

UNITED STATES

NUCLEAR REGULATORY COMMISSION

+ + + + +

MEETING WITH THE NRC'S INDEPENDENT ADVISORY COMMITTEE ON
REACTOR SAFEGUARDS TO PROVIDE THEIR VIEWS TO THE
COMMISSION ON ISSUES RECENTLY REVIEWED BY THE COMMITTEE

+ + + + +

FRIDAY,

JUNE 7, 2024

+ + + + +

The Commission met in the Commissioners' Hearing Room,
One White Flint North, 11545 Rockville Pike, Rockville, Maryland at 10:00 a.m.
EDT, Christopher T. Hanson, Chair, presiding.

COMMISSION MEMBERS:

CHRISTOPHER T. HANSON, Chair

DAVID A. WRIGHT, Commissioner

ANNIE CAPUTO, Commissioner

BRADLEY R. CROWELL, Commissioner

ALSO PRESENT:

CARRIE M. SAFFORD, Secretary of the Commission

BROOKE CLARK, General Counsel

PRESENTERS:

WALT KIRCHNER, Chair, Advisory Committee on Reactor Safeguards
(ACRS)

GREG HALNON, Vice Chair, ACRS

DAVID PETTI, Member-At-Large, ACRS

MATT SUNSERI, Member, ACRS

RON BALLINGER, Member, ACRS

PROCEEDINGS

(10:00 a.m.)

1 CHAIR HANSON: Okay. Good morning, everyone. I
2 convene the Commission's public meeting with our Advisory Committee on
3 Reactor Safeguards, or ACRS. The ACRS is mandated by the Atomic
4 Energy Act of 1954, as amended, and the committee plays an incredibly
5 important role in providing independent advice that is factored into the
6 Commission's decision-making processes.

7 I want to start today's meeting by recognizing the ACRS
8 membership changes that occurred since we last met. First, I'd like to
9 recognize the significant technical and leadership contributions of Dr. Joy
10 Rempe provided over her 14 years of service to the committee. Thank you,
11 Dr. Rempe. This past April, Mr. Charlie Brown retired from the committee
12 after 16 years of service and also, next week, Dr. Jose March-Leuba will be
13 retiring after 8 years of service. The Commission recognizes and thanks
14 these members for their dedicated service over multiple terms.

15 Last summer, Tom Roberts and Bob Martin began their start
16 of four-year terms on the committee, and they both will receive plaques, their
17 plaques of service at the end of today's meeting. Finally, last December, Dr.
18 Walt Kirchner was elected as ACRS chair for 2025; Mr. Greg Halnon was
19 elected vice chair; and Dr. David Petti was elected as member-at-large.

20 I just want to take a moment to note that the Commission
21 appreciates the ACRS members' willingness to give your time and energy to
22 an effort that is so important to nuclear safety and the future progress of the

1 nation's nuclear regulatory program. So thank you all.

2 With that, we'll hear from ACRS members this morning on
3 several important topics recently reviewed by the committee, as well as its
4 ongoing efforts to improve the effectiveness and efficiency of the ACRS. I'm
5 looking forward to a great conversation.

6 Before we start, I'll ask my colleagues if they have any
7 remarks they'd like to make. Okay. Thank you. Dr. Kirchner, over to you.

8 DR. KIRCHNER: Thank you, sir. Good morning, Chair
9 Hanson and Commissioners. It's a pleasure to be here. I look forward to
10 today's meeting, as well.

11 I'm going to start with a brief overview of recent activities,
12 and then I'm going to turn to my colleagues. Greg Halnon, who is our vice
13 chair, is going to talk about recent improvements we've been taking to improve
14 our performance as a committee. Dave Petti, our member-at-large, is going
15 to drill down to another level and look at how those changes are being
16 implemented in an actual review of advanced reactors. Then we're going to
17 hear from my colleague and former chair, Matt Sunseri, on safety aspects of
18 recent license renewals and subsequent license renewals. And we'll close
19 with Ron Ballinger talking about the low-level waste disposal proposed rule,
20 which represents a comprehensive approach to dealing with that subject
21 matter. And then I'll have some brief concluding remarks and go to
22 questions.

23 So with that, next slide, please. I think we can skip this one
24 and go to the next one.

1 So since we last met with the commission in June of last
2 year, we've issued 16 letter reports. We actually will have two more to add
3 to that this week. And in the area of license renewal and subsequent license
4 reviews, it represents about 5,000 megawatts of capacity for another 20 years
5 of operation. I think that's a significant activity by the committee, and Matt
6 will give you a much more detailed presentation.

7 We are in the midst of the NuScale SDA review. We've
8 completed the first phase of that. I think big challenging work remains, but
9 we've got a good start on that. We will likely complete our review in early
10 2025, so I expect we will have a fairly full plate in the November, December,
11 and January time frame in completing that activity.

12 We've done a number of reviews and, what I've pretty much
13 lump together here, it looks like a long list of different activities. But they all
14 have something of a common thread in they address operational reactor fleet,
15 getting better utilization out of the existing fleet in the areas of fuel, while at
16 the same time reducing waste. So there's a tie-in there on each of these four.

17 And then in the advanced reactor review area, we are in the
18 midst of the Kairos 2 Construction Permit review, and we expect to have a
19 letter to you next month. We'll complete that, and Dave will talk in more detail.

20 We just yesterday completed a review of the TerraPower
21 Sodium principle design criteria and their fuel and control assembly
22 qualification plan. So those letters will be coming to your attention shortly.

23 And a while back, we had done a comparable review for the
24 General Atomics fast modular reactor PDCs. And we also spent a good day

1 with the people from RES looking at their progress in non-light water reactor
2 computer code development, and I would say, in summary, it's impressive.
3 They've come a long way from the action plans that we saw before COVID,
4 and I think they're in good shape. They're ready to review these advanced
5 concepts with tools that can be used to selectively look at confirmatory like
6 analyses of key safety issues.

7 Next slide, please. Continuing, we conducted a review of
8 the Level 3 PRA activities. We had some interesting interactions there.
9 That's the culmination of a considerable body of work by the staff going on.
10 I'm going to come back to this Branch Technical Position in my concluding
11 remarks, so let me skip over that for the moment.

12 In the advanced reactor regulatory infrastructure area, we
13 reviewed the ARCAP/TICAP activities, as well as microreactor fuel loading
14 and testing at a factory. And on that latter one, I know there's a lot of interest.
15 That is feasible. It can be done safely. It's a question of how far one goes
16 in the testing. Obviously, you don't want to build up a fission product
17 inventory at the factory and then try and ship it. But it can be done. There
18 are regulatory challenges that are perhaps more legal than they are in the
19 safety arena. But the staff is making good progress there.

20 And then I'll come back to the international meeting of the
21 advisory committees in my final comments.

22 Going on to the next slide. Now, this is more some of the
23 steps we've taken internally to prepare ourselves and be in a good position for
24 the reviews that we see coming our way, particularly with the many advanced

1 reactor concepts that are on our plate. So the first thing that we do when we
2 get an advanced application is we form a design-centered review committee
3 led by one of the members, and it involves the entire committee. We divide
4 up the labors accordingly, and Dave will go into that in some more detail.

5 At the core of our technical and safety work, we decided to
6 collapse the number of committees we have to six, and they are kind of
7 functionally oriented to accident analysis, digital I&C, electrical systems, fuel
8 structures and materials, operating plants, and regulatory infrastructure. And
9 then we have approximately five to six members on each subcommittee. And
10 so that means, with our current level of members of eleven, that's about three
11 members are on each on three subcommittees. And then the topics that we
12 receive from the staff for review are then assigned to those subcommittees,
13 and they align pretty much with the members' expertise.

14 The key thing here is that we need to focus our time and our
15 resources on the safety-significant aspects of the work, I say tongue-in-cheek
16 here, not attendance. I think what happened perhaps during COVID is we
17 found ourselves in a situation where all the members were all on the
18 subcommittees, so, if you were to look at our subcommittee structure chart,
19 there's no information really there. Everyone is participating. So we've
20 structured that. It's a much more effective and efficient alignment of our
21 resources for what's coming.

22 And, again, going forward, are we going to have to focus
23 and be very selective. And the focus needs to be on the safety-significant
24 matters and, just as an example, and you'll hear more from Greg on this, we

1 have numerous technical reports in front of us. We're going to have to drill
2 through those and be selective and pick those that are essential to support
3 the safety case of the concept that we're reviewing.

4 And Greg and Dave will give you some examples, as well as Matt, of what
5 we're doing in that area.

6 So I should summarize here and say that our current
7 workload is being met with the number of members we have. Thank you for
8 those nice remarks, Chairman Hanson, about our former members and also
9 Member March-Leuba sitting behind me. Joy Rempe was responsible for the
10 International Review Committee re-engagement. That had been done in past
11 years, but it had lapsed, and she took that challenge on, and it proved to be
12 very interesting and very useful. I found that we had a lot of common topics
13 of interest, defense-in-depth, lines of defense, EPZ, zoning and sizing, aging
14 effects, and such. So our nominal plan right now is to re-engage that the year
15 after next, so on a triennial basis, and that was certainly a major
16 accomplishment by Chairman Rempe for the committee.

17 Charlie Brown, as you mentioned, also stepped down this
18 spring. I think Charlie has left for the agency an enduring legacy, and let me
19 elaborate a little more. First of all, you have to know what the principles are
20 that he espoused, and they are independence, redundancy, deterministic
21 behavior, diversity and defense-in-depth, and access control for digital I&C.

22 So given those principles and taking a top-down
23 architectural approach allows the committee to, at a high level, review very
24 effectively, I believe, digital I&C proposals. In fact, a case-in-point, the

1 NuScale review of their digital I&C approach went very efficiently and quickly.

2 Now, there's a lot of detail after the architecture, but that's
3 probably best left for when the plant is built, when the initial testing and
4 qualification of the equipment takes place, and calibration, and that's your staff
5 out there in the field, the inspectors, et cetera. But this is proven, I think, to
6 be very useful. The staff has adopted it. We see it now throughout the
7 different regulatory infrastructure guides.

8 And I would also commend to your attention that, at the
9 request of the committee, the staff working on I&C have pulled together a very
10 useful roadmap that lays out the regulatory basis, the guides, and codes and
11 standards for reactor protection systems, et cetera. And I commend that to
12 your staff assistants. I find it very useful. It's good knowledge management,
13 and it's also a good resource for the applicants to see what the regulatory staff
14 is going to be looking at in their application for a digital I&C system. So kudos
15 to Charlie Brown. He's left a very useful legacy for the agency.

16 And then, lastly, Jose has been a very strong contributor in
17 reactor kinetics, thermal hydraulics, very knowledgeable on the boilers in
18 particular, so the stability issues that go with that, and has made strong
19 contributions. He also continually reminds us of cybersecurity concerns and
20 issues. So we thank all three of them for their service to the committee.

21 And, finally, I want to thank the Commission for your
22 support. We have two new members coming on. They'll be on board next
23 month. One has strong industrial nuclear experience, and the other has
24 strong reactor methods experience. So it's a good complement to the

1 committee. Getting a diverse composition and retaining it on the committee
2 will be an ongoing challenge. We want both industry, laboratory, and
3 academic insights, and I think we have a very good mix right now and we'll
4 work at continuing that.

5 So in that vein, we've already sent up to you a request for
6 permission to go out and solicit for new more positions, one that would focus
7 on nuclear reactor systems and the other would be nuclear structural seismic
8 design, which is an important aspect going forward for the committee and its
9 reviews.

10 And I'll close here before I turn it over to Greg and just say
11 that we would welcome your support and networks in our recruiting efforts to
12 attract and build a highly-qualified pool of applicants for these solicitations.
13 And with that, I'll turn to Greg.

14 MR. HALNON: Thank you, Walt. Good morning. I
15 wanted to talk a little bit about the improvement process that we've been going
16 through and give you a 50,000-foot level of how we got there, and then Dave
17 will go into a lot more detail on how it's being applied to the Kairos review.

18 But when I came on, we were in the midst of the SHINE and
19 NuScale reviews, and, when I was assigned some design centers myself, I
20 had to get some coaching about where to go with this because it was brand
21 new to me to establish such a big project. So as we worked through the
22 coaching process, we started writing it down. And then we held a series of
23 self-assessment retreats to look at lessons learned going back, and we'll go
24 through that process as we get through this.

1 On the next slide, the first slide, during this process, we
2 stayed very mindful and we reminded ourselves constantly what our mission
3 was, which was to focus on safety and to make sure that we were building a
4 process that was bounded by that principle. We have a lot of documents to
5 review and a lot of very smart engineers look at them before we get to them,
6 and we need to credit that, but we also need to do that independent review to
7 make sure that we're satisfied that all that was done properly and scientifically
8 correct.

9 There's a lot of new technologies being proposed. Many of
10 them are based on very old experiments. We have some very experienced
11 folks on the committee that were part of those or at least some of the papers
12 and stuff written after that from the labs, which is really good. And now we're
13 applying that to new ways of making steam heat, whatever you want to do with
14 it, so it's important that we recognize that we need to be very focused on the
15 safety of that aspect. You know, there's a lot of innovative things coming
16 down the road that we need to look at.

17 We did numerous process enhancements. We passed
18 along these as we went from review to review. It was in our minds to write it
19 down, so we started to say, well, we need to make some durable guidance
20 here. And so that's what we did.

21 One of the more significant things we needed to do was to
22 help with our scheduling. We have a six-month look-ahead schedule, but it
23 was changing so rapidly. Sometimes, we're putting documents aside and
24 having to pick them back up, and these are 800 - 900-page documents we're

1 looking at, and we were seeing ourselves inefficiently scheduling because
2 things were coming and going off the schedule, and we needed to enhance
3 that piece of the process. So I'll go through a little bit how we did that.

4 And then, obviously, we wanted to increase the efficiency of
5 the reviews. We were getting a lot of feedback from internal and external
6 stakeholders that that could be done, and we agreed there was some very
7 good self-reflective moments in there to take a look at it.

8 On the next slide, we also recognize that there's a changing
9 regulatory landscape. So in that, there is a lot of emphasis on pre-application
10 engagements, so we also factored that into it. Matt will talk a little bit about
11 the subsequent license renewals and license renewals, how we improved that
12 process. Clearly, the Part 53 parallel reviews that we did was
13 unconventional, but it was useful, very useful. So we factored that in.

14 Walt talked about the subcommittee structure and
15 membership and how that's now leaning forward into a heavier workload
16 expectation that we're going to have coming forward. And then all this kind
17 of factored into the design-centered review improvements that we were trying
18 to make, and we went back and did, I'm not going to say a formal look, but we
19 used the lessons learned from the SHINE and the NuScale reviews to inform
20 that.

21 On the next slide, in the SHINE and NuScale reviews, we
22 had some very effective practices that we wanted to continue. We knew that
23 the early submission and review of significant topical reports was important in
24 the pre-application process. Walt mentioned member review assignments

1 and getting those early. Establishing with subject matter experts was very
2 important from the standpoint of making sure that, like myself, the operations
3 folks were looking at the operations areas, that source term folks were looking
4 at the source term areas.

5 And then we formalized this member chapter memorandum.
6 I'll go into a bit more detail and Dave will talk a little bit. It started the NuScale
7 review, but it really causes us to have a clarity of the question and concerns
8 by, after the subcommittee meeting, we'll write a memo describing the review
9 and any concerns that we might have so that the lead member will have in
10 writing very transparent, very available issues. And the applicant will also
11 have them, NNR will have them, and, when we get to the full committee, we
12 can have a very effective focus on those issues, rather than going through
13 things that everybody has agreed on.

14 We also did another thing where we, not just chapters but
15 looked at cross-cutting areas such as source term that cross-cuts several
16 areas. It provides an area a person that's watching across chapters to make
17 sure that we're not missing something.

18 And then that all kind of culminated into the learnings, well,
19 it culminated into the design center new guidance, but some of the learnings
20 and theories that we didn't do so good in is that we tend to focus on the
21 interesting areas that may be lower safety significance: drifting questions,
22 evolving questions, that provide some unclarity.

23 And then the changing membership. We have people
24 living in the middle of the review, and you have to pass along, so there was

1 some impetus to get that all written down in these chapter memos that feed
2 into the final memo and then the guidance helped all that.

3 On the next slide, we developed this guidance document
4 that is transparent to all stakeholders. It's on the website. It's got a lot of
5 detail in it, but it helps the new members and other members approach each
6 review in the best practice way. It does capture all the lessons. It provides
7 for a very efficient communication with the NRR staff PMs. They are able to
8 see what we're doing, and we have informational meetings with them that
9 focus on that guidance.

10 The main topics that we address, which there's a lot of
11 topics, but I just am going to touch real briefly on a couple of more significant
12 ones: the committee engagement plans, the member review expectations,
13 and then the final template. And Dave will discuss that to more detail, but I'll
14 cover the first two.

15 So next slide. The committee engagement plan is probably
16 the most significant. I mentioned the six-month look ahead. What we now
17 do is we take every document for every design center, we put it on to a fairly
18 simply spreadsheet. The picture is just an example. And, for example, we
19 have over 100 topical reports populated on this. It looks forward to many
20 years down the road, 27, 28. Whenever the topical report is expected or the
21 application is expected, we schedule it, we look at it, we allow changes
22 because changes happen, and we are able to get graphics and other things
23 that show where that bow wave may come in and we're able to move it forward
24 if we need to or move it back.

1 The NRC PM sees this. The applicant can be, you know,
2 it's proprietary, so we don't show it in public, but we do show the PM and then
3 they discuss the different scheduling aspects and logistics of making sure that
4 the meetings are efficient, they're not overlapping, they're not redundant, and
5 that sort of thing. And then this feeds into that six-month look ahead to make
6 sure that our six-month meeting look ahead is efficient, as well.

7 On the next slide, we provided expectations for different
8 types of applications, for example the construction permit applications. We
9 need to manage our interests in helping design the plants, so we are mindful
10 of the fact that there is, even though there's an intense desire for more
11 information, it's going to come later. So asking the question is fine, but let's
12 not force a design change right now when it's not even been designed yet.

13 And then the depth and breadth of those reviews have to be
14 commensurate with what we've got. The construction permit is less detailed
15 in an operating license. Therefore, we need to make sure that we recognize
16 that and maybe we have a parking lot for concerns and questions in our
17 chapter memorandum so that we know what to look out for when we do get
18 the operating license. And, again, the emphasis, the focus on the safety
19 significance of the provided information.

20 On the next slide, just kind of run to the end of this. There's
21 other enhancements that we're doing. For instance, we're developing a
22 knowledge management portal that's focused solely on purposes of what
23 ACRS would need, past letter reports, past positions, so that, you know, if we
24 need to change a position because of new information, then we need to do

1 that mindfully, but we don't need to do it unmindfully, if you will. So this will
2 help us be efficient in our research.

3 We have several follow-up items on our punch list,
4 performance indicators and outreach strategies, so that we continue with the
5 continuous improvement process and also transparency. And we're in the
6 midst of implementing a topical report review challenge to make sure that
7 we're not reviewing topical reports that don't have a very strong safety case to
8 them.

9 Several of us are from the industry, so we've grown up in a
10 continuous-learning atmosphere, so we're going to continue that. And then
11 one of the issues that we think that we're going to be really pushing hard on is
12 this developing our approach, ACRS approach to an nth-of-a-kind licensing
13 reviews, and Dave will talk a little bit more about that.

14 In the last slide, in summary, it kind of goes through
15 everything. I'll just focus on the areas to watch. We want to make sure that
16 our informational meetings are just right, not too early, not too late, with the
17 right members. This CEP engagement plan will help do that. We know that
18 we have a lot of reactor reviews potentially coming down the road, so, as Walt
19 mentioned, we're trying to lean forward into that so we understand how we're
20 going to attack that, even possibly having concurrent subcommittee meetings
21 if we need to.

22 And then we do know that we have a high-volume period
23 coming at the beginning of next year because of our engagement plan and
24 how it views out. We've seen that move out because of the way different

1 applicants and reviews go. But that doesn't mean we don't prepare for it.

2 So with that, I'll turn it over to Dave and let him go through
3 some of the practical applications.

4 DR. PETTI: Okay. Thank you, Greg. Let's go to the
5 second slide. I want to talk a little bit about how we're reviewing topical
6 reports and the safety analysis reports and the organization of the letter that
7 we write for the design-centered reviews because the organization kind of
8 drives the conversation and, at least in my mind, I'm always going back to
9 thinking about those issues.

10 We like to review the topical reports first in advance of the
11 safety report that comes in. And many of the designers and applicants are
12 using the topical reports to establish the key aspects of the safety case.
13 They're kind of the foundation, the building blocks, upon which the SAR is
14 built. We almost always review principle design criteria first, as you would
15 imagine. But then fuels, materials, source term, the analytical methods and
16 how they're verified and validated, what are the plans, are also critical. Those
17 are the key ones that should be in the queue first.

18 Sometimes, these things are all interrelated. Fuels, source
19 term, and, say, functional containment is a classic, and we're being asked to
20 see the elephant. And if you don't see all the pieces, you don't know it's an
21 elephant, right; and we've had this happen, honestly, in Kairos where I was
22 asking questions at the beginning, like, I don't understand why are you doing
23 this. And then, when it gets to the PSAR, there's the numbers, and I go, oh,
24 now, I understand. God, it would have been better to have that. We

1 wouldn't have had to go through the cycle.

2 So we're learning a little bit about, you know, there's a lot of
3 interconnectedness. And, sometimes, some of these might be better to be
4 reviewed in parallel then in a sequential manner.

5 So in terms of the actual process, you've heard both Greg
6 and Walt. We do a chapter-by-chapter review of the SAR with no open items
7 from the staff. We previously used to review when they had the five phases,
8 the information, when there were still open items. So that's all been removed,
9 so we only get it when all the staff's items are closed.

10 And then we have the summary memos, as was discussed,
11 prepared by a lead member who has expertise in the area. Everybody still
12 reviews everything, but that member who has the expertise, the ability to
13 synthesize all the information, is more efficient than if we asked someone who
14 didn't have expertise in that area to do it.

15 So they write the memo, and the memo gets passed to the
16 lead, and the lead has to pull all those memos together and kind of integrate
17 all that from the letter basically. And so anything that needs additional
18 discussion is usually identified in that memo, and so it will float up to the full
19 committee out of the subcommittee chapter, for instance, that's reviewed.
20 Also, discussions on cross-cutting issues, we're going to touch on things in
21 more than one chapter, tends to be there. And, of course, as I said, it lays
22 the preparatory work for the final letter, so it makes it really easier to pull it all
23 together.

24 I'll just say we're always looking for places where the safety

1 reviews could arise that were missed in the staff review. Historically, the staff
2 used to do, you know, each expertise chapter by chapter. They're getting
3 better, too. They're forming these cross-functional teams. We're noticing it
4 in the reviews. We just had the subcommittee on Kairos, and it's quite clear
5 some of the issues cross the technologies. They have the right people at the
6 table. They had talked about this. So we're seeing some improvement on
7 the staff which is really good, I think. We did this during SHINE and Kairos
8 Hermes and also it's currently being used for the NuScale, as well, as was
9 said.

10 Next slide. So in terms of the letter, it's very top-down
11 focusing on the important safety aspects of the design. What are the novel
12 features, what are the new source terms, what are the key safety functions.
13 You know, what are they, how are they implemented, how do they work, how
14 might they fail. Then tell us about the principle design criteria and the SSCs
15 that support those criteria and their classification. And then, finally, you
16 know, tell us about defense-in-depth across the design.

17 We tend to want to focus, obviously, on the postulated event
18 selection, the safety analysis, the classic Chapter 15 stuff, and the safety
19 margin. We have talked to more than one applicant about the need to be
20 able to clearly see the margin because, in the end, we're not going to have all
21 the data we want on these advanced systems. It's the margin that
22 compensates with the defense-in-depth, and, if it isn't clearly written that way,
23 it's just going to cause a lot of churn that doesn't have to if you keep that goal
24 in mind. That's things that we're looking for.

1 Then, of course, with the new systems, the technology
2 development required, there's usually a long punch list, so-called Appendix A,
3 that the staff would have attached at the CP stage, for instance. So, you
4 know, I tend to think the nature of the questions change when you look at
5 LWRs and even, you know, NuScale, other water derivatives. We know a lot
6 about water reactors, there's a lot of questions the staff can ask. There's a
7 lot of questions that we could ask.

8 When you move to the advanced systems, it's different.
9 The question is going to be, you know, do you really understand the
10 technology that you're trying to develop because, sometimes, the first time it's
11 all being put together in the way you're putting it together, and there's less
12 operating experience to almost no operating experience in some cases. So
13 the nature of the questions change, and you can only go so deep. At some
14 point, you have to say, you know, we've got to build this to see if it's going to
15 work. And that's just the recognition that we're trying to continually remind
16 ourselves you can't really compare it to the fleet. It's not a fair comparison.

17 So now when we turn to Hermes 2, which is a little bit
18 different, you know, as you know, significant overlap with Hermes 1 but some
19 important new systems were added. The other thing the applicant did was
20 they gave us a redline strike-out of the SAR. This was incredibly helpful.
21 You can imagine. These are 500-page documents. To be able to go
22 through a chapter where you just see what the changes are is incredibly
23 efficient. Not all of them do that. Boy, I wish they would because it really,
24 it's a huge efficiency gain. It forces you to focus.

1 Again, all chapters are reviewed by all the members and
2 there's a lead with relevant experience that takes the lead in the chapter. And
3 they communicate to the overall lead, in this case me, if there's a safety issue.

4 We now, for Hermes 2, we will only write a memo if there's
5 a safety issue. If it just summarizes and it's just the same as Hermes 1, we're
6 not going to spend the time, the effort, and the paper. Only those chapters
7 that have a safety issue get floated and documented.

8 On the next slide, the way that we're going to write the letter
9 is also different than we did for even Hermes 1 because this is this unique
10 situation where the design is so similar. We're just going to ask yourselves a
11 number of key questions: Do the design changes affect the safety functions
12 that were identified in the design of Hermes 1 and Hermes 1? Do they
13 change the SSCs that implement those functions? Do they change the list of
14 items that need to be confirmed prior to the issuance of the OL? This is the
15 staff's punch list, the Appendix A. Do the design changes impact source
16 terms? Do they introduce new accident sequences, changing the maximum
17 hypothetical accident? Are there co-location effects? Because now we've
18 got two different systems together accounted for. At least, at CP, at best
19 they're noted. Do the designs influence the wave streams?

20 So the review is still in progress, although we really have
21 one subcommittee meeting in three weeks. We're done with the chapter-by-
22 chapter views. We'll be kind of pulling everything together and talking about
23 the letter, and then the letter will follow on, you know, after the 4th of July.

24 So this is sort of the approach. And so I keep asking if it

1 doesn't answer one of these questions, then maybe it doesn't rise to the level
2 that it's really a safety issue. So the letter is going to look really different than
3 the Hermes 1 letter, but I think it's still going to address all the issues but it's
4 going to encapsulate it in a very simple way. And that's why I said this
5 window to nth-of-a-kind. I can see myself taking this question list and
6 expanding it a little and altering it a little because it has some site issues you
7 think of and come up with another set of simple questions that could guide our
8 thinking so that it's not a start-over and review the whole thing.

9 So, in summary, on the next slide, we continue to look for
10 novel ways to accomplish our views in the most time-efficient manner
11 possible, and these approaches help sharpen the focus on the safety-relevant
12 issues and the novel design features. So with that, I will turn it over to Matt.

13 MR. SUNSERI: Thank you, Dave. I note that we're
14 running a little short on time here, so I'm going to hit the high points of the
15 presentation and then let you drive a deeper conversation through the
16 question-and-answer period, if that's okay.

17 So since we last visited, we have completed three safety
18 reviews of license renewal activities. Two of those have been subsequent
19 license renewals, and one is just an initial license renewal to Comanche Peak.
20 In each one of these cases, we have concluded that the established programs
21 and commitments made by the licensees demonstrate that they are capable
22 of adequately managing the effects of aging and, therefore, can operate these
23 reactors without undue risks to health and safety of the public. And that's an
24 important finding because, as you know, the subsequent license renewal

1 process is requesting operation of these plants up to double or twice the length
2 of time that their initial licenses were issued for.

3 So we've now completed eight of these reviews, and, as a
4 result of going through this process, we've learned a little bit of a pattern of
5 how the information is coming to us, which is allowing us to change our
6 process. And I'm just going to get to the bottom line that we've evolved our
7 process such that we've eliminated a full subcommittee meeting. We are now
8 meeting only once with the applicant and the staff during a full committee
9 meeting. The elimination of the subcommittee meeting cuts down travel time
10 for the applicant to about half of their time. It eliminates their direct
11 involvement with us to about a third of their time that they had prior. And if
12 they choose, if the applicant chooses to participate in the full committee
13 meeting virtually, then they can eliminate essentially all of their travel time.

14 Our letter report is prepared in the final full committee week
15 that we're there, and the net result of all of this is we've shortened the process
16 from a calendar duration of two months to about one month. And that's not a
17 measure of the level of our effort, but it's a calendar duration of how long we've
18 been involved with the staff and the applicant on these reviews. So a pretty
19 substantial improvement there.

20 The part that has helped us recognize this is the fact that
21 the reviews are coming in and then we develop a repetitive pattern. So, you
22 know, the repetitive pattern allows us to discriminate between things that we
23 already know and we've dispositioned, if you will, in the past and allows us to
24 focus on the changes or the new aspects of a particular design. So that takes

1 a little bit of discipline to not rehash, if I could use that term, the reviews and
2 stuff that's already, you know, known-knowns and allows us to focus on the
3 new things.

4 So, you know, one may ask, well, by doing this, have you
5 compromised the quality of your review and, essentially, turned it into a pro
6 forma rubber stamp, and the answer is really, from our perspective, no
7 because we still get the application, the safety evaluation report, all the
8 inspection reports, and our subcommittee still does a thorough review of that
9 information. What we've just now, though, is, because we see the pattern
10 here, we're able to get to the meat of the thing more efficiently that way and,
11 therefore, cut down on some of their involvement.

12 We still do have that opportunity, though, to interact directly
13 with them during the full committee meeting, and this also includes engaging
14 with the resident inspectors who are a very important part of this process
15 because they're the eyes and ears of the agency that's, you know, on the
16 ground at the facility.

17 So two things that really have enabled this is, as I
18 mentioned, the repetitive nature of the applications, but what we've also
19 observed during the eight or nine meetings that we have seen is that the next
20 applicant in the queue is almost always present at our activities observing,
21 writing down questions, gathering information, and they're refining their
22 applications based on the kind of things that we're looking for, so the quality
23 of the applications coming to us we feel like are enhanced and more address
24 our needs.

1 And so this is where, if I now turn to the summary page, the
2 very last part of my presentation here, I'll just kind of conclude with that the
3 applicants continue to demonstrate that these renewed licenses are justified
4 based on their ability managing aging effects of the effects of aging, and we
5 expect to continue to look at our process and refine it. But the key take-away,
6 and I know there's been a lot of discussion about nth-of-a-kind as it applies to,
7 what I believe you're looking at is the original application or the original issue
8 of an operating license for a facility, when you get down to the nth-of-a-kind
9 on them, I think there's a lot of parallels what we've learned here from the
10 subsequent: the repetitive nature, the engagement of the staff, to having to
11 discipline to only look at the staff that is new and unknown. So we can
12 explore this further during the question-and-answer period because I want to
13 reserve some time for my colleague, Dr. Ballinger, which I will now yield the
14 floor to.

15 DR. BALLINGER: Thank you. We'll have a discussion
16 now about the rule, Part 61, for low-level waste disposal. What I'm going to
17 say is I'll provide a little background and history of what's -- because it's been
18 a long history, hit the high points of the rule itself, and then some
19 conclusions.

20 First slide. It has been an ongoing and long process. It's
21 been since around 1982, according to the slide. We've had numbers of
22 ACRS meetings, and, if you look at the letters that have been produced, you'll
23 see sort of a progression and then, finally, a convergence between the staff's
24 evolution and our evolution in terms of reviewing what the staff is doing. And

1 that's, in large part, because the type of waste that we're initially envisioned in
2 the 1982 version are not the same as what we have now. A number of
3 additional streams have been -- we have to deal with, and so that's resulted
4 in this evolutionary process. But I think we've finally, in this latest version,
5 we've got convergence, and we'll have a good rule.

6 A little more background. The classification of waste is
7 really A, B, C, and greater than Class C. Greater than Class C is a key part
8 of the new part of the rule, and it's basically a progression between the
9 hazards involved with the different waste streams. A is the least hazardous,
10 shortest half-life; B; and then it progresses to -- and greater than Class C
11 waste adds true waste to the stream. And if you recall, there were, in the
12 past, two paths, one for greater than Class C waste and one for the other types
13 of waste, and they've been combined in the new rule.

14 Next slide, please. Again, the waste streams that we've
15 been dealing with, depleted uranium, mixed waste, radium bearing, fuel
16 processing, a lot of different waste have been -- and the addition of transuranic
17 waste. It used to be that the rule, if you had greater than 100 nanocuries per
18 gram with a greater than 20-year half-life, that was beyond the limit.

19 Next slide, please. So the latest proposed draft includes all
20 the new waste streams. And, in fact, because of the requirement for a site-
21 specific analysis here, I believe that any new waste streams that come down
22 can be adequately accounted for by that process. That's what I mean by the
23 site-specific performance analysis. And there are new compliance periods
24 that have been specified. One is the thousand-year so-called compliance

1 period where there's a much more extensive analysis that has to be done.
2 And then the long-lived after 10,000 years, there's another analysis that has
3 to be done, but it's not as extensive, mainly because 10,000 years is a long
4 time.

5 Next slide. So some of the key points of the rule, and it's in
6 response, in some cases, to ACRS interaction, is that in previous version there
7 was a single rule but there was existing facilities, so-called grievance states,
8 now have the ability to opt out of the greater than Class C waste if they choose
9 to do that, and that was an important sticking point for some of the comments
10 that were made.

11 There's a requirement, because of the true waste and the
12 greater than Class C waste, there's now a requirement related to criticality.
13 And the annual dose limits have been updated to, I think it's 25 millirem per
14 year for the average member of the public and 500 millirems per year for the
15 inadvertent, so-called inadvertent intruder. And that inadvertent intruder part
16 is also fairly new to the rule.

17 Next slide. Okay. So, again, we're running out of time, so
18 the classification really determines how deep and how long you have to have.
19 So there's, for greater than Class C waste, there's this 10,000 nanocuries per
20 gram threshold, there's a criticality analysis, and then, for greater than Class
21 C waste, there's additional defense-in-depth requirements, as well as actual
22 depth requirements, for burial for near-surface burial. And I should add that
23 the new rule is more consistent with international practice, as well.

24 Next slide. I think I've already covered that. Let me try

1 that -- okay. So the ACRS, as I mentioned, have, I think, five letters on the
2 topic. And we've had our disagreements and agreements with the staff, and
3 we've evolved and we've, I think, converged. The one area that we have
4 been consistently promoting is an uncertainty analysis associated with the
5 waste, with the process. And as a matter of fact, it's not explicitly stated that
6 they do an uncertainty analysis now, but the development of the general rules,
7 the 25 millirem and the 500 millirem, those were developed considering
8 uncertainty in the general sense. And in the site-specific sense, the site-
9 specific analysis most certainly would involve an uncertainty analysis itself.
10 So that question that we have had all along is resolved as far as we're
11 concerned.

12 And I think maybe that's -- next slide. Whoops. Thank
13 you. I guess it's back to Walt.

14 DR. KIRCHNER: And I'll just summarize. The NRC
15 historian recently said that the Advisory Committee on Reactor Safeguards is
16 the oldest committee in the world devoted to reactor safety. The statutory
17 mandate of the ACRS is now more than ever relevant and necessary to
18 provide public confidence that deployment of new and advanced reactor
19 technologies can be achieved in a safe and timely manner to benefit the
20 nation's energy and climate priorities.

21 Our mandates are neither outdated, nor unrelated, to the
22 current maturity of nuclear technology. In support of the agency's overall
23 mission, we provide a safety oversight function for the current and future
24 nuclear fleet that, should it not exist, would likely be reinvented to satisfy public

1 transparency.

2 As we discussed today, our recent safety reviews have been
3 focused, thorough, and expeditious. We do not hamper the deployment of
4 safe, new advanced reactors. Their safety remains to be demonstrated. In
5 many ways, the ACRS reviews for new reactors mirror the role of the
6 committee at the dawn of the development of commercial nuclear power some
7 50 years ago.

8 So, in conclusion, I hope that my colleagues and I have
9 demonstrated to you that we continue to evolve and improve our processes to
10 remain focused on safety and simultaneously increase the committee's
11 effectiveness, efficiency in its reviews. And with that, we would like to --
12 happy to take questions.

13 CHAIR HANSON: Thank you very, very much, Chair
14 Kirchner. We'll begin with Commissioner Caputo this morning.

15 COMMISSIONER CAPUTO: Good morning. Thank you
16 all for being here, especially given the travel it takes most of you to reach our
17 offices. So thank you for that, and thank you for reminding us of the history,
18 Walt. It's a remarkable legacy for the members that serve now, given the
19 history and the previous members that have come before over such a span of
20 time. So that's an appropriate reflection, given the novel technologies that
21 are coming and the nature of how nuclear technology is changing with an eye
22 toward the future. So thank you for that.

23 I particularly appreciated the discussion on the committee's
24 efforts to improve its effectiveness and efficiency. This has been an area of

1 interest, I think, to the Commission and, certainly, to a lot of stakeholders,
2 once again, with an eye to the future and the challenges that are coming down
3 the pike towards the agency. And I do see some parallels between the nature
4 of how ACRS is trying to address its efficiency and how the Commission is
5 considering opportunities to approve our own effectiveness and efficiency. In
6 particular, I would refer to the mandatory hearings.

7 So to support the Commission's decisions following a
8 mandatory hearing, ACRS reviews and reports on the applications. So given
9 the Commission is considering modifying how it conducts mandatory
10 hearings, including options that would potentially rely on written processes
11 and written documents in responses to questions, has the ACRS looked at
12 those options proposed by the staff and considered how those might be
13 reflected in how the ACRS executes those reviews and reports?

14 DR. KIRCHNER: Specifically with regard --

15 COMMISSIONER CAPUTO: Don't everyone answer at
16 once.

17 DR. KIRCHNER: With regard to mandatory hearings, we
18 certainly are following that. This isn't a direct answer to your question, but I
19 think, in principle, what we are trying to do to eliminate, and I think Matt pointed
20 to it with regard to the licenses renewals and subsequent license renewals,
21 we're trying to be better prepared. This is going to be an indirect answer to
22 your question. So that is we will conduct our reviews in parallel. We're not
23 waiting until next fall and the new year to start our NuScale review. We
24 already are engaged.

1 So where I see are parallel to eliminating some of the
2 mandatory hearings is that we will consume less time in subcommittee
3 meetings with the applicant and the staff than we had previously. Previously,
4 we had the luxury, I suspect, of time before COVID, like in the NuScale review,
5 to devote a whole day to a subcommittee meeting on critical heat flux. We
6 can't do that and meet the objectives that the agency has.

7 So I don't think there's a direct parallel to mandatory
8 hearings, but there are comparable ways for us to eliminate our kind of
9 hearings. We don't conduct hearings, of course, but our subcommittee
10 meetings and such so that we can be more effective, use less time of the
11 applicant and the staff.

12 COMMISSIONER CAPUTO: Well, that's a great lead-in to
13 my next question. I appreciate the focus on safety significance that many of
14 you have raised because I do think that is the key to having ACRS function
15 more efficiently is to make sure that the expertise represented on the
16 committee is focused on the things that are the most safety significant. So in
17 keeping with our efficiency principle of good regulation, the need for the depth
18 and breadth of ACRS's reviews should be commensurate with the type of
19 application you're looking at.

20 So, for me, this raises questions about the staff's proposal
21 to require construction applications to include a description of probabilistic risk
22 analysis for a design. So while it's certainly possible to have, to develop a
23 PRA at an early stage, it's somewhat in conflict with the fact that a construction
24 permit approval does not, under 50.35(b), include approval of the safety of any

1 particular design features unless specifically requested.

2 So would you please discuss how, with that as a backdrop,
3 how does the committee try to balance its inherent desire for more detailed
4 information with the information that's actually required of an applicant?

5 MR. HALNON: I can start that. There's a process, I
6 mean, when you have an application in front of you, there's a learning process,
7 and then there's an adjudication process that we have to go through. Some
8 CPs come in with a tremendous amount of information, and some come in
9 with the, I'm not going to say minimally required but, you know, what is
10 required information.

11 And, again, we have to challenge each other to manage our
12 expectations and not necessarily say you need to do it this way or you need
13 to do it that way because we don't have the information yet. And part of this
14 is the massive number of topical reports that are starting to come in, and Dave
15 mentioned that, if you had it all together, you would not have these questions.
16 So we have to manage ourselves in these chapter memorandum that we have
17 where we challenge each other saying, you know, if someone comes up with
18 a safety issue, we have challenged each other saying, well, that's just not
19 information that we have yet, so how can you call it a safety issue? And then
20 we would document it as a question, rather than I have a concern, and then
21 that gets addressed in the full committee. Sometimes, it gets addressed by
22 the applicant saying I want to take that back because it's a good idea, and
23 sometimes it's we'll get that to you later, and we accept that and we need to
24 accept that. And we have to challenge each other to do that.

1 COMMISSIONER CAPUTO: Okay. Thank you. Matt,
2 let's have that discussion on license renewals. So the subcommittee still
3 performs full review of license renewal applications, staff safety evaluations,
4 relevant inspections and audits, et cetera, as part of the ACRS review under
5 54.25. The staff has indicated it's pursuing efficiencies to make its review
6 process more commensurate with safety significance. Based on your
7 discussion, it appears the committee has been able to similarly identify
8 efficiencies based on experience and the repetitive nature of the reviews.

9 So could you discuss how these learnings and observations
10 are being memorialized for future committee members, given the turnover and
11 expected continued workload here, so that what you are seeing and reaching
12 conclusions on now can be cited by future committee members, rather than
13 having these issues reviewed again in the future by future members who
14 weren't present in the initial reviews?

15 MR. SUNSERI: Thank you for the question, and that's a
16 good insight because we are, you know, a committee that is not governed by
17 a lot of procedures. We have our bylaws and charter that broadly govern our
18 activities, but I want to reflect back on a document that Walt had mentioned
19 before and that's our committee assignment sheet.

20 So on the surface, it looks like a matrix just with some names
21 filled in, but, if you really drill down into it, there's a description behind that of
22 what each one of these subcommittees is responsible for and the scope of
23 their review. And I really haven't thought about how we would institutionalize
24 the change, but, now that you've asked the question, I think it would be worthy

1 to go back and at least look at my section of that report and revise that to put
2 some of these insights in there.

3 COMMISSIONER CAPUTO: Well, in the same way that
4 you've described how applicants, future applicants are coming in to observe
5 your meetings and learn from the nature of the questions that you're asking,
6 to the extent that these questions and observations and decisions can be
7 made once and then referred to in the future, streamlines the ability to reach
8 decisions in the future by not resurrecting and re-examining issues that are
9 already closed. It makes it, I think, a lot more predictable and reliable in terms
10 of knowing what the resolution of those issues are for future applicants coming
11 through.

12 So I think I just want to make a high-level observations just
13 on the nature of license renewal reviews and the ACRS. Given the nature of
14 growing demands for energy, potentially growing number of applications that
15 may come to the agency in the future, with the novel technologies that are
16 coming forward, this is an area where I personally wish the agency had more
17 flexibility in terms of the work that ACRS is doing. License renewals are fairly
18 repetitive, and there are decades of experience with aging management and
19 aging management programs and how licensees are executing these. They
20 represent decisions that have previously been made by the Commission,
21 conclusions previously reached by the staff. To me, it's not necessarily the
22 best use of the talent and expertise of the ACRS to be reconsidering issues
23 that are so well established and well known when there is such a wealth of
24 new challenges coming. So it's my own personal wish that the Commission,

1 the agency, had more flexibility in terms of how it uses ACRS to preserve your
2 time and attention for novel issues, but that remains an issue for Congress.

3 So thank you all for your time and your dedication.

4 MR. SUNSERI: May I respond to that comment?

5 COMMISSIONER CAPUTO: Sure.

6 MR. SUNSERI: So, to me, we're taking these licences
7 from an area of known potentially to an area of unknown. I mean, we're going
8 out to 80 years right now in aging management, but then there's no limitation
9 on how much farther we can go. We can go out to 100 years potentially after
10 this.

11 So I know that it feels like a burden and a non-necessity to
12 have this independent review, but I kind of look at it like your annual physical.
13 So if you think about going to your doctor, how many of us really enjoy going
14 to our annual physical? We feel healthy, we're going in, we don't expect the
15 doctor to tell us anything that's wrong, but they do a good check, a thorough
16 look at us. And, every once in a while, something is found that is important
17 and could be a life-saving thing.

18 And so that's the way I think we approach our reviews when
19 we look at a license application. We're not duplicating the regulatory effort.
20 We're not making sure that all the, you know, compliance with all the 10 CFR
21 requirements. We're trying to look more broadly and wholistic at the safety
22 aspects, which is our charter. And as we venture into new designs and
23 further out on the learning curve, we want to make sure that there's no bathtub
24 effect, if you will, where all of a sudden the probability of failures and risk are

1 going to go up high.

2 So that's, you know, the --

3 COMMISSIONER CAPUTO: That's exactly where the
4 ACRS attention should be focused, rather than the bulk of the application,
5 which is simply continuing what's been practiced for the previous decades, to
6 be looking at things that present new and novel safety aspects.

7 MR. SUNSERI: Right. And we agree with you, and that's
8 why we've been able to shorten the review. Thank you.

9 COMMISSIONER CAPUTO: Thank you.

10 CHAIR HANSON: Thank you. Commissioner Crowell.

11 COMMISSIONER CROWELL: Thank you, Mr. Chair.
12 Thank you to all the ACRS members for being here today. I look forward to
13 this meeting and enjoyed my engagement with all of you.

14 I just want to say that I appreciate the work that you all do
15 and highlight that the workload is heavy and it is also not your full-time job.
16 So folks who are antsy about how quickly you all operate need to keep in mind
17 that it is a pretty heavy, nearly pro bono, job that you guys are doing. So
18 thank you.

19 But I also think that the role of ACRS today is as important,
20 you know, it's as important today as it is at the, you know, when ACRS was
21 first created and the NRC came into being, as well. If this advent of new
22 reactor technologies comes to the agency, there's going to be a lot of novel
23 issues. There's going to be increased workload. That's on top of license
24 renewals and subsequent license renewals and a whole lot of other topics.

1 It's potentially all coming to all of us at the same time, and we're going to need
2 to balance all of that and be prepared for it.

3 At the same time, you know, I appreciate the efficiency
4 efforts that ACRS has been identifying and will continue to identify. I just want
5 to point out that the things that you can do to be more efficient are intrinsically
6 tied to the things that we're doing at the NRC at the staff level to be more
7 efficient, as well. If we don't make our processes more efficient and more
8 focused, that will limit your ability to do the same. So, you know, we have a
9 shared vested interest in this, and we all need to do it together and be
10 consistent in doing so.

11 And I'm going to plow same ground from a little bit different
12 perspective than Commissioner Caputo did. You know, the nexus to what
13 we're thinking about on mandatory hearing reforms is also, I think, there is a
14 direct correlation there. Part of my comfort level in potentially, you know,
15 slimming down and reforming the mandatory hearing process for the
16 Commission, what makes me feel okay about that is knowing that ACRS is
17 living up to its responsibilities and doing that independent role that you function
18 in ensuring the public that we're looking at the right things and approving
19 things in a way that will keep communities safe.

20 So, Dr. Petti, I'm going to send this first question to you, but
21 can you talk a little bit more about the conundrum of when you receive safety-
22 significant topical reports, you know, before the application is submitted
23 versus when it's submitted? Because I think what I'm taking away from that
24 conversation is some unofficial advice to applicants that the more they get

1 those identified, those safety-significant issues, up-front and maybe even get
2 a topical report in on it sooner is going to help the efficiency of the review on
3 all fronts.

4 DR. PETTI: Absolutely. If I were king, which I am not, I
5 would make it a requirement because the closer the topical report comes to
6 the actual submittal, you kind of have to review the topical before you review
7 the relevant chapter that supports it. And you're just asking for a workload
8 whereas you could have gone it in six months earlier, nine months earlier,
9 particularly on those big key-hitting issues where your technology relies so
10 much on certain aspects. And those things need to be up-front, you know,
11 early.

12 Kairos is a really good example. They put their stuff in very
13 early and we were able to get that common understanding, so, by the time you
14 then read the SAR, you go, okay, yes, now I see that ties in.

15 There have been other applicants where the topical report
16 came in after the chapter, and that's problematic, right, because then you
17 really can't make a final decision until you review that, and that just gums up
18 the efficiency and the schedule.

19 COMMISSIONER CROWELL: Agree it makes more
20 challenging. I don't know if we can go so far as to make it mandatory for
21 applicants, but, certainly, applicants should be aware that the efficiency of the
22 review will be impacted by what they decide to do on that. And it's also worth
23 noting that some safety-significant things that may need a topical report for
24 various reasons may not be identified until later in the process, and we've got

1 to make room and accommodation for that.

2 DR. PETTI: Right.

3 COMMISSIONER CROWELL: But there's responsibility
4 on all sides: applicants, staff, ACRS in terms of making the process efficient
5 like we've done --

6 DR. PETTI: I would just say some of the others is how you
7 sequence them, too, which is really a conversation we probably should have
8 with the staff because it may still be on the staff's side, but it's coming to us,
9 like, six months apart, and we should probably say, you know, if we knew that,
10 now that we have the engagement plans, we think those should be done
11 together. That will be more efficient, you know, the order in which you do
12 some of the things.

13 Source term is a classic. Source term is so tied to fuel that
14 it seems like you ought to do source term really close to fuel and you ought to
15 not have a lot of time because there will be questions that come up. So
16 there's some of those interlinkages that I think good feedback when we talk to
17 the staff in our CEP plans will help, I think, do that so there isn't those gaps.

18 COMMISSIONER CROWELL: And good communication
19 with applicants, especially those who are, you know, new or first-time
20 applicants, so they understand those dynamics so they can help control their
21 destiny.

22 Another connection to what we're thinking about on
23 mandatory hearing reforms is this question of first-of-a-kind versus nth-of-a-
24 kind. And at least as I've looked into this, that's kind of one of the areas that

1 I'm getting tripped up over. I mean, I'd love it if it were so simple as to say we
2 will only do, you know, first-of-a-kind and not nth-of-a-kind, but that dividing
3 line is not as clear as I would have hoped it is.

4 Can any of you elaborate a little bit more on how you can
5 look at that division?

6 DR. KIRCHNER: Well, I think it plays off of comments by
7 Dave and Matt about the delta reviews that we're doing. The Kairos example,
8 actually, is very useful for this because it's a realtime exercise of this.

9 So you have a first-of-a-kind reactor, but then they want to
10 put a power conversion loop on it. So what are the delta changes, and I won't
11 repeat Dave's list, but, if we get to an SDA for that first-of-a-kind or maybe the
12 second one because they decided for whatever reasons, economics or
13 whatever, it needs to produce more power, if we really do get an SDA and if
14 the applicant doesn't substantively change it, then it's a matter of the site
15 factors really, and the biggest one being seismic.

16 So if they've designed a robust envelope for the systems,
17 structures, and components, such that that standard design could go to
18 multiple sites and be bounded by the -- seismic hazards is probably the most
19 important one -- I think that will go very, very quickly. If they go back and
20 make substantive changes to the reactor design that raise safety questions,
21 then it's going to be the delta kind of review that Dave has laid out.

22 COMMISSIONER CROWELL: One of the reasons I bring
23 this up is because, if the Commission decides to initiate or implement reforms
24 to our mandatory uncontested hearing process, and we do so in a way that

1 attempts to distinguish between first-of-a-kind and nth-of-a-kind, I think it's
2 important that that distinction is consistent in how the Commission applies it,
3 as well as how ACRS applies it. Otherwise, I think we'll sow confusion with
4 the public as to what we're focusing on.

5 MR. HALNON: And if I may, the questions that Dave laid
6 out talk about what is different with the original versus -- the F versus the N, if
7 you will. There's also another set of questions relative to what owner-specific
8 issues may raise up. Owner-specific supply chains, they may already have
9 contracts somewhere else. One of the areas I'm concerned about is this
10 consistency in accident response, the use of technical guidelines, generic
11 technical guidelines from the vendor, how that translates into operating
12 procedures. You don't want two different exact copies, people thinking I have
13 a better way of responding to an accident in an EOP than you do or a different
14 way. That doesn't make a lot of sense to me. It should be consistent, the
15 best way.

16 So there's a lot of, maybe a series of questions relative to
17 the owners and relative to the design that you can ask that may all come out
18 null and say we're done, but they may come out where there's a delta that you
19 have to go look at it in a little bit more detail.

20 COMMISSIONER CROWELL: I appreciate that. Dr.
21 Sunseri, I have been thinking about the analogy you just used on aging
22 management and subsequent license renewal and comparing it to a physical,
23 and I'm going to hopefully build on it and improve it here for a second.

24 You know, when I went to a physical when I was 20 years

1 old, not too many issues; 40, more and different; 60, when I get there, if I get
2 there, more and different. And I think that is an apt analogy probably. It
3 doesn't mean they are not manageable, but they need to be recognized and
4 they're different.

5 Would my colleagues indulge me to ask one more question?
6 What, if anything, does ACRS do to engage the public or encourage them to
7 follow along with what the committee is doing? Because I think it's an
8 essential part of building that social license for new reactor technologies in
9 areas that haven't had those types of power sources or nuclear applications
10 in their communities before, and I think we can start to -- you know, it's one
11 way we can maybe minimize some of the concern and even, you know,
12 contentions and interventions by getting the public more involved or aware of
13 what ACRS is doing so they can feel better, especially that segment of the
14 population that may be skeptical of how the Commission fits into this. Well,
15 you're the independent backstop. So what are you doing in that area now or
16 what more maybe could be done to help with public engagement?

17 MR. HALNON: One of the things on our improvement list
18 is that outreach plan I said that we're still working out. There's other things.
19 We do presentations at different organizations. I did one at NEI a few years
20 ago, Dave has done some. Ron is on different committees, and I think, Walt,
21 you've done a presentation.

22 But one of the things is, for instance, when the design-
23 centered guidance was issued, we reached out to the advanced reactor
24 community and asked if they were interested in having one of those types of

1 meetings. And that's open item, yes, they are interested, so our outreach
2 plan will include not just capturing what we've done and what we already do
3 as a normal course of business but a direct and deliberate attempt to get out
4 to the public.

5 And we do ask for public comments on every meeting that
6 we have that's public, and we get various numbers of people sometimes.
7 Sometimes, none. But we do engage with the public on that.

8 But I think the stakeholder outreach plan that we're going to
9 be putting together will certainly directly address that, but we also do some
10 behind the scenes, as we do now.

11 COMMISSIONER CROWELL: To focus on those, you
12 know, not the choir but the nontraditional communities or the average
13 communities that we haven't engaged with before who may not be aware of
14 the role that ACRS plays in that they can be a participant or observer, as well.

15 So thank you, Mr. Chair.

16 CHAIR HANSON: Thank you. Thank you all for being
17 here again and thanks for the discussion and especially thank you for your
18 service.

19 I want to pick up on something that Commissioner Crowell
20 raised because I think he's really got into, I think, kind of a key issue. And I
21 think, Greg and Dave, this is really for you and it kind of gets to the kind of
22 improvement efforts that we're going. But I'm going to try and take a step
23 back and approach this issue of kind of topical reports and concurrent reviews
24 and so forth.

1 So talk to me a little bit about how the committee decides
2 which topical reports to review and kind of what are some of the factors and
3 considerations in your all's approach to that?

4 MR. HALNON: Let me start with process-wise, and then
5 maybe Dave can fill in some of the blanks.

6 We have an existing process with regulatory guides where
7 the staff requests our decision whether or not we do a regulatory guide review
8 or not. And I mentioned that there's an element of learning, and there's an
9 element of adjudication. The CEP, the engagement plan, if we use that
10 terminology, has populated all the topical reports relative to the design
11 centers. They're there, and there's a column that says when it's available for
12 our review.

13 So if it's a process of learning, we might get an informational
14 briefing or we might get a briefing on it, but there's a conscious decision by
15 the subcommittee whether or not we write a letter or not. So that triggers
16 whether or not we have a full committee meeting or not, and then we
17 document that in our planning and procedures meetings that we have. And
18 if you look at, when we look at the summaries now, you'll see an expanded
19 version of justification for a yes or a no.

20 We're mimicking that same process with the topical reports.
21 The subject matter expert or subcommittee chairman gets to look at it. Is it a
22 necessary just to have people read it and learn it? Is it necessary to have a
23 subcommittee on it and then further, a third decision, is it necessary to have a
24 full committee and write a letter on it.

1 We're learning that, for instance, quality programs, we don't
2 need to -- we might be interested in it but --

3 CHAIR HANSON: That's the one I was thinking of.

4 MR. HALNON: -- we don't need to review those in a formal
5 manner. But because of plant-specific or owner-specific issues, we may
6 have a need to go back and know that it's there.

7 We did some PDCs early on where it's just a cut-and-paste
8 out of the reg guide. That's fine. You're going to comply with the reg guide,
9 there's really no reason. But like we just recently experienced with the
10 TerraPower PDCs, there were some issues that we had that was not a cut-
11 and-paste. It was some innovative ways of looking at functional containment;
12 therefore, it was a very fruitful review to look at that.

13 So it's a conscious decision on each one, and then we
14 document why or why not.

15 DR. PETTI: I would just add that, you know, there really
16 isn't much new under the sun in terms of these advanced systems. They all
17 go back. There's a predecessor somewhere. So there is this general list of
18 concerns, and they vary by technology. So in our minds, many of us, we
19 know where the touchpoints are, and that feeds into the, you know, yes, that's
20 not going to be a big issue, but this one is.

21 We reviewed both NUREG-2246 on fuel qualification and a
22 similar report that Oak Ridge did on salt fuel qualification where the fuel is
23 dissolved. So we were like, yes, we're interested because that's very
24 different. So those really set us up, particularly 2246, for just doing what we

1 just did with TerraPower, you know. And the staff reviewed it against it, so
2 we all knew, and it made it very, very efficient.

3 CHAIR HANSON: Well, kind of getting back to the
4 TerraPower thing, and, Dave, you were talking a little bit about this about kind
5 of the need to -- whether you do the topical report or whether you do the
6 chapter. We're in this, I don't want to call it fully unique but somewhat unique
7 situation, I think, in TerraPower where, as you noted, Kairos, we resolved a
8 lot of topical reports kind of up-front before the application came in, and I think
9 we were only doing three concurrent with the CP at the time. Well, in this
10 case, I think, with TerraPower, we've got the CP application. We've got
11 something like, I think, 13 topical reports that are being reviewed concurrently.

12 So how are you planning to kind of manage that large
13 number of topical reports, acknowledging, I think, as Greg did, that maybe,
14 you know, you can look at quality but not necessarily have to write something
15 up on that, as well as kind of then looking at the CP application itself, right,
16 looking at the parts and looking at, I think the elephant is how you mentioned
17 that.

18 DR. PETTI: So one thing, you know, historically, what
19 we've done is we wait for the staff SE on the topical report. We may decide
20 not to do that, you know, to review it when we have, there's time in the
21 schedule, we'll review it. Then when the SE comes in, we'll do it, but we will
22 have done a tremendous amount of homework by reviewing the report. So
23 that's sort of an option to prevent the stacking up, if you will. That's one of
24 the things that I think we'll have to look at.

1 DR. KIRCHNER: And we will have to -- we can't do these
2 serially, so I think we'll look for logical groupings. If it's methods, we'll take
3 on the suite of methods together. If it's material qualification, which is usually
4 a very important one for the new concepts, then we can take those on
5 together, for example graphite, metallic, et cetera, fuel or coolant. So those
6 are logical building blocks for the concept, and those can be kind of
7 aggregated and not just, as I said to Commissioner Caputo previously, we
8 could just spend a whole day on critical heat flux. That's not going to work.

9 So there are things we can do to expedite our review but still
10 be thorough and cover the real technology issues.

11 DR. PETTI: I think learning from Hermes 1 and Hermes 2
12 and now TerraPower is this logical grouping. I don't think we've bumped into
13 that and thought about it, but I think that's going to be a lesson learned that
14 we're going to carry forward to help.

15 CHAIR HANSON: Well, I look forward to seeing how this
16 process unfolds and how you guys are going to tackle that challenge because,
17 you know, we still do face kind of the imperative of having that efficient and
18 effective and timely review for some of these new CPs. So thank you.

19 I did want to touch on one other thing. You know, it's
20 somewhat related to the subsequent license renewal but it's really the power
21 uprate issue. And, of course, ACRs has a significant amount of experience
22 in power uprates, and the staff is already starting to think about and get ready
23 for what we expect to be kind of an influx of power uprate applications and so
24 on and so forth.

1 So has the committee started to think about how you're
2 going to potentially tackle, along with the other things that are going on here,
3 the power uprates?

4 DR. KIRCHNER: Well, quite a few power uprates were
5 done a decade ago or two decades ago. The committee was intimately
6 involved. Now we're going to get those at the same time we're looking at the
7 advanced reactors.

8 I think it depends really. I think, again, we'll have to be
9 selective and look for where there's going to be issues. We are getting a
10 taste, a foretaste of power uprates in other areas, like incremental burnup and
11 so on, that they're related topics. So what you're looking again at is safety
12 margin that Dave was talking about. The margins then become critical. So
13 the review likely will focus on, okay, do you still have adequate margin to have,
14 you know, so you can make a reasonable assurance determination.

15 CHAIR HANSON: Thank you. I would encourage the
16 committee and the staff to, you know, kind of lean into this, particularly the
17 staff, as they say, is getting the band back together in power uprates and
18 looking at their procedures from a decade ago and updating those and
19 leveraging existing knowledge and so on and so forth. So thanks, Walt, very
20 much.

21 Ron, I've got about a minute and a half left. I'm really
22 worried that you're going to come out of this thing neglected, so I just wanted
23 to say --

24 DR. BALLINGER: I'm a metallurgist --

1 (Simultaneous speaking.)

2 CHAIR HANSON: Commissioner Wright is assuring me
3 over here. But, look, I appreciated your presentation on Part 61; and, you
4 know, the 10,000-year standard in Part 61 was how I kind of got into the
5 nuclear space in the first place. And so I appreciated your comments about
6 the convergence between the committee and the staff on kind of an
7 uncertainty analysis, either explicit and/or implicit essentially, as part of, you
8 know, particularly as you get into a site-specific review for one of these things.

9 I think it reminded me, actually, as you were talking, it
10 reminded me about something I think Dave had said about being able to
11 account for that uncertainty in more, I think, in disposal space, either geologic
12 or engineered barriers for this kind of thing. So I wanted to thank you about
13 that, and I was very glad to see that because I reviewed one of the most, I
14 think the most recent letter on Part 61, and it mentioned that.

15 DR. BALLINGER: When I first started -- remember, I'm a
16 metallurgist. When I first started looking at the Part 61 rule and all the letters
17 that we wrote, and I said to myself, my goodness, these are so disjoint, what's
18 going on here? But then when I started reading and looking at transcripts
19 and things, then you start to see this pattern that I described that the
20 convergence, which I think is a key role of the ACRS actually, this
21 convergence between us and our notions of what needs to be done and the
22 staff's process and how they operate, and I came to appreciate that effort,
23 especially since I had to respond to the previous letter that had the uncertainty
24 concern in it. I had to figure out whether that was really what was going on,

1 and I concluded that that was correct.

2 CHAIR HANSON: Thank you again very much.
3 Commissioner Wright.

4 COMMISSIONER WRIGHT: Thank you, Chair. This is
5 very interesting. Again, Walt, I've been following how you've been kind of
6 putting things in place and I appreciate -- I like what I see, and I've appreciated
7 how I've heard you address things in a really more efficient and effective way
8 and that your focus is on that. So I think it's really good, and I look forward
9 to just kind of seeing how this plays out over time.

10 And to make good on my promise to the Chair, I'm going to
11 go right to Ron. So Part 61. I want to just ask you, you know, it includes
12 new waste streams, you talked about some of that, but did you also consider
13 the potential waste streams that fusion might create, or is this something that's
14 going to have to be looked at in the future when we have more experience
15 with fusion devices or something?

16 DR. BALLINGER: I think yes to both. To my knowledge,
17 we did not consider the fusion streams in our discussions up to this point, but
18 if you consider the process that's been developed, the site-specific analysis,
19 the classification, the intruder, I think that pretty much any new waste stream,
20 that's one of the whole points of doing a rule over to start with. I think that
21 any waste stream, including fusion-related waste streams, can be handled by
22 the rule. There better not be any true waste from a fusion machine, so they're
23 likely to just be metallic isotopes and things like that. And the ABC process
24 really defines, it's really defined by half-life, how long it takes before it's not

1 hazardous.

2 So, you know, Cobalt-60 has got a 5.2 year half-life. That's
3 going to be Class A waste because, after five half-lives, it's pretty much gone.
4 And I don't know all the half-lives, so don't pin me down. So I think, in answer
5 to that question, I think the rule, as it's proposed, will handle that.

6 COMMISSIONER WRIGHT: So I know you're aware but
7 last year, you know, the Commission issued our direction on fusion to address
8 near-term applicants. Have you determined whether ACRS is going to
9 continue to be involved with reviewing the rulemaking, that proposed
10 rulemaking, as well?

11 DR. BALLINGER: Are you referring to Part 61?

12 DR. PETTI: No, this is -- let me --

13 (Simultaneous speaking.)

14 DR. BALLINGER: I defer to my colleague, Dave Petti.

15 DR. PETTI: It's not officially part of the ACRS swim lane, if
16 you will, because of the regulation path they're taking. But what we've fed
17 back to the staff is, if they have questions, they would like an independent
18 look, obviously, here to help that. But officially, no.

19 COMMISSIONER WRIGHT: Okay. Thank you for that.
20 And, Dave, while I've got you, I had a question, I think, for you. So really
21 appreciated your discussion on topical reports and how you're looking at all
22 that. You mentioned during the review, I think, that ACRS is looking for, and
23 I think I can quote this correctly, looking for places where safety issues could
24 arise in submittals and were missed in staff review.

1 How do you go about determining whether an issue was
2 missed in staff review, rather than maybe appropriately reviewed by the staff
3 but perhaps not deemed a significant safety issue?

4 DR. PETTI: I think it, let's say historically, we tended to
5 look across the chapters in an integrated view, and the staff did it, let's say,
6 more chimneyed, each chapter, each expertise. And so there was a greater
7 chance for that because there are things that cross over.

8 But if you find something and the staff doesn't believe it, then
9 that's where you have to have the discussion, right, and go into more detail,
10 obviously, with the applicant, as well, to say is there an issue. We continually
11 challenge both the staff and the applicant.

12 I just recently, on Kairos, there was a potential safety issue.
13 The staff had recognized it, but it wasn't clear they recognized the depth of it.
14 I had references going back to 1955 that the staff didn't have, and I said I'd be
15 happy to provide them to you so that you can get a bigger -- you know, what I
16 do, with everything coming in, whether they have access to the whole plethora
17 of stuff that's out there, particularly older stuff, it's harder to get. But we all
18 have our networks and are able to get information, and so I was able to pass
19 some information on to them so that we could kind of get, you know, normalize
20 our understanding of the issue.

21 And with Kairos, they were really happy that we had seen
22 the issue the same as they because they were a little unsure themselves, and
23 so it was a really good technical exchange. So, you know, bringing it in the
24 open meeting, talking about it, because sometimes it's just not detailed in the

1 PSAR especially where, you know, in your mind, you've got this question on
2 this issue and, you know, we need an answer from the applicant. Yes, and
3 then, okay, then that's not an issue. You're doing it a little different because
4 that level of detail is not there.

5 COMMISSIONER WRIGHT: I don't really know where to
6 go with this question or who to, so, Walt, you or Dave, whatever, Greg. So
7 this whole nth-of-a-kind thing, I think we all agree that the Hermes, the Kairos
8 thing has been, you know, a very good process in the way they've gone about
9 it, and I think you have, you all have spoken to the order of things and how it's
10 happened and that others are looking, you know, they're there, paying
11 attention, right, but maybe not necessarily coming in and doing it the same
12 way.

13 Are you looking maybe to, I don't know, not a formalization,
14 so to speak, but are you all looking to maybe work with staff and make this
15 some kind of a potential template going forward with nth-of-a-kind applications
16 or, you know, is it just --

17 DR. PETTI: We know the staff is working on, you know,
18 some information for you. We've not been directly involved, but, you know,
19 it's probably worth a meeting of the minds to say, well, this is sort of how we're
20 thinking about it. When it's ready, I think it would be worth doing that.

21 COMMISSIONER WRIGHT: Okay. And, Walt, back to
22 you. On your reorganization, your restructuring of the committees, which I
23 think is great, do you plan to do some kind of effectiveness review on this thing
24 down the road or are there metrics you're going to be using to measure

1 whether or not this is really working the way it should be working?

2 DR. KIRCHNER: The answer is yes. Do I know all the
3 metrics? No. We've just started with this arrangement as of February.
4 There are several things that I would look at just from a managerial scheduling
5 perspective, and that is if we find that one subcommittee is carrying all the
6 load, then this isn't going to work. We need to avail ourselves of all the
7 members.

8 So right now it seems to be balanced, but I would look for
9 balance of workload as something that might make us reconsider the way
10 we're structured right now. That's kind of a metric, in my mind, to see.

11 And then the other metric is results, can we maintain the
12 schedule. And where, collectively, we're looking hard is we can see it's
13 coming later this year and early in the next calendar year. That's one reason
14 for doing the international meeting on a triennial basis. We would not be able
15 to support that come next March and the RIC. We've got too much on our
16 plate, we realize that, and our focus is on the most important things, which are
17 the licensing reviews for both the current fleet and the advanced reactors.

18 So I can't say we have firm metrics. Our old metrics just
19 will not serve us. Our old metric was number of letter reports. I went back
20 before this meeting and looked, and, on the NRC public website, in 1999, there
21 was something like 39 reports. I don't think we can replicate that, and I don't
22 think it's a good metric anymore. I think it's really going to be how can we
23 meet the schedule on the applications that are before of us.

24 I've had an opportunity in discussions with you, I am a

1 schedule-driven person. My background in project management is schedule,
2 schedule, schedule. If you're just worrying about cost, for example, that's not
3 the right metric. So I'm really focused on that. If we cannot support the
4 demands on the committee, if we become a roadblock, then, obviously, we
5 don't have the right structure.

6 Now, that's presuming that you support us continuing to put
7 solicitations out. If it came to it, I would come back to you and ask to go up
8 to the 15 members if that's what we need to do the job and support the
9 schedule. So that would be my approach. It's not a really direct answer to
10 your question --

11 COMMISSIONER WRIGHT: I like what I'm hearing. I just
12 like your continually reassessing and refreshing --

13 MR. HALNON: Just real quick, though. Every new
14 chairman that comes in on an annual basis has to review the subcommittee
15 structure and workload, and that's what caused this change. So it is a self-
16 assessment, if you will, every year.

17 DR. PETTI: And one more thing. You know, the CEPs,
18 these engagement plans that we're having with NRR staff, incredibly helpful.
19 I mean, you know, aligned schedules, and there's a lot of new people in NRR,
20 a lot new project managers, they're kind of new, and they all participate, you
21 know, in our closed administrative meeting because of the schedule
22 information, but they begin to see, oh, my project is running in parallel to this.
23 So it's sensitizing everybody, let's say, at the working level. I mean, I'm sure
24 NRR management understands those conflicts, but, sometimes, at the

1 working level, it doesn't happen. So this is a really nice communication
2 pathway to help sort of, from the top to the bottom, when they come to us
3 because we're kind of an integrating function in a sense.

4 COMMISSIONER WRIGHT: I have one final, if I could.
5 You've spoken about the international meeting, right. It's coming up. And I
6 had a question about, because there were a lot of different countries there,
7 were there any significant lessons learned or insights that you gained from
8 that meeting that might be applicable to identify any challenges or
9 improvements for ACRS going forward?

10 DR. KIRCHNER: Well, it was very apparent right off that
11 we share similar concerns, like SMR reviews and such. We also share
12 similar concerns that maybe are more longer-term issues to take up, like cliff-
13 edge effects, that seismic -- where's the cutoff. If you're going to a
14 probabilistic-based approach to licensing and a risk-informed-based, how do
15 you cut that off and is there a cliff edge there? That's an example.

16 Another one that occurred to me in preparing for this
17 meeting is, you know, the Japanese are in a situation where they're trying to
18 restart their fleet, and now we have one, two utilities who want to restart
19 reactors. So I'm thinking is there something there that the Japanese are
20 doing or have they discovered what are the issues they're confronting as they
21 try to restart these dormant plants, and that, I think, has some analogs to the
22 Palisades and other restart considerations that you're going to see.

23 COMMISSIONER WRIGHT: That could come to you, too,
24 maybe. Okay. Thank you so much.

1 CHAIR HANSON: Thank you, Commissioner Wright.
2 Well, with that, I want to thank you all for your presentations and all the
3 members of the committee for being here and the folks that have joined us
4 online, as well. And I want to thank my colleagues for their questions and the
5 good discussion this morning.

6 I hope everybody has a wonderful weekend. It's beautiful
7 here in Rockville today. And with that, we are adjourned. Thank you.

8 (Whereupon, the above-entitled matter went off the record
9 at 11:43 a.m.)