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## UNITED STATES NUCLEAR REGULATORY COMMISSION

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10 CFR PART 53 LICENSING AND REGULATION OF  
ADVANCED NUCLEAR REACTORS PUBLIC MEETING

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TUESDAY,  
OCTOBER 26, 2021

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The Commission met via Videoconference at  
1:00 p.m. EST, Bob Beall, Meeting Facilitator,  
presiding.

PRESENT

BOB BEALL, Meeting Facilitator, Office of  
Nuclear Materials Safety and Safeguards  
AMY CUBBAGE, Senior Project Manager for Advanced  
Reactors, Office of Nuclear Reactor Regulation (NRR)  
STEVEN LYNCH, Acting Branch Chief, Advanced  
Reactor Policy Branch, NRR

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WILLIAM RECKLEY, Senior Project Manager, NRR

JESSE SEYMOUR, Technical Lead, NRR

JUAN URIBE, Project Manager, NRR

ALSO PRESENT

CYRIL DRAFFIN, U. S. Nuclear Industry Council

SARA FIELDS, Uranium Watch

MIKE KELLER, Hybrid Power Technologies, LLC

EDWIN LYMAN, Union of Concerned Scientists

MARCUS NICHOL, Nuclear Energy Institute

KALENE WALKER

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

1:01 p.m.

MR. BEALL: Good afternoon. I want to welcome everyone and thank you for participating in today's public meeting to discuss the Risk-Informed, Technology-Inclusive, Regulatory Framework for Advanced Reactors or the Part 53 Rulemaking.

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

My role is to help ensure that today's meeting is informative and productive. This is a comment gathering public meeting to encourage active participation and information exchange with the public to help facilitate the development of the Part 53 rulemaking.

The feedback that the NRC receives today is not considered a formal comment. So there will be no formal response to any of today's discussion.

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

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during the meeting.

Next slide, please. This is a continuation of a series of topical public meetings on various sections of the Part 53 rulemaking.

The agenda for today includes a discussion of Part 53, Subpart F sections related to staffing, training. Excuse me, hopefully I didn't -- okay.

The sections on Subpart F include staffing, training, personnel qualifications, and human factors. There will also be an open discussion on other Part 53 preliminary proposed rule language. And we will also have a 15-minute break this afternoon.

Slide 3, please. I would now like to introduce Steve Lynch. Steve is the Acting Branch Chief of the Advanced Reactor Policy Branch in the Office of Nuclear Reactor Regulations. Steve will give the opening remarks for today's meeting. Steve?

MR. LYNCH: Hey, good afternoon, everyone.

I just wanted to welcome all of the participants that we have today. I'm glad to see that we've got over 55 stakeholders here with us today to discuss this very important topic.

The NRC is moving rapidly forward and releasing as much of the feedback that we have --

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releasing as much of the input that we've developed to the Part 53 rulemaking and are looking forward to hearing what our stakeholders have to say about this so that we can have rule language that best meets the needs of the advanced reactor technologies that are being developed and to be proposed to the NRC staff.

One of the things I do want to emphasize with this meeting is that as with all of these technical meetings, this is not going to be your last time to interact with us on this topic or any other topic related to development of Part 53.

So please provide feedback to us today at this meeting. And also reach out to us to suggest topics for further engagement. I do want to highlight that one of the forums that we have for discussing topics of interest that can go into detail on certain focused technical areas on areas like Part 53 are periodic advanced reactor stakeholders' meetings.

We have one of those meetings coming up on November 10. So if you are available for that meeting, we encourage you to participate then and then also use that as an opportunity to suggest topics for further engagement with the NRC staff so that we can keep you informed of all of the developments related to this and other advanced reactor topics.

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And that's really all I had as far as prepared remarks for this afternoon.

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

If you're not using Microsoft Teams to attend this meeting and you would like to have a copy or view the presentation slides, they are located in NRC's ADAMS document database and on regulations.gov. I've also placed a link to the slides in the chat window for today's meeting. The ADAMS Accession Number for today's presentation is ML21295A124.

Slide 4, please. The purpose of today's meeting is to exchange information, answer questions, and discuss the Part 53 rulemaking. This is a continuation of a series of public meetings where the NRC staff will discuss specific topics related to the Part 53 rulemaking.

As such, today's meeting will focus on the preliminary proposed rule language for Part 53, Subpart F, Sections 53.750 through 53.799 related to

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staffing, training, personnel qualifications, and human factor requirements.

I have placed the link in the Teams' chat window for this meeting to the subpart preliminary proposed rule language. In addition, there will be an open discussion of other preliminary rule language that has been made public.

This is a comment gathering public meeting, which means the public participation is actively sought as we discuss the regulatory issues.

Because of the number of attendees, we may need to limit the time for an individual question or discussion on a topic to make sure everyone has a chance to participate. After everyone has a chance to ask a question, we will circle back and allow people to ask additional questions if you like.

As I have mentioned before, we are using Microsoft Teams for this public meeting. Today's meeting is using a workshop format so the number of formal presentations and the corresponding number of slides have been reduced to a lot more time for open discussion on various topics.

This will also require all of us to continuously ensure that our phones are muted when we are not speaking and do our best not to speak over

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each other.

To help facilitate the discussion during the meeting, we request that you utilize the raised hand feature in Teams so we can identify who would like to speak next. The staff will then call on the individual to ask a question. The raised hand button, which is shaped like a small hand, is along the top row of the Teams' display area.

You can also use the chat window to alert us if you have a question. Please do not use the chat window to ask or address any technical questions about the Part 53 rule. The chat window is not part of the official meeting record and is reserved to identify when someone has a question or for handling any meeting logistical issues.

To minimize interruptions, the staff will call on participants who have used the raised hand feature or chat window to identify when they have a question or comment.

If you joined the meeting using the Microsoft Teams' bridge line, you may not have access to these features. If you would like to ask a question or provide a comment, you would need to press star 6 to unmute your phone. The staff will pause at the end of each topic to ensure all participants will

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have an opportunity to ask a question before moving on to the next topic.

After your comment has been discussed, your phone line will be muted again. If you want to ask additional questions on a future topic, you will have to press star 6 to unmute your phone.

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

This meeting is being transcribed. So in order to get a clean transcription and to minimize distractions during the meeting, we ask everyone to please mute their phones when they're not speaking and identify themselves and the company or group you may be affiliated with. A summary and the transcript of today's meeting will be publicly available on or before November 24, 2021.

Finally, this meeting is not designed or intended to solicit or receive comments on topics other than this rulemaking activity. Also no regulatory decisions will be made at today's meeting.

Please note towards the end of this presentation, there are slides containing acronyms and abbreviations that may be used during this meeting and

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a set of backup slides that contain additional information about the Part 53 rulemaking.

Slide 5, please. So with that, I'll turn the meeting over to Jesse Seymour to start today's discussion of the Part 53 rulemaking. Jesse?

MR. SEYMOUR: Thanks, Bob. My name is Jesse Seymour, and I'm a Human Factors Technical Reviewer and author and licensing examiner in the NRC's office of Nuclear Reactor Regulations. I'm one of the staff members who developed the preliminary proposed rule language that we'll be discussing today as well as the related white paper on Risk-Informed and Performance-Based Human-System Considerations for Advanced Reactors that was issued earlier on this year.

That white paper helped to inform the development of this rule language that we will be discussing today. As background, key drivers behind the white paper were recognition that the regulatory framework for advanced reactors should be capable of addressing novel operational concepts for a wide variety of advanced reactor technologies.

Additionally, we recognize that some advance reactor designs may present very low radiological risk and requirements in the current

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regulatory framework for operation of large light-water reactors may not be necessary for reasonable assurance of safety in all cases.

Also we recognize that development of a risk-informed, performance-based and technology-inclusive regulatory framework that appropriately considers the roles of humans and human system integration is warranted for advanced reactors.

So that being said, today's presentation will follow along the general structure and content of our preliminary rule language, and there shouldn't be anything that I cover here that isn't generally covered within the discussion table version of the rule language that's already been made publicly available.

The publicly available document will provide detailed rule language and discussions. And for the sake of time, I'll only be summarizing some of the areas. There's also a considerable amount of material to get through today. So I'd like to hold the participant questions until I get to the end of my slides, at which point we'll transition over to sometime that's been set aside for answering questions and for general discussion.

Next slide, please. Okay. So to begin

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with, we'll start with an overview of the structure and content of the rule language. The sections that we'll be discussing today are located at 53.750 to 53.799. And I've divided them up into four subsections at present.

The 53.750 to 759 section covers general requirements that apply to all operating license and combined operating license applicants and holders under Part 53. Within the subsection, there's two key sets of requirements that are located at 53.753 and 53.755. The first of those two key sections that I want to highlight is 53.753, which addresses technical requirements for operating license and combined license applicants.

Those include, in part, human factor's engineering design requirements, human system interface design requirements, conflict of operations, functional requirements, analysis and functional location requirements, staffing plan requirements, and license and certified operator program requirements.

The 53.755 section addresses certain conditions of licenses for operating license and combined operating license holders. These include provisions for not using licensed operators and also provisions for load-following. And, again, that's

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just summarizing some of the high points we'll talk about in more depth.

Next, the 53.760 to 769 section covers operator licensing requirements and includes training examination, requalification, and simulator requirements.

Separately, the 53.770 to 779 section covers operator certification requirements. And lastly the 53.780 to 789 section covers general training and qualification requirements. And as we move through, we'll go through and discuss each one of these sections in more detail.

Next slide, please. Okay. So I'll begin our overview with 53.750 to 759 sections. These sections propose a rule similar to certain aspects of the 50.34(f), post-TMI requirements, the 50.54 conditions of facility licenses requirements, and Part 55, operator licensing requirements. Again, aspects, they are not in their entirety.

However, a major difference from current regulatory framework is that the requirements established in areas of human factors engineering, staffing, and operator qualification within this preliminary Part 53 rule language are now directly linked to design specific safety functions and the

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fulfillment. And I'll explain what is meant by that at a high level here.

First, human factors engineering is required where needed to support safety functions versus being generically applied to a control room.

Secondly, operator staffing is required to the extent necessary to support design specific needs for safety function fulfillment versus relying upon a prescriptive number of reactor operators and senior reactor operators.

Lastly, the fundamental role of the licensed operator centers around the management and fulfillment of safety functions in addition to the manipulation of facility controls.

Next slide, please. Okay. So now we're going to go through and talk about the contents. So, again, some areas where we'll go through rather quickly as we do this and others where there's more substantive changes from existing regulatory framework, we're going to go into more depth.

So Section 53.750 contains applicability and definitions while Sections 53.751 and 752 parallel certain existing requirements. Much of this content is administrative in nature. And it should be noted that this preliminary rule language introduces some

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new definitions, which are necessary to support various aspects of what is being covered here. And a key example of that would be load-following, which we do define.

Section 53.753 would require operating license and combined operating license applicants to develop and maintain specific measures to ensure that human actions needed to fulfill safety functions, prevent or mitigate licensing basis events or otherwise meet safety criteria are satisfied. Those measures are covered under Items (a) through (g), which we'll go through now.

Item (a) is a human factors engineering design requirement and is performance-based. Under this requirement, facility design need to reflect the state-of-the art and human factors principles for safe and reliable performance in all settings that human activities are expected for performing or supporting the continued availability of plant safety or emergency response functions.

Guidance for reviewing this performance-based, human factors engineering requirement in a scalable manner is being developed by the staff via interim staff guidance. And we did touch upon the current state of that guidance during an earlier

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stakeholder meeting that we had recently.

If we could move on to the next slide, please? Item (b) contains human system interface design requirements and requires facility designs to provide for the following to support operators in monitoring plant conditions and responding to plant events.

The design requirements include, and I'll go through item by item here, features for displaying to operators a minimum set of parameters that define the safety status of the plant, automatic indication of bypassed and operable safety system status, and a direct indication of SSC status as it relates to the ability of those SSCs to perform safety functions.

And an examples of what that means in practice could be, you know, relief and safety valve positions, you know, where those are needed for maintenance of safety functions, instrumentation to measure, record and readout key plant parameters related to performance of SSCs, and the integrity of barriers important to fulfilling safety functions. And an example of that could be fuel system conditions.

Next, leakage control and detection in the design of systems that pass-through barriers for the

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release of radionuclides. And so an example of that would be a system structure with a component that penetrates a containment structure and that may contain radioactive materials.

And lastly monitoring of in-plant radiation and airborne radioactivity as appropriate for broad-range routine acts and conditions.

And if we could move on to the next slide, please? Okay. So Item (c) would require the applicant to provide a concept of operations. So in general the concept of operations in a very broad sense provides the agency with a clear picture of how a novel design could function, you know, with respect to numerous aspects of the facility's operations.

And the importance of this is that, as we look at designs that are going to be considerably different and operating concepts that are going to be considerably different than what we've seen in the past, you know, there can be a significant advantage to having that broad understanding from the get-go. And this could in turn reduce the need for, you know, subsequent interactions and so forth. So, again, I'll just put that plug in before we go through this.

The concept of operations would need to describe the following. And these items would include

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facility goals, the roles and responsibilities of personnel and automation that are responsible for completing plant functions, staffing qualifications and training, the management of normal operations, off-normal conditions and emergencies, the management of maintenance and modifications and the management of tests, inspections and surveillance tasks.

Item (d) would require a functional requirement analysis and functional allocation to be provided. Now earlier I had mentioned a few different concepts, you know, the idea of safety functions, and safety functions do play a prominent role in Subpart B.

And, again, what we talk about here is a slightly different approach to that. But it's not independent of, you know, the Subpart B discussion of safety function. What we do here is we build upon that, and we gain an understanding that we need within the specific context.

So the functional requirements analysis would address how the design specific safety functions are satisfied. The function allocation would then describe how safety functions will be assigned to either human actions, automation or safety features, whether those safety features be active in nature,

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passive in nature or whether they be inherent safety characteristics.

If we can move on to the next slide, please? Okay. So Item (e) would require a description of the program to be used for evaluating and applying operating experience.

Item (f), and this is a bit more involved than (e), would require a staffing plan describing the numbers, positions and qualifications of the reactor operators and senior operators or, if applicable to the facility, certified operators and that would go for all modes of plant operations.

So the staffing plan would also need to describe the personnel providing support in areas such as plant operations, equipment surveillance and maintenance, radiological protection, chemistry control, fire brigades, engineering, security and emergency response.

But circling back to the licensed operators, here we would need more information. And we'll see why this gets to be, you know, of importance. Additionally, facilities that would require licensed operators would need to also describe how that licensed operator staffing would be sufficient to provide assurance that plant safety

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functions can be maintained. This would need to be supported by human factors engineering analyses and assessments.

So why would we be asking for so much here? The reason is this provision for flexible staffing and allowing the applicant to propose the staffing to be used for the facility replaces the prescriptive staffing requirement we currently see in 50.54.

So we don't have in this language anything that's akin to the staffing table of 50.54(n). Instead, what we allow the facility to do within this framework is to propose the staffing that's needed, you know, for their specific concept migrations. And then, you know, within the context of likeness to operators to go ahead and provide the attendant human factors engineering-based data to support how that conclusion was reached.

So this provision for flexible licensed operator staffing is a significant change from current 50.54(m), control room staffing requirements.

Additionally, guidance for evaluating the staffing plans is being developed by the staff in the form of interim staff guidance but is intended to be used in conjunction with the existing NUREG-1791

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guidance that we have for currently staffing exemptions, but we would repurpose that for application within this context. And that guidance is something that we intend to discuss in further detail at a public meeting that we're planning for November 10 currently.

So we can move on to the next slide, please. Okay. So while not addressed by the staffing plan requirement discussed here, it is important to note that at present the staff preliminarily do not intend to require the shift technical advisor position to Part 53 applicants.

The Commission's 1985 policy statement on engineering expertise on shift stated that the FDA requirement was an interim measure and for goals that included upgrading human system interfaces and operator training were achieved.

Our current staff perspective is that the upgrades to human system interface is an operator training envisioned within this policy statement will be the norm under Part 53 and driven by multiple regulatory requirements. However, this will represent a policy issue and the staff intend to use the Part 53 rulemaking process as a vehicle for Commission engagement on this topic.

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So moving on, Item (g) would require applicants to describe the programs for operator licensing initial training, the operator licensing examination program and the operator licensing requalification program. And as we will see, there's a reason why we're asking for specific details on things like the examination program. You will be able to see there's going to be significant new flexibilities that are afforded, and we'll discuss that in more detail later on.

In a comparable manner, facilities using certified operators instead would need to submit the corresponding programs for operator certification.

Now we'll talk in more depth about certified operators, but just to, you know, provide a quick plug, certified operators will represent a new non-licensed role that will be addressed in here in greater detail as we go on.

Next slide, please. Okay. Section 53.754 covers general exemptions that relate to operators and facility controls and fills a role that's comparable to 55.13. And we'll see in a number of places where we say that something is fulfilling a comparable role, something that I just want to highlight is that, you know, our current approach is to try to have this be a

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standalone set of rule language.

So in certain places we do need to, you know, parallel, you know, certain rules that exist elsewhere such as in, you know, Part 55. And that doesn't mean that we're, you know, parroting them word-for-word. We're adapting them to our purposes. But where things tend to run parallel like that, I'll generally just highlight that for the sake of time.

Section 53.755 contains a number of requirements that apply to the holders of operating licenses and combined operating licenses under Part 53, and I'll provide a review here.

And something that I want to just clarify before we get into this because this will be one of the more lengthy sections is that the construct of Part 53 does not have something that would, you know, be, like, federally identified as being a corollary to 50.54 conditions for licenses.

So what we'll see here is that there are certain items that we'll talk through where, you know, if you're familiar with the content of 50.54, they're really kind of similar to 50.54.

So in some places in this section where we'll have to go through, you know, we are either paralleling or we're creating requirements that

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fulfill certain needs that may be comparable to those in 50.54. And I would just caution, you know, that there's very important differences that are going to exist here even if some of the wording may stay the same or in a similar way I should.

So Items (a) and (b) need to be taken together. So Item (a) would require facility of licensees to have licensed operators unless they can meet criteria contained in Item (b) to use certified operators instead.

So let me be clear before we get into this. The way that this framework is currently arranged, a plant would either have licensed operators or certified operators. We wouldn't see any of the plants would need to maintain both.

Also there would be no permutations where a plant would have neither licensed nor certified operators. So a plant would have either licensed operators within the, you know, traditional RO and SRO roles or they would be using non-licensed but certified operators under this new program.

So a plant would need to demonstrate that they can meet the criteria of (b) in order to be eligible to use certified operators.

So (b) contains the requirements that must

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be met in order to justify not using any licensed operators as part of facility staffing. At present, there are two different staff proposals for these criteria.

And so this is something that, you know, I'll highlight as we go through here. In the rest of the preliminary proposed ruling language that's been issued, I don't think there's another spot in there where they currently have, you know, two options that are presented for, you know, stakeholders. Everything else is kind of framed as, you know, here's, you know, our preliminary language and maybe there's a discussion that may indicate they're still working or, you know, areas, you know, where feedback, you know, is being considered and so forth.

But in this case we actually, you know, layout two, you know, competing proposals that are out there. And, you know, we provide this for stakeholder feedback.

So conditions that would need to be met for not using any licensed operators would consist of within what's being proposed here, one of the two sets. The first proposal would apply the following.

So one, the facility, and keep in mind, the way that this is structured is that, you know, a

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facility would need to meet all three of these items under this first proposal, right?

So item one would be requiring any human actions for event mitigation as part of meeting the safety criteria, achieving safety functions or providing adequate defense in depth.

Item two would be that the PRA would need to demonstrate that the evaluation criteria for each event sequence could be met without human action for mitigation.

And item three is that the complaint response to licensed-based events would need to not be reliant on human actions to guaranty the performance of system structures and components that were needed.

And examples of that, you know, may be relying on inherent safety characteristics or perhaps, you know, using engineering protections against human failures in order to reduce the likelihood.

And from a factual standpoint, you know, that may be -- I'll give an example, you know, something that's done to, you know, reduce full likelihood of a system misalignment, you know, rendering a passive safety system inoperable. So that would be an example of that.

Now a second alternate proposal takes a

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different approach. In some ways the second alternate proposal falls upon the unmitigated accident philosophy that's used in certain applications by the DOE and to an extent what we also, you know, see within certain applications used at fuel cycle facilities. So there is, you know, some borrowing from a different philosophical basis here. A bit more of, you know, an ISA background, an integrated safety analysis, you know, versus a PRA in this context.

So, again, we do get to a second alternate proposal through a different channel.

What that second set of criteria would require, is that the design basis accident safety criteria, Part 53, so again we're talking about the 25 REM safety criteria, would need to be met without mitigation by human actions, active engineered features, or passive design features except for those passive features that can both survive licensing basis events and also not be defeated by credible human act errors. Okay?

So what that means is that, you know, the passive safety features that are credited would need to, you know, be able to get over a hurdle of, you know, not having credible human errors render them from being unable to fulfill their function.

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And embedded in that is that, you know, relying on inherent safety characteristics within that role would also be acceptable because, you know, by definition those types of characteristics would be immune to that.

If we could move on to the next slide, please? Okay. So moving on, Item (c) restricts who is allowed to conduct control manipulations to either licensed or certified operators.

Item (d) would require operator qualification training programs to commence concurrent with when licensing or certification exams are first administered.

Item (e) requires that those operations other than direct control manipulations, okay? So, again, when we look at Item (c) we're talking about, you know, direct control manipulations. And the way to picture this would be an operator putting their hand on a switch to move controls around, right? That's what (c) is talking about, right?

Item (e) is more akin to, you know, an operator manipulating a plant turbine and then causing, you know, a power change, you know, through that indirect means.

So Item (e) requires that those

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operations, other than control manipulations, which can affect reactor power level, only occur while plant conditions are being monitored by a licensed or certified operator. But there is an important, you know, additional item that is embedded in (e). And this is it, right here.

So under (e) load-following would be permitted provided that certain conditions are met such that demands from the grid operator could be immediately refused when they would either challenge safe operation or when precluded by plant equipment conditions.

For example, a technical specification action that limits a reactor power level might be something that exists. You may have, you know, a technical specification action statement that restricts reactor power at 75 percent. So that would be an instance where there was a condition that precludes you from going past a certain power level.

So specifically, one of the following would need to be provided to meet this. So one of these following items would need to be able to immediately refuse a demand from the grid operator if responding to that demand would, you know, put the plant into an unacceptable condition.

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And the things that could be used to meet that would be the actuation of an automatic technical system, an automated control system or a licensed or certified operator could be used as well.

So, again, this was a big departure from the currently regulatory framework in that the equivalent of (e) that's currently in 50.54 would preclude those. But within this preliminary proposed staff language here, we propose to allow this under these conditions.

So continuing on, Item (f) requires plants with licensed operators to include SROs as part of their staffing. So what that means is that, you know, while a plant that requires licensed operators would propose a staffing model supported by HFE analyses that show the numbers and roles of people, a plant that requires its operators still has to have SROs within their staffing. So that would be required.

Item (g) would require that facility licensees would need to maintain their staffing complement that is described under their approved staffing plan.

And what that means is this. So while facilities can take a flexible approach in determining their required staffing, once that staffing plan has

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been approved by the NRC, the staffing plan would become a condition of the facility's license.

Next slide, please. Okay. So Item (h) requires an SRO's supervision of core alterations and is similar to existing requirements for fueling SROs.

And, again, you know, what we're talking about here are core alterations, fuel movements within reactor vessels, that type of thing.

But there's two key differences here. First facilities that don't require any licensed operator staffing are instead required to use a certified operator in an equivalent manner. Just because a facility doesn't have licensed operators, you know, they have certified operators instead, you know, that doesn't mean that we would require them to be license an SRO or fueling SRO for these types of alterations. We would allow them to use the non-licensed certified operator within that context.

Secondly, this requirement doesn't apply to those facilities capable of refueling online while at power. So, again, what this means is that, you know, in those instances where a plant is able to, you know, conduct its refueling in a continuous manner for example while they're online, you know, we would not hold them to the requirements you have an SRO or a

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certified operator, you know, right there monitoring that activity for practical reasons.

So Item (i) contains specific requirements for plants using certified operators. And, again, I mentioned this earlier that we would get into more detail about the certified operator role.

So (i) gets into more detail here. And as a reminder, the certified operator is a non-licensed role that is required at facilities that don't require licensed operators. Again, you know, a facility would either have one or the other. So the facilities that were able to meet the criteria that we discussed before could, you know, invoke the option to use certified operators instead.

Importantly, certified operators would be responsible for certain administrative functions that would have otherwise been assigned to an SRO that must still be performed by an adequately qualified individual.

And, again, what I want to highlight here is this, right? You know, even if you have a plant that is simple enough and safe enough, whatever the case may be, that, you know, it meets the criteria for not having licensed operators, when you remove the licensed operators from the picture, there's certain

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administrative type of responsibilities that still exist. They still have to be done by someone, and they still have importance.

So in this case, what that may entail are things like technical specifications and determinations, departing from license conditions in an emergency when it is needed to protect health and safety of the public, implementation of maintenance and configuration controls, compliance with radioactive release limits and, you know, any responsibilities that may exist under the facility emergency plan that might be applicable, making emergency notifications.

So, again, those are administrative functions that have importance, right? And particularly if we consider the case of technical specification compliance, in some instances, what you're potentially addressing is maintaining the plant within an analyzed state.

So, again, those are important roles, and they have to go somewhere even if you don't have licensed operators. And they have to go to someone who has, you know, a requisite level of qualification such that there's the confidence that those things are going to be done reliably.

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So, again, that outlines, you know, some of the administrative functions that these certified operators would be envisioned to have.

So while a number of certified operators is not prescribed, certified operator staffing would be performance-based and would need to provide for a continuity of responsibility for facility operations at all times during the operating phase.

And what that really entails is this, right? We wouldn't prescribe the number of certified operators that would need to be used. We wouldn't be prescriptive about, you know, necessarily where they need to be located or how many, you know, facilities that they could oversee.

And, again, you know, this is embedded in Part 53. And what I'm not speaking to is remote operations here. You know, that's a broader, you know, discussion and that's something that I'm not going to discuss within the course of that discussion today.

For our purposes, this language here and what's here is silent on those aspects by design, right? So we don't restrict any of that. But what we do say is that wherever they are, you know, that they need to be able to fulfill certain functions. And the

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number of them and, you know, their location and so forth is driven by demonstrating that they're going to be able to cover these things, right? So we talked about the administrative functions.

Specifically, this would entail continuous monitoring of fueled units from wherever they are located and having the capabilities, too, and I'll go through and discuss these categorically, receive plant operating data and parameters, the ability to immediately initiate reactor shutdown, the ability to promptly dispatch operations and maintenance personnel, the ability to implement any emergency plan responsibilities that may be applicable to the facility based, you know, on their emergency plan and, also, the ability to conduct any reactor decontrol manipulations that require human action.

So, again, we're not talking about, you know, an autonomous control system controlling power here. What we're saying is that, you know, for example if you have a facility that's autonomous, but it still requires an operator to do the startup, you would need to use -- you know, if you're a plant that qualifies to use certified operators, you would still need to have a certified operator, you know, conduct that, that start which needs to be done manually,

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right? That would be, you know, a function of that position.

If we could move on to the next slide, please? Okay. So with regard to certified operators, we noted that allowing such non-licensed operators to manipulate reactor controls and conduct reactor changes represents a policy issue. It is the present intention of the staff to use the rulemaking process as a vehicle for Commission engagement in this area.

Moving on to Item (j), (j) would allow facility licensees to take reasonable actions apart from the license conditions and technical specification emergency situations when the action is immediately needed to protect public health and safety. This is comparable to the provision of 50.54(x).

In concert with that item, Item (j) would limit the authority to invoke -- I'm sorry, Item (k) would limit the authority to invoke (j) to an SRO, certified operator or at those plants that have permanently ceased operations to an SRO, a certified operator or a certified fueling SRO where it's applicable. This would in turn be comparable to the requirement of 50.54(y) with the exception that here we would extend that authority to certified operators

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as well.

If we could move on to the next slide? Okay. So Section 53.756 covers medical requirements for licensed and certified operators. And then within that, (a) would require that applicant RO and SROs' licenses would need to have medical examinations by a physician and that licensed SROs and ROs would need to have ongoing medical exams by a physician every two years. In a comparable manner, certified operators would need to have a medical examination prior to certification every two years thereafter.

The physician would need to determine that the individual's medical condition and general health will not adversely affect the performance of assigned operator job duties or cause operational errors endangering public health and safety.

Item (b) requires facility licensees to submit the medical certifications that are required for licensed operators to be commissioned. However, those submittals would not be required for certified operators.

Item (c) would require facility licensees to maintain the results of medical examinations for licensed and certified operators and to provide that documentation for the Commission upon request.

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And then lastly, Sections 53.757 covers violations and 53.758 covers criminal penalties. And those sections would be comparable to existing requirements.

Can we can move on to the next slide, please? Okay. Now we'll transition into discussing Sections 53.760 through 769. These sections address operator licensing requirements for those particular facilities that require licensed operators. And I'd like to note that these sections propose a framework that includes an operator license pathway that's independent of, but still borrows from, Part 55.

So we'll discuss the present iteration of the proposed approach here. However the extent to which this operator license pathway will remain independent from Part 55 remains an area of ongoing work and is subject to change in the future iterations of this preliminary rule language.

So that being said, we'll go through again kind of section by section here, and we'll kind of skim over the ones that involve less substantive changes from the existing framework.

Section 53.760 describes the applicability of these requirements. Sections 761, 762, and 763 generally run parallel to existing Part 55

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requirements. Again, this is an independent pathway to some of the, you know, regulatory pieces and parts that are needed to, you know, make that program work from a regulatory standpoint would need to, you know, exist here as well, too.

Section 53.754 covers the licensed operator application process. Item (a) describes how to apply and what must be included. And here NRC Form 398 would need to be submitted and the staff would intend to provide guidance on the contents of that form.

And why do we say that? Well, currently in Part 55, we do get quite prescriptive in the regulation in certain areas. So here we see opportunity to, you know, place some of that prescriptive information, not regulation, but rather have it located in the guidance and that does afford additional flexibility as well.

The evidence would need to be provided with confidence by the applicant to control manipulations via either the facility or a simulator.

But no specific number of reactor manipulations would be prescribed under Part 53. Additionally, medical certification would need to be provided as well.

Item (d) describes how we would

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disposition the applications, and Item (c) would describe the reapplication process. And this is another difference under Part 53. We're currently proposing that there be no waiting periods for reapplications, which there currently are under Part 55.

If we can move on to the next slide, please? Section 53.765 covers the training program for licensed operators. Item (a) will require initial licensed operator training programs to, and we'll go through these three items, be based upon a systems approach to training. It will be required to ensure that licensed applicants at the facility will possess the knowledge, skills, and abilities necessary to both protect the public health and also to maintain design specific plant safety functions, and the program would also need to be approved by the Commission prior to use for license training.

Item (b) requires facilities to establish a licensing examination program to test the knowledge, skills, and abilities for ROs and SROs. Now this is an area of significant difference in Part 55.

The program would need to include both the exam methods and criteria used to assess passing performance. It would also need that Commission

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approval. Guidance for reviewing these facility developed operator licensing exam programs is being developed by the staff under an interim staff guidance document. And that is an area of guidance that we intend to discuss in further detail during our November 10 public meeting.

Additionally, facility licensees would be allowed to administer licensing exams, which is another difference in current practice. However, the Commission will reserve the ability to do so.

So in summary, what (b) has embedded in it is provisions for allowing the facilities to develop their own operator licensing programs for exams, I should say, that are tailored to the specific needs of their facilities. And, again, we will go into more detail on that ISG during the November 10 meeting. But this is intended to provide a flexible and tailorable approach.

And then additionally, you know, the option would also exist there to let the facilities administer their own licensing examinations. But, again, the NRC would retain the licensing authority, you know, if that were utilized.

If we can move on to the next slide, please? Okay. Item (c) requires facilities to

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establish requalification training programs for licensed operators. These programs would need to, and, again, I'll go through and highlight these items. And this is for requalification training.

These programs would need to be based on a systems approach to training. They would need to ensure the ROs and SROs maintain the knowledge, skills, and abilities necessary to protect the public health and maintain those plant safety functions specific to the facility design. They would need to be conducted for the continuous period not to exceed 24 months. And they would need to be approved by the Commission.

The facilities would also need to propose a biannual requalification examination program with testing topics from the requalification training program, including both the examination methods and criteria to be used to assess passing performance. And, again, this would be in a similarly flexible and tailored manner to what we discussed for the initial examinations.

So that program would need to be approved by the Commission, and exams would need to be administered biannually.

Guidance for reviewing these facility

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developed licensed operator requalification programs are currently being developed by the staff via an ISG. And, again, that's the same ISG work that I mentioned for the initial exams as well.

Moving on to Item (d), (d) requires examination integrity in a similar manner to existing Part 55 exam security requirements.

Can we move on to the next slide, please? Item (e) establishes simulation facility requirements for plants that are required to have licensed operator staffing. So it should be noted that, again, we're talking about licensed operator programs here. A little bit later we'll talk about certified operator programs.

So when we get there, again, you know, some of the wording will sound the same. But what I want to highlight here is that we have separate -- we're proposing separate and less stringent simulation facility requirements for plants that utilize certified operators.

So key aspects of the requirements of plants with licensed operators would do that. And, again, I'll go through those items.

First, that partial scope simulators would not be mandated. Instead, partial scope simulators

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may be acceptable provided that their scope is adequate to meet their intended usage.

Next, simulation facilities would need to be approved by the Commission if the facility licensee will rely on them for certain purposes. And those purposes would be for training, for meeting experience requirements. And a key example there are reactivity changes or for initial or requalification examinations.

So a key point that I want to make there is that there may be alternatives to utilizing a simulator to meet any given one of those areas. And, again, we're currently working through, you know, guidance development and so forth.

But the reason why that's, you know, qualified with, you know, reliance upon and for certain purposes is because there may be alternative means that, you know, a given facility may be able to demonstrate are satisfactory that don't necessarily rely on a simulator to achieve.

Next, use of a simulation facility for conducting human factors engineering analyses or assessments would require demonstrating that adequate simulator skill is provided as well.

So, again, a key point here is just that,

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you know, if a simulator is going to be used as a human factors engineering testing or if it's going to be used to, you know, support staffing analyses, right, the simulator needs to be able to support that scope. And, again, that is a separate requirement that's there as well.

Additionally, prior to the initial fuel load, the simulator models would be allowed to replicate the intended initial core loads. And that would support operator license instruction. And that is a difference from the current Part 55 requirements.

So, again, you know, here for a plant that hasn't yet been constructed, you could, you know, essentially, you know, replicate the intended core load and then conduct reactor manipulations for experience requirements.

Continuing on, Item (f) establishes requirements for waivers for exam requirements, including those instances when additional units are constructed at multiple unit sites. So that would, you know, with the appropriate supporting information, that would allow a license to be essentially extended to newly constructed units, provided that, you know, the requirements are met.

Item (g) requires that facilities

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establish Commission approved programs for both maintaining and reestablishing licensed operator proficiency. And, again, this is a difference because the existing, you know, Part 55 is prescriptive in specifying both what is required to maintain proficiency and what is required to re-establish it.

Here, we would allow the facilities to develop a program that we would have to approve. But that could be done taking the specifics of that facility's considerations into account. And, again, that would be a difference from the prescriptive approach in Part 55.

Moving on to the next slide, please. Okay. So Sections 53.766, 767, and 768 generally parallel current Part 55 requirements. And before we move on, I just want to highlight again that, you know, please bear in mind that the structure of, you know, the section that we just discussed and its degree of independence from Part 55 remains an area of ongoing staff work.

Could we move on to the next slide, please? Okay. So Sections 53.770 through 779 cover the requirements operator certification programs at those facilities that are allowed to use certified operators in lieu of licensed operators.

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The certified operators are defined under Part 53. And what the current definition has them assigned as is, and I'll paraphrase here, but they are individuals who are certified to manipulate facility controls without being licensed by the Commission. And, again, when we refer to controls, what we're referring to are reactivity controls at the facility.

So it is important to note that certified operators are not intended to be credited for fulfilling plant safety functions. And that is a central concept here.

So to the contrary, the design of the facility is that qualify to use certified operators instead of licensed operators, you know, would not have a human role for the mitigation plant events. So that's a key difference that's here. The types of plants that would be using certified operators are plants where, you know, there isn't a human role in the mitigation of plant events.

So, again, when we look at the construct, and some of this spills over into, you know, guidance we'll be talking about further down the road, the certified operator is not seen as fulfilling that type of a role where a licensed operator would be.

So going through these sections, again,

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you know, we'll highlight certain areas, and we'll talk in more depth about others. The 53.770 section just describes applicability of the requirements.

Section 53.771 requires individuals to hold a certification issued by the facility. And keep in mind that this certification is issued by the facility licensee, right, not the Commission, right? That's a key difference that's here.

So in terms of, you know, who holds the license, when we're talking about certified operators, you know, within this construct, the facility licensee is the license holder, right?

So in terms of who is "on the hook" for these requirements in this certified operator section, it would be the facility licensee. And we'll see that in the rule language itself that that's, you know, who this is directed to.

So, again, just to set that framework and how this is different, you know, fundamentally from an operator licensing, you know, programmatic perspective that folks might be used to.

So individuals that would be required to hold a certification issued by the facility licensee and not the Commission in order to perform the function of a certified operator, additionally,

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facilities would be required to establish, administer and maintain their certified operator programs.

Section 53.772 would require facility licensees to immediately remove individuals from the performance of certified operator duties in the event that medical requirements were not met due to a permanent physical or mental condition, how the allowance would be made for medical restrictions, if they could accommodate medical issues, provided they're compliant with the prescriptions he's maintaining.

If we could move on to the next slide, please.

Okay. So, now we're moving on to Section 53.773, which describes the training program for certified operators. Now, as we go through this, some of this will sound familiar -- the licensed operator section. But we'll try to highlight some of the key differences that are here.

Because as you'll see that there's a number of relaxations within the serve operator program compared to that for what's being proposed for licensed operators.

So, item (a) requires initial operator certification training programs to -- and we'll go

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through and talk about these items -- be based upon a systems approach to training to ensure that certified operator trainees will possess the knowledge, skills, and abilities necessary to protect public health, and also to be approved by the Commission prior to use.

Item (b) would require facilities to establish an examination program to test the knowledge, skills, and abilities of certified operators. The program would need to include the exam methods and criteria to be used to assess passing performance, and will need to be approved by the Commission prior to use.

And, again, you know, that, that takes some more conflict than we talked about for the licensed operators. So, again, this would be a flexible, you know, tailored approach that can be used. And we envision that as being driven by some more guidance to what we're looking to develop for the licensed operator program as well.

The guidance for reviewing these facility-developed certified operator programs is being developed by the staff via an ISG. Facilities would develop, administer, and grade certification exams. And facilities would also issue the operator certification, and not the NRC. So then, you know,

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the NRC would not be issuing the certification. The Commission would reserve the ability to observe the process. So, that would be an aspect of it.

Could we move on to the next slide, please.

Okay. So, moving on to Item (c). Item (c) requires facilities to establish continuing training programs for certified operators. The programs will be required to be based upon a systems approach to training. They will be required to ensure that certified operators maintain the knowledge, skills, and abilities necessary to protect the public health. And they will need to be approved by the Commission prior to use. So, then that reads similar to the, the initial requirements as well.

Facility licensees would also need to propose a requalification exam program for testing continuing training topics. This program would need to include the examination method and criteria to be used to assess passing performance. Again, similar flexibility as, you know, what we've discussed for the licensed operator variant.

Facilities would need to propose the periodicity for requalification exam administration. And that is a key difference from licensed operator

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requalification examination requirements. Right?

Again, we talked about, you know, the 2-year requirement, which is similar to that of Part 55 when we're talking about licensed operators. For certified operators we would allow the facilities to tell us what that period is to be -- should be. And, again, that would have to be, you know, supported. But we would not mandate that it had to be a 2-year periodicity. The program would need to be approved by the Commission prior to its use.

Guidance for reviewing the developed certified requalification examination programs are currently being developed by the staff via an ISG. And, again, that's embedded in what we intend to impress upon at our November 10th public meeting as well.

As operator certifications do not have renewal requirements -- again, keep in mind the Commission is not issuing these, right, but there is now expiration and renewal associated with them in the conventional sense, like it would be for a license.

Continuing training program records are, instead, retained while operators remained certified at the facility, which would be a difference from licensed operator requalification requirements where

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it's actually tied to, you know, the expiration and renewal of licenses.

So, again, an administrative detail, but just highlighting some of the differences when this is being locally managed at the facility level.

And moving on to the next slide, please.

Okay. So, continuing on. Item (d) requires examination integrity, so exam security, right, in a manner similar to that of licensed operator programs.

Item (e) establishes simulation facility requirements for plants with certified operators. The aspects of these requirements are -- and again I would caution that some of this will sound similar to some of the licensed operator equivalents, but there are some key differences that are embedded in here.

The full-scope simulators are not mandated. And partial-scope simulators may be acceptable, provided that the scope is that of the quantified usage. The simulation facilities at those facilities using certified operators would not require Commission approval. So, again, you know, Commission approval will not be needed for simulators that are being used at certified operator plants.

However, certain requirements would apply

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if the facility is using them for training unique experience requirements, or for initial or requalification exams. So, there would still be, you know, regular core requirements that would apply to the simulators if they're being used, you know, within those contexts, but the simulator itself would not require Commission approval.

And similar to what I mentioned on the related point for licensed operator plants, you know, we, we envision that there could be alternatives that a facility could propose for meeting, you know, those training, you know, experience requirements or, you know, even for the examinations themselves that could, you know, feasibly be proposed and, you know, essentially found to be acceptable to where the simulator would not need to be, you know, credited for those specific items. So, that is an area of guidance that we continue to work on.

So, using a simulation facility for conducting feedback engineering analyses or supplements would, again, still require demonstrating that adequate simulator scope is provided. And, again, that, that is a function of allowing for a partial-scope simulator, but the partial scope must still be sufficient for what it's being used for

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within that context.

And similar to operator requirements, prior to the initial fuel load the simulator model will be allowed to replicate the intended initial core load. And that would support operator certification during construction.

If we could move on to the next slide, please.

Okay. Moving on to Item (f). Item (f) would allow the facility licensee to waive examination requirements in accordance with their approved training and qualification program.

So, again, you know, there would be a requirement for initial Commission approval of the program itself, but part of that program, you know, would consist of, you know, the process used to waive examination requirements. And, again, this is, you know, something that we see where, you know, perhaps there's a circumstance where one portion of the test has already been passed, or perhaps someone is coming from a, you know, a similar facility, as the case may be.

It's an area where more guidance needs to be developed, but there is a corollary to the existing practice. And the key difference that's here is that

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we would allow that to be managed at the facility level under their approved program, and to potentially waive those requirements where appropriate.

So, Item (g), if we move on, would be, item (g) would require that facilities establish a program for maintaining certified operator proficiency on position functions and plant status, as well as for reestablishing certified operator proficiency when needed.

Now, that wording probably sounds different, you know, if you're familiar with the existing requirements. And something that we, we have to keep in mind with certified operator requirements is that -- and, again, this applies to the broader specific framework -- you know, we may have facilities that have, you know, very limited staffing capacity, you know, perhaps even, you know, running autonomously. So, in those instances, you know, there may be a difference in how proficiency is maintained compared to the status quo for the water, light water reactors.

So, in this case we propose modified wording for certified operators that points to proficiency on position functions and plant status. So, that's a little bit different there.

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And, additionally, you know, and this is similar to the licensed operator variant, you know, the facilities have to establish a program for reestablishing certified operator proficiencies when needed.

And, notably -- and this is a key difference -- that proficiency program would not require Commission approval, which is a difference from the comparable licensed operator requirements would be in that case.

The section 53.774 then addresses requirements for the issuance of certificates by facilities for certified operators. And, again, this is, this is markedly different from Part 55 because within the context of Part 55, or even, you know, the comparable Part 53 requirement for licensed operators that we were discussing earlier, the NRC is the licensing authority.

So, when it comes to matters of issuance of the license, you know, that's something that is, you know, "owned" by the NRC. In this case these are requirements for the facility licensee for how they issue certificates to their certified operators. So, again, this will set the stage. This is a different context.

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So, so just starting over. Section 53.774 addresses requirements for the issuance of certificates by facilities for certified operators and requires that facility licensees ensure that individuals meet the following requirements prior to being issued operator certifications.

And, again, I'll go through these five items. The first is the completion of either a high school diploma or a GED. So, that would be, that would be a requirement to be a certified operator.

Next, satisfactory completion of an approved initial training program.

Third, passing of an initial operator certification examination.

Fourth, demonstration of competence in conducting control manipulations.

And, lastly, meeting medical condition requirements. So, those are things that would need to be met, and that the facility licensee would need to ensure were met prior to issuing a certificate to anybody.

If we could move on to the next slide, please.

Okay. So, Section 53.755 addresses conditions of operator certificates, and establishes

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requirements that a facility licensee would need to meet to ensure -- well, would need to ensure for each certificate that it issues.

So, just to rephrase that. You know, when we think of the existing Part 55 where it talks about conditions of licenses, you know, for licensed operators, this is, this is a similar concept except in this case the facility licensee would need to ensure that their certified operators are meeting these requirements.

So, again, the regulatory requirement is just directed a little bit differently. Licensing is directed to an individually licensed operator. Here this is being directed to the facility licensee.

So, these requirements would include limiting certifications for the facility specified in the certificate. However, -- and this is a key, you know, thing that I want to point out here -- at no point are we talking about any limit being placed on how many facilities that an individual could certify at, you know, simultaneously. So, you know, someone could hold certificates for operating, you know, multiple facilities, you know, run by the same company, and so forth. So, again, I just want to clarify that.

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So, additionally, you know, there would be a requirement for certified operators to complete the continuing training program. They would need to pass their periodic requalification examination. They would need to have biannual medical examinations. They would need to maintain proficiency in accordance with the facility proficiency program. They would need to meet fitness for duty requirements regarding drug and alcohol usage. And there would be a point where Commission notifications would still be required for any felony convictions of the certified operators of a plant.

So, moving on, Section 53.776 would require that operator certifications be terminated at the end of employment or upon determination that the individual no longer needs certification. So, again, you know, the key difference here is that we don't have the normal, you know, requirements that you might expect for Commission renewal and revocation and things like that because these individuals are being certified by facility licensees. So, again, these different requirements that are directed to a different licensee here.

If we can move on to the next slide, please.

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Okay. So, this moves into the fourth section we discussed from an overview perspective earlier. And this is Sections 53.780 through 53.789.

And what that covers are training and qualification requirements for commercial nuclear plant personnel under Part 53. So, these sections address personal training requirements other than those directly associated with training licensed and certified operators. And what this section does is it fills a role that's similar to that of the existing 50.120 training rule requirements.

And something I want to highlight for, you know, for those listening is that the 50.120 requirements are driven by a statutory basis. So, the Nuclear Waste Policy Act is the driver behind why we have to have a training rule. So, you know, in this instance within Part 53 we attempt to create a self-contained framework. But we still have to address the requirements of the training rule. And that's why, you know, as people read through, they may say, well, you know, this reads somewhere in 50.120. Why do we have to have this here?

And that's the reason because, you know, we would have no need to reference over to 50.120 if we already have it in standalone right here. And

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because of some of the, you know, considerations for advanced reactors, our current proposed approach is to address it in a standalone way in Part 53. So, Section 53.780 simply describes the applicability of this set of requirements.

And then 53.781 covers the training qualification requirements. And those would include, you know, the following items that I'll talk to now. So, first, so, facilities would be required to have training programs established with sufficient time to provide trained and qualified personnel to operate the facility prior to fuel load. Right? And, again, that's the key wording there is sufficient time prior to fuel load. And that is a significant difference from the existing 50.120 requirements which imposes an 18-month requirement. So, here we would allow greater flexibility, you know, on when those programs are started up, with the key thing being that the people that are needed to be trained and qualified are, you know, in that state and they're in place prior to fuel load. And, again, we, you know, do that with a mindset that, especially for small facilities, you know, perhaps, you know, the timeline could be considerably quicker than, you know, what we saw years ago with the sidebars.

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So, next, requiring the use of a systems approach to training. Right? So, again, you know, we don't intend to depart from the current reliance upon the systems approach to training as being the means used for training within this, this training rule. And that's consistent with existing requirements. Additionally, this rule would require the training and qualification of supervisors, technicians, and other appropriate operating personnel to be provided for.

Now, the actual wording that's used -- and this is what we know as rule language -- is specific to these three categories as well, and that is a considerable difference from 50.120, which I believe goes through and identifies on the order of about 10 or so different categories of personnel. What we do within the preliminary rule language is we consolidate those to higher level generic categories, with examples provided. And we bucket those as supervisor, technicians, and other appropriate operating personnel.

So, why do we do that? Well, again, what we are attempting to accommodate is the potential for greater flexibility in roles, and perhaps non-traditional roles and positions, you know, especially at facilities with small staffing complement that

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perhaps we haven't, we haven't seen before. So, again, by consolidating those categories of personnel into more generic and higher level categories, you know, we see that as being a more appropriate way to potentially address that.

And then, lastly, you know, there would still be a requirement for records retention to allow for programmatic inspection to occur.

If we can move on to the next slide, please.

Okay. So, that concludes my overview of the preliminary proposed rule language. So, I'd like to go ahead now and open things up for questions and general discussion.

And, you know, Bob, if you could, I'd request that you help me to please moderate and, you know, if we go faster to start addressing the questions and comments in the order they were received, if that works.

MR. BEALL: Sure. Or if, Cyril, are you, are you there?

MR. DRAFFIN: I am. But if people want to provide comments first, that will be fine.

MR. BEALL: Okay. Okay, Marcus, how are you doing, from NEI?

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MR. NICHOL: Good. Good, thanks.

I could make comments. But I've been in Cyril's position before. And so I, I would recommend you let Cyril go through his prepared remarks before you let the rest of us speak. But I'm happy to do it any way you want.

MR. BEALL: Okay. Yeah, Cyril's only got a couple slides. So, let's go ahead and get him first. Okay?

But I, I see the other hands raised and I'm taking notes.

MR. DRAFFIN: Okay, thank you. This is Cyril Draffin, Senior Fellow for Advanced Nuclear at U.S. Nuclear Industry Council. And we have just a few slides. But we do appreciate the staff in their effort to explore novel operational concepts for advanced reactors. It is appropriate and timely.

Just going to the next slide, I did -- there's a limit to, you know, something long and complex, so we don't -- didn't have enough time to have reactions from many of our developers. So, this will be just kind of a high level.

You did note that there's a number of pieces of guidance being prepared and will be discussed at the next meeting, or at least the

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November 2nd meeting, which is helpful, because the guidance is a key part of how this could be implemented.

It might be interesting to hear, you know, your thoughts of, you know, how many pages it will take to do that. We've seen, you know, what the subpart F regulations are, and you referred to at least two or three different ISGs or NUREGS, but delineating what guidance is going to be needed. And the timing for that might be helpful. So, you might capture that, if not today, then for the November 2nd meeting.

The next slide is sort of a series of comments.

You mentioned a couple times you're trying to clarify the independence from Part 55. So, an indication of what some of the issues are I think would be helpful, and what variants might occur in the future. Obviously, we're thinking about that, so there must be some changes you had in mind. So, clarifying what that earlier than later would be helpful.

For the scalable HFE review, is there expansion of it to, responses to it as offsite, you know, beyond the control room? You might clarify under what conditions. Maybe if it's a fleet

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operation and there are no operators onsite that would make sense. But if you plan on doing that as some people onsite and some people offsite, the scope of how that applies might be helpful clarification.

We think that the concept of, concept of operations and asking companies to describe that is appropriate for designers, particularly if there are proposed significant difference in what the NRC shows for large light water reactors, that would be a logical way of articulating that. And the fact you, you see the willingness to back off from crowning a shift technical advisor. I think there's generally very broad sentiment that that's not required. And it's probably also appropriate that you don't need a staffing table like there was in 50.54(n).

However, there's a lot of questions regarding the clarification of the criteria for certified operators such that they be appropriate in lieu of licensed operators that you might have such a high standard that the non-licensed operators just aren't possible. You know, they, do they have to refer to all parts of human factors engineering throughout the hiring plant? And actually, it would be a higher standard than what's required for certified operators.

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If you have the approach that you can't have a mix of certified operators and licensed operators at the same facility, and you're not going to give them any credit for, the certified operators getting no credit for fulfilling safety functions, maybe just administrating a couple of backups for SOCs, you know, it limits their value.

So, it's what's the value of a certified operator? And it's probably the guidance that will clarify it, but it may be such high standards that you're basically saying it's a possibility that the standards are such and so high that you can't get there. So, that's important because we're, we're concerned because we're spending a lot of effort on a new approach but not having it likely to be implementable is a problem.

We do think that load following with automatic protection is a desirable path. That's part of the requirements in the utility industry. And one of the advantages of the large reactors and other non-light water reactors. And so, thinking about how that could be done and, obviously, appropriate protections are needed, and the developers should be working on that along with the utilities that are deploying them.

But I think that you should approach that

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up front and think about that.

There is a question regarding the regulatory licensing philosophy for simulators. I know you, you talked about that as part of the training program. We're interested in whether the NRC has worked with our Canadian counterparts to gain from their simulator facility reviews. Obviously, we're trying to avoid different perspectives if not necessary, and have some more cohesion as possible between the Canadians and the U.S. as we go forward.

So, that would be some of the points I might make.

Another question is you said the staffing plan would be a condition of facility licensing. There may be different staffing plans. There may be the absolute minimum required, and there may be the planned-for, which might be higher.

So, I was just wondering how that would be addressed, whether they would just -- whether an applicant would say, okay, this is the minimum, and this is what we want in our license approval, but actually will probably put a few more people in, maybe particularly at the early stages. But we don't want that to be locked in. So, define how that staffing plan would be, the criteria to be used for that would

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be helpful.

I guess going to the next slide.

As you go forward to clarify the role of the operators, I know by design you keep piling on autonomous operations externally. But as companies develop a concept of operations, with a staffing plan in conjunction with utility, to be open to that, which you're trying to do, I believe, so that if there is fleet operations with a central control room that the headquarter is monitoring that Part 50 allows that and should be forward-looking and considering how that would appear.

The question also is for the staffing approach, is it likely to in the future -- I know it's written for Part 53, which is appropriate -- but would some of it also be applicable for Part 50 for license applications that are developed, even if as this, some of the language in this is developed perhaps independently, Part 53 could be used separately.

So, those would be some of the points I would raise. And I'm sure other people have comments as well. But the overall position is that it's helpful that you're pursuing this. I think there's benefits in this. Implementation is a question about how appropriate, how onerous it will be. And I think

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that will maybe tend to the requirements which you're working through it.

So, with that, I'll pause and see what other, if you have any comments or reaction to that, or open up for people who have perspectives as well.

MR. BEALL: Thank you.

MR. SEYMOUR: Yeah. And, Bob, I can -- if you want to pause here for a moment, I can go ahead and speak to some of that if we want to while we're all here.

MR. BEALL: Yeah. Go ahead, Jesse.

MR. SEYMOUR: Yeah. Certain items, I know that there was a lot embedded in there. And I do appreciate you're providing the slides in advance. I think we may have touched upon some of those areas we you went through the presentation today.

So, I won't, I won't review all that. But there's a few, in just a few points I want to make to this.

You know, first, with, you know, with regards to guidance, what we currently anticipate in terms of a timeline, I think you asked specifically about looking at this engineering guidance.

And what we're currently working through is, you know, internally to have the scalable factors

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engineering guidance, you know, drafted up by, by around the beginning of December. At that point we would go ahead and get that, you know, through some internal review. And then in the December time frame to provide that for stakeholder, you know, comments and so forth.

And, again, that would be released in the form of, you know, the white paper format that we've been using thus far for, you know, interim staff guidance documents.

But that's currently the timeline that, you know, we have there.

With regards to the staffing and operator system guidance, I will defer that until the, you know, November 10th discussion. We'll provide more detail there because, then, that is a work in progress.

What I would say also is that for the operator licensing specific project we need to actually establish a contract with the Department of Energy, and more specifically Idaho National Labs, to, you know, work with us in developing that guidance as well. So, that's in your basket at this stage here.

So, some additional points. I know one of the things that was asked about was, you know,

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simulator requirements, right, and, you know, some of the drivers may be there. And what I will say is that, you know, in the course of doing our white paper and so forth, and we use the white paper as a, you know, kind of background to where we're at now, we did, we did look at a number of international examples. And we are, we are sensitive to the fact that some developers are, you know, looking to, you know, have progress in Canada and also here in the U.S.

And we, we are pursuing the, you know, outreach and so forth through our internal channels currently.

But, what I would say is that I just want there to be recognition that here in the U.S. we also have different statutory drivers behind that. And simulator requirements are interesting in that they are explicitly addressed by the Nuclear Policy Act, as being something that we need to speak to.

And I'll just take a minute to parrot what the Nuclear Policy Act says. But there's essentially a key point in Section 306 of the Nuclear Policy Act that says that we have to establish regulations, you know, and guidance that establishes simulator training requirements for specifically in nuclear power plant.

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And that guidance has to -- those regulations and guidance have to cover, you know, operator licenses and requalification programs as well.

So, and additionally, you know, we have to address requirements for operating tests at civilian nuclear power plant simulators.

So, we do have flexibility in how we implement those requirements. But it is an area where we need to exercise caution as we explore greater flexibilities, because we do have to make sure that we remain compliant with that core requirement.

And, again, I'm not, you know, I don't want to speak to what any comparable requirement may be for Canada because that's not an area where I have, you know, expertise. But that is something that here in the United States that we do have to make sure that we stay compliant with because it is the law.

So, additionally, I believe that there was a question about staffing plans. And with regards to, you know, is a staffing plan speaking to a minimum or is it speaking to, you know, normal conditions and so forth?

And what I will say is that our development of, you know, guidance and so forth is

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ongoing. You know, the development of the rule language is an iterative process. However, you know, the current status quo, right, when you look at 50.54 and how 50.54 approaches staffing, what that's doing is establishing, you know, a minimum staffing requirement. Right?

And that can vary based on plant condition. Right? So, again, you know, what we're, what we're talking up here would be akin to that, that, you know, sort of specific facilities, based upon the operating condition of the facility that there would be a staffing plan that, you know, articulates what the, what the minimum staffing is, you know, based upon the operating condition of the facility.

So, doesn't that mean that, you know, facility staffing could be more that, I mean it doesn't preclude that in any way, right, that facility staffing could be more than that. But I'm saying, you know, from a regulatory standpoint, you know, what we're thinking of is, you know, people being there in sufficient positions, roles, and qualifications, and numbers to make sure that safety functions can be fulfilled.

You know, one of our key considerations,

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especially when I think about licensed operator staffing, what we're looking for there is, you know, is that minimum met. So, again, that's where the focus is now.

As we, you know, continue the development of our guidance and so forth, you know, we may, we may, you know, expand, you know, kind of our view. But right now that's, that's the minimum, you know, scope really I think we're zeroed in on right now because that's where that safety question rests at, so.

And I think we've covered some of those items. And, again, I think some of the other items we touched upon as we went through.

MR. RECKLEY: Jesse, if I could, this is Bill Reckley.

MR. SEYMOUR: Yes.

MR. RECKLEY: Cyril touched on a point that I think some developers might want to consider. And that is for, for first-of-a-kind plants in particular, or it could even go to the initial start-up of several units, the staffing plan might reflect that the minimum -- let's use first-of-a-kind as an example, the staffing plan for the first operating cycle or the first year of operation, or whatever would be

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appropriate, might differ in recognition that operating experience is being gained; you know, plant shakedown tests, and initial operations.

And we have a note in the discussion table, as I recall, that was even mentioned for the role of shift technical advisor here it could be foreseen that for a first-of-a-kind plant, having a degreed individual onsite for support might make sense for a period of time. So, all of that could be in play and worked out for first-of-a-kind operations.

I think as we're talking about a number of these advanced reactor designs, keeping that in the back of people's minds. We tend to write these regulations for kind of the equilibrium, longer term view. But we do have a lot of flexibility in hearing proposals for first-of-a-kind in shorter term operations in terms of the first few operating cycles, or as part of the review, really finding that that would be appropriate. So, I just wanted to make that observation.

And then while I'm unmuted, one area that we're really looking for feedback from developers is as you're doing your safety analysis, you're doing your design, you're doing your assessment, if there is a notion that you can't get there from here. We

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raised this in a few other areas that if we're offering flexibility and proposing criteria for when those flexibilities can be met or could be used, and plants don't think it's possible to demonstrate that, then two things are in play:

Maybe we don't need to operate, offer that flexibility if it can't be met; or maybe the criteria need to be revisited. So, we would be interested in anybody's observations about the criteria and their usability and feasibility. So, thank you, Jesse. That's all I have.

MR. Uribe: And, Jesse, this is Juan Uribe.

I have one, one thing.

MR. SEYMOUR: Yeah. Sure, Juan.

MR. URIBE: So, just wanted to perhaps have a little bit more context to the schedule that you provided. And maybe this is just for trying to help Cyril with the question about scheduling and perhaps only recently.

But Jesse alluded to the white paper on scalable HFEs. There's scalable HFE reviews sometime in December. At the November 10th meeting you'll hear a status update on the flexible -- the tailored operator licensing and the staffing. At the last stakeholder meeting you heard about the scalable HFEs.

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In the May time frame of 2022 we hope to have white papers associated with the staffing and the operator licensing examinations. And it will follow the same process as the HFE will. We'll have a white paper out, again to solicit comments. And it's no different than what we're also doing for the ARCAP and TICAP projects.

So, what I mean by that is you'll have plenty of opportunity to get involved and look at the product. And they'll be, they'll be close enough but sufficiently spaced out so that you can, you can dive into those in detail and be able to provide your feedback.

So, I just wanted to provide the May time frame and for the plan that we're going to pursue with those other two projects for, for your benefit.

MR. DRAFFIN: Thank you. That feedback from all of you is helpful.

MR. BEALL: Okay, thanks.

All right. So, we'll go to the questions. So, Marcus, you still have your hand up. Do you have some questions, please?

MR. NICHOL: Yeah, thanks. Thank you, appreciate it.

So, Jesse, I've got some similar comments

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to share, which is want to appreciate or thank you for really looking at how to be more flexible under Part 53 in this area. I think you, you've added a number of important areas of flexibility in terms of flexibility on the number of operators you have, the ability to use certified operators, many, many different things. So, so appreciate that.

As Cyril also said, we didn't have a lot of time to dive into this deeply. We're going to get some experts on this so we can provide some more real comments. So, what I have here is more, more questions.

I want to start on number 13 because I think the criteria for certified operators is going to be a key point for working out. So, I don't know if you can go to slide 13 or not. But, but my first question there is when you talk about no human action, is that any human action within the plant? Or is that a, when you say "human action" you're specifically referring to manipulation of reactor control?

MR. SEYMOUR: So, again, what I want to preface the discussion with is, you know, kind of the high-level observations that we're putting out this information for stakeholder engagement. And, you know, an aspect of that is when you go through the

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actual preliminary rule language you'll see that we even constructed this as, you know, two different options with, you know, some annotation requesting that we're still working on this.

But this is an area where, you know, we are, we are definitely receptive to stakeholder feedback, and input, and so forth. So, I just don't want to give the impression that --

MR. NICHOL: Okay.

MR. SEYMOUR: -- you know, this is something where, you know, we're putting out option A and option B. It's, you know, if someone doesn't like it that we won't be receptive to feedback. That's not the case. Right? We're definitely receptive to feedback on this.

MR. NICHOL: Okay. Thank you.

MR. SEYMOUR: Yes. Sorry.

MR. NICHOL: Go ahead.

MR. SEYMOUR: Okay. Okay. So, when we, when we talk about these proposals, right, the key thing that we're looking at is this: when it comes to important human actions, right, so, actions that are being relied upon for, you know, the mitigation of plant events, right, you know, actions that are needed to ensure that safety functions are controlled, right,

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those types of actions the way that we keep things within the construct that those are instances where if you want to justify a plant that does not have licensed operators we would not want that, right, in the absence of licensed operators. Okay.

So, we see certified operators as filling a, basically filling a void that exists once we eliminated the need for licensed operators. Right? They fulfill administrative functions. They can do reactor manipulations, and so on and so forth, those areas that we discussed. But what we don't see them, you know, doing is fulfilling safety functions.

So, when we talk about human actions, right, these human actions that we're talking about are a link to the mitigation of events. Right. And these are the types of actions that, you know, you may think of them as being, you know, important human actions, you know, areas, you know, of high safety significance for the plant and so forth.

You may think of them as areas where the safety functions are being, you know, if you go through and you map out using, you know, a function allocation, you know, who or what is satisfying, you know, a safety function, this would be a place where, you know, eventually you're pointing to a human

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action. Right. You know, you're pointing to a person taking, you know, some type of a manual action to make something happen.

And to a lesser extent, you know, if you're talking about, you know, an active safety feature, then perhaps even, you know, extending to the defense in death role of, you know, who's going to be there to supply defense in death and so forth.

So, again, we're not talking about, you know, low level stuff here. We're talking about, you know, things that are needed to be done so that the safety functions of the facility are fulfilled. But that's the level of human action that we're talking about here.

MR. NICHOL: Okay. That's, that's helpful.

I have a few thoughts just for you to take back for consideration as you think through this.

So, so one, I'll just note that even the certified operators, the NRC has a tremendous amount of control and assurance over, over what's being done. You get to review the programs, all of this.

The one major difference is you're not actually licensing the operator. That's sort of the biggest difference, and then there's some other minor differences.

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So, but I wanted, I just wanted to stress that there is a lot of rigor in the certified operator. And I'm not saying that that rigor is unjustified. I'm just saying that, you know, it's not as if the certified operator is something you have no confidence over.

So, with that sort of perspective in mind, I'd encourage the NRC to think about the human action in terms of, as much as possible in terms of manipulating reactor controls and --

(Audio interruption.)

MR. NICHOL: Can you go on mute, please. And in terms of safety-related functions. I'll give two examples on why, because this may have an unintended effect in these two, two examples.

So, the first, let's say there's a plant that one of, one of its mitigating actions is that an operator has to go out and manually open a valve. So, this, this criteria here would sort of say, well, in that type of plant you have to have licensed operators.

But I can take from a real-life example of an operating plant that I have experience with. That is, that is the case and that manipulation of the, you know, manual opening of the valve in the case of an

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accident sequence actually is performed by a non-licensed operator, NLO.

So, so we seem to come to a different outcome in that. So, that that's one example to think about.

The other example is whether this might actually drive designs in the wrong direction. So, let's say my design I can meet with all, with passive safety features, or anything that doesn't require human action I can meet the safety criteria. But, but I look at it and I say, well, it's pretty close to the limit. I still would like to have more margin than that. So, I add in a valve. That valve has to be actuated, let's say, either by control or action through the controls, or manually operated, doesn't really matter. And by doing that I gain a lot of margin in the design. But that activation of the valve now becomes risk significant.

And I look at this criteria and I say, well, I can add that risk significant valve, but now I'm going to have to have licensed operators. Or I could just take that valve out and have a little less margin, but I don't have to have licensed operators. So, that's why I say kind of really think through what the human action is that's being referred to in this criteria.

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I'm sure there's going to be more addition, but I just wanted to get those thoughts out because I think going through some actual examples will help refine this.

MR. SEYMOUR: Yeah. And I appreciate the, I appreciate the feedback there. Something that, you know, you mentioned in kind of the first segment of your discussion that I just want to point to is in the instance that was discussed of, you know, the non-licensed operator performing the action that was important to safety out in the field, an important difference I think that we need to, you know, be, you know, to maintain an awareness of is the difference in context in terms of who is providing that direction. Right?

MR. NICHOL: Uh-huh.

MR. SEYMOUR: In that particular situation. So, you know, classically, and I can think of examples. You know, when I was a licensed operator I was at an older plant, and there were a number of, you know, field actions that were important that had to be, you know, done out in the field and so forth. But one of the, one of the key things was that, you know, the direction to perform those actions was being issued by a licensed operator. Right?

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So, within this framework, you know, something that we need to just maintain an awareness as well that, you know, in certain plants, you know, nothing that we're saying here says that you won't have equipment operators out in the field. Right? So, you know, whether the plant has licensed operators or certified operators, you know, in both those constructs there could very well still be equipment operators out in the field, you know, performing actions, right, regular actions.

But the difference is, is that pedigree of qualification, if you will, you know, is lesser for the, you know, certified operators. And even though, you know, again, what we're not presenting here is guidance and, you know, what type of examination scope would the certified operators, you know, need in comparison with the licensed operator and so forth, but, you know, we would see that that certified operator would have -- you know, wouldn't have that same scope of function associated with maintaining safety functions and so forth.

So, even that, you know, kind of directed, you know, issuing the orders to that equipment operator to go out and take this important actions, and so forth, has to be looked at differently there.

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But, again, I would just offer in return, you know, just keep in mind that, you know, with the licensed operator plant and that paradigm that we currently exist in, it may be an unlicensed person out doing that field action, but they're doing it under the, you know, purview of a licensed individual.

MR. NICHOL: Yeah, that, that's a good point. Thank you. The next question I've got is on Slide 8 for the HFE for the facilities design, recognizing that this is going beyond the control room because you're actually creating in here the possibility for plants that don't have control rooms, they have controls in different -- in places that are not called the control room.

So, so within the -- so, HFE is now being applied to more areas and, I mean, is a fundamental concept that may not be necessarily bad. But I did want to ask if, if in this is this just for safety-related controls for the reactor, or is this also for risk significant controls?

I, again, I thought of an example here which, you know, might help to enlighten how we think about it is, let's say for my design I have flexed equipment to, you know, mitigate beyond design basis events. Does that flexed equipment have to have HFE,

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you know, design built into it? Is it that important?

Or, or even if could there be different levels of HFE that I have to go through: so, safety-related controls that manipulate the reactor all the time, that's one level; and then, you know, this mitigation equipment might have a different level of HFE applied to it?

MR. SEYMOUR: That's a really good question. And I think, I think that question extends beyond, you know, really what we're going to see here with real language. And it gets into, you know, the specific guidance that would be issued in conjunction with this. So, I would, you know, open with that.

You know, the level of the rule language, you know, the way we envision this requirement is that -- and, again, you know, I think you captured it well when you made the observation that we're, you know, building requirements that can handle, you know, going all the way up through a facility not having a control room. Right?

So, what we do here -- and, again, I'll just kind of clarify the philosophy that lead to this -- is that instead of taking our human factors engineering requirement and applying it to specific locations, right, in this case a control room, what we

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do is we instead apply it to where it's needed. Right? And where it's needed is based upon where those human touch points exist for maintaining and fulfilling safety functions. Right?

So, when you go through, you know, for an advanced reactor design and you identify what the safety functions are for that plant, and then you identify, you know, using, you know, for example, you know, functional requirements analysis, functional allocation, who or what is fulfilling the safety functions, right, at that point, you know, this identification is happening, you know, saying there's already a person making the safety function happen. Or they're doing something to enable the safety function to occur. Right?

And that, that's the sort of complex that we look at, you know, this requirement within in terms of how we get there. So, what that looks like in practice is this, right: it doesn't mean that we're taking the entire facility and taking a broad brush and just saying apply, you know, human factors engineering to everything. Right? That's not the case at all.

But what it's doing is it's saying that, you know, just because you have a control room doesn't

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mean that human factors engineering needs to be applied to everything in the control room. What we care about are the things where there are those nexuses to the safety functions themselves. Right?

But what that does is it means that they can spill over out into the field. Right? So, perhaps you have a local, you know, control station. Right? And, you know, there's actions that would be taken there that are associated with, you know, fulfilling a safety function. Right? That, that could be, you know, a place where, where that would exist as well.

Potentially, if you're talking about an autonomous facility, right, this is where, you know, we extend the thought process a little bit more. Let's say, for the sake of discussion now, you have a facility that that does operate autonomously, and perhaps it's being monitored by a certified operator who's located in, you know, a location that's not, that's not right there with that autonomous facility.

Right? So, we'll just kind of set the stage with that.

And, you know, in this case let's say that, you know, you're going to go ahead and start this autonomous facility as it's going to run. And

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it's going to run with -- and maybe security guards around it, right, but you don't actually have people that are, you know, there that are, you know, dedicated operators per se. Right? And I know I'm kind of putting it as a hypothetical in there. Right?

But, if you think about that hypothetical facility, and you think about, you know, the types of passive safety systems that might be there, what we can begin to see are places where the fact that there isn't the opportunity for human intervention right there locally at that facility, suddenly making certain aspects of what people do with those systems beyond operations are a bit more important from a safety standpoint. Right?

And examples that may come into play are, you know, let's say that during the maintenance availability that someone goes and they perform maintenance on a passive safety system. And at the end of that maintenance, you know, the system is inspected. And then, you know, a valve line up is conducted that restores it to, you know, its operability. And then you start the facility up and then everyone leaves.

In balance for the position, or if an inspection or maintenance activity was not done

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correctly, now, you know, because of the unique operating considerations that are here, you know, you no longer have an opportunity for human intervention readily being there to correct that. Right?

But they, you know, with kind of the paradigm that we're used to thinking now, you could dispatch an operator to go out to the field a lot of times and open the valve. Or, you know, you can, you know, tell them to go troubleshoot. You know, they'll do a walk-down, find out why the system isn't operating, you know, and so on and so forth. Right?

But, you know, within that particular type of hypothetical, you know, you wouldn't have that being readily available. Suddenly, you know, things like the maintenance of inspection and activities that you're doing could potentially, you know, take on a greater significance to where, you know, it may be, it may be warranted to apply additional measures to ensure that those activities are conducted in a way that's reliable and that ensures the continuing availability of those safety functions. Right?

So, again, I would put that out there as well, too, just to kind of shape, you know, and kind of provide some insight into the, you know, underlying philosophy behind the plain rule language. But,

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specifically, when we get into, you know, the individual nuance of, you know, I think some of those compacts where we start sending things out to, you know, areas of defense of death, right, you know, when you really start getting into some of those areas, that's an area I think that resides more heavily in guidance. And that's an area in which we continue to work and develop.

MR. NICHOL: Okay, thank you. That was a really helpful answer. Two, two last questions that should be quick.

Slide 15, it looks like if you are able to meet the criteria and you have a certified reactor -- certified operator, that certified operator could be the one that oversees things like refueling the reactor. Was that correct?

MR. SEYMOUR: Yes. Yeah.

MR. NICHOL: Okay.

MR. SEYMOUR: So, something I want to point out here. And, you know, I just want to clarify that certified operators, you know, because again we could have an entire meeting just dedicated to that because it's a new, it's a new concept. And, you know, there's definitely a lot of layers to it. But certified operators there's certain things that

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they're doing that, you know, really I think highlight the fact that, you know, this is still a very important role. Right? And one of them, you know, obviously is core alterations.

So, you know, when you think about core alterations, there may be times where someone is moving fuel in a spent fuel pool, you know, or perhaps, you know, they're loading fuel into a cask. You know, they're doing something that doesn't involve an actual movement of, you know, fuel within a, you know, a reactor vessel.

And something that I think we need to keep in mind there is that just from operating experience and so forth, there's times where maybe we're not having an SRO being the one who's directly observing, you know, what's going on. But what I would, you know, caution is that within those contexts, you know, what we're, what we're not doing is we're not necessarily moving fuel and altering a core. Right?

And the key thing is, you know, and I'll use the example of a spent fuel pool, right. So, when you're moving fuel in a spent fuel pool, you know, you're, you know, generally moving fuel into locations, you know, grid locations and so forth that have, you know, features engineered there specifically

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to keep criticality from occurring. Right?

So, you know, perhaps you have, you know, spacing wherein you've got, you know, boration, you know, perhaps. You may have, like, a coating of, you know, the interior of the grid locations and so forth. So, a key difference is, you know, sometimes we're not looking at that same, you know, pedigree of qualification. But those are times where, you know, you're not, you're not actually moving fuel in something that is designed to create and sustain the conditions needed for criticality. Right?

So, when we start talking about moving fuel around in a core, like actually altering, you know, a core such as you would see during, you know, a cooling operations, that's where we start, you start raising a bar on the degree of qualifications needed for, you know, needed for an individual.

So, here, you know, what we, what we don't propose to do is require that, you know, a plant that is allowed -- would otherwise use certified operators and not licensed operators, we're not going to say under, at least under preliminary proposal, right, that plant would need to qualify refueling SROs just to supervise core alterations. Right?

In this instance, you know, we, we propose

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that the non-licensed certified operator could fulfill that function. However, you know, that is one of the drivers behind such a high pedigree of training. And qualification is still required for this individual, despite the fact that they are not licensed.

MR. NICHOL: Okay. Very, very helpful. Thank you. Last question, on Slide 21. So, I didn't understand exactly what you meant by partial scope when you talked about partial scope simulator. Is it, one, partial in scope in terms of the computer models that the computer simulation only has a subset of the systems in, you know, modeled or can only, you know, model, replicate a subset of the event? Or is it limited, partial scope because it's not a physical twin of the, you know, the reactor controls? I didn't understand something I heard. I just didn't understand what partial scope meant.

MR. SEYMOUR: Yeah. So, what we, what we mean here -- and, again, this is an area, too, where, you know, you have the rule language and, you know, there could be places where you identify the issues needed to amplify exactly. You know, what you just mentioned to provide clarification and so forth.

So, but again, you know, we'll just kind of focus on the, you know, kind of the rule language

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and what the underlying intent was. And that was this, right

So, when we say partial scope what we mean is that, you know, use the example of replicating, you know, the entire control room, right, with, you know, fidelity of all the panels. You know, everything is modeled, you know, in each of those panels and so forth. You know, it is a physical, you know, I don't want to say a duplicate but with a very high degree of fidelity, right, it emulates the control room itself.

Right?

And what we, what we talk about here is that the partial scope simulator, that term fundamentally implies that you don't have to duplicate the control room in that manner. Right? So, a partial scope simulator could just, you know, have some of the plant components and, you know, the control panels and so forth actually present, right, without being a full, you know, kind of recreation of the control room. Right?

And that's where, that's where, you know, we do have to tread carefully though, because while that requirement would let you have, you know, perhaps you're using some type of a flat panel representation of what might be a hard panel, you know, in the

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control room and so forth, what we, what we say is that you're supposed to make sure that what you have modeled is appropriate. Right? That you replicate, you know, enough equipment and you model enough things that you're going to be able to meet a scope that is commensurate with what you're crediting the simulator to accomplish for you. So, in this case if you're going through, and you're using this simulator, an example might be plant safety functions for example.

So, for licensed operators, it may be necessary to say that the simulator, even though it's only required to be a partial scope, still needs to recreate the systems, and model them for things that are needed where you're going to take actions, implement procedures, and so forth to maintain plant safety functions. So, when we talk about partial scale simulators, they're used as an example. That's where the nuance is.

What we envision here is that you may not need to have a large simulator that recreates a control room with fidelity, what you may need to have are certain portions of your plant, control systems replicated there so that certain job tasks, and functions that are linked to safety functions could be demonstrated. But again, there is a qualifier there.

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If you intend to use the simulator for examination purposes, it would need to have an adequate scope for that.

If you intend to use it to conduct human factors engineering analyses and assessments, then it would need to have a suitable scope for that. So, the scope of the partial scope is driven by what it's used for by just taking a broad brush, and painting a full scope simulator requirement. What that means is that for some applicants, that may mean that they just opt to build a full scope simulator. It may mean that others, particularly if they have a relatively small, simple facility, or what not, they may see opportunities to perhaps accomplish some of these areas, training, experience requirements, or exams using the actual plant itself.

And perhaps using alternate analyses, especially for HFE purposes that don't need a simulator. And by doing that, they may be able to justify a much smaller simulator scope. Perhaps they're just going to model a few panels, or something like that without having that full blown facility that we're more accustomed to seeing at the large light waters. So, again, this method B is a flexible requirement where the actual need for the simulator is

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driven more so by what it's being used for, and where it's being credited vice just a full scope requirement.

And again, where I just would caution everyone is that the partial scope needs to be sufficient. So, again, for certain facilities it may mean that they just opt to build a full scope simulator, others may choose different routes.

MR. NICHOL: Great, thank you, that's all my questions.

MR. BEALL: Okay, thank you Mark. Before we get to the next attendees, I would like to request that if you're listening to today's discussion, to please leave your camera off to save bandwidth. Please feel free to turn your camera on if you are asking a question or have a comment on today's topics.

But to save bandwidth, and make sure we have a clean, and uninterrupted public meeting, please leave the camera off if you can. So, with that, Ed Lyman, you have a question?

MR. LYMAN: Hi, yes I do, can you hear me?

MR. BEALL: Yes sir, please go ahead.

MR. LYMAN: And (Unintelligible.) so, going back to slide 13 again, the criteria for license versus certified operator, I'm trying to figure out

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how this fits in with the security requirements, and I've lost track of where that is in part 53. But if an applicant is getting, or asking for credit, or release from security requirements by crediting operator actions in response to security events, where is that going to fit in?

Are security events now included in OBEs, or are they a separate category? How are you going to fit that together? Because it sounds like this could get kind of complicated. Again, unless you have some sort of tier, or hierarchy of where you're applying this credit, thank you.

MR. SEYMOUR: So, I would ask -- I'll start out here, but I would ask maybe Bill Reckley if he could help speak to that, or perhaps one of the other folks from the working group. What I will say is that what we're seeing here is a simplified version of the actual, real language. And the actual, real language does point to individual criteria from subpart B. So, that would be part of it, in that we do point to certain criteria are embedded elsewhere in subpart B.

So, there's aren't a stand-alone requirement, they're linked in with a bigger picture. But the other thing I would just kind of highlight as

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well too, is that even though we're talking about certain operational requirements, and staffing requirements here, what this doesn't do, is it doesn't negate any other requirements that are embedded in part 53.

I'll use the example of emergency preparedness. So, there may be an area in our language, as we talk through operator licensing, staffing requirements, and so forth, where we're silent on emergency preparedness roles, and responsibilities, and so forth. The applicant would still need to demonstrate how they meet, do well with emergency preparedness requirements. So, at the end of the day for a licensing action to go through, to obtain a combined operating license, or an operating license, someone would have to show how they meet all the requirements, not just the ones that are here to tune.

And that would extend to security considerations as well. But Bill, if you don't mind, I'm not sure if you can clarify any of that.

MR. RECKLEY: It's a great question, I think it's one we'll take back, and think a little bit about. But by, and large, it's what Jesse said. We'll look to see, our initial thinking was if the

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human action was needed for safety functions, that that would likely capture security. But it's worth a specific look, and it's also worth discussions with the personnel, the staff that are looking at this in more detail as part of the limited scope rule making, and so forth.

So, we'll take -- it's a great comment, or question -- and we'll take a look at that. And the broader context, as Jesse said, the other staffing, the non-licensed operator, or certified operator would also be captured under the concept of operations, or an extension to that to fill out the whole staffing plan. So, we would have an opportunity to make sure that all of those things are considered, but it's a good comment, and we'll take that back. So, that's probably all I'm going to offer Bob.

MR. BEALL: Okay.

MS. FIELDS: This is Sarah Fields, and I have a comment, and a question.

MR. BEALL: Okay Sarah, go ahead.

MS. FIELDS: My comment is on section 53.772 of slide 23, and that has to do with incapacitation because of disability, or illness. And it only relates to permanent physical, or mental conditions, and there's no mention of incapacitation

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because of temporary disability, or illness such as breaking your arm, or having a condition where you're prescribed pain medication that maybe makes you a little bit fuzzy.

So, I think that your regulation must also address temporary physical, and mental conditions. Let's say you test positive for COVID, because I think that's -- we've all been through experiences where we have temporary physical, or mental conditions that would affect our performance. Okay, that's my comment. Then my question is, is there a specific reactor design that has been approved by the NRC where the NRC believes that only certified operators for that plant would be appropriate?

I mean, when you came up with all those specific rules related to certified operators, were you thinking of a specific design?

MR. SEYMOUR: I can speak to that, and actually if you don't mind, what I'll do is I actually want to go back to your comments, because from an operator licensing standpoint, and I did note the comment, and I appreciate the feedback in regards to temporary conditions. Temporary conditions are handled differently than permanent conditions in that the regulation speaks to -- and I'm talking about

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exiting regulations right now -- exiting regulations speak to permanent conditions.

The way that temporary conditions are handled, is they are handled using administrative processes that the facility licensees have to implement. And the mechanism by which that works is handled in guidance. So, the regulation speaks to the level of permanent disability. Temporary disabilities are administratively controlled, and again, that's handled by a level of guidance. In practice, what that ends up looking like, I'll give the example of a condition that arises to where we end up putting a restriction on somebody's license.

Perhaps they need to take medication, or what not, and we actually put that on the license. With these temporary conditions, what we would generally see, is we would see the facility use an administrative process to put an administrative, kind of locally controlled condition on that person. So, that may involve restricting them from performing licensed duties until further medical evaluation can be conducted, and so forth.

So, I don't want to give the impression that there's just kind of a void where nothing happens, the condition is temporary, it's just in the

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current framework that's handled through administrator processes that are driven by guidance, through the regulation itself. The underlying approach here is reflective of that current approach. But again, I did capture the comment.

So, with regards to the other question that was asked, I'll say that the answer is no. We did not take a specific plant design, or a specific applicant, or anything like that, and use that to guide our developments of the certified operator requirements, and so forth. What we did, and again, our white paper is publicly available. Actually if you don't mind Bob, if you could maybe put the ML in the chat, that would be great, just so that folks can pull that up if they want.

What we did is earlier this year we issued a white paper, and went through, and took existing work that had been done, and we took considerations that were associated with advanced reactors, and we used that to create a foundation from where we started looking at what would be required to have a plant that didn't have licensed operators. So, what we didn't do, is we didn't take an existing design, and try to work from that. Instead, we worked from more of using kind of an engineering, and technical foundation.

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We had various considerations that went through, and we spell this out in the white paper, how we got there, and there's a lot of references, and background information. But we ended up developing from that, kind of a philosophical framework that we use to guide the criteria that are here. And an example of that being not desiring to rely on people for mitigating events if you're going to go that route.

That was an evolution out of the work that we did. So, again, there's no design that's been approved, or was used as a driver to create those criteria. What we did is we tried to take the best information that's out there right now that's not specific to any given technology and create a technology neutral set of criteria that could be used to make that assessment.

MS. FIELDS: Thank you.

MR. BEALL: Okay, Mike Keller, you have a question?

MR. KELLER: I do, this is Mike Keller, president of Hybrid Power Technologies. I've got a general opening remark. The NRC staff is clearly adding new, and unprecedented CFR requirements as opposed to removing existing CFR requirements that are

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not relevant to advanced reactors, and, or adding high level clarification. It strikes me as doubtful compliance with the Licensing Modernization Act, and the precepts involving altering the Code of Federal Regulations.

That's a remark, now I have several questions. All safety functions are not equal in terms of risk to the public, yet the NRC staff is equating human factors, and other requirements for all safety functions. For instance, safety functions associated with anticipated operational occurrences involve significantly less risk than those associated with safe design basis accidents. I'm curious, on what basis is the staff imposing new safety function requirements well beyond those contained in the existing Code of Federal Regulations?

As an observation, it would seem appropriate to weave into the 10 CFR 53.700 series, the concept of requirements commensurate with the risk, which would allow separation between the higher-level safety functions, and the lower level ones. The second question is the claims that 10 CFR 53 parallels 10 CFR 55 is not accurate. 10 CFR 53.7XX are all significantly more complex than what we have right now.

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Three, and this applies to 53.755, and perhaps I just misunderstood what was going on. Online refueling activities directly involved major reactivity changes. On what basis are such plants exempt from requirements for an NRC approved licensed, or certified, or even an SRO? I don't understand where you're coming from on that. Could you explain that at this point?

MR. SEYMOUR: Yeah, I can start with that question. So, what I just want to clarify is that the refueling supervision requirement that we've talked about is something that is independent of the broader staffing considerations required for that plant. So, what we're talking about there is solely the direct oversight of the refueling operation that's being provided by, typically again, if we think about this in the existing framework, by a senior reactor operator who might be there riding a refueling bridge crane, supervising movement of fuel, and so forth.

For matters of practicality, that framework doesn't translate to a continuous online refueling environment of power. But what that doesn't say at all is the fact that if it's a facility that requires licensed operators, that SRO supervision of the facility is somehow exempted, right? That's not

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stated at all. In fact, a plant that's required to have licensed operators is explicitly required by those requirements to have senior reactor operators built into their staffing, right? So, that is an explicit requirement made in there.

Similarly, certified operators are fulfilling a comparable role for facility oversight. So, in either case, the way that we see it is a facility that is conducting online refueling at power would still have supervisory oversight, either being provided by a senior reactor operator, or by a certified operator. The difference is location. Because again, for matters of practicality, you would not have someone directly there at the reactor, as we see within that current framework providing that supervision from that location.

Going back to the original question that you posed about safety functions, what I want to highlight is that what we're doing here, and what we're trying to convince you to do is to take a technology inclusive approach. One of the methods that we use to accomplish that is by taking the individual design considerations associated with a facility, and then linking the requirements to that instead of just being prescriptive in a manner that's

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comparable to the existing part 50 and 55 framework.

So, in this case, the method that we've elected to use within this preliminary framework is in large part to identify what the safety functions are for that plant, and then to use that to drive our requirements for staffing, human factors engineering, and operator licensing. And the reason why we do that is, and I'll use the comparison of a large light water reactor to a micro reactor, right? And we'll just for the sake of discussion, just assume that we're talking about two (Unintelligible.)

But for the large light water reactor, we may see that there's five, or six safety functions, core pulling, heat sink, reactivity, containment, and so on, and so forth. When we look at the micro reactor, perhaps in that design we only see that there's three safety functions. Perhaps it's reactivity, heat removal, and perhaps something related to the functional containment, perhaps confinement of fission products, and so forth that control the release of radiation.

So, in one case you've got two distinct, very different designs, and an easier way to categorize that on a very, very high level is to look at what the differences are, and the safety functions

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between those plants. And as we move from a prescribed framework, to a flexible framework, one of the things that we can do, is we can use that as our benchmark.

So, again, I would just point to that as being a means that we've used to try to be technology inclusive here.

MR. KELLER: Yeah, but you're not recognizing that the safety functions have a hierarchy, and you're imposing, it seems a level of requirements. I don't see that that's appropriate, and it creates an awful lot of difficulties that wash throughout the entire design, construction, and operation of the plant. You need to have some in some fashion commensurate with risk. The stuff involving rad waste systems is significantly risky to the public than an accident involving a design basis event. The way it's currently written, there is no acknowledgment of that fact.

MR. RECKLEY: If I can, at the binary level, whether it's a licensed operator or a certified operator, you're basically characterizing it correctly. But in that the criteria, both criterion are basically identified as potential discussion, initial discussion points. Let's say that if human

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action is required to perform needed safety functions, then that's a criterion for having licensed operators.

But do look at the analysis that would be done in the ability to take a graded approach in terms of other things such as the number of people, the training of people. All of the things that are talked about here have built into them a gradation that would provide some of the release that you're mentioning. If human actions are only required for one event sequence, then again, as we proposed it, but as Jesse said, this is the stuff we want to talk about, then the fact that human action is required for that one sequence would be a basis for having a licensed operator.

From our point of view, that's a decision the designer has made. They reached an impasse, and said I can't design around this sequence, I'm going to have to require human action to deal with it. Well, that brings with it then requirements on the humans that'll be credited, and in our proposal, that's licensing. However, if there's seemingly human action for one sequence, that will be reflected in a graded approach in terms of the number -- again, what I said before, the number of people, the training of the people, and so forth.

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MR. KELLER: But the fundamental document is overly rigid the way it's setup right now, because it's equating, if it's a safety function, everything presumably applies, when clearly the safety functions are -- and for the anticipated operational events, there is significantly less risk than the design basis events. And it seems to me 10 CFR 53 needs to in some fashion reflect that consideration, and how it actually plays out by the plant designer, and the constructor, and the operators. That depends on the level of risk really, and I think you need to have more flexibility built into a code affecting regulations.

I also have another question, that maybe I just misunderstood what was going on, for plants with completely separated control and safety related plant systems, it would appear that you're requiring general plant operations have to be covered by an NRC approved operator, or certified operator. I was under the impression that, with respect to the parts of the plant associated with nuclear safety functions, then it makes perfect sense to apply a licensed, or certified operator.

But not so much for the power production, and that's where I'm really uneasy, is you're setting

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what would appear a path to license general plant operations.

MR. SEYMOUR: So, I'll speak to that. When we talk about what do we see a licensed, or certified operator doing at any given plant? And again, this starts to stray into some more detail that's in the rule language itself, or even going out into the guidance space, which we'll talk about all of that in more detail during coming interactions. When we talk about what's actually needed to be done by those operators at any given facility, right?

Whether it's a large light water, or a micro reactor, that's driven by in large part the task analysis that would be conducted by that facility. It then applies what that job needs to do at that facility. Now, licensing itself, by and large, what a licensing process would do, is it would identify which of those identified tasks have higher importance, right? As driven by their impact on plant safety, and so forth. The licensing process itself would tend to focus on the higher importance tasks, right?

So what is driving a task to be important, right? And again, things like likes to safety, vice just the power, vice, the power generation per plant would be one aspect of there. So, the licensing

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process, and again, we are working on guidance to pursue a flexible operator licensing and process. Licensing in general, when you're looking at any of those tasks, the focus naturally tends to gravitate towards things that are required for a specific design, and it tends to focus more heavily on things that are needed by safety for generation, and so forth.

The other aspect too, is that when we look at the actual wording that's in the 53.755 requirements, and so forth, what we see is that there's requirements opposed that the facility controls, right? Which is a fine term, and it talks about things that affect reactivity, or power. When those things are going to be manipulated in a direct way that a licensed, or certified operator performing those manipulations.

However, we see a different requirement that applies to indirect changes that are made. So, when other systems were operated, that would go, and actually end up having an effect on plant power, that is stated to be something that requires the oversight, and you'd have supervision, I forget the exact wording that's used there. But in essence, the oversight of someone with a license in those instances. So, there

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what we see is that those types of operations may not necessarily require a licensed operator to do them.

It's like the plants that require less stoppers, but they would be things that require the cognizance of a licensed operator none the less, right? So, there is a flexibility that's built in there. Whether, I haven't given applicants assigned to have a mix of licensed, and non-licensed people understanding that there is a differentiation in who can operate what, that's a decision that the designer would have to make, and so forth. But again, there's a little bit more nuance to it that's not quite flat black, and white.

MR. KELLER: Well, I can see a situation where you could offer power production, and the reactor would either eventually, or right away change the reactor's power level in response to actions taken by, to balance the plant basically. So, are you envisioning that say the folks that would alter the power production would have to be licensed?

MR. SEYMOUR: So, again this gets back to the specific wording, what we have in 53.755, which in some ways descends from existing framework for those two items in 50.54. So, when we talk about indirect changes in power, and I'll give an example, that it

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can be seen at the existing large light water reactors, there may be a field operation that needs to be done that is going to, through an indirect way, create a small transient on the plant that results in a change in power, right?

Can that manipulation be done by someone without a license? Provided that it's not something that directly controls reactivity, or power, then it may be acceptable under certain conditions for someone that doesn't have a license to do that. But they need to do it under the supervision, and direction of a licensed operator to do that. So, again, it's a point that's made here to where I think what we're talking about, it is not quite as far removed as we might think for -- in comparison with the existing reactors that are out there.

A key difference here is that we open the door to load following. In load following, a grid operator located elsewhere who is non-licensed would essentially change the demanded output of the facility. That would be indirect, that grid operator would not be physically controlling the reactor controls directly, but they would be changing the turbine output for example. So, by doing that, they would then cause the power of the plant to, the

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reactor output would change to meet that, and so forth. We proposed requirements for that to occur, but again, that would be a non-licensed individual who was doing that.

MR. KELLER: I'm sorry, I'm just very uneasy with what I see in the text as written. I don't think it -- I think it's opening a door that I think has some rather painful ramifications on operations of the plant. I also have one more question. I'm uneasy about the need for replicating existing Code of Federal Regulations criteria, for instance 50.120, because what seems to happen is the NRC staff invariably adds new requirements.

So, I'm very uneasy when you guys do that. It seems to me you ought to just go ahead, and cite the applicable Code of Federal Regulations, and then clarifications at a high level if you really need them, as opposed to all manner of texts, and paragraphs that have been altered relative to what we started with. And again, it's just an unease on my part. I do have one closing remark, and it's rather broad brush.

Numerous questions have been asked throughout the 10 CFR 53 development process, however responses to these individual questions are only

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rarely provided by the NRC staff. That strikes me as kind of troubling, because we have questions, and you may have perfectly fine reasons for doing it the way you are, but when a question is put on the table, to simply ignore it doesn't instill a lot of confidence in what's going on. And again, that's just a general closing remark, and thank you for your time.

MR. BEALL: Okay, thank you Mike. Are there any other questions on this part of today's public meeting, subpart F? Okay, hearing none, before we move onto the next section, this is where we're pretty much on time to schedule a 15 minute break. So, let's come back at 3:50, and we'll resume on the second part, and we'll have an open discussion on the other part 53 preliminary ruling, which is currently out for public comment. So, we're on a 10-minute break, and we'll resume -- excuse me, 15-minute break -- and we'll resume at 3:50, thank you.

(Whereupon, the above-entitled matter went off the record at 3:37 p.m. and resumed at 3:50 p.m.)

MR. BEALL: Welcome back everyone. We'll continue our public meeting today on Part 53. This next topic will be an open discussion of the Part 53 sections and subparts. Next slide please.

I think we're having technical

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difficulties here for a minute. Okay, until we get the slides together, this part of this meeting is to discuss some of the subparts that have been publicly released, and see if there's any comments, or questions that the public may have on these various Part 53 subparts.

Some of the preliminary rule language that we have out right now for public comment is subpart B, which is the third iteration of technology inclusive safety requirements, subpart C, requirements for design, and analysis, which is also in its third iteration, subpart H, which is licensing certificates, and approvals, subpart I, maintaining, and revising licensing basis information, and subpart J, reporting, and other administrative requirements.

That's just a partial list of some of the preliminary rule language under Part 53 that we have for public comments. But we are now, the staff is available to answer any questions, or take any additional comments the public may have on the subparts. If you have a question on any of the current subparts that are currently out for public comment right now, please raise your hand. Marcus, go ahead.

MR. NICHOL: Yeah, thanks Bob. I actually

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don't have any comments on the subparts that have been released to date, because I think we've made all of our comments in previous meetings, I can't think of any new comments, but I did have a question, and you can wait until other people go through their discussion. But does the NRC have any plans to release new iterations, or updates to any of those parts?

Just for example subpart B, and C has gone through three iterations, but other subparts haven't gone through any iterations. I don't know if the NRC has plans for updates based on comments received to date.

MR. BEALL: Yeah, Marcus, we still have additional plans to revise, and continue to issue iterations based on the public comments we have received. So, most likely you will see another iteration of some of these subparts. But we're also working on trying to put together a more comprehensive poll of all the rule language put together. So, we want to move from having, issuing individual subparts to providing a more comprehensive rule text, so you can see the whole of Part 53, and how it all works together. Bill, would you like to add something to that?

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MR. RECKLEY: No, it's just basically what I was going to say. That it's likely that the next iteration of individual subparts will just be reflected in what we put together as the consolidation of all of the subparts.

MR. BEALL: But one thing we all want to try to do Mark, is instead of us just releasing it, and having you try to figure out what's the change, we still want to put in the red line strikeouts. So, as we make changes, and affect a third, or fourth iteration, the public can see those changes as we incorporate comments into it. Because Part 53 is going to be a large document once you put it all together.

MR. NICHOL: Okay, that's helpful, thank you.

MR. BEALL: Sure. Mr. Keller.

MR. KELLER: Yeah, relevant to this consolidated version of 53, how is that impacting the timeline for public comments? Say with respect to the regulations.gov, is that going to be expanded then, pushed out in time?

MR. BEALL: Whenever we release the documents, as soon as they're released, you'll be free to submit comments through regulations.gov.

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MR. KELLER: I understand that, but right now, I think there's a fuse winding down on regulations.gov. I think it's like 10, or 15 days you have, is that going to be reinitialized in some fashion?

MR. BEALL: Yes, yes, we will continue to accept comments on that, yes sir.

MR. KELLER: So, the consolidated version will have some level of run time to comment on it, is that so?

MR. BEALL: Yes sir.

MR. KELLER: Okay, thank you.

MR. BEALL: Okay. Dr. Lyman, you have your hand up.

MR. LYMAN: Yeah, just sorry I'm going to ask to clarify, are you planning to formally publish an extension of that deadline, which I think was November 5th, or no?

MR. BEALL: We will probably have to go in, I have to check with our folks who take care of that, but we may have to go in, and revise that Federal Register Notice, yes. So, I have to verify --

MR. LYMAN: Would it help if we made a formal request to extend it, or is that necessary?

MR. BEALL: That would be great, that's

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always helpful, we always like to have that also.

MR. LYMAN: Okay, thank you.

MR. BEALL: Sure, yes sir.

MR. RECKLEY: But by formal, just an email, or something.

MR. BEALL: Yeah, that's all it needs to be, right, yes. Cyril, you have a question? You have your hand up?

MR. DRAFFIN: I do, Cyril Draffin, Nuclear Industry Council. Some, maybe half a year ago, you gave an update on the guidance that was going to be planned as part of Part 53, and as you do your consolidation, or comprehensive rule text, were you also planning on issuing about the same time, an update on that schedule which basically showed here are all the guidance packages, for instance we talked about a number of them today for staffing, that you'd list all the guidance package, and some sense of when they might be finished.

MR. RECKLEY: We'll have to do that at some point whether they come together exactly, at the same time, or not, I'm not sure, we're working on that. So, the bottom line is yes, we're going to update that table, and we'll talk about it. If it's coincident with the release of the consolidated text,

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or shortly thereafter, we'll just have to see how that goes in terms of our internal timelines.

MS. FIELDS: This is Sarah Fields, I'd like to make a comment.

MR. BEALL: Go ahead Sara.

MS. FIELDS: I'd like to go back to the beginning of the whole Part 53, and the definition of what would be an advanced nuclear reactor. My understanding that the definition relies on the definition of advanced nuclear reactor in the nuclear energy innovation, and modernization act, and that definition does not provide any objective criteria for determining whether part 53 would apply to a specific application.

The NEIMA states that advanced reactors, and nuclear fission, or fusion reactor with significant improvements compared to commercial nuclear reactors under construction as of the date of the enactment of the act. And it includes improvements such as additional inhalant safety features, significantly lower levelized costs of electricity, lower waste yields, greater fuel utilization, enhanced reliability, increased proliferation resistance, increased thermal efficiency, or the ability to integrate into electric,

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and non-electric applications.

The definition relies on improvements described as additional, significantly, lower, more, greater, enhanced, increased, but there's no real base to make comparisons, so the definition is really very vague, and highly questionable, and here is some issues, like how many how many of these improvements must be included in a new reactor design to be considered advanced? What if the design meets one, or more criteria, but does not significantly meet another criteria?

For example, the NuScale small modular reactor which was approved in design certification, and standard design approval process, has a higher waste yield per megawatt hour than conventional light water reactors. And there's no operational history, so its reliability is unknown. If a reactor design has the ability to integrate into electric and non-electric applications, does it matter if it has additional safety features, greater fuel utilization, thermal efficiency, or reliability?

And how are these so-called improvements going to be assessed? What are the base line elements that a new reactor design will be compared to? The definition references the levelized cost of

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electricity, and I don't really think that information is required in an application to the NRC. And the levelized cost of electricity, and average cost of energy over the life of the reactor, there's no information how that would be determined.

And it's really, I guess by golly, (Unintelligible) and with no operational history of these new reactor designs, it's hard to understand how the reliability is going to be determined. And it's also unknown how the NRC will determine whether inherent safety features are not balanced by new safety considerations that are not present in current reactor designs. There is also concerns already about proliferation related to these new technologies, and to the new types of fuel that had been proposed.

So, if the NRC is going to rely on the NEIMA definition of an advanced reactor, we must provide a meaningful basis, and process to determine how a new design user does not meet any of these improvement criteria. Thank you, that's my comment.

MR. RECKLEY: Okay, thank you, and it's actually a very insightful comment. We've had similar discussion internally, and it may have been a subtle change in our release of these most recent subparts, and I can't recall if we discussed it at the last

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public meeting. But you will notice in the discussion, and our language in these most recently released subparts that we simply refer to these as commercial nuclear power plants no longer using the term advanced nuclear power plant.

And the rationale for that is largely what you just went over. It's a very broad definition within NEIMA, and so we did not, at least in these current iterations, want to get involved in trying to make that determination, because as you mentioned, they involve a variety of criteria, some of them safety, some of them economic, some of them social policy almost. And so our current thinking is that Part 53 would not have such a gate, and it would just be worded as commercial plants, even that term is under discussion, but whatever term we use.

After the date of that rulemaking, it would just be generally available for any reactor, and it would not need to pass any specific criteria as you mentioned, are included in NEIMA, or ones that the staff would add. So, that's our current thinking. Again, as we put this together, and consolidate that, it'll be one of the things we have to make consistent throughout Part 53.

And as we go all the way back to the

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beginning of this exercise, one of the feedbacks that we'll be looking for is if there are any reason to limit the scope of Part 53. Internally the more we've talked about it, the less inclined we were to try to come up with some kind of way to limit the scope. And so, really right now, that's the way we've worded the most recently released subparts.

MR. BEALL: Okay, thanks Bill. Sara, do you have a follow up question, or comment?

MS. FIELDS: No, thank you.

MR. BEALL: Thank you. Kalene Walker, you have your hand up.

MS. WALKER: Hi, well I'll do a follow up on that. If you're redefining, or retitling these reactors, then would they even fall under NEIMA, and is the NRC justified in the expense and effort of writing this Part 53? I'm wondering if it actually fits in the law of what Congress is expecting from the NRC, and that's one question, which you don't have to answer. I'm wondering of the people on this call, how many people are on in the NRC?

How many NRC staff are on this call, and how many -- who is overseeing this process? I know the office at NRR is heading it up I guess, but it gets kind of mysterious as far as who is actually

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doing this? Is there a list of the people on the committee who is writing this Part 53 section?

MR. RECKLEY: Internally, this is Bill Reckley, so I don't know that we've ever released the membership of our working group, but I mean it's not a secret, it's just there's a working group within the NRC, it includes representatives from multiple offices, Nuclear Reactor Regulation, NMSS, Nuclear Materials Safety and Safeguards, they have the lead for rulemaking. So, they're involved, Nuclear Security and Incident Response on the security and emergency planning side.

Office of the General Counsel, can't forget them. So, yeah, we have a mix of people who are involved, and who are all in the working group. And then within the management structure, we have a steering committee, not unusual for rulemaking activities, that's made up of what one would generally characterize as mid-level managers. And then we have an advisory committee made up of senior management, and ultimately whatever we do gets provided to the Commission to put forward as a proposed rule.

So, within the general structure, you have the working group staff level, and you have involvement in this activity all the way up to the

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Commission.

MR. BEALL: So, it's a multiple discipline working group, and so we involve many staff members from all those Offices that Bill just mentioned.

MS. WALKER: Right, sometimes there's so many fingers on the hands that the hand doesn't know what to do. I guess I just wanted to the listeners that during the break there was a hot mic, and one of the NRC people said quote if someone's going to break the planet, it will be us. At which time he was instructed to turn off his mic. (Inaudible.)

(Simultaneous speaking.)

MR. BEALL: That was not an open mic to an NRC staff person, that was one of the public participants.

MS. WALKER: Okay. Well, I'll have to agree with that one. Thank you.

MR. BEALL: Thank you.

MS. CUBBAGE: This is Amy Cubbage, NRC staff, I just wanted to add one point, the questioner was commenting about Congress, and whether we would be delivering what we were being asked to do, and I just wanted to note that under the Nuclear Energy Innovation Modernization Act, the NRC was required to prepare various reports, and one of them was issued

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this summer that explained how we're proceeding to this regulatory framework. So, I just wanted to point out that Congress has been informed of our activities.

MR. BEALL: Okay, thank you Amy. Mark, you have a question?

MR. NICHOL: Just one to follow up on Bill's answer to, I think Sara, related to the criteria for advanced reactor in the rules. So, first I want to say it's a welcome change that the NRC is not going to impose that criteria restriction on use of this rule, so we think that's the right thing to do. I'll just note, and you're probably already aware of it, there's a lot of rule language still that would have that affect, particularly in subpart A around the scope area, and some in the definition.

So, we are, I didn't mention this earlier, but we are putting together a comprehensive set of comments, and one of our comments is focused on not artificially restricting this to quote unquote advanced reactor technologies. So, we'll just note in there that the NRC stated in this meeting that their goal is consistent with our comments. So, thank you.

MR. BEALL: Okay, thank you Mark. Ed Lyman.

MR. LYMAN: Yeah, hi, this is news to me

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too, and I'm actually pretty shocked, and disturbed to hear that, because I thought the whole point of this exercise was to provide a framework for reactors that nominally were compliant with advanced reactor policy statements for one, that the whole point of going through this framework was for those where there was some expectation that they would have these advanced, or improved safety features, and that's the preamble for every statement that you make about this rule by quoting about plan expectations.

So, it's bizarre frankly what you're saying now, and I don't understand that that's not the right answer to Ms. Field's question. The right answer is to clarify that there should be stringent criteria for a design to use this, but it would have to demonstrate that indeed, there's a high likelihood that they would meet multiple expectations for an improved reactor design.

Otherwise, what you're saying is this is going to be a substitute for Part 50, and Part 52 rather than a voluntary alternative for certain reactor types that deserve it. So, I'm pretty startled to hear this frankly, thank you.

MR. RECKLEY: Okay, thanks Ed. The logic behind that is methodology within Part 55 -- this is

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my view -- the methodology delivers, it's an alternate path that gives you the same level of safety as Part 50, and Part 52's deterministic approaches, and prescriptive approaches for large lights. And as such, if large light were to come into part 53, and do all of the analyses, they would end up in a comparable place to where they are now, in terms of their risk profile.

And so the logic that you laid out, I understand. And we may have contributed to it, is that somehow Part 53 is a relaxation, and the relaxation is earned simply by saying you're an advanced reactor, and we control it at the gate if you will. You can only get in if you've demonstrated you meet these criteria, these criteria will ensure that you have some of the advanced reactor attributes, and therefore you're entitled to some degree of relaxation.

And as we've developed this, I'll apologize if we continued to communicate anything like that. Really what we see is Part 53 is the methodology, as is Part 50, and by extension Part 52 to give you ultimately what we need in terms of making our safety findings, and either one can deliver that.

But one is not easier, one is not less restrictive,

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one is not built on the assumption that just because you're there, you're safer. And so from that regard, that's why we are comfortable saying we don't need to control it at the gate.

The safety is actually ensured by meeting all of the requirements laid out in the various subparts. So, that's the logic, and it might be a change, and as you look at the consolidation, keep in mind that that is something that changed from early on in the discussions and look at it in that context when you're reviewing it, and providing comments.

MR. BEALL: Okay, thanks Bill. Mike Keller.

MR. KELLER: Yeah, I'd like to echo Ed Lyman's observations. I find it hard from a logic standpoint to move forward with a conventional water reactor under 10 CFR 53 in light of the 50 years of history on 10 CFR 50 and 52. I'm just somewhat baffled as to why you would leap past those well-known regulatory requirements. And whether or not there are arguments that they're the same, it's like well, they're not.

I mean, all you've got to do is compare 53 to 52, and they're obviously different. So, it's troubling that basically it looks like you're just

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sweeping away 50 and 52, and I don't see why you would do that, thank you.

MR. RECKLEY: Okay, thanks. Part 53, as always is -- I mean this is, I mean this is consistent all along, is a voluntary rule, people are always open to use Part 50 or Part 52.

MR. BEALL: Okay, Marcus, you have your hand up.

MR. NICHOL: Sorry, I forgot to take it down.

MR. BEALL: Okay, all right. Kaylene, you have your hand up.

MS. WALKER: Hello?

MR. BEALL: Yes.

MS. WALKER: Did you call me?

MR. BEALL: Yes ma'am.

MS. WALKER: So, the last comment was you're saying that Part 53 will be a volunteer federal rate regulation, is that what I just heard?

MR. BEALL: It's optional, the applicants will have a choice to make an application to the NRC under part 53, in which case they are then compelled to meet all of the requirements in part 53, or they can make an application under Part 50 or 52, in which case they are compelled to meet all the requirements

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or justify exemptions from the requirements in those parts. So, it's not voluntary in that regard, it's voluntary in terms of there are -- an applicant has the choice as to which application under which part to make. Either Part 50, 52, or when it's completed, part 53.

MS. WALKER: Very creative, thank you.

MS. FIELDS: This is Sara Fields, I have another question, or point to make.

MR. BEALL: Go ahead Sara.

MS. FIELDS: Okay. Well, there are also different kinds of applications that might come in under a certain 10 CFR part. For example, the NuScale small modular reactor had an application under a design certification. Then they intend to also submit an application under the standard design approval application requirements. As far as the entity which will actually construct, and operate a facility using the NuScale design, they would come in under a combined operating license application.

So, I think you'd have a little bit of a confusion if a design certification applicant used Part 53, or maybe even Part 52, or Part 50, and then the operator, the proposed operator could come in, and submit an application under a different part. So, I

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think opening things up the way you apparently are doing now to any type of application coming in under Part 53 is going to create some confusions, and serious questions.

MR. RECKLEY: If I can, the way it's constructed is that a combined license under Part 53 could only reference a design certification issued under part 53. So, we are not currently in the language supporting for example, a design certification that was granted under Part 52 being used anywhere within Part 53, and that's because there's enough subtle differences that you're right, it would have been very complicated to try to support that. And so it's currently restricted to not support that.

MS. FIELDS: I still think there must be rigorous criteria as to what types of reactors can use the Part 53 process.

MR. RECKLEY: Okay, thank you.

MR. BEALL: Okay, Mike Keller, you have your hand up.

MR. KELLER: Yeah, thank you. If you could provide a bit of a clarification, 10 CFR 50 has a method for exemptions, does that concept also apply to 53? I mean I'm just asking, I don't know honestly.

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MR. RECKLEY: Yes. We, in subpart A, included an equivalent to 50.12 for exemptions.

MR. KELLER: Okay, thank you. And a broader question, let's say you come in with -- let's say the Korean version of the API, or AP 1000, whatever its power level is. Would that come in under, or could that come in under 53, or would it be held to 50, or 52? I'm just asking. I don't really know, it's a puzzling consideration.

MR. RECKLEY: As it's currently contemplated, they could come in under Part 53. Now, there would be in that particular case, certain advantages for them to potentially come under Part 50 or 52 if the design, and the analysis was already performed to meet those requirements. But, if they wanted to come in under Part 53, and do the assessment, and design, and licensing under Part 53 under the last iterations of text, we would not preclude them from doing that.

MR. KELLER: Thank you.

MR. BEALL: Okay, thank you Mike. Kalene, you have another question? You have to unmute.

MS. WALKER: No, sorry, I don't, thank you.

MR. BEALL: Okay. Are there any

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additional questions, or comments? Anything also on subpart that we talked about today? Okay, I don't hear anything. So, can we go to slide 39 please?

This slide provides an overview of the current Part 53 rule making schedule. As you can see, we are still on the first milestone, with the staff performing public outreach, meeting with the ACRS, and working on the draft proposed rule package.

The staff has six months to complete these activities before the draft proposed rulemaking package is submitted to the commission in May of 2022. The staff is currently projecting that the Part 53 proposed rule will be published for public comment in October of 2022. Next slide please.

The staff is planning to host additional topical public meetings on the Part 53 rulemaking. The next public meeting will be on October 28th, 2021, to discuss the technology inclusive alternative to Part 53. That meeting will start at one o'clock, p.m., East Coast Time.

The staff has already tentatively scheduled a topical public meeting on November 16th, 2021, to discuss the changes to Part 26, Fitness for Duty Programs for Part 53. All new and revised proposed rule language will continue to be posted on

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ADAMS and on regulations.gov under our docket ID NRC-2019-0062 prior to each of the public meetings. The staff is also continuing to meet with ACRS Future Plant subcommittee to receive feedback on the Part 53 rule making.

The next meeting with the ACRS subcommittee will be on November 18th, 2021. Next slide please.

If you have any additional input or suggestions for future topics related to Part 53 rulemaking, please send an email to Bill and I at the email addresses on the site. Your comments will improve our rulemaking effort. I'd also encourage you to monitor the Part 53 rulemaking effort. I'd also encourage you to monitor the Part 53 rulemaking docket ID, once again it's NRC-2019-0062, on regulations.gov website for updates and important documents related to this rulemaking.

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

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everyone for participating in today's meeting and I hope everyone has a good evening. The meeting is now closed.

(Whereupon, the above-entitled matter went off the record at 4:29 p.m.)

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