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NuScale Subcommittee

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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NUSCALE SUBCOMMITTEE

+ + + + +

WEDNESDAY

JUNE 22, 2022

+ + + + +

The Subcommittee met via Videoconference,
at 1:00 p.m. EDT, Walter L. Kirchner, Chairman,
presiding.

COMMITTEE MEMBERS:

- WALTER L. KIRCHNER, Subcommittee Chairman
- JOY L. REMPE, Chairman
- DAVID A. PETTI, Member-at-Large
- RONALD G. BALLINGER, Member
- VICKI M. BIER, Member
- CHARLES H. BROWN, JR. Member
- VESNA B. DIMITRIJEVIC, Member
- GREGORY H. HALNON, Member
- JOSE A. MARCH-LEUBA, Member
- MATTHEW W. SUNSERI, Member

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1 ACRS CONSULTANTS:

2 DENNIS C. BLEY

3 STEPHEN P. SCHULTZ

4 DESIGNATED FEDERAL OFFICIALS:

5 LAWRENCE BURKHART

6 MICHAEL SNODDERLY

7 ALSO PRESENT:

8 BILL ACTON, NuScale

9 BRIAN ARNHOLT, NuScale

10 BEN BRISTOL, NuScale

11 JOHN BUDZYNSKI, NRR

12 KRISTOPHER CUMMINGS, NuScale

13 JEFF EHLERS, NuScale

14 LIZ ENGLISH, NuScale

15 BOB HOUSER, NuScale

16 MEGHAN MCCLOSKEY, NuScale

17 JOSH PARKER, NuScale

18 GETACHEW TESFAYE, NRR

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P R O C E E D I N G S

1:00 p.m.

1
2
3 SUBCOMMITTEE CHAIRMAN KIRCHNER: Good
4 afternoon. The meeting will now come to order.

5 This is a meeting of the Advisory
6 Committee on Reactor Safeguards NuScale Subcommittee.
7 I'm Walt Kirchner, Chair of the subcommittee.

8 With us for the meeting today, I think the
9 entire committee is in attendance. For the record,
10 that would be Ron Ballinger, Vicki Bier, Charles
11 Brown, Vesna Dimitrijevic, Greg Halnon, Jose March-
12 Leuba, Dave Petti, Joy Rempe, and Matt Sunseri.

13 We also have our consultants, Dennis Bley
14 and Steve Schultz, in attendance. Mike Snodderly is
15 the Designated Federal Official for this meeting.

16 The subcommittee will discuss with staff
17 from NuScale their plans for an eventual standard
18 design approval application of their US460 design.

19 The ACRS was established by statute and is
20 governed by the Federal Advisory Committee Act (FACA).
21 The NRC implements FACA in accordance with its
22 regulations found in Title 10 of the Code of Federal
23 Regulations, Part 7. The committee can only speak
24 through its published letter reports. We hold
25 meetings to gather information and perform preparatory

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1 work that will support our deliberations at a full
2 committee meeting.

3 The rules for participation in all ACRS
4 meetings were announced in the Federal Register on
5 June 13th, 2019. The ACRS section of the U.S. NRC
6 public website provides our charter, bylaws, agendas,
7 letter reports, and full transcripts of all full and
8 subcommittee meetings, including slides presented
9 therein. The agenda for this meeting was posted
10 there. As stated in the Federal Register notice,
11 members of the public who desire to provide written or
12 oral input to this subcommittee may do so and should
13 contact the Designated Federal Official five days
14 prior to the meeting, as practicable.

15 This is an MS Teams hybrid meeting. The
16 communications channel has been open to allow members
17 of the public to monitor the open portions of this
18 meeting. The ACRS is now inviting members of the
19 public to use the MS Teams link to view slides and
20 other discussion materials during these open sessions.
21 The MS Teams link information was placed in the agenda
22 for this meeting on the ACRS public website.

23 As stated in that agenda, portions of this
24 meeting may be closed to protect proprietary
25 information pursuant to the U.S. Code.

1 We have received no written comments or
2 requests to make oral statements from members of the
3 public regarding today's meeting. However, there will
4 be an opportunity for public comment, and we have set
5 aside ten minutes at the end of this meeting for
6 comments from members of the public attending or
7 listening to our meeting. Written comments may be
8 forwarded to Mike Snodderly, the Designated Federal
9 Official.

10 A transcript of the open portion of the
11 meeting is being kept, and it is requested that
12 speakers identify themselves and speak with sufficient
13 clarity and volume so that they can be readily heard.
14 Additionally, participants should mute themselves when
15 not speaking, please.

16 And we'll now proceed with the meeting.
17 So I am going to call on Mark Shaver of NuScale to
18 introduce today's speakers and begin their
19 presentation.

20 Mark, the floor is yours.

21 MR. SHAVER: Thank you. This is Mark
22 Shaver from NuScale Power. I'm the licensing manager.
23 I will be one of the presenters today, and, with me,
24 Chris Cummings, a Licensing Engineer V, will also be
25 a presenter. Liz English from NuScale licensing is

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1 also in the room.

2 While Chris and I will be the presenters,
3 we will potentially call on folks back in the
4 Corvallis office or elsewhere, as needed, to answer
5 more in-depth technical questions. And we'll ask
6 those people to remember to introduce themselves
7 before speaking with their name and position.

8 I'd like to thank you for having us here.
9 This is a good opportunity, I think, to get the ACRS
10 up to speed on the design changes and what NuScale has
11 been doing the last couple of years. So we look
12 forward to this opportunity.

13 With that, I think we can start the
14 presentation. I'd like to acknowledge the DOE for the
15 funding.

16 Next slide, please. So as I said, I'm the
17 licensing manager of NuScale Power. My scope of
18 responsibility in this presentation will really be on
19 the standard design approval application. And I'll
20 show how that fits in with our overall licensing
21 strategy for the US460 design, but we will not be
22 getting into content on COLA or any other
23 applications.

24 ACRS CHAIRMAN REMPE: This is Joy, and I
25 had a question about this slide, or did you want to

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1 talk more about the mockup in this slide?

