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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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PLANT LICENSE RENEWAL SUBCOMMITTEE

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THURSDAY

MARCH 23, 2017

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ROCKVILLE, MARYLAND

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The Subcommittee met at the Nuclear Regulatory Commission, Two White Flint North, Room T2B1, 11545 Rockville Pike, at 1:01 p.m., Gordon R. Skillman, Chairman, presiding.

COMMITTEE MEMBERS:

GORDON R. SKILLMAN, Chairman

RONALD G. BALLINGER, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, JR., Member

MICHAEL L. CORRADINI, Member

WALTER L. KIRCHNER, Member

JOSE MARCH-LEUBA, Member

DANA A. POWERS, Member

PETER RICCARDELLA, Member*

JOHN W. STETKAR, Member

MATTHEW W. SUNSERI, Member

DESIGNATED FEDERAL OFFICIAL:

KENT HOWARD

ALSO PRESENT:

PAUL AIKEN, Dominion

ERIC BLOCHER, Dominion

STEVEN BLOOM, DLR

BENNETT BRADY, NRR

DONALD BRITTNER, DLR

ANGELA BUFORD, NRR

SHERYL BERNHOFT, EPRI

CLIFF DOUTT, NRR

MICHAEL GALLAGHER, Exelon

JERUD HANSON, NEI

ALLEN HISER, DLR

BOB HOFFMAN, NRR

BILL HOLSTON, DLR

HEATHER JONES, NRR

BRYCE LEHMAN, DE

NANCY MARTINEZ, DLR

JIM MEDOFF, NRR

SEUNG MIN, NRR

JEFF POEHLER, DE

JASON REMER, NEI

BILLY ROGERS, DLR

MOHAMMAD SADOLLAH, NRR

ANDREA D. VEIL, Executive Director, ACRS

GEORGE WILSON, DLR

*Present via telephone

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

P R O C E E D I N G S

1:01 p.m.

CHAIRMAN SKILLMAN: Ladies and gentlemen, this meeting will come to order. Welcome to all of you.

This meeting is about subsequent life renewal, sometimes called life beyond 60. My name is Dick Skillman. I am Chairman of this meeting, and I am Chairman of the Plant License Renewal Subcommittee. In attendance are, by phone, Dr. Peter Riccardella; around the table, Dr. Dana Powers, Dr. Ron Ballinger, Matt Sunseri, John Stetkar, Dr. Walt Kirchner, Charlie Brown, Dr. Dennis Bley, Dr. Mike Corradini, and Dr. Jose March-Leuba. Colleagues, thank you for attending. Kent Howard is the ACRS Designated Federal Official.

The ACRS was established by statute and is governed by the Federal Advisory Committee Act. As such, this meeting is being conducted in accordance with provisions of FACA. That means that the committee can only speak through its published letter reports. Interest parties -- interested parties who wish to provide comments can contact our offices requesting time in accordance

with the Federal Register notice and make those comments and speak on time. That said, we also set aside ten minutes for spur-of-the-moment comments from members of the public who are in attendance or who are listening in to our meetings. Written comments are also welcome.

The ACRS section of the U.S. Nuclear Regulatory Commission public website provides our charter, our bylaws, our letter reports, and full transcripts of our full and subcommittee meetings, including all slides presented at the meetings. This afternoon, we will hear presentations from the Division of License Renewal and the Nuclear Energy Institute regarding subsequent life -- subsequent license renewal. This Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions as appropriate for deliberation by the Full Committee.

The rules for participation in today's meeting have been announced as part of the notice of this meeting previously published in the Federal Register. We have not received written comments or requests for time to make oral statements from members of the public regarding today's meeting. The entire meeting will be open to public

attendance.

There is a phone bridge line currently open. To preclude interruption of the meeting, the phone will be placed in a listen-in mode during the presentations and during committee discussion. A transcript of this meeting is being kept and will be made available, as stated in the Federal Register notice. Therefore, I ask that participants in this meeting please use the microphones located throughout the meeting room when addressing the Subcommittee.

