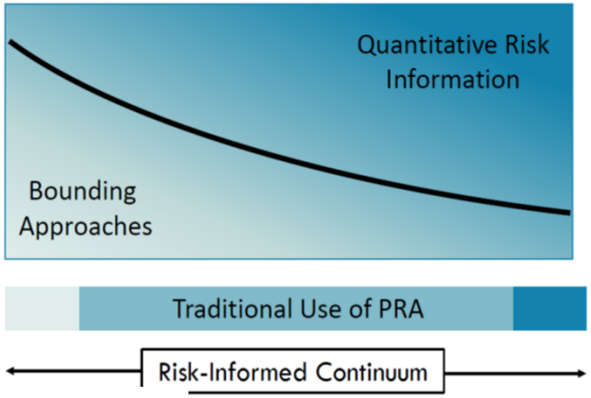
Framework A

- Subpart B – Safety Requirements
- Subpart C – Design Requirements
- Subpart D – Siting
- Subpart E – Construction
- Subpart F – Operations
- Subpart G – Decommissioning
- Subpart H – Licensing Processes
- Subpart I – License Maintenance
- Subpart J – Reporting
- Subpart K – Quality Assurance

Framework B

- Subpart N – Purpose/Definitions
- Subpart O – Construction
- Subpart P – Operations
- Subpart Q – Decommissioning
- Subpart R – Licensing Processes ⇄ **Alternate Evaluation for Risk Insights**
- Subpart S – License Maintenance
- Subpart T – Reporting
- Subpart U – Quality Assurance

Part 53 Licensing Frameworks



Framework B
Emphasis
Design Criteria

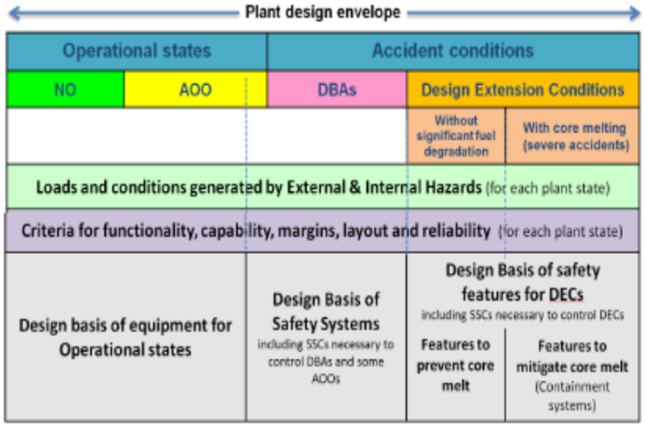


FIG. 2. Main elements of the design basis of SSCs for different plant states.

- ***Traditional approach represented by figure from IAEA guidance***

Framework A
Emphasis
Risk metrics

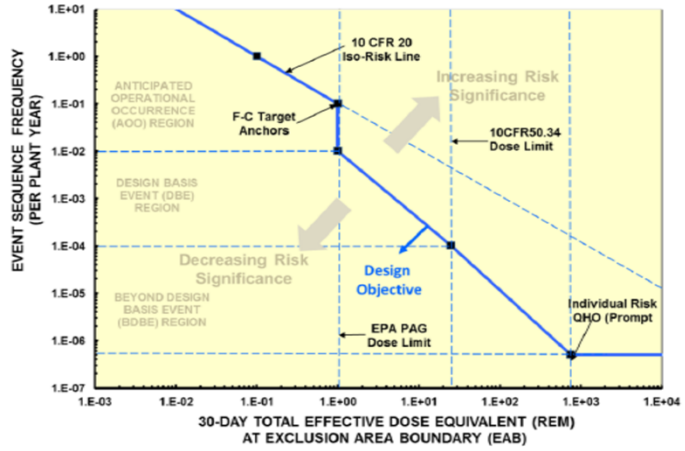


Figure 3-1. Frequency-Consequence Target

- ***With addition of DBA used to set design criteria and performance objectives for the design of Safety Related SSCs.***

Consolidated Preliminary Rule Language (Including Second Iteration) Summary & Changes

Framework A

Subpart A	**General Provisions (Definitions)**
Subpart B	**Safety Requirements** (Including QHOs, ALARA)
Subpart C	**Design and Analysis**
Subpart D	**Siting**
Subpart E	**Construction and Manufacturing**
Subpart F	***Operation*** *(Including Engineering Expertise, Operator Licensing)*
Subpart G	**Decommissioning**
Subpart H	**Licenses, Certifications and Approvals**
Subpart I	**Maintaining Licensing Basis**
Subpart J	**Reporting and Administrative**
Subpart K	**Quality Assurance**

Evolution of Part 53 & Stakeholder Feedback

Topic	Addressed in Preliminary Proposed Rule Language
Duplicative/overlapping programs	• Quality Assurance (QA) requirements consolidated in Subpart K. • Added flexibility for licensees to organize and combine programs, as appropriate, to avoid duplication (Subparts F & K).
Manufacturing license (ML) expansion	Expanded activities permitted under ML to include fabrication of entire reactor, including fuel loading (Subparts E & H).
Safety criteria structure	Eliminated two-tiered approach to safety criteria (Subpart B).
Codes and standards	Enabled flexibility in using codes and standards.
Normal operations	Decoupled requirements for normal operation from those for licensing basis events (LBEs) (Subparts B & C).
Use of “advanced nuclear plant” and expansion beyond commercial reactors	• The staff has removed references to “advanced nuclear plant”. • No plans to expand applicability to research and test reactors (note that NEIMA is directed at commercial reactors) (Subpart A).

Subpart A – General Provisions

- Selected definitions
  - Commercial nuclear plant
  - Commercial nuclear reactor
  - Manufactured reactor
  - Manufactured reactor module
- Methodology definitions
  - Event categories
  - Defense in depth

Subpart B - Technology-Inclusive Safety Requirements

§ 53.200 Safety objectives.

§ 53.210 Safety criteria for design basis accidents.

§ 53.220 Safety criteria for licensing basis events other than design basis accidents.

§ 53.230 Safety functions.

§ 53.240 Licensing basis events.

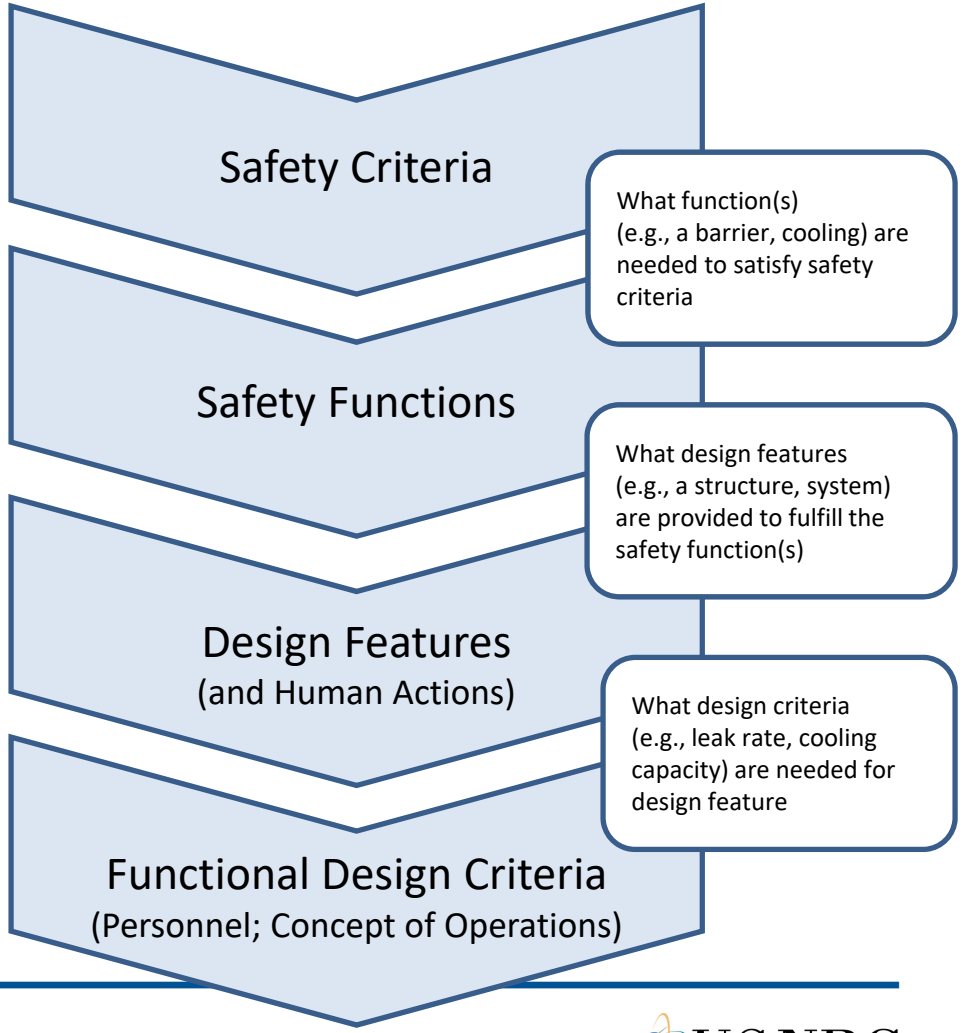
§ 53.250 Defense in depth.

§ 53.260 Normal operations.

§ 53.270 Protection of plant workers.

Subpart B – Safety Criteria

- Safety Objectives
- DBA Safety Criteria
- Non-DBA Safety Criteria
- Safety Functions
- Licensing Basis Events
- Defense in Depth
- Role of:
  - Structures, systems, and components (SSCs)
  - Personnel
  - Programs



Subpart B - Technology-Inclusive Safety Requirements

- Revised criterion related to NRC quantitative health objectives (QHOs) to address feedback.

- Revised criteria related to as low as reasonably achievable (ALARA) to address feedback.

QHOs – Updated Preliminary Proposed Rule Language (May 2022)

§ 53.220 Safety criteria for licensing basis events other than design basis accidents.

Design features and programmatic controls must be provided to:

(a) Ensure plant structures, systems and components (SSCs), personnel, and programs provide the necessary capabilities and maintain the necessary reliability to address licensing basis events in accordance with § 53.240 and provide measures for defense-in-depth in accordance with § 53.250; and

(b) Maintain overall cumulative plant risk from licensing basis events other than design basis accidents analyzed in accordance with § 53.450(e) such that the calculated risk to an average individual in the vicinity of the commercial nuclear plant of prompt fatalities remains below five in 10 million years, and the calculated risk the population in the area near a commercial nuclear plant of cancer fatalities remains below two in one million years.

QHOs – Basis

- Performance-based approaches use measurable or calculable performance metrics.
- Risk-informed approach benefits from cumulative risk measure as well as success criteria for specific event sequences
- QHOs are well established and have been used in making regulatory decisions since they were developed as part of the NRC's Safety Goal Policy Statement. Examples include:
  - Regulatory Guide (RG) 1.174 (Using probabilistic risk assessments (PRA) in risk-informed decisions - licensing basis)
  - NUREG/BR-0058, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission."
- Supports risk-informed, performance-based approach as encouraged by NEIMA.
- Provides predictability and stability in that acceptance criteria are defined and are used by both applicants and NRC during initial licensing reviews and maintenance of licensing basis information (Subpart I, "Maintaining and Revising Licensing Basis Information").

QHOs – Basis

- Methodologies available for performing risk assessments and comparing to QHOs.
  - Supported by recently issued RG 1.247, “TRIAL - Acceptability of Probabilistic Risk Assessment Results for Non-Light Water Reactor Risk-Informed Activities”
- Applicants may choose to use surrogate measures to show that designs or plants satisfy the QHO-related criteria (e.g., core damage frequency for light-water reactors (LWRs))
- Recent language change to “calculated risk” and to refer to “analyzed in accordance with § 53.450(e)” intended to address issues about uncertainties associated with estimating risks to the public from the release of radionuclides.
- Revised to “fatalities” to maintain alignment with Safety Goal Policy Statement
- Rationale for using QHOs as a metric will be provided in Statement of Considerations for the proposed rule package.

ALARA – Updated Preliminary Proposed Rule Language

§ 53.260 Normal operations.

(a) *Maximum public dose.* Licensees under this part must ensure that normal plant operations do not result in public doses or dose rates in unrestricted areas that exceed the limits provided in Subpart D to 10 CFR part 20.

(b) *As low as reasonably achievable.* A combination of design features and programmatic controls must be established such that the estimated total effective dose equivalent to individual members of the public from effluents resulting from normal plant operation are as low as is reasonably achievable in accordance with 10 CFR part 20.

(similar text for occupational exposures)

ALARA – Basis

- Consistent with current requirements in § 50.34a, "Design objectives for equipment to control releases of radioactive material in effluents— nuclear power reactors." Additional ALARA requirements tied to the initial design of a facility include Appendix I to Part 50; 10 CFR 20.1101, and 40 CFR Part 190 (EPA).
- Consistent with previous design certification (DC) applications

10 CFR 50.34a, "Design objectives for equipment to control releases of radioactive material in effluents—nuclear power reactors.

(e) Each application for a design approval, a design certification, or a manufacturing license under part 52 of this chapter shall include:

(1)A description of the equipment for the control of gaseous and liquid effluents and for the maintenance and use of equipment installed in radioactive waste systems, under paragraph (a) of this section; and …

(a) … a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in gaseous and liquid effluents … the application shall also identify the design objectives, and the means to be employed, for keeping levels of radioactive material in effluents to unrestricted areas as low as is reasonably achievable….

ALARA – Basis

- Recognizes that plant design plays essential role in controlling releases and protecting plant workers
- Consistent with past Commission decisions (Part 20 rulemaking, Advanced Reactor Policy Statement)
- Many cost-effective solutions are most effectively identified and addressed at the design stage of a project
- Staff is proposing more performance-based approach to preparing applications and NRC review of ALARA during design reviews through issuing draft guidance (Advanced reactor content of application project [ARCAP])
- Rationale for maintaining ALARA requirements—for both licensees and designers— will be provided in Statement of Considerations for the proposed rule package

Subpart C - Design and Analysis Requirements

§ 53.400 Design features for licensing basis events.
§ 53.410 Functional design criteria for design basis accidents.
§ 53.420 Functional design criteria for licensing basis events other than design basis accidents.
§ 53.425 Design features and functional design criteria for normal operations.
§ 53.430 Design features and functional design criteria for protection of plant workers.
§ 53.440 Design requirements.
§ 53.450 Analysis requirements.
§ 53.460 Safety categorization and special treatment.
§ 53.470 Maintaining analytical safety margins used to justify operational flexibilities.
§ 53.480 Earthquake engineering.

Subpart C - Design and Analysis Requirements

- Clarified references to use of consensus codes and standards and requirement that they must be found acceptable by NRC.
- Added design requirements for:
  - Aircraft impact
  - Chemical hazards related to licensed materials
  - Minimizing contamination

Subpart C - Design and Analysis Requirements

- Changes and Clarifications for Analysis Sections
  - Added need to define evaluation criteria for each event or specific categories of LBEs
- Changes and Clarifications for SSC Categorization
  - Added reference to Subpart K (QA)
    - Required for safety-related SSCs
    - As appropriate for non-safety-related but safety significant SSCs

§ 53.450(e) – LBEs other than DBA

(e) *Analyses of licensing basis events other than design basis accidents*.

Analyses must be performed for licensing basis events other than design basis accidents. These licensing basis events must be identified using insights from a PRA in combination with other generally accepted approaches for systematically evaluating engineered systems to identify and analyze equipment failures and human errors. The analysis of licensing basis events other than design basis accidents must include definition of evaluation criteria for each event or specific categories of licensing basis events to determine the acceptability of the plant response to the challenges posed by internal and external hazards. The analyses must address event sequences from initiation to a defined end state and be used in combination with other engineering analyses to demonstrate that the functional design criteria required by § 53.420 provide sufficient barriers to the unplanned release of radionuclides to satisfy the evaluation criteria defined for each licensing basis event, to satisfy the safety criteria of § 53.220, and provide defense in depth as required by § 53.250. The methodology used to identify, categorize, and analyze licensing basis events must include a means to identify event sequences deemed significant for controlling the risks posed to public health and safety.

Event Selection & Analysis

Licensing Modernization Project
AOOs

Anticipated **event sequences** expected to occur one or more times during the life of a nuclear power plant, which may include one or more reactor modules. **Event sequences with mean frequencies of 1×10^{-2}/plant-year and greater are classified as AOOs. AOOs take into account the expected response of all SSCs within the plant, regardless of safety classification.**

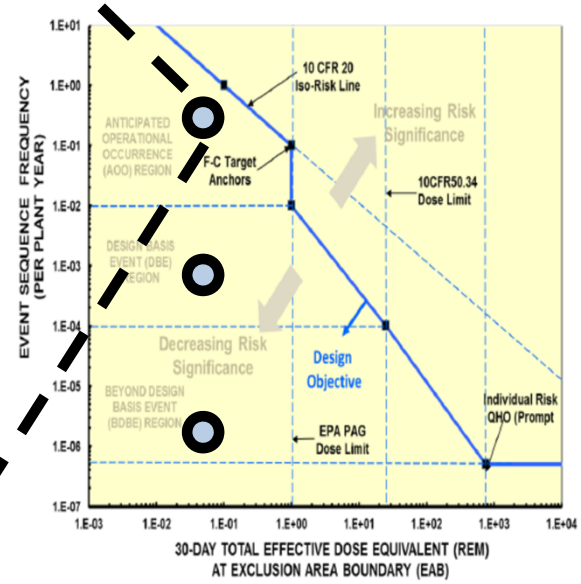


Figure 3-1. Frequency-Consequence Target

Event Selection & Analysis

Licensing Modernization Project
DBEs
Part 53: Unlikely Event Sequences

Infrequent **event sequences** that are not expected to occur in the life of a nuclear power plant, which may include one or more reactor modules, but are less likely than AOOs**. Event sequences with mean frequencies of 1×10^{-4}/plant-year to 1×10^{-2}/plant-year are classified as DBEs. DBEs take into account the expected response of all SSCs within the plant regardless of safety classification.**

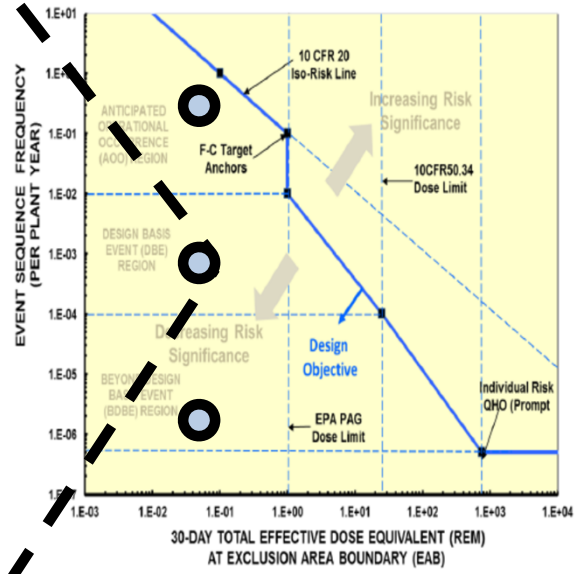


Figure 3-1. Frequency-Consequence Target

Event Selection & Analysis

Licensing Modernization Project
BDBEs
Part 53: Very Unlikely Event Sequences

Rare **event sequences** that are not expected to occur in the life of a nuclear power plant, which may include one or more reactor modules, but are less likely than a DBE. **Event sequences with mean frequencies of 5×10^{-7}/plant-year to 1×10^{-4}/plant-year are classified as BDBEs. BDBEs take into account the expected response of all SSCs within the plant regardless of safety classification.**

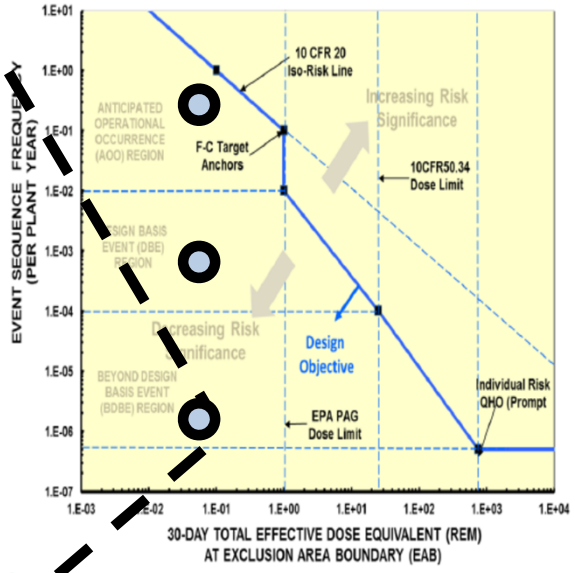


Figure 3-1. Frequency-Consequence Target

§ 53.450(f) – Design basis accidents

(f) *Analysis of design basis accidents*.

The analysis of licensing basis events required by § 53.240 must include analysis of design basis accidents that address possible challenges to the safety functions identified in accordance with § 53.230. The events selected as design basis accidents must be those that, if not terminated, have the potential for exceeding the safety criteria in § 53.210. The design basis accidents selected must be analyzed using deterministic methods that address event sequences from initiation to a safe stable end state and assume only the safety-related SSCs identified in accordance with § 53.460 and human actions addressed by the requirements of Subpart F are available to perform the safety functions identified in accordance with § 53.230. The analysis must conservatively demonstrate compliance with the safety criteria in § 53.210.

Design Basis Accidents

Licensing Modernization Project
DBAs

Postulated event sequences that are used to set design criteria and performance objectives for the design of Safety Related SSCs. DBAs are derived from DBEs based on the capabilities and reliabilities of Safety-Related SSCs needed to mitigate and prevent event sequences, respectively. **DBAs are derived from the DBEs by prescriptively assuming that only Safety Related SSCs are available to mitigate postulated event sequence consequences to within the 10 CFR 50.34 dose limits.** **(Part 53: Safety Criteria in Subpart B)**

Subpart C - Design and Analysis Requirements

- Added § 53.480 “Earthquake engineering”.
  - Intended to support the more flexible and graded seismic design approaches afforded by performance-based standards such as the American Society of Civil Engineers (ASCE)/Structural Engineering Institute (SEI) 4-19, “Seismic Design Criteria for Structures, Systems, and Components in Nuclear Facilities”
  - Future interactions with ACRS expected on this topic through development of guidance documents

Subpart D – Siting Requirements

§ 53.500 General siting.
§ 53.510 External hazards.
§ 53.520 Site characteristics.
§ 53.530 Population-related considerations
§ 53.540 Siting interfaces.

- Added QA requirement for siting activities.
- Made changes related to the earthquake engineering section in Subpart C

Subpart E - Construction and Manufacturing Requirements

§ 53.600 Scope and purpose.
§ 53.605 Reporting of defects and noncompliance.
§ 53.610 Construction
§ 53.620 Manufacturing

- Made changes reflecting consolidation of QA requirements in Subpart K
- Added § 53.605 to capture requirements in § 50.55(e).
- Clarified requirements for MLs allowing fuel loading.
  - References to 10 CFR Part 70

Subpart F - Requirements for Operation

To be discussed during June meeting

Subpart G - Decommissioning Requirements

- § 53.1000 Scope and purpose.
- § 53.1010 Financial assurance for decommissioning.
- § 53.1020 Cost estimates for required decommissioning funds.
- § 53.1030 Annual adjustments to cost estimates for decommissioning.
- § 53.1040 Methods for providing financial assurance for decommissioning.
- § 53.1045 Requirements for decommissioning trust funds.
- § 53.1050 NRC oversight.
- § 53.1060 Reporting and recordkeeping requirements.
- § 53.1070 Termination of license.
- § 53.1080 Release of part of a commercial nuclear plant for unrestricted use.

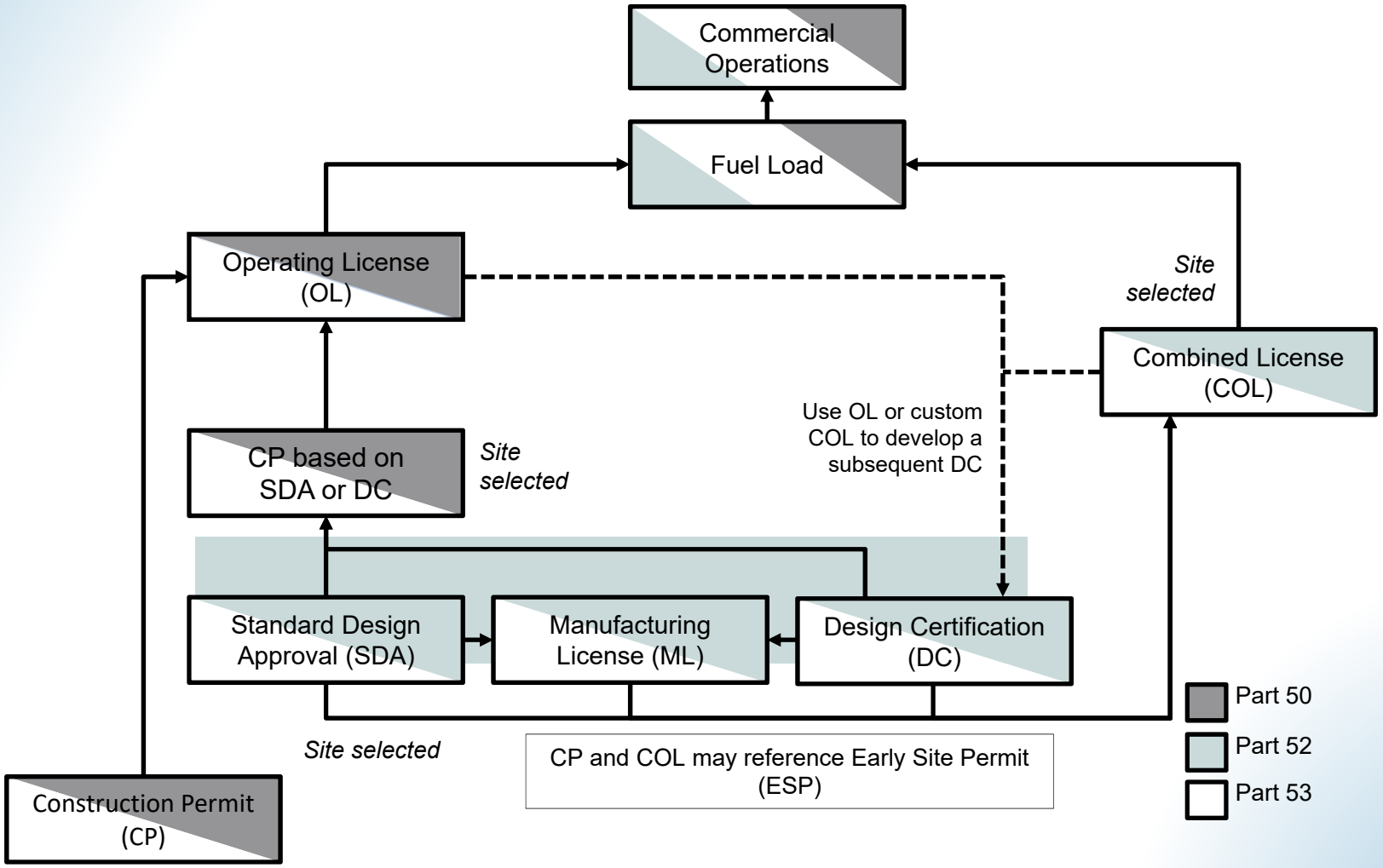
Subpart H - Licenses, Certifications and Approvals

- § 53.1100 - 53.1121 General/common requirements.
- § 53.1124 Relationship between sections.
- § 53.1130 Limited work authorizations.
- § 53.1140 **Early site permits**.
- § 53.1200 Standard design approvals.
- § 53.1230 **Standard design certifications**.
- § 53.1270 Manufacturing licenses
- § 53.1300 Construction permits.
- § 53.1360 Operating licenses.
- § 53.1410 Combined licenses.
- § 53.1470 Standardization of commercial nuclear power plant designs: licenses to construct and operate nuclear power reactors of identical design at multiple sites.

Subpart H - Licenses, Certifications and Approvals

- Formatted using early site permits (ESPs) for siting-related content and DCs for design-related content
- Added existing provisions exempting U.S. Department of Defense reactors from NRC licensing (§ 53.1120).
- Removed allowance for construction permits (CPs) to reference MLs.

Leveraging and Combining Existing Licensing Processes



Subpart I - Maintaining and Revising Licensing Basis Information

§ 53.1500 Licensing basis information.
§ 53.1505 Changes to licensing basis information requiring prior NRC approval.
§ 53.1510 – 53.1520 License amendments.
§ 53.1525 – 53.1535 Specific provisions
§ 53.1540 – 53.1545 Other licensing information
§ 53.1550 Evaluating changes to facility as described in final safety analysis reports.
§ 53.1555 – 53.1565 Program-related documents
§ 53.1570 Transfer of licenses or permits.
§ 53.1575 Termination of license.
§ 53.1580 Information requests.
§ 53.1585 Revocation, suspension, modification of licenses, permits, and approvals for cause.
§ 53.1590 Backfitting.
§ 53.1595 Renewal.

Subpart I - Maintaining and Revising Licensing Basis Information

- Added existing change control requirements for individual programs (QA, Emergency Preparedness, security).
- Added change control provisions for DBAs and aircraft impact.
- Added existing generic license conditions (§ 53.1502).

§ 53.1550 Evaluating changes to facility as described in final safety analysis reports (1 of 2)

(a) A licensee may make changes in the facility as described in the UFSAR and make changes in the procedures as described in the UFSAR without obtaining a license amendment pursuant to § 53.1510 only if:

(1) A change to the technical specifications incorporated in the license is not required and

(2) The change meets all of the following criteria:

(i) Does not result in an increase to the frequency or consequences of an event sequence such that an event sequence previously deemed not risk significant becomes risk significant by the analyses performed in accordance with § 53.450(e).

(ii) Does not result in an increase to the frequency or consequences of an event sequence such that an event sequence deemed risk significant in accordance with § 53.450(e) has a decrease of 10 percent or more in the calculated margins to the LBE evaluation criteria required to be established in accordance with § 53.450(e).

(iii) Does not result in an increase to the frequency or consequences of one or more event sequences such that the margin between the calculated cumulative risks posed by the commercial nuclear plant and the safety criteria of § 53.220 decreases by 10 percent or more.

§ 53.1550 Evaluating changes to facility as described in final safety analysis reports (2 of 2)

(iv) Does not involve a departure from a method of evaluation described in the UFSAR used in assessing margins in accordance with § 53.450(e) unless the results of the analysis under § 53.450(e) are conservative or essentially the same, the revised method of evaluation has been previously approved by the NRC for the intended application, or the revised method of evaluation can be used in accordance with an NRC endorsed consensus code or standard.

(v) For commercial nuclear plants licensed under this part for which alternative evaluation criteria are adopted in accordance with § 53.470, does not result in a change to the frequency or consequences of event sequences such that the calculated margins between the results for event sequences evaluated in accordance with § 53.450(e) and the alternative evaluation criteria decreases by 25 percent or more.

(vi) Does not result in the identification of a new design basis accident in accordance with § 53.450(f).

(vii) Does not result in a decrease by 10 percent or more in the margin between the consequence of any design basis accident and the safety criteria in § 53.210.

(viii) Does not prevent meeting the design requirements in § 53.440(j) to limit the release of radionuclides from reactor systems, waste stores, or other significant inventories of radioactive materials assuming the impact of a large, commercial aircraft.

Subpart J – Reporting and Other Administrative Requirements

§	53.1600	General information.
§	53.1610	Unfettered access for inspections.
§	53.1620	Maintenance of records, making of reports.
§	53.1630	Immediate notification requirements for operating commercial nuclear plants.
§	53.1640	Licensee event report system.
§	53.1650	Facility information and verification.
§	53.1655	Reporting of defects and noncompliance.
§	53.1660	Financial requirements.
§	53.1670	Financial qualifications.
§	53.1680	Annual financial reports.
§	53.1690	Licensee's change of status; financial qualifications.
§	53.1700	Creditor regulations.
§	53.1710	Financial protection.
§	53.1720	Insurance required to stabilize and decontaminate plant following an accident.
§	53.1730	Financial protection requirements.

Subpart K – Quality Assurance Criteria

§	53.1800	General Provisions	*10 CFR Part 50, Appendix B*
§	53.1805	Organization	*(Criterion I)*
§	53.1810	Quality Assurance Program	*(Criterion II)*
§	53.1815	Design Control	*(Criterion III)*
§	53.1820	Procurement Document Control	*(Criterion IV)*
§	53.1825	Instructions, Procedures and Drawings	*(Criterion V)*
§	53.1830	Document Control	*(Criterion VI)*
§	53.1835	Control of Purchased Material, Equipment and Services	*(Criterion VII)*
§	53.1840	Identification and Control of Materials, Parts and Components	*(Criterion VIII)*
§	53.1845	Control of Special Processes	*(Criterion IX)*
§	53.1850	Inspection	*(Criterion X)*
§	53.1855	Test Control	*(Criterion XI)*
§	53.1860	Control of Measuring and Test Equipment	*(Criterion XII)*
§	53.1865	Handling, Storage and Shipping	*(Criterion XIII)*
§	53.1870	Inspection, Test and Operating Status	*(Criterion XIV)*
§	53.1875	Nonconforming Materials, Parts or Components	*(Criterion XV)*
§	53.1880	Corrective Action	*(Criterion XVI)*
§	53.1885	Quality Assurance Records	*(Criterion XVII)*
§	53.1890	Audits	*(Criterion XVIII)*

Discussion

Additional Topics for Discussion

Rulemaking Coordination

- Emergency Planning for Small Modular Reactors and Other New Technologies
- Decommissioning
- Part 50-52 Lessons Learned
- Financial Qualifications Requirements for Reactor Licensing

Key Guidance

Rulemaking Plan – SECY-20-0032 and SRM

"The staff should accelerate its timeline while balancing the need to produce a high-quality, thoroughly vetted regulation … to achieve publication of the final rule by October 2024."

- Staff's response to SRM identified timing of guidance document development to support the Part 53 rulemaking as an uncertainty in meeting the accelerated schedule
  - Focus resources on developing the proposed rule language
  - Possible need to publish proposed rule before completing draft supporting guidance
  - Continue engaging external stakeholders to ensure common prioritization of guidance documents
  - Support early applications under Parts 50/52 (e.g., U.S. Department of Energy's Advanced Reactor Demonstration Program)

Key Guidance Coordination

Existing

- Licensing Modernization Project (NEI 18-04 & RG. 1.233)
- Siting Criteria (RG 4.7)
- Fuel Qualification Framework (NUREG-2246)

Under Development

Near-Term

- Non-LWR PRA Std
- TICAP/ARCAP (NEI 21-07)
- High Temp Materials (ASME III-5)
- Reliability & Integrity Mgt (ASME XI-2)
- Fuel Qualification (technology-specific)
- PRA Level of Detail (NEI-led)
- Seismic Design/Isolators
- Emergency Planning
- Change Process (SNC-led)
- QA Alternatives (NEI-led)
- Operator Training Program

Part 53

- Initiating Events
- Qualitative Risk Estimate/Insights (Alternative Evaluation of Risk Insights [AERI])
- Operator licensing Exam
- Human Factors Engineering
- Concept of Operations/ Staffing
- Fitness for Duty
- Access Authorization
- Cyber Security
- Physical Security
- Materials Compatibility ISG

Future

- Analytical Margin
- Chemical Hazards
- Manufacturing
- Technical Specifications
- Facility Safety Program
- Contents of Applications for Framework B

Existing Guidance

Existing

- Licensing Modernization Project (NEI 18-04 & RG. 1.233)
- Siting Criteria (RG 4.7)
- Fuel Qualification Framework (NUREG-2246)

- Existing guidance documents currently exist and will be referenced in the Part 53 rulemaking package as key guidance.
- Conforming changes will be needed to ensure they are applicable to Part 53.
- Revision will occur between proposed rule and final rule stages.

Guidance Under Development

Near-Term

- Non-LWR PRA Std
- TICAP/ARCAP (NEI 21-07)
- High Temp Materials (ASME III-5)
- Reliability & Integrity Mgt (ASME XI-2)
- Fuel Qualification (technology-specific)
- PRA Level of Detail (NEI-led)
- Seismic Design/Isolators
- Emergency Planning
- Change Process (SNC-led)
- QA Alternatives (NEI-led)
- Operator Training Program

Part 53

- Initiating Events
- Qualitative Risk Estimate/Insights (AERI)
- Operator licensing Exam
- Human Factors Engineering
- Concept of Operations/ Staffing
- Fitness for Duty
- Access Authorization
- Cyber Security
- Physical Security
- Materials Compatibility ISG

- Near-term guidance documents are currently under development and will be referenced as key guidance.
- These will be issued prior to the finalization of Part 53 to support near-term applicants and will need conforming changes to ensure they are applicable to Part 53.
- Revision will occur between proposed rule and final rule stages.

- Part 53-specific guidance documents are currently under development and are expected to be included with the Part 53 rulemaking package as key guidance.

Future Guidance

- Future guidance documents are identified as future guidance that may need to be developed to support Part 53.
- These guidance documents may be referenced in the Part 53 rulemaking document as under development and are expected to be completed to support the final rule.
- Additional operational program guidance and reporting requirements guidance may be provided with the final rule.

Future

- Analytical Margin
- Chemical Hazards
- Manufacturing
- Technical Specifications
- Facility Safety Program
- Contents of Applications for Framework B

Final Discussion and Questions

Closing Remarks

Rulemaking Contacts

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Regulations.gov docket ID: **NRC-2019-0062**

Please provide feedback on this public meeting using this link:
https://www.nrc.gov/public-involve/public-meetings/contactus.html

Acronyms and Abbreviations

ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Documents Access and Management System
AERI	Alternative Evaluation of Risk Insights
ALARA	As Low As Reasonably Achievable
AOO	Anticipated operational occurrence
ARCAP	Advanced reactor content of application project
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
BDBE	Beyond design basis event
CFR	Code of Federal Regulations
COL	Combined license
CP	Construction permit
DBA	Design basis accident
DBE	Design basis event
DC	Design certification
DEC	Design extension condition
EAB	Exclusion area boundary
EPA	U.S. Environmental Protection Agency
ESP	Early site permit
F-C	Frequency-consequence
IAEA	International Atomic Energy Agency
ISG	Interim staff guidance
LBE	Licensing basis event
LWR	Light-water reactor
ML	Manufacturing license
NEI	Nuclear Energy Institute
NEIMA	Nuclear Energy Innovation and Modernization Act
NO	Normal operations
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation

Acronyms and Abbreviations

NUREG	U.S. Nuclear Regulatory Commission technical report designation
OL	Operating license
PAG	Protective action guide
PRA	Probabilistic risk assessment
QA	Quality assurance
QHO	Quantitative health objective
REM	Roentgen equivalent man
RG	Regulatory guide

SDA	Standard design approval
SEI	Structural Engineering Institute
SNC	Southern Nuclear Company
SRM	Staff requirements memorandum
SSCs	Structures, systems, and components
TICAP	Technology-inclusive content of application project
UFSAR	Updated final safety analysis report

Results of Nuclear Energy Institute and U.S. Nuclear Industry Council 2022 Part 53 Industry Survey

For
ACRS
19 May 2022

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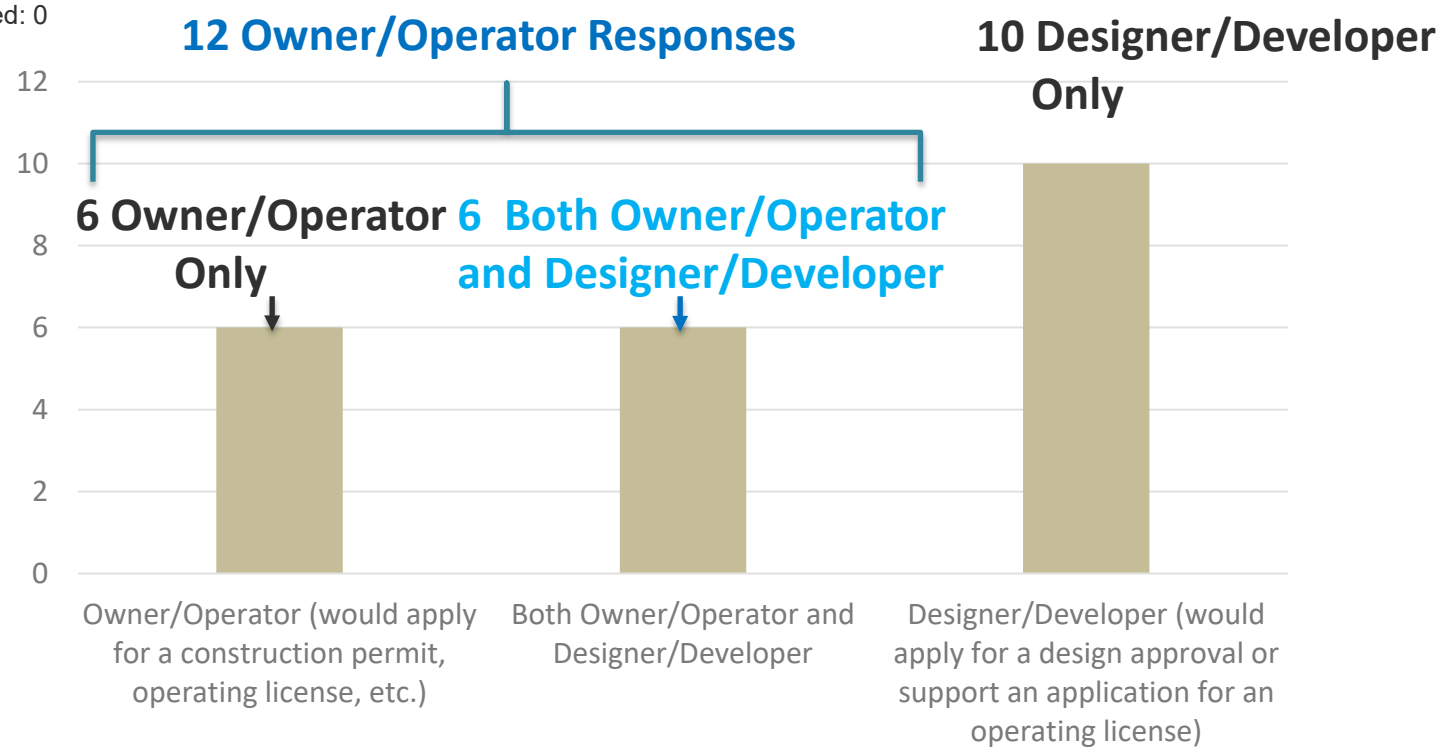
Q1: Companies Completing NEI/USNIC Part 53 Survey – April 2022

1. Alpha Tech
2. ARC Clean Energy
3. BWXT
4. Constellation
5. Energy Northwest
6. Framatome
7. GE-Hitachi Nuclear Energy
8. General Atomics
9. Holtec International
10. Kairos Power
11. Moltex Energy
12. NuScale Power
13. Oklo
14. Radiant Industries
15. Southern Company
16. TVA
17. TerraPower
18. UAMPS (Carbon Free Power Project)
19. Ultra Safe Nuclear Corp.
20. Westinghouse
21. X-energy
22. Xcel Energy

This **comprehensive** survey of Part 53 was sent to senior regulatory affairs personnel of companies that are potential applicants to the NRC.

Q2: What type of applicant to the NRC are you? (Select all that apply)

Answered: 22 Skipped: 0



Concluding High Level Insights (1 of 2)

- Comprehensive survey
  - 12 owner/ operator responses and 10 designer/developer only responses
  - Key active organizations provided responses-- 15 of 22 respondents have submitted application to NRC, are pre-app with NRC, or submitted RIS response to NRC
- Support for, and interest in using, Part 53 is directly related to perceptions of whether Part 53 will be more efficient than Parts 50 and 52 in achieving same level of safety
- NEI/USNIC comments supported some NRC approaches but presented significant concerns overall-- strong support for NEI/USNIC comments
- Ten Part 53 items create significant concerns (e.g. expanding ALARA to be design requirement, proliferation of unnecessary programs, increased regulatory burden for non-safety SSCs, and safety objectives different than in AEA)
- Four Part 53 items have benefits (e.g. increased use of performance-based approaches for security, and technology-inclusive requirements)

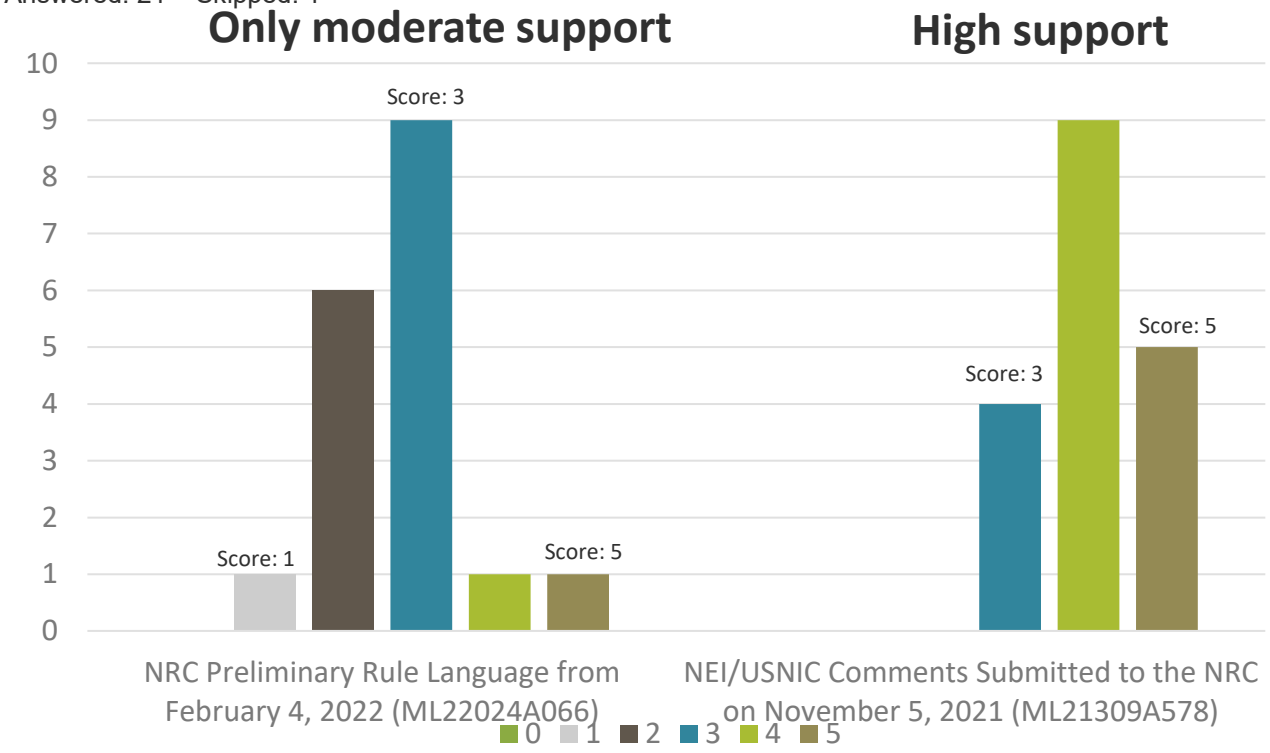
Concluding High Level Insights (2 of 2)

- Innovations needed included streamlining of licensing reviews, regulatory approvals, and program requirements
- Input provided to assist NRC in determining what in Framework A should-- and should not-- be included in Framework B (Industry still prefers a single flexible framework)
  - Diversity in use of PRA and type of licensing approach to be used
- Most do not want QHOs in the rule (3 are likely to use and 4 may use Framework A)
  - Very few want QHOs in rule (1 likely to use Framework A and 1 undecided)
  - All plan to use PRA
- Many goals for Part 53 are not met by current language, but some goals are met
  - Not met: Improving regulatory efficiency, predictability, stability, clarity, and flexibility
- Part 53 development and review is time-consuming process, but only limited support for current language, and many areas where improvements needed to address concerns
  - Lukewarm satisfaction for NRC rationale for proposed approaches and receptivity to stakeholder response
  - High satisfaction with opportunity to comment, but low satisfaction on NRC's feedback to industry

Appendix:
Selective Slides from 2022 Part 53 Industry Survey

Q5: To what degree do you support the following? (score 0 to 5, with 5 being the most agreement)

Answered: 21 Skipped: 1



Degree of Support[1, 2]

NRC Draft Rule Language:

- High Support (score 4 or 5) = 11% (2)
- **Moderate Support** (score 2 or 3) = 83% (15)
- Low Support (1) = 6% (1)

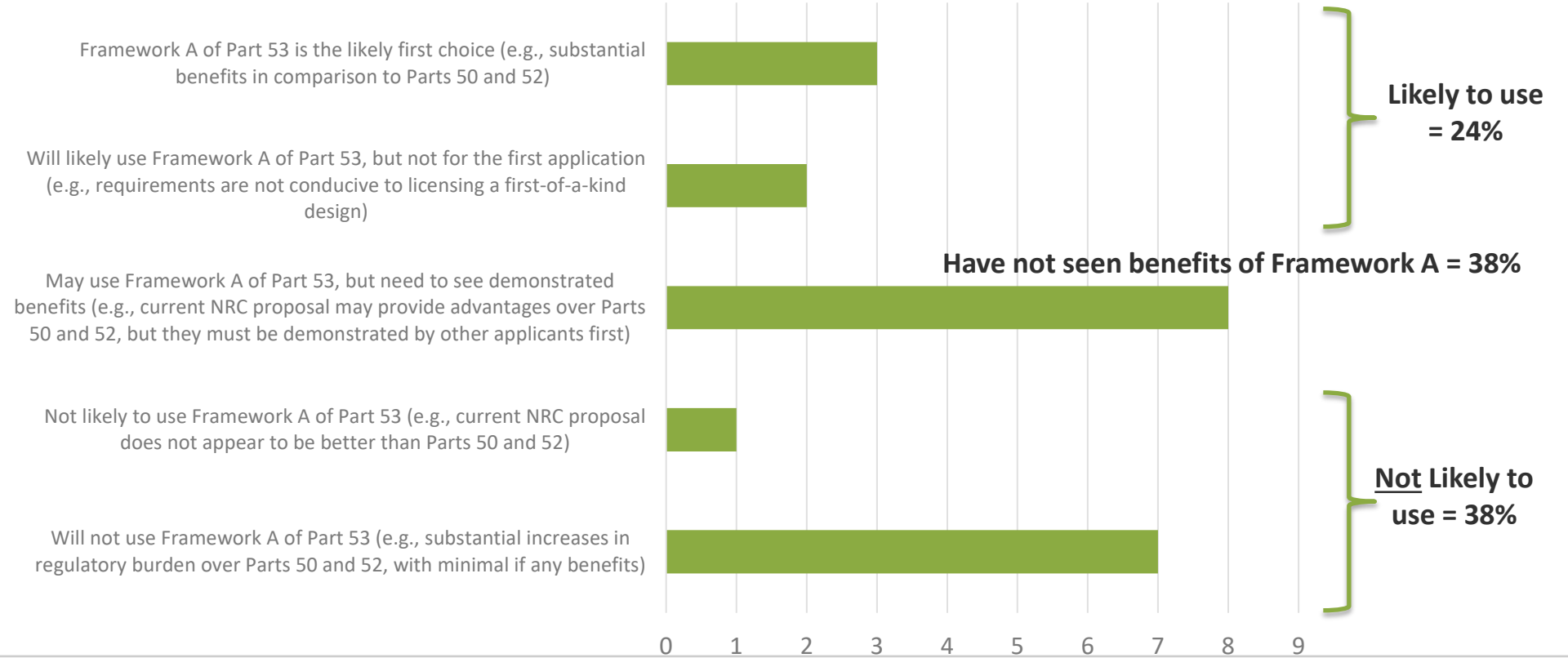
NEI/USNIC Comments:

- **High Support** (score 4 or 5) = 78% (14)
- Moderate Support (score 3, not 2) = 22% (4)
- Low Support (no 0 or 1) = 0% (0)

1) Moderate support for NRC rule language is consistent with NEI/USNIC comments, in which NEI/USNIC support some of the NRC approaches, but have concerns in key areas.
2) Not shown are three "Don't Know" responses. Percentages are of those providing responses other than "Don't Know"/skip.

Q6: For applications submitted in 2025 and beyond, what is the likelihood that you will use the NRC Part 53 Framework A, if the Final Rule adopts the language and approaches in its current form? (Note that later questions will ask about Framework B, and the overall two-framework approach)

Answered: 21 Skipped: 1



Q7: Which of the following areas of the current NRC preliminary language and approaches in Part 53 provide significant benefits over Parts 50 and 52? (score 0 to 5, with 5 being the most beneficial)

Answered: 20 Skipped: 2

Best at providing benefits

Part 53 Content	Most (4 or 5)	Least (0 or 1)	Don't Know
Increased use of performance-based approach for Security	**80%** (16)	0% (0)	10% (2)
Technology-inclusive requirements (e.g., safety functions, design criteria, design features)	**75%** (15)	5% (1)	10% (2)
Increased use of performance-based approach for Operators (e.g., certified operator option)	**60%** (12)	5% (1)	15% (3)
Increased use of performance-based approach for Fitness for Duty	**55%** (11)	5% (1)	15% (3)
Fewer exemptions will be required	42% (8)	5% (1)	**42% (8)**
Increased functionality for Manufacturing Licenses	32% (6)	0% (0)	21% (4)
Organization and structure of the rule (e.g., separation of design, analysis, operations, etc.)	30% (6)	0% (0)	20% (4)
Two frameworks (A and B) in rule based on role of PRA	26% (5)	16% (3)	21% (4)
Inclusion of Quantified Health Objectives in the Rule, rather than keeping as a Policy	21% (4)	47% (9)	11% (2)
Facility Safety Program	5% (1)	**32%** (6)	26% (5)

Q7: Which of the following areas of the current NRC preliminary language and approaches in Part 53 provide significant benefits over Parts 50 and 52?

Key Insights from Comments

1. Two-Frameworks (A and B)
    a) Some believe multiple frameworks make little sense, and a single framework that utilizes guidance for details for different approaches would be more appropriate.
    b) Some are in favor of using Framework B instead of Framework A, but not as written (likely referring to Part 5X that is expected to be basis for Framework B).
2. Facility Safety Program
    a) This program is untested so it is tough to know what the burden or value will be.
    b) Some believe licensee-led, industry-overseen framework for oversight of facility programmatic matters has some potential benefits in reducing regulatory burden without impacting safety; however, it is not clear that current NRC language will actually achieve greater efficiency.
3. Exemptions - Some believe what may be required to meet Part 53 is uncertain, and there was suggestion to leverage the Technology Inclusive Risk-Informed Configuration Evaluation (TIRICE) effort to develop 50.59-like process with clear performance criteria (53.895 was viewed as never-ending risk reduction measures).

Q8: How concerned are you about the following areas of the current NRC preliminary language and approaches in Part 53? (score 0 to 5, with 5 being the most concerned)

Answered: 20 Skipped: 2

Greatest concerns

Part 53 Content	Most (4 or 5)	Least (0 or 1)	Don't Know
Expanding ALARA to be a design requirement	**68% (13)**	0% (0)	5% (1)
Proliferation of duplicative and unnecessary programs	**68% (13)**	0% (0)	5% (1)
Increased regulatory burden for non-safety SSCs	**67% (12)**	11% (2)	6% (1)
Safety objectives that are different than those in the Atomic Energy Act	**63% (12)**	0% (0)	11% (2)
Expansion of design basis to include Beyond Design Basis Events	**61% (11)**	11% (2)	6% (1)
Lack of clarity in the purpose and application of some requirements	**58% (11)**	0% (0)	5% (1)
Lack of clear measurable goals for regulatory efficiency	**50% (10)**	5% (1)	15% (3)
Missed opportunity to integrate safety, security, EP and siting	**50% (10)**	6% (1)	20% (4)
Facility safety program	**50% (9)**	0% (0)	17% (3)
Inclusion of QHOs in the Rule, rather than keeping as a Policy	**50% (9)**	11% (2)	6% (1)
Lack of consistency in use of regulatory terminology (e.g., PDC vs FDC)	44% (8)	5% (1)	17% (3)
Lack of clarity on the safety paradigm	39% (7)	0% (0)	28% (5)
Only allowing an enhanced/leading use of PRA licensing approach	28% (5)	17% (3)	17% (3)
Two distinct frameworks (A and B) in the rule based on role of PRA	28% (5)	22% (4)	17% (3)

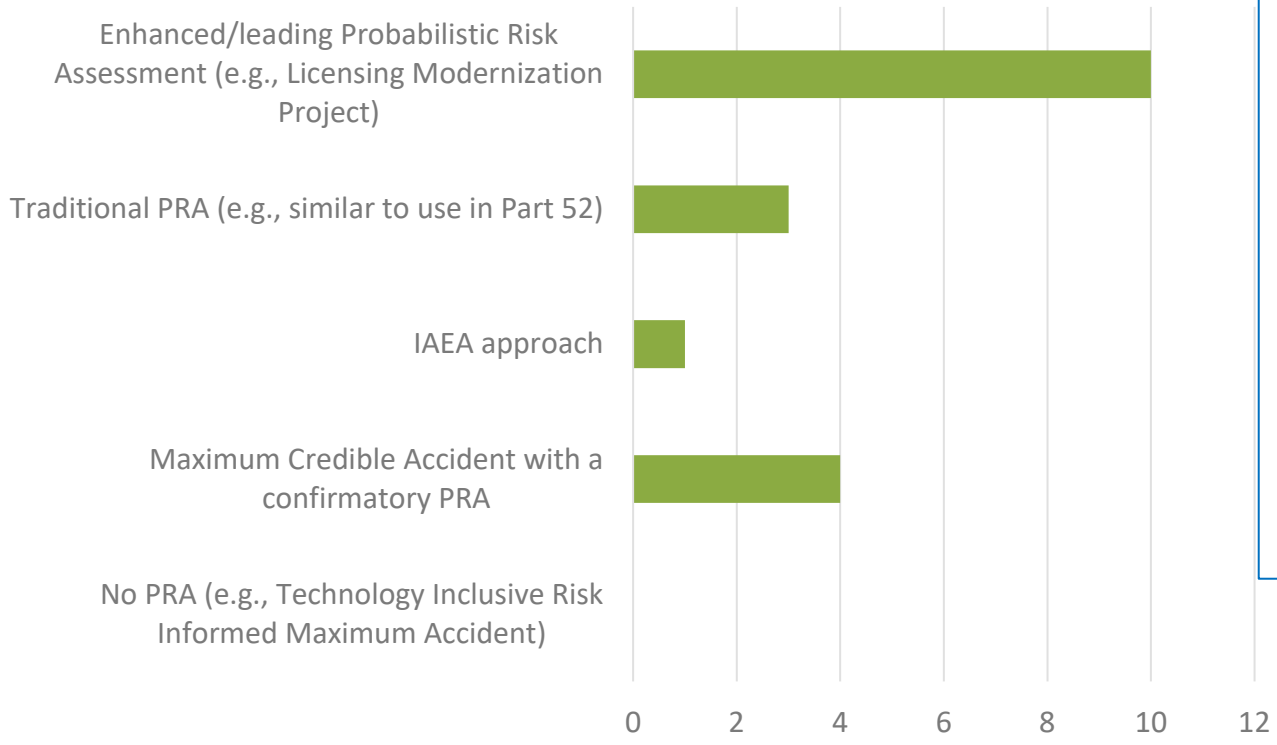
Q9: Which of the following innovations that the NRC is not pursuing would greatly enhance the value of Part 53? (score 0 to 5, with 5 being the most beneficial

Answered: 21 Skipped: 1

Part 53 Content	Most (4 or 5)	Least (0 or 1)	Don't Know
Streamlining of licensing reviews and regulatory approvals	**79%** (15)	0% (0)	5% (1)
Streamlining of program requirements	**68%** (13)	0% (0)	5% (1)
Treating ALARA as a Policy rather than requirements in the Rule	**67%** (14)	0% (0)	10% (2)
Streamlining of oversight and inspections	**65%** (13)	0% (0)	10% (2)
More performance-based and modern siting requirements	**60%** (12)	0% (0)	10% (2)
Integrating safety, security, emergency planning and siting	**57%** (12)	9% (2)	5% (1)
QA requirements that explicitly allow ISO-9001 for safety-related	**52%** (11)	0% (0)	10% (2)

Q11: If you use Part 53, which type of licensing approach would you most likely use?

Answered: 22[1] Skipped: 0



Notes

- If Part 53 used, 46% (10 of 22) of respondents plan to use what NRC defines as an enhanced role of the PRA
- 36% (3+1+4=8) of respondents plan to use PRA in a way not permissible by current Framework A rule text
- Of remaining 18% (4 of 22), two do not plan to use Part 53, one does not care which approach is used, and one did not identify which approach (though they did say they are using a PRA)

1) Four responses were "Other", as described in side bar above.

Q13: How well do you think the NRC has met the following goals, so far, for the Part 53 rulemaking? (score 0 to 5, with 5 being the most fulfilled)

Answered: 18 Skipped: 4

Goals that are <u>most</u> met by current preliminary Part 53 rule language

Part 53 Content	Most (4 or 5)	Least (0 or 1)	Don't Know
Continue to provide reasonable assurance of adequate protection (SECY 20-0032)[1]	**78%** (14)	0% (0)	11% (2)
Establish requirements that address non-LWRs (SECY 20-0032)	**50%** (9)	0% (0)	17% (3)
Safety Focused (industry goal)	44% (8)	0% (0)	17% (3)
Technology-inclusive (July 2021 Unified Industry Position letter)	44% (8)	0% (0)	17% (3)
Risk-informed (July 2021 Unified Industry Position letter)	33% (6)	6% (1)	22% (4)
Reduce requests for exemptions (SECY 20-0032)	33% (6)	17% (3)	28% (5)
Recognize technological advancements in reactor design (SECY 20-0032)	33% (6)	22% (4)	22% (4)
Credit the response of advanced reactors to postulated accidents (SECY 20-0032)	28% (5)	17% (3)	22% (4)
Flexible (industry goal)	22% (4)	11% (2)	17% (3)

Note: Many key goals (e.g. technology-inclusive, risk-informed & reduced exemption requests, flexible) received low scores (less than half 4 or 5) indicating key goals have not been demonstrated

1) Other comments expressed concern that the NRC has increased standards and regulations for public protection (e.g., Beyond Design Basis, ALARA, Programs) – see Q8.

Q13: How well do you think the NRC has met the following goals, so far, for the Part 53 rulemaking? (score 0 to 5, with 5 being the most fulfilled)

Answered: 18 Skipped: 4

Goals that are <u>least</u> met by current preliminary Part 53 rule language

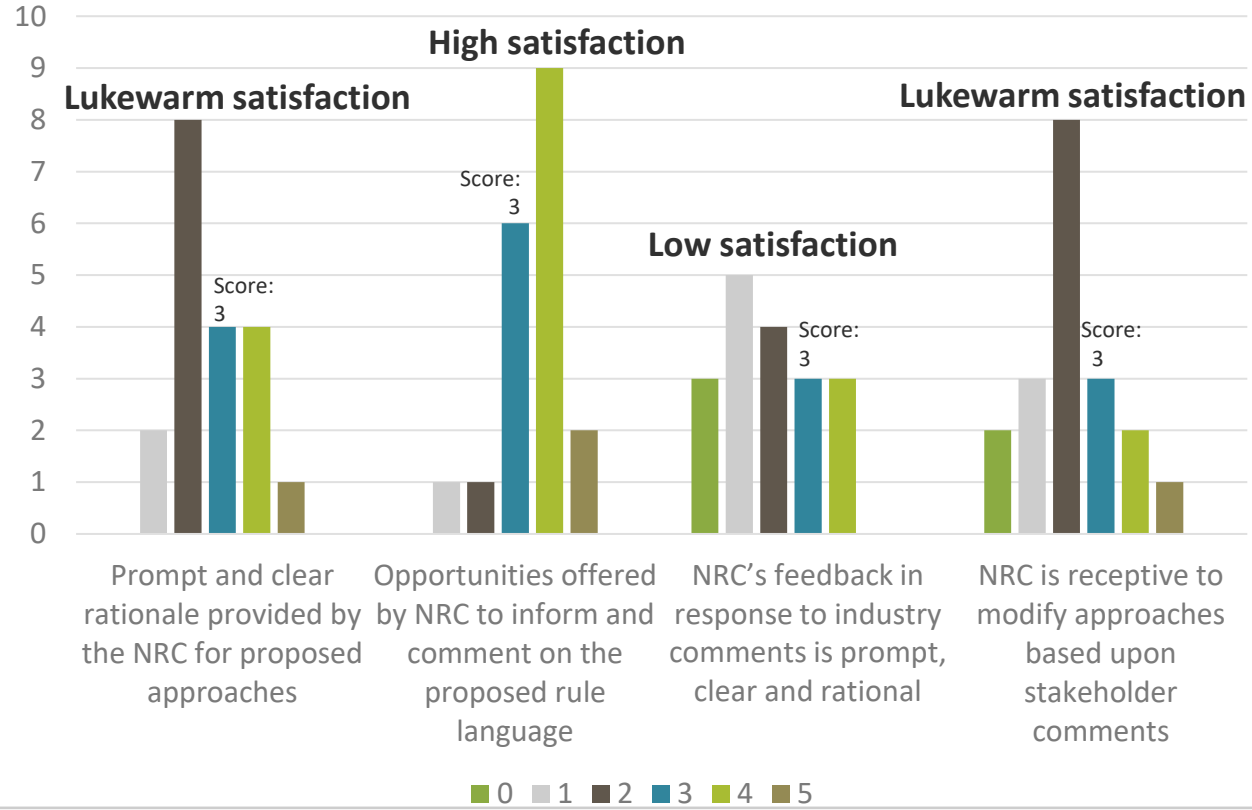
Worst at meeting goals

Part 53 Content	Most (4 or 5)	Least (0 or 1)	Don't Know
Efficiency (July 2021 Unified Industry Position letter)	11% (2)	**39% (7)**	22% (4)
Promote regulatory stability, predictability and clarity (SECY 20-0032)	22% (4)	**28% (5)**	22% (4)
Clear (industry goal)	5% (1)	**22% (4)**	11% (2)
Usefulness (July 2021 Unified Industry Position letter)	11% (2)	**22% (4)**	22% (4)
Recognize confidence in licensee controls (July 2021 Unified Industry Position letter)	0% (0)	**17% (3)**	28% (5)
Requirements at a high level with utilization of guidance to address details (SRM-SECY-20-0032-ML19340A056)	17% (3)	17% (3)	28% (5)
Regulatory framework using methods of evaluation that are flexible and practicable for application to a variety of technologies (NEIMA)	11% (2)	11% (2)	11% (2)

Note: Many key goals (e.g. clear, efficient, useful) received very low scores (less than 20% 4 or 5, and many 0 or 1) indicating key goals have not been demonstrated

Q14: How satisfied are you with the NRC engagement with stakeholders on Part 53? (score 0 to 5, with 5 being the most satisfied)

Answered: 21 Skipped: 1



NRC Engagement Satisfaction[1]

NRC Rationale for approaches
- High (score 4 or 5) = 5
- **Moderate (2 or 3) = 12**
- Low (0 or 1) = 2

Opportunities offered to inform/comment
- **High (4 or 5) = 11**
- **Moderate (2 or 3) = 7**
- Low (0 or 1) = 1

NRC Feedback on industry comments
- High (4 or 5) = 3
- **Moderate (2 or 3) = 7**
- **Low (0 or 1) = 8**

NRC Receptivity to Input
- High (4 or 5) = 3
- **Moderate (2 or 3) =11**
- Low (0 or 1) = 5

1) Not shown are three "Don't Know" responses. Percentages are of those providing responses other than "Don't Know"/skip.