2 MR. SHAVER: The mockup is a to-scale
3 upper module mockup in Corvallis, Oregon.

4 ACRS CHAIRMAN REMPE: I've actually been
5 there and crawled through it, but I'm just curious are
6 you going to update the mockup to reflect the new
7 design?

8 MR. SHAVER: Not to my knowledge.

9 ACRS CHAIRMAN REMPE: Okay. I just was,
10 when I saw the picture, I couldn't help but wonder.
11 Also, are the staff planning to use the same design-
12 specific SRPs you used for the design that's going
13 through the certification, or are you going to try and
14 encourage the staff to do something a bit different?

15 MR. SHAVER: Yes. We are following the
16 SRS and the SRP, but we're largely leveraging the work
17 we did for the DCA, which I'll talk a little bit about
18 the relationship of the scope and content between the
19 DCA and the SDA shortly. That's on --

20 ACRS CHAIRMAN REMPE: Okay. I'll wait.

21 MR. SHAVER: All right. So how I'd like
22 to start is to discuss why are we here, why did we
23 make design changes. So really, after the DCA,
24 NuScale went and took a comprehensive look all the way
25 at the plant level from an economics --

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1 ACRS CHAIRMAN REMPE: Excuse me. Whoever
2 is on the phone line needs to mute because we're
3 getting an echo in the room. I'm sorry to interrupt
4 you, but it will make it much nicer.

5 MR. SHAVER: Sure. So we really took a
6 look at the entire plant. The DCA design was a new
7 and novel design. The first time, we had gone through
8 a lot of the analyses, and we went through both to
9 optimize it from an economics perspective as much as
10 we could without impacting safety, as well as to
11 implement some design changes that our first customer
12 was requesting.

13 So really what we found was that the steam
14 generator specifically was very underutilized. There
15 was a lot of margin in the steam generator. Also, the
16 fuel was underutilized. So those two things really
17 drove looking at the power uprate and how much power
18 we could get out of the existing steam generator and
19 fuel. Some other changes, like air cooled, were
20 driven by the customer.

21 MEMBER BROWN: This is Charlie Brown. I
22 just wanted to springboard off of Joy's question about
23 some of the materials from earlier meetings, public
24 meetings or meetings you had with the staff, showed a
25 number of design changes that you all had in mind. I

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1 presume you're going to cover those in the closed
2 session?

3 MR. SHAVER: Yes, that is correct.

4 MEMBER BROWN: Okay, all right. So there
5 are deviations for the original approval?

6 MR. SHAVER: Yes, that's correct. And
7 that's really what's driving the new standard design
8 approval application.

9 MEMBER BROWN: Okay. Thank you very much.

10 MR. SHAVER: So we've also added some
11 additional engineering safety features to eliminate
12 events or to simplify safety analyses. We'll get into
13 those, as well, in the next presentation.

14 And one thing I wanted to note up-front is
15 that the current evaluation of the PRA, there's no
16 significant alterations to the risk insights.

17 Next slide, please.

18 ACRS CHAIRMAN REMPE: So you mentioned
19 some of the changes simplifying the accident analyses
20 and eliminating certain events, and I'm sure you're
21 familiar with the letter we wrote on the prior design
22 and some of the areas that we focused on in that
23 letter. And I believe, but we'll find out more in the
24 closed session or in subsequent reviews, that perhaps
25 that some of the items in our first letter were also

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1 addressed from the simplified safety analysis. Would
2 you comment on that in the open session a bit?

3 MR. SHAVER: Yes, we think so. We think
4 the comments that were made are addressed.

5 ACRS CHAIRMAN REMPE: Okay. So, yes, so
6 maybe our letter helped create some of the changes a
7 bit, too?

8 MR. SHAVER: I would say those were in the
9 work anyway, but I think they're aligned with the
10 changes.

11 ACRS CHAIRMAN REMPE: Okay. Thank you.

12 CONSULTANT BLEY: This is Dennis Bley.
13 Could I ask you kind of a question about your strategy
14 here in licensing? For this modification, you're
15 coming in for an SDA rather than a design cert, which
16 leaves some things kind of unresolved. I'm sort of
17 guessing that you figure those things that would be
18 unresolved if this was your only process here, the
19 SDA. Some of those things that wouldn't be resolved
20 under the SDA by itself you can refer back to the
21 design cert and not have as much review as one might
22 get if this SDA was coming in all by itself; is that
23 right?

24 MR. SHAVER: Yes, we would expect a
25 streamline review based on leveraging information

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1 that's in the DCA. And I've got some more information
2 on that in the next slide.

3 CONSULTANT BLEY: Oh, good. Okay. I'll
4 wait for that.

5 MR. SHAVER: So I wanted to explain some
6 nomenclature just so that we're all on the same page
7 and speaking to the same words. So VOYGR-6 product in
8 NuScale, the VOYGR is a NuScale product that's offered
9 for customers. The 6 indicates six modules. There
10 could be a VOYGR-12 with 12 modules, et cetera. And
11 there could be different configurations for this
12 overall product.

13 The design that will be represented in the
14 SDAA is US460. That's the United States baseline
15 design at 460 megawatts, which is a six-pack. So the
16 US460 is the design, and the SDA is a VOYGR-6 product.
17 You can think of VOYGR as a marketing product.

18 NPM-20, just to note, is the NuScale power
19 module that will be represented in the SDA design,
20 that will be the updated module from what was seen in
21 the DCA.

22 So for this US460 design, we've chosen to
23 pursue Part 52 through a complete standalone standard
24 design approval application, and that will be followed
25 by a COLA. So what I mean by a standalone SDA is we

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1 will not be referencing or incorporating by reference
2 the design certification application content.

3 So while this is a standalone, there is
4 substantial portions of it that have not changed, so
5 we would expect the NRC to be able to leverage in
6 their review using a risk-informed review, leverage
7 that information and focus on more of the design
8 changes rather than things that haven't changed.

9 CONSULTANT BLEY: Well, this is Dennis
10 again. Will the original design with the design cert
11 that exists be an offering, or is this is now the
12 offering from NuScale is the 460?

13 MR. SHAVER: We would, we're anticipating
14 that the US460 design be what customers choose, but,
15 certainly, we would offer either design if a customer
16 were interested.

17 ACRS CHAIRMAN REMPE: Well, to follow on
18 Dennis's question then, again, a lot of the details
19 will be discussed in the closed session, but it just
20 seems like some of the changes in your optimization
21 and whatever, new design might be reasonable and
22 important to consider for the one that is still, it's
23 not an SDA, but the Commission has an issue to rule,
24 so it's going through the DCA process. What's the
25 NuScale position on that? Are you going to try and do

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1 some sort of backfits?

2 MR. SHAVER: No, we say the DCA is a
3 standalone application that was reviewed and found to
4 be acceptable on its own merits, so we're not going to
5 go back and change it or backfit anything. The DCA
6 will stand as-is, and this new updated design will
7 have a standalone SDAA. So we view the two as
8 separate licensing efforts, separate designs.

9 ACRS CHAIRMAN REMPE: Thank you.

10 MR. SHAVER: So that being said, as I've
11 kind of started talking about, we started the
12 application with the approved DCA Revision 5 Tier 2
13 FSAR information. That's the foundation. We are not
14 rewriting all the content from scratch. We do the DCA
15 Rev 5 language and are updating it for the design
16 changes.

17 So we've really, besides updating for the
18 design changes, we will add in additional information
19 to address the DCA carve outs, and we'll specifically
20 talk in the next presentation about how we're doing
21 that, as well as optimizing content. And we'll have
22 more on that, as well. So we really focused this
23 content on safety-related significant content.

24 So our first customer will be referencing
25 this SDA in their COLA under Subpart C. And that

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1 application will be forthcoming on the heels of the
2 SDA application. But we didn't plan on talking about
3 that scope here today, but I just wanted to make sure
4 it was clear how it fit together.

5 Next slide, please. So I'd like to talk
6 a little bit about the SDAA content. NuScale went
7 through and comprehensively looked at what was
8 required for the design certification under Subpart B
9 as part of the DCA. And when we decided to go with an
10 SDAA, we looked at what was required by Subpart E.
11 That's in the middle column. However, we also looked
12 at what would be needed to support a COL applicant.
13 And then we decided to include things in the SDAA that
14 would be required for a COLA to reference, independent
15 if it was required or not. I know this is a little
16 bit busy slide, but in the next slide I've highlighted
17 some things to point out.

18 Next slide, please. So, first, I'd like
19 to highlight -- back one slide. There we go. That
20 one.

21 So I'd like to highlight what's different
22 from the DCA to the SCA. Essentially, one of the main
23 differences between Subpart E and Subpart B is
24 there's no Tier 1 information in Subpart E. So that's
25 the main thing is we won't have any Tier 1

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1 information. However, we will have ITAAC. That's
2 been moved to Part 8. And one other thing to note
3 besides Tier 1 information is that there will not be
4 an environmental report.

5 Next slide.

6 CONSULTANT BLEY: On that last point, I
7 guess, when there's a COLA, that would have to include
8 the environmental report, right?

9 MR. SHAVER: Correct. That is required
10 for a COLA. Actually, go back. There's another slide
11 on --

12 SUBCOMMITTEE CHAIRMAN KIRCHNER: Well,
13 alternately, your customer could do an ESP.

14 MR. SHAVER: Certainly. Maybe go back a
15 slide. There's another slide with highlighting. Yes,
16 there we go.

17 So I also wanted to highlight what
18 information will be part of the SDA, even though it's
19 not required to support a COLA, and that's Part 4
20 information, tech specs, and Part 8, ITAAC. So while
21 ITAAC, we want to make sure there's ITAACs included in
22 the application. Since we don't have Tier 1, that
23 will be in Part 8.

24 And also another thing I wanted to note
25 was the site parameters is usually Chapter 5 of Tier

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1 1, and we won't have that, but we still will have in
2 Chapter 2 of the Tier 2 information the site-specific
3 parameters that we assume to do our analyses.

4 CONSULTANT BLEY: Before you leave this
5 slide, you're not mentioning it here, but you will
6 have to do the update on the safety analysis report.
7 You show that as a yes. And you show the QA program
8 as a yes. I'm curious as to why you need to change
9 the QA program.

10 MR. SHAVER: QA program is required, and,
11 since this is a standalone application, we'll submit
12 our QAPD along with the applications as part of Part
13 10.

14 SUBCOMMITTEE CHAIRMAN KIRCHNER: So this
15 is Walt Kirchner. A further question on Part 8. Are
16 you, first order, carrying over the ITAACs from the
17 DCA to the SDAA, or do you expect new ITAACs?

18 MR. SHAVER: The ITAAC will be updated
19 with the design change information. They will not be
20 exactly the same as what was in --

21 SUBCOMMITTEE CHAIRMAN KIRCHNER: Okay.
22 Thank you.

23 ACRS CHAIRMAN REMPE: Along with that, on
24 the ITAACs, there was one related to water level
25 sensors in the containment, as well as the reactor

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1 vessel. Has NuScale made any progress in the
2 development of the sensor in the last couple of years
3 since the certified application went forward so that
4 some of that ITAAC could be resolved, or what's the
5 status on the water level sensor?

6 MR. SHAVER: I'd have to refer to
7 engineering on the line for that question.

8 MR. CUMMINGS: I'd also save that question
9 for the closed portion of the meeting.

10 ACRS CHAIRMAN REMPE: Well, it's actually,
11 I'm not saying anything that's not in the open with
12 respect to this radar-based sensor, so, yes, I'd like
13 to know about that for --

14 MR. CUMMINGS: Well, we'll take a note and
15 see if we can provide an update on that.

16 MR. SHAVER: All right. Next slide,
17 please.

18 I also wanted to go over our expected
19 review. We have proposed in a letter to the NRC a
20 four-phase review with Phase A being the RAIs, Phase
21 B being the SER without open items; and Phase A and
22 B together would constitute the NRC's technical
23 review.

24 Phase C would be the ACRS review, and that
25 would be a single pass-through, and Phase D would be

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1 the final safety evaluation report.

2 I understand there were some questions
3 from the ACRS on having a single pass-through, and
4 this was done for a couple of reasons. One is that we
5 think that you all will be much more familiar with our
6 design and technology than during the review of the
7 DCA. Also, with going through the subcommittee and
8 full committee last time, those two were largely the
9 same. I believe there were only a few extra members
10 who hadn't seen it, so it was largely giving the same
11 information to the same people twice.

12 And in some cases, the first round to the
13 ACRS, we thought it really was too early to get the
14 value out of it. There were too many open items in
15 the FSER.

16 So for all those reasons, we think it
17 would be reasonable to go through one round of ACRS
18 review.

19 MEMBER BROWN: Before you go on, just on
20 that note, don't take this negatively, please. It's
21 not a negative. Just because an SER has been issued
22 without open items does not necessarily mean there
23 will not be comments from the committee. That ought
24 to be understood.

25 Secondly, secondly, I think that's

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1 largely, particularly in my area, demonstrating, which
2 is the I&C area, there was a comprehensive look given
3 at the original DCA. A lot of stuff, and it's well
4 put together and we really got it done very well. You
5 all did a very good job on that. Deviations from that
6 would raise a lot of questions; and if we don't see
7 those before that meeting, that could create some
8 issues. Just because the staff necessarily accepts
9 them doesn't necessarily mean the committee will.
10 That's our job is to make sure we provide an alternate
11 viewpoint if we think it's necessary.

12 So nothing negative about the comments,
13 just the process issue with how we proceed.

14 MR. SHAVER: Understood. And we
15 appreciate that. I think that's a good comment, and
16 we'll note that down you'd like information early with
17 plenty of time to review it.

18 MEMBER BROWN: If there's changes.

19 MR. SHAVER: On the changes.

20 MEMBER BROWN: Yes, if there's major
21 changes. The stuff that's lookalike, we need to say
22 lookalike and here's where we made a change. That
23 way, you really reduce the structure and stuff that
24 you need to look at because the I&C is largely
25 dependent upon its architecture, and, if that stays

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1 the same, it's the same characteristics and then a few
2 nuances, that makes it very, very easy to try to
3 assess those nuances without looking at the whole
4 scope, which is more difficult, I'd say.

5 SUBCOMMITTEE CHAIRMAN KIRCHNER: Well,
6 perhaps, at the end of the presentation, we can have
7 a discussion on this because I think you've got some
8 slides coming up on TRs, and that's clearly something,
9 it's beneficial for all parties that we look at them
10 as they are ready and conduct a review as appropriate
11 and not find ourselves in a situation where we have
12 the SER and all the TRs and not well sequenced in
13 terms of those TRs that are important to the FSAR and
14 the SER. So I'd just make that note at this point.
15 And then, with the staff, we can discuss further how
16 the review sequence might unfold. Thank you.

17 ACRS CHAIRMAN REMPE: So along those
18 lines, it's your view that you would provide at the
19 very end a complete SER with no open items and all the
20 topical reports, or was your vision that you would
21 have groupings and provide it in a way similar to what
22 we're doing actually with another application where
23 they are giving us a final SE from the staff with no
24 open items, but they've grouped it into appropriately
25 group sections so that we cannot be something that

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1 would delay the final certification that were just
2 right after the staff. It was just their last SE. Is
3 that your vision that you would have grouped this so
4 that --

5 MR. SHAVER: Yes.

6 ACRS CHAIRMAN REMPE: -- it would not be
7 something at the very end? Because sometimes --

8 MR. SHAVER: Yes.

9 ACRS CHAIRMAN REMPE: -- don't understand
10 that we do this almost simultaneously with the staff.

11 MR. SHAVER: That's a good point, and I
12 could have been more clear on that. Yes, we do expect
13 a phase review each topical report and really chapter
14 could go on its own, or maybe we group topical reports
15 with the chapters they support. The intent was not to
16 wait until all the SERs were complete for all of the
17 chapters and all the topical reports and then dump a
18 massive amount of information in the lap and --

19 ACRS CHAIRMAN REMPE: Because some of the
20 design developers have been confused about that.

21 MEMBER BROWN: You could imagine some
22 topical reports being ready for review during Phase A
23 and Phase B?

24 MR. SHAVER: Correct, yes, yes. We want
25 to move topical reports through on their own time line

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1 at their own pace. And if they're ready to come to
2 you, then we don't want to hold that to the end. And
3 I intended to represent that with the blue boxes being
4 overlapping.

5 ACRS CHAIRMAN REMPE: That helps. The
6 only other thing I guess I'd comment on is, as you'll
7 recall from the DCA review, as you were going through
8 the ACRS review, some of the comments made by members
9 led NuScale to actually change some features of the
10 design at the last minute. And, of course, that is
11 the risk of waiting because, although your analysis
12 indicates there aren't any important risk-significant
13 changes, that is a risk, and I just thought it was
14 good to kind of say that out in the open here.

15 MR. SHAVER: Yes, I understand.

16 MEMBER BALLINGER: This is Ron Ballinger.
17 I've got now some experience with an actually ongoing
18 review with this grouping issue, and I would caution
19 NuScale to discuss with the staff and have that
20 grouping be very well considered because what can
21 happen is you end up with, you can end up with non-
22 overlap, if you will, where you've got one chapter
23 which refers to another chapter which is at a
24 different group, and you end up with confusing things
25 going on where there's no relationship, the

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1 relationship is not quite there. So the groups have
2 go to be very well considered.

3 SUBCOMMITTEE CHAIRMAN KIRCHNER: This is
4 Walt. Thanks, Ron. Yes, that's certainly on my mind,
5 too, based on our experience. And in our discussion
6 with staff and NuScale, we can reflect that. Chapter
7 3 comes to mind as an example of one that hopefully
8 would be up-front so that we're not revolving back to
9 previously reviewing material and cross-checking or
10 looking, you know, for some of the design principles
11 and requirements that often are covered in Chapter 3.

12 So we can hold this for our interaction
13 with the staff and the applicant.

14 MR. SHAVER: Great. I'd like to note I
15 did hear back from engineering. And Jeff Ehlers, are
16 you on the line to discuss the water level sensor?

17 MR. EHLERS: Yes. Can you hear me?

18 MR. SHAVER: Yes.

19 MR. EHLERS: Okay. Yes, my name is Jeff
20 Ehlers. I'm the plant systems engineering manager.
21 Yes, so for the containment water level, we're
22 utilizing a thermal dispersion sensor for that
23 technology, for that indication. I wasn't sure what
24 the specific question about it was, or if that was
25 just all you were curious about is what we were going

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1 to utilize.

2 ACRS CHAIRMAN REMPE: Oh, for the DCA, we
3 had a radar-based sensor, so have you totally changed
4 what the sensor is?

5 MR. EHLERS: Yes, working with different
6 vendors, we found the most reliable indication was
7 going to be the thermal dispersion sensor based on the
8 conditions.

9 ACRS CHAIRMAN REMPE: What are you going
10 to use for in the reactor vessel, pressure vessel?
11 Has it changed also?

12 MR. EHLERS: No. The reactor vessel is
13 the same.

14 ACRS CHAIRMAN REMPE: So it's the radar-
15 based sensor. And have you made any progress with
16 qualifying it? And with this new thermal dispersion
17 sensor, it would be nice if you could provide us, I
18 mean, have you updated the, isn't it like advanced
19 instrumentation topical report, and has that been
20 updated since you've done the DC? Maybe it would be
21 good to get a copy to us. I'd be very interested in
22 hearing about the progress and efforts to qualify it
23 and the appropriate conditions, radiation, as well as
24 temperature.

25 MR. EHLERS: Yes, we'll have to follow-up

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1 on the status of those with you.

2 ACRS CHAIRMAN REMPE: Okay. Thank you.
3 And this seems like something that is probably going
4 to want to be a backfit for the certified sign, but
5 actually it was just an ITAAC, so probably it isn't
6 really a backfit, it's just the topical report that
7 needs to change.

8 MEMBER MARCH-LEUBA: On the topic of level
9 sensors, thermal dispenser sensors have switches. It
10 only detects one level. It doesn't measure the level
11 in the containment. We will be interested in
12 reviewing what you've done. I mean, this is not a
13 level sensor, it's a switch, correct?

14 SUBCOMMITTEE CHAIRMAN KIRCHNER: Okay.
15 Let me propose something here, though. Now we're
16 getting into, really into the details of the actual
17 design. This open presentation is on the actual SDA
18 approach. I think we are best holding our detailed
19 technical questions to the next session.

20 Let's proceed with this, and then I'm not
21 trying to shut off the dialogue, but why don't you go
22 through your presentations? I think we can pick up a
23 number of these issues when we get to the closed
24 session and we talk about, you present first your
25 design changes and then we can ask questions.

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1 MEMBER MARCH-LEUBA: Can you tell us in
2 the open session about the duration between the two
3 green diamonds, your anticipated schedule between
4 submitting and --

5 MR. SHAVER: Not at this point. We're not
6 prepared to discuss -- we're still working with the
7 NRC on that.

8 I believe that concludes my presentation
9 for the open session.

10 SUBCOMMITTEE CHAIRMAN KIRCHNER: Mike, a
11 procedural question. Are we going to hear anything
12 from the staff on this today or just information from
13 NuScale?

14 MR. SNODDERLY: Yes, the staff is here
15 observing, but there is no, they do not, to the best
16 of my knowledge --

17 SUBCOMMITTEE CHAIRMAN KIRCHNER: Well, let
18 me make the offer then. Does anyone from the NRC
19 staff wish to make a comment at this point or reflect
20 on any of our comments?

21 Hearing none, okay. I think, at this
22 point, is this the end of your presentation, NuScale?
23 Mark, is this --

24 MR. SHAVER: Yes, it is.

25 SUBCOMMITTEE CHAIRMAN KIRCHNER: Okay.

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1 Thank you. Well, thank you for that.

2 Let's turn now, I know we have members of
3 the public on with us. This is an opportunity for
4 members of the public to make a comment. Please state
5 your name, affiliation if appropriate, and your
6 comment.

7 I am not hearing anything. Does anyone
8 out there wish to make a comment from the public?
9 Okay. Hearing none, I think this completes the open
10 portion of our meeting today. For the closed portion,
11 we have a separate link for those people who are
12 authorized to participate.

13 And so with that, we'll close out this
14 open portion of our subcommittee meeting, and I direct
15 those who are invited to attend the closed portion to
16 sign on.

17 We'll take, I think it's 1:36 Eastern
18 time. Let's try and re-engage by ten minutes of the
19 hour, 1:50. NuScale, I'll ask you to be looking at
20 working with Mike to make sure that participants are
21 authorized.

22 And with that, thank you everyone. And
23 I'll adjourn this meeting.

24 (Whereupon, the above-entitled matter went
25 off the record at 1:37 p.m.)

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June 14, 2022

Docket No. 99902078

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Submittal of Presentation Materials Entitled “ACRS Subcommittee Presentation: US460 Design and SDAA Overview,” PM-119782, Revision 1 (Open Session)

The purpose of this submittal is to provide presentation materials to the NRC for use during the upcoming Advisory Committee on Reactor Safeguards (ACRS) NuScale Subcommittee Meeting on June 22, 2022. The materials support NuScale’s “ACRS Subcommittee Presentation: US460 Design and SDAA Overview,” of the NuScale Standard Design Approval Application.

The enclosure to this letter is the nonproprietary version of the presentation entitled “ACRS Subcommittee Presentation: US460 Design and SDAA Overview.”

This letter makes no regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions, please contact Mark W. Shaver at 541-360-0630 or at mshaver@nuscallepower.com.

Sincerely,



Mark W. Shaver
Manager, Licensing
NuScale Power, LLC

Distribution: Michael Dudek, NRC
Getachew Tesfaye, NRC
Bruce Bovol, NRC
Mike Snodderly, NRC

Enclosure: “ACRS Subcommittee Presentation: US460 Design and SDAA Overview,” PM-119782, Revision 1 (Open Session)



Enclosure:

“ACRS Subcommittee Presentation: US460 Design and SDAA Overview,” PM-119782, Revision 1 (Open Session)

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1



ACRS Subcommittee Presentation

US460 Design and SDAA Overview

(Open Session)

June 22, 2022

Mark W. Shaver
Licensing Manager - SDA

Kristopher Cummings
Licensing Engineer V

Acknowledgement and Disclaimer

This material is based upon work supported by the Department of Energy under Award Number DE-NE0008928.

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Agenda – Open Portion

- SDAA Content
- SDA Review

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Why we are here and how did we get here?

- The SDA submittal is an engineering optimization of the NuScale DCA to allow for better customer use and deployment. The SDA maintains the approved technical and licensing basis from the DCA while maintaining the overall safety and risk profile.

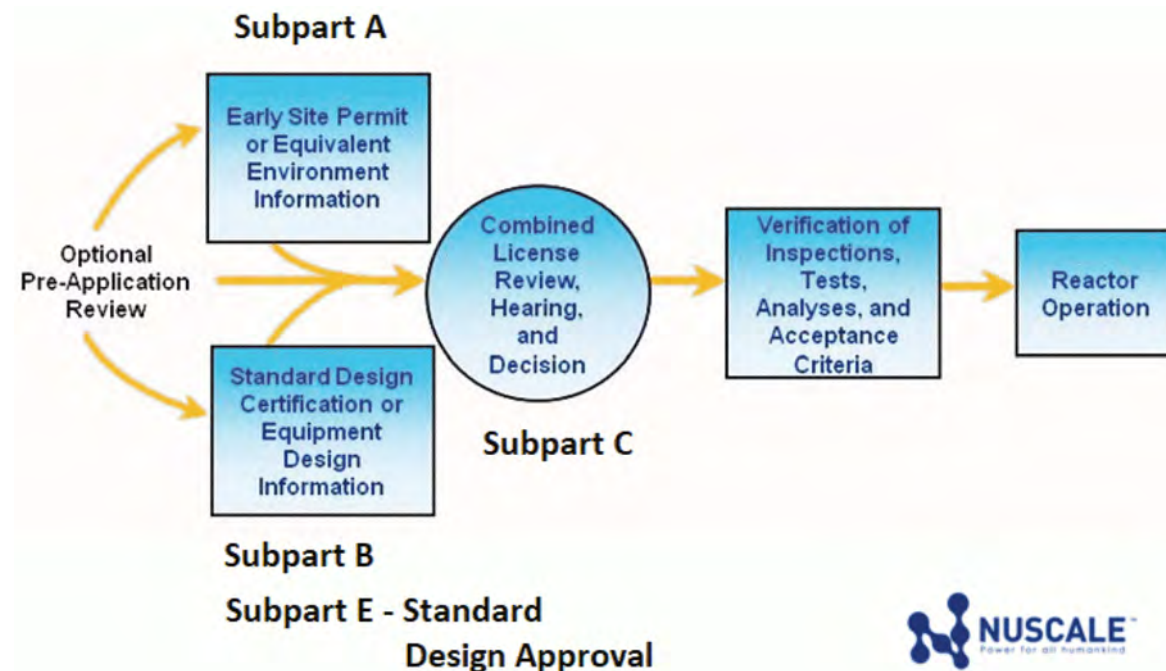
High Level Design Changes

- Redesigned site layout to accommodate a 6 NPM configuration
- NPM optimized for increased power output; ease of maintenance, manufacturing and operation while maintaining safety margins:
 - Steam generator was over designed for 160MWth application (DCA) and allows for increased power output while maintaining design limits
 - Additional testing is being completed to validate performance of NPM engineered safety features at new power level
 - Additional engineered safety features added to eliminate certain events and simplify Chapter 15 analysis
- Current evaluation of SDA design changes does not significantly alter the DCA PRA risk insights.

Standard Design Approval (SDA) Application Content

10 CFR Part 52 Process and SDA Strategy

- For the VOYGR-6 product (US460 design), NuScale has chosen to pursue Part 52 through a complete, stand-alone Standard Design Approval Application (SDAA) followed by a Combined License Application (COLA).
- The SDAA will:
 - Utilize approved DCA Revision 5 Tier 2 FSAR information as foundation
 - Update content for design changes
 - Address DCA carve-outs
 - Optimize content, focusing on safety and risk-significance



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SDA Application Content

APPLICATION PART	DESIGN CERTIFICATION (10 CFR 52 subpart B)	SDAA – Required by Regulation (10 CFR 52 subpart E)	SDAA – Needed to Support COL	Include as Part of SDAA Submittal
Transmittal Letter	Yes	Yes	N/A	Yes
Part 1: General and Financial Information	(financial info. Not required)	(financial info. Not required)	N/A	Yes
Part 2: Safety Analysis Report – Tier 1	Yes	No	No	No
• Ch. 1 – Introduction	Yes	No	No	No
• Ch. 2 – Unit Specific SSCs Design Descriptions and ITAAC	Yes	No	ITAAC Only	ITAAC Only (see Part 08)
• Ch. 3 – Shared SSCs and Non-SSCs Design Descriptions and ITAAC	Yes	No	ITAAC Only	ITAAC Only (see Part 08)
• Ch. 4 – Interface Requirements	Yes	No	No	No
• Ch. 5 – Site Parameters	Yes	No	No	No (in FSAR Ch. 2)
Part 2: Safety Analysis Report – Tier 2	Yes	Yes	Yes	Yes
Part 3: Environmental Report	Yes	No	No	No
Part 4: Technical Specifications	Yes	No	Yes	Yes
Part 5: Emergency Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 6: Security Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 7: Exemptions, Departures, and Variances	Yes, if Applicable	Yes, if Applicable	N/A	Yes – Exemptions
Part 8: License Conditions; Inspections, Tests, Analyses and Acceptance Criteria	Yes, (ITAAC only) NuScale DCA references Part 2 Tier 1	No	Yes (only ITAAC)	Yes (only ITAAC)
Part 9: Withheld Information	Yes, NuScale DCA provides list of tables and figures	Yes	N/A	Yes
Part 10: Quality Assurance Program Description	Yes, NuScale DCA references separate topical report	Yes	Yes	Yes
Part 11: Supplemental Information (e.g., Limited Work Authorization)	Yes, if applicable None for NuScale DCA	No	No	No

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SDA Application Content (included for COLA)

APPLICATION PART	DESIGN CERTIFICATION (10 CFR 52 subpart B)	SDAA – Required by Regulation (10 CFR 52 subpart E)	SDAA – Needed to Support COL	Include as Part of SDAA Submittal
Transmittal Letter	Yes	Yes	N/A	Yes
Part 1: General and Financial Information	(financial info. Not required)	(financial info. Not required)	N/A	Yes
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• Ch. 5 – Site Parameters	Yes	No	No	No (in FSAR Ch. 2)
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Part 3: Environmental Report	Yes	No	No	No
Part 4: Technical Specifications	Yes	No	Yes	Yes
Part 5: Emergency Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 6: Security Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 7: Exemptions, Departures, and Variances	Yes, if Applicable	Yes, if Applicable	N/A	Yes – Exemptions
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Part 9: Withheld Information	Yes, NuScale DCA provides list of tables and figures	Yes	N/A	Yes
Part 10: Quality Assurance Program Description	Yes, NuScale DCA references separate topical report	Yes	Yes	Yes
Part 11: Supplemental Information (e.g., Limited Work Authorization)	Yes, if applicable None for NuScale DCA	No	No	No

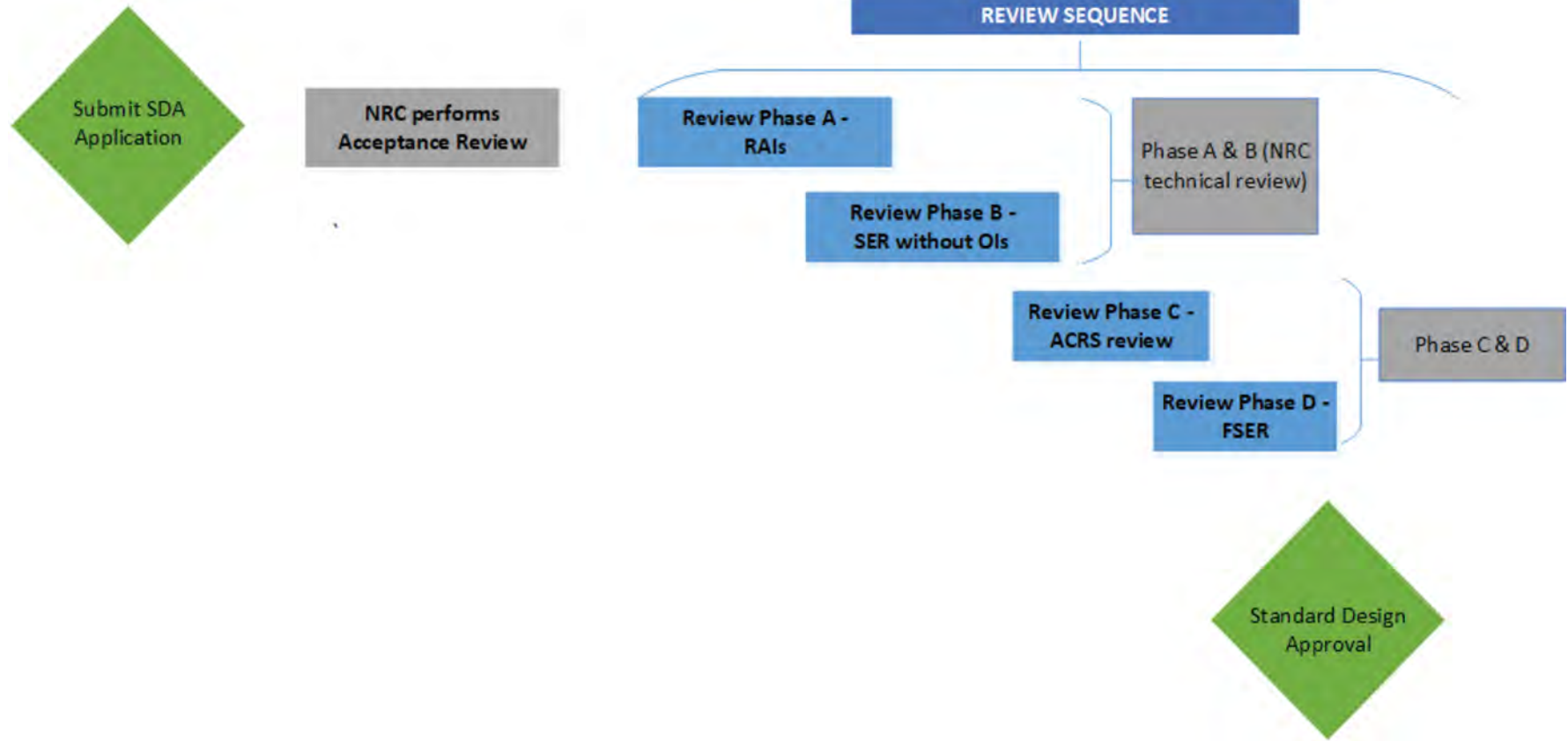
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SDA Application Content (differences from DCA)

APPLICATION PART	DESIGN CERTIFICATION (10 CFR 52 subpart B)	SDAA – Required by Regulation (10 CFR 52 subpart E)	SDAA – Needed to Support COL	Include as Part of SDAA Submittal
Transmittal Letter	Yes	Yes	N/A	Yes
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• Ch. 5 – Site Parameters	Yes	No	No	No (in FSAR Ch. 2)
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Part 3: Environmental Report	Yes	No	No	No
Part 4: Technical Specifications	Yes	No	Yes	Yes
Part 5: Emergency Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
Part 6: Security Plans	Optional (Limited Scope) Not in NuScale DCA	No	No	No
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Part 9: Withheld Information	Yes, NuScale DCA provides list of tables and figures	Yes	N/A	Yes
Part 10: Quality Assurance Program Description	Yes, NuScale DCA references separate topical report	Yes	Yes	Yes
Part 11: Supplemental Information (e.g., Limited Work Authorization)	Yes, if applicable None for NuScale DCA	No	No	No

SDA Review

SDA Review Path



Source: LO-100168 on 4/22/2021

Full Name	User Action	Timestamp
Snodderly, Michael	Joined	6/22/2022, 12:35:46 PM
Burkhart, Larry	Joined	6/22/2022, 12:42:59 PM
Andy Lingenfelter NuScale	Joined	6/22/2022, 12:43:08 PM
Mark Chitty (NuScale)	Joined	6/22/2022, 12:43:09 PM
Thomas Griffith (NuScale)	Joined	6/22/2022, 12:43:10 PM
Dennis Bley	Joined	6/22/2022, 12:47:12 PM
Toby Walter	Joined	6/22/2022, 12:47:13 PM
Walker, Sandra	Joined	6/22/2022, 12:48:02 PM
Kirchner, Walt	Joined	6/22/2022, 12:48:11 PM
Rempe, Joy	Joined	6/22/2022, 12:50:06 PM
Lu, Shanlai	Joined	6/22/2022, 12:52:11 PM
Rau, Adam	Joined	6/22/2022, 12:52:56 PM
Stephanie Terwilliger (NuScale)	Joined	6/22/2022, 12:53:41 PM
Carrie Fosaaen - NuScale	Joined	6/22/2022, 12:54:22 PM
Istar, Ata	Joined	6/22/2022, 12:55:47 PM
Makar, Gregory	Joined	6/22/2022, 12:56:51 PM
Jose March-Leuba (ACRS)	Joined	6/22/2022, 12:56:58 PM
Amber Berger (NuScale)	Joined	6/22/2022, 12:57:30 PM
Josh Parker (NuScale Power)	Joined	6/22/2022, 12:57:31 PM
Fehmida Mesania - NuScale Power	Joined	6/22/2022, 12:57:31 PM
Nadja Joergensen (NuScale)	Joined	6/22/2022, 12:57:37 PM
Ghosh, Amitava	Joined	6/22/2022, 12:57:50 PM
Susan Baughn	Joined	6/22/2022, 12:57:56 PM
Halnon, Gregory	Joined	6/22/2022, 12:58:00 PM
Peter Subaiya (NuScale)	Joined	6/22/2022, 12:58:01 PM
Jeremiah Doyle (NuScale)	Joined	6/22/2022, 12:58:10 PM
Nolan, Ryan	Joined	6/22/2022, 12:58:13 PM
Tokey, Jason	Joined	6/22/2022, 12:58:15 PM
Bavol, Bruce	Joined	6/22/2022, 12:58:22 PM
Budzynski, John	Joined	6/22/2022, 12:58:23 PM
Tim Tovar, Dir Plant Ops, NuScale	Joined	6/22/2022, 12:58:28 PM
Skov, Tammy	Joined	6/22/2022, 12:58:42 PM
Ben Bristol	Joined	6/22/2022, 12:58:43 PM
Collier, Alex	Joined	6/22/2022, 12:58:53 PM
Stubbs, Angelo	Joined	6/22/2022, 12:59:09 PM
Sarah Fields	Joined	6/22/2022, 12:59:25 PM
Grady, Anne-Marie	Joined	6/22/2022, 12:59:31 PM
Tetter, Keith	Joined	6/22/2022, 12:59:34 PM
Allyson Callaway (Fuels, NuScale)	Joined	6/22/2022, 12:59:40 PM
Alec Reeve, NuScale Power	Joined	6/22/2022, 12:59:47 PM
Robert Gamble (NuScale)	Joined	6/22/2022, 12:59:49 PM
Widmayer, Derek	Joined	6/22/2022, 12:59:53 PM
Lehning, John	Joined	6/22/2022, 12:59:58 PM
Boeyink, Julia	Joined	6/22/2022, 1:00:17 PM
Reichelt, Eric	Joined	6/22/2022, 1:00:22 PM
Staudenmeier, Joseph	Joined	6/22/2022, 1:00:25 PM
Honcharik, John	Joined	6/22/2022, 1:00:29 PM
Schiller, Alina	Joined	6/22/2022, 1:00:43 PM

Barrett, Antonio	Joined	6/22/2022, 1:00:43 PM
Armstrong, Kenneth	Joined	6/22/2022, 1:00:44 PM
Bhatt, Santosh	Joined	6/22/2022, 1:00:44 PM
Thompson, Jason	Joined	6/22/2022, 1:00:44 PM
Miller, Joshua	Joined	6/22/2022, 1:00:45 PM
Vivanco, Ricky	Joined	6/22/2022, 1:00:46 PM
Elisa Fairbanks, NuScale	Joined	6/22/2022, 1:00:46 PM
Kyra Perkins	Joined	6/22/2022, 1:00:51 PM
Jon Bristol NuScale Power	Joined	6/22/2022, 1:00:54 PM
Evren Ulku - NuScale Power	Joined	6/22/2022, 1:01:00 PM
Luca Brasi	Joined	6/22/2022, 1:01:20 PM
Park, Sunwoo	Joined	6/22/2022, 1:01:28 PM
Pravin Sawant (NuScale)	Joined	6/22/2022, 1:01:32 PM
Patton, Rebecca	Joined	6/22/2022, 1:01:37 PM
Meghan McCloskey (NuScale)	Joined	6/22/2022, 1:02:00 PM
Bates, Melissa	Joined	6/22/2022, 1:02:01 PM
Stutzcage, Edward	Joined	6/22/2022, 1:03:05 PM
Wagage, Hanry	Joined	6/22/2022, 1:03:09 PM
Drucker, David	Joined	6/22/2022, 1:03:12 PM
Lien, Peter	Joined	6/22/2022, 1:03:20 PM
Jeff Ehlers	Joined	6/22/2022, 1:03:25 PM
Daniel Lassiter	Joined	6/22/2022, 1:04:04 PM
Walton, Shandeth	Joined	6/22/2022, 1:04:10 PM
Steven Pope	Joined	6/22/2022, 1:04:11 PM
Li, Chang	Joined	6/22/2022, 1:05:31 PM
John Volkoff	Joined	6/22/2022, 1:05:54 PM
Haider, Syed	Joined	6/22/2022, 1:06:52 PM
Bill Acton	Joined	6/22/2022, 1:06:55 PM
Brian Meadors - NuScale	Joined	6/22/2022, 1:08:19 PM
Tamela Cohen - NuScale	Joined	6/22/2022, 1:08:47 PM