The participants are also requested to please identify themselves and please speak with sufficient volume and clarity so that they can be readily heard. I also request that all meeting attendees please silence your electronic devices.

We will now proceed with the meeting, and I call upon George Wilson to begin the presentations. George?

MR. WILSON: Good afternoon. I am George Wilson, the Director of the Division of License Renewal in the Office of Nuclear Reactor Regulation. We appreciate the opportunity to come to you today. Our goal is to update you on our activities and the changes that we have made to the

draft subsequent license renewal guidance documents, which are the Generic Aging Lessons Learned for Subsequent License Renewal, or GALL-SLR, and the Standard Review Plan for the Review of Subsequent License Renewal, SRP-SLR, and also to brief you on an effort within the division to evaluate the overall process for subsequent license renewal and to develop recommendations of how the process could be made more efficient and more effective.

Our goal is to publish the guidance documents by the middle of July for the upcoming letters of intent that we have that we plan on receiving some subsequent license renewal applications in Fiscal Year '18. I will now turn it over to Steve Bloom for his presentation.

MR. BLOOM: Good afternoon, and thank you, George. Members of ACRS Subcommittee for Plant License Renewal, my name is Steve Bloom. I am the Branch Chief in charge of the Subsequent Renewal Guidance and Operations Branch in the Division of License Renewal in the Office of Nuclear Reactor Regulation.

I would like to first give a quick recap of our project. You may recall that we met

with this Subcommittee in November of 2015 to brief you on the status of research on the major technical issues or concerns during the period of operation from 60 to 80 years. Staff from the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research, as well as representatives from the Department of Energy, Electrical Power Institute, and NEI met with this Subcommittee to discuss current and future research activities in the major technical areas.

As planned, we again met with you in February 2016 to discuss the most significant changes in the draft GALL-SLR report and SRP-SLR from the documents which were from the initial license renewal. We issued these documents for -- as draft for public comment in December of 2015. We were in the public period -- comment period at that time. During that period, we received over 300 pages of comments, which had 500 comments in total. We therefore reconvened our expert panels and have dispositioned all of our comments.

We held nine public meetings during this period to inform interested stakeholders on those changes and the technical basis for these changes and other comments that we received.

During today's meeting, we will focus on the significant changes we made to those documents following the public comment period.

We will begin our discussion with a little background on the principles of license renewal, how these documents maintain the principles and Commission's direction to the staff. We will discuss our schedule and future plans. We will then talk about some further generic changes that we made to our documents and then discuss significant changes in the four major technical issues for subsequent license renewal.

As George stated, we plan on issuing the documents in July of 2017. As he also stated, we have some licensees who have already told us that they are going to come in during the letters of intent. With that, I would like to introduce Mike Gallagher, who is the Vice President of License Renewal, Exelon Utilities, and Paul Aiken, who is the Manager for Second License Renewal for Dominion, to give a quick, quick update on the status of their -- of getting ready for their applications.

MR. GALLAGHER: Okay. Thanks, Steve. Yes, I am Mike Gallagher. I am Vice President of

License Renewal and Decommissioning at Exelon, and as Steve said, we have been -- as the industry, we have been working on a plan since 2009 to be ready for subsequent license renewal, and Exelon and Dominion had stepped up to have lead plants in that area. And so we are on track, and we appreciate the NRC, you know, being on track on getting the guidance out because it was always envisioned that the guidance would be coming out in the middle of 2017, so we really do appreciate that.

We think we are well-positioned to do second license renewal, or subsequent license renewal, because, you know, as far as Exelon goes, we have 22 of our 23 units are in -- have renewed licenses, so we do -- we feel we have a lot of experience in doing license renewal, and the -- and the second -- subsequent license renewal is really a continuation of the original process.

We have 13 units in the period of extended operations, we have a lot of aging management experience that we're building off of, and we have participated in the EPRI long-term operation committee and the NEI initiatives. As Steve said, there was extensive commenting, and it wasn't -- extensive commenting on a high-quality

document is what I would say is what it was because we had a lot of industry experience, a lot of staff experience, and I think we -- we were able to get some good commenting process in, and I think there was a good exchange to the whole process, and I thought that went rather well, so that was a reflection of I think a high-quality initial product that I think is -- is going to end up as a good, high-quality product.

And, you know, with that, we think we do understand the -- the expectations for license renewal and second renewal, and we are looking forward to submitting an application for Peach Bottom in the third quarter of 2018, which is -- was our original plan, and we're on track to do that. We are in process on our project, and we will be submitting in the third quarter of 2018.

And one thing I -- well, let me just end it there because I am going too long, so -- .

MR. AIKEN: Thank you, Mike.

MR. GALLAGHER: Paul?

MR. AIKEN: Good afternoon. I am Paul Aiken from Dominion. Can you hear me okay? Yes, okay.

I appreciate the opportunity to speak

in front of the distinguished panel here. Just to amplify on Mike and Steve and George's comments, we have been working long and hard for the last couple of years with the staff, and a lot of that is a testament to the folks up at the front of the room and the folks in the audience here. We have been meeting, several public meetings, and we'll discuss areas when we get into our presentation later on, but it is that transparency that allowed us to get us to where we are today, and it has been that transparency that has given us the building blocks to move forward.

So with every issuance of this document, believe me, Mike and I and our organizations are turning on it and we're working to it, so we want to get the best document we can. It has been a high-quality document. We have had comments. We have had healthy discussions and debates, and I think we have come to a common resolution on -- on most of the issues, so we look forward to proceeding. Surry is on track. Our project team has been fully staffed since 2015, so we have actively been working on the project, and we are on schedule and looking forward to the July issuance, and we think with this final round, I

think we will be where we need to be. So --

CHAIRMAN SKILLMAN: Paul, if I could, when do you anticipate submitting your subsequent life renewal application for Surry?

MR. AIKEN: Yes, our letter of intent was for the first quarter of '19.

CHAIRMAN SKILLMAN: First quarter of '19?

MR. AIKEN: Yes sir.

CHAIRMAN SKILLMAN: Yes sir, thank you.

MR. AIKEN: Okay, fair enough.

CHAIRMAN SKILLMAN: Thank you.

MR. BLOOM: Thank you, Mike and Paul. As they stated, they are already generating their documents, but they are using the latest draft document that we gave them, and so therefore, they both are anticipating the final version of this document as soon as we can get it.

Next, I would like to turn it over to Bennett Brady, who will now discuss the NRC's activities related to subsequent license renewal.

MS. BRADY: Good afternoon. My name is Bennett Brady.

CHAIRMAN SKILLMAN: Microphone, please? Little green light, please? Okay, just pull it a

little closer to you please, Bennett.

(Pause.)

MS. BRADY: Is that better?

CHAIRMAN SKILLMAN: There you go. Thank you.

MS. BRADY: Yes, thank you.

CHAIRMAN SKILLMAN: Thank you, Bennett.

MS. BRADY: Before we get into our discussion of the technical issues, I would just like to take a few minutes to talk about the License Renewal Rule, the two principles of license renewal, and how our document fits into this background.

In 1991, the Commission established the License Renewal Rule. They again reviewed it in 1995 and reaffirmed the License Renewal Rule. Slide 3, please.

They -- they also established two -- two -- the two principles of license renewal: first, the regulatory process ensures that the current licensing basis provides and maintains an acceptable level of safety. The only possible exception to this is the effects of aging degradation, and that's what we're about. The second principle was each plant's licensing basis

must be maintained to the extent and in the same manner as it was for the first four years of the operating period.

Our subsequent license renewal thus is focusing on the aging management differences that will be in the period from 60 to 80. Next slide, please.

MEMBER CORRADINI: You may want to keep it off the speaker.

MS. BRADY: Thank you.

MEMBER CORRADINI: No problem.

MS. BRADY: For this period, we have developed the two documents that you have heard about: the Generic Aging Lessons Learned for Subsequent License Renewal, the GALL-SLR report, and NUREG-2191. This document provides an evaluation of the various activities and programs for maintaining at adequate aging control. It also establishes aging management programs that the NRC feels acceptable for maintaining safety during the 60 to 80 period. Of course, plants may choose to use a plant-specific program that they have in place of these, and our staff is certainly capable of reviewing plant-specific programs.

We also have the Standard Review Plan

for Review of Subsequent License Renewal Applications for Nuclear Power Plants, which we call the SRP-SLR. That provides guidance to the staff on reviewing applications for subsequent license renewal to ensure their quality and uniformity. It also provides guidance for reviewing plant-specific programs.

As Steve mentioned, in our first meeting -- second meeting with you in last February, we talked about the changes from the GALL to the draft guidance documents. Today, we are mainly focusing on the changes from the draft that we have presented to the final document that we gave you. Of course, we can go back and talk about any of the changes that you would like. Next slide, please.

These are the four technical issues that we have identified as being the most significant for subsequent license renewal. They were first laid out in two international meetings on long-term operation back in 2008 and 2011. We have gone through our review, and these -- still maintain that these are the four major issues for subsequent license renewal. They will not be completely resolved by the time the first

applications come in, and this will mean that the first applicants will have to do a little more in developing their own plant-specific programs to address these issues. That will not prevent us from continuing. We have a lot of experience in reviewing plant-specific applications, and we are ready to review the applications today, if need be. Next slide, please.

These are our next steps of subsequent license renewal. That will be a Full Committee meeting of the ACRS on April 6th, a Commission meeting on April the 25th to talk about our preparations for subsequent license renewal, and as we have mentioned several times, mid-July is when we plan to issue the two documents. There will also be two NUREGs that we will be issuing at the end of the year, one that will provide the technical basis with all the changes we have made. The second NUREG will be on the public comments. It will provide all the comments verbatim, telling also our resolution of these comments and the technical basis for these comments.

And you have already heard about the schedule for Peach Bottom and Surry. They seem to be doing well. They have been telling us these

dates since the very beginning.

CHAIRMAN SKILLMAN: Bennett, please say more about the April 26th Commission meeting.

MS. BRADY: It will be --

MR. BLOOM: Dick, I am sorry, what do you specifically want to know about it?

CHAIRMAN SKILLMAN: Is the sole topic of that meeting subsequent life renewal?

MR. BLOOM: Yes.

MS. BRADY: Yes.

MR. BLOOM: Yes sir. So we are going to have ourselves talk about the documents themselves. The Office of Research will be talking about the research related to this, and actually, Mike and -- and Paul will actually be there to talk about their applications, along with Sherry and Rich Reister to talk about research that is going on in the industry as a collaborate effort.

CHAIRMAN SKILLMAN: Is there any expectation that there will be an ACRS product prior to that meeting, a letter report from the ACRS?

MR. BLOOM: I was assuming the answer would be yes. I would like to get -- say that I would like that letter before that meeting, but

it's not a necessity.

CHAIRMAN SKILLMAN: I am just making sure we are clear on what we're doing here, what we --

MR. BLOOM: Right.

CHAIRMAN SKILLMAN: -- would be doing --

MR. BLOOM: I mean, I would like the letter --

CHAIRMAN SKILLMAN: -- for the Full Committee --

MR. BLOOM: -- before --

CHAIRMAN SKILLMAN: -- meeting.

MR. BLOOM: -- then, after our April 6th Full Committee meeting, but if -- if it can't be done, then I understand --

CHAIRMAN SKILLMAN: Okay.

MR. BLOOM: -- but I would like one.

CHAIRMAN SKILLMAN: Just trying to make sure I am fully aware of what is going on. Thank you.

MR. BLOOM: Yes sir.

MS. BRADY: I think you will find that the ACRS Full Committee meeting will be very much the same topics as the Commission meeting.

CHAIRMAN SKILLMAN: Thank you, Bennett.

MS. BRADY: Yes.

CHAIRMAN SKILLMAN: Okay. Please proceed.

MS. BRADY: That completes my presentation. Thank you. Are there any questions?

MR. BLOOM: Now I would like to start the technical kind of part of our discussion. Bill Holston will start off with a discussion on some generic changes and burden reductions which are in the documents, and then the other three panel members, who will introduce themselves when they get to them, will talk about mechanical AMPs that have been revised based on -- since the -- the draft GALL that we submitted to you back in February.

MR. HOLSTON: Okay. This is Bill Holston. I am a technical reviewer in Division of License Renewal. Steve already adequately introduced what I will be talking about here, so we can focus on the first slide, slide 8.

As we were reviewing across several of the aging management programs trying to drive to consistency across those where that was possible, we noted that there was sometimes a different

approach with protecting the extent of degradation discovered during inspections, so we developed common wording for the appropriate aging management programs. Some programs already had built-in projections. For instance, Section 11, if you detect -- have an indication, evaluate it to the flaw evaluation, that factors that in within the ASME code itself.

So if we -- depending upon whether the program is a periodic program or a one-time program, we built into the recommendations that the degradation was projected to the next inspection or the end of the subsequent period of extended operation. The changes are focused on inspection results which are quantifiable versus inconsequential degradation, so some of the walkdowns for example, if you're doing for in accordance with external surfaces program where the system engineer walkdown, you see some corrosion on a pipe pretty much to the point where you take your glove and wiped it off, it would be gone, we're not going to quantify that.

But however, instead, if you're doing volumetric wall thickness measurements, those can certainly be quantified. If you're doing masonry

wall observations and you saw some minor cracking in your last inspection, you go back and inspect again, it is maybe an inch longer, you can continue to project those. That is the type of inspection results that we're talking about projecting.

And the acceptance criteria for that will be that it needs to meet the intended function for either the remainder of the period of extended operation, if it's one-time inspection, or until the next inspection interval in a periodic program. Any questions on slide 8?

(No audible response.)

MR. HOLSTON: Okay. Slide 9: we went through all of the UFSAR supplement descriptions to revise them to cover key aspects of the aging management programs. We noticed that some of those supplements had the -- had that rigor in them, but some of the other ones didn't, and so those were added. So if you can picture a three- or four-page AMP, you're not going to put three or four pages in that FSAR summary, but you want to pick out the key characteristics of that program.

So using buried pipe, one of the ones I work with quite a bit, we want licensees to have in their current licensing basis that they're going to

do cathodic protection monitoring annually, they are going to inspect their backfill, they are going to inspect the coatings, and that their inspections will be informed based upon the conditions that they encounter.

Timing of inspections is -- was built into the FSAR supplements, and another example is citing industry consensus documents, so a key aspect of the fire water system program is tests and inspections that are conducted in accordance with NFPA, National Fire Protection Association, Standard 25, which is for water-filled systems, so that is cited now in the FSAR supplement.

Closure bolting inspections for air-filled and gas-filled systems, probably about four, maybe four, four-and-a-half years ago, we recognized and started addressing submerged bolting via requests for additional applications -- or information with the applicants. Submerged bolting is difficult to detect leakage, and that was the whole basis of the GALL reporting on bolting integrity, and so through working with several plants over the RAI process, we arrived at some acceptable recommendations.

Well, when we were putting that into

the subsequent license renewal guidance document, we recognized we hadn't ever addressed air-filled or gas-filled systems. Again, the basis of the program is looking for leakage. You are not, you know, necessarily going to see air- or gas-filled leakage. Sometimes you might. If you've got a diesel exhaust pipe, certainly if you have some loss of pre-load or if you have some degradation of the bolting that is causing some separation, you will see soot, right, but instrument air system, you might be able to hear if you have a leak, but you might not.

So we added specific recommendations for that, provided about six options, examples for possibly thermography if there's a difference between the air and the environment. Soap bubble testing, sometimes those systems are dead-ended. In other words, you have an accumulator here and you have a valve over here, a check valve in between. You could monitor the degradation of the pressure in that piping system to tell you what is going on with the bolting at that flange, whether it is leaking.

And then we developed common wording for inspection parameters. This one was actually

based upon some operating experience. We were working with a regional inspection team that had observed a couple of inspections. The pre-job brief was wholly lacking in what we would call inspection parameters. Nobody talked about lighting. Nobody talked about distance, what angle could you be looking at. These are not code inspections in many of the AMPs, but, you know, you still have to have adequate lighting to see. You can't be, you know, 50 feet away and maybe detect cracking in a -- in a pipe.

So that -- we built those common wording into all the AMPs. Of course, where you had ASME Section 11 AMPs, we didn't need to build that in. Any questions on slide 8?

PARTICIPANT: That was 9, though.

MR. HOLSTON: Oh, it was what?

PARTICIPANT: Number 9.

MR. HOLSTON: I am sorry.

MEMBER BLEY: Is there kind of common agreement on that last one you talked about?

MR. HOLSTON: The last --

MEMBER BLEY: The common wording?

MR. HOLSTON: The common wording for inspection parameters?

MEMBER BLEY: Yes, did you get any --

(Simultaneous speaking.)

MEMBER BLEY: -- feedback from licensees and others about that?

MR. HOLSTON: No, I don't recall getting any comments on that, and we had that in the -- in the -- the edition that was put out in December --

MEMBER BLEY: Right.

MR. HOLSTON: -- yes sir.

MEMBER BLEY: Okay.

MR. HOLSTON: Sorry. I just couldn't read. That was slide 9 from here. Yes, could you go to 10? Yes, thank you.

All right. Some of you are probably well aware, we added a lot of recommendations to the -- the GALL report, but we were also able to identify some burden reductions.

So the first one I am going to talk about is we went through six recent license renewal applications, so you would have aging management review line items that are consistent with the GALL, and it is very easy for a licensee to write those up. It is very easy for the staff to review those. If you're -- if you have a material

environment aging effect and recommended program, you're aligning with that. The reviews go pretty quickly.

However, if you have a unique material or unique environment, those take a lot more time for the licensee to develop those line items. It takes us longer to evaluate them, and then each of those individual line items have to be written up in the SER, so you're talking quite a bit of effort to do that.

So we identified about 100 line items. Now, when I say 100 line items, that is not 100 material environment aging effect program combinations, but some were around about 40 or so of what we called notes F through J. So generic notes A through D are for -- those are the consistent ones. Those, F through J, are, you know, well, the material was not in the GALL, or the environment was not in the GALL, or the aging effect was not in GALL, so we built those into the GALL, and it will reduce our review time and of course the licensee's time in putting the GALL report together.

CHAIRMAN SKILLMAN: Were those additions generally agreed to by licensees? These

came out of prior license renewal apps, and so these were, if you will, consensus findings for applicants, is that --

MR. HOLSTON: Yes sir, yes, yes. What -- what we did was we reviewed the license renewal applications. We didn't take one-offs. If the client had a unique material, okay, that is fine, but where there were two or more, we reviewed the license renewal application, went to the safety evaluation report to see how we addressed it to ensure that we're in alignment with what -- you know, because the license renewal application might have had a, well, there is no aging effect and no recommended AMP, and --

CHAIRMAN SKILLMAN: Yes.

MR. HOLSTON: -- well, wait a second, this is an elastomer and it's in your containment, I think there is an aging effect, and so, you know, we went from the SER final staff output to build the tables from those.

CHAIRMAN SKILLMAN: Okay. Thank you.

MR. HOLSTON: Yes.

We eliminated a significant number of line items that cited a plant-specific AMP, so the vast majority of the line items in the GALL report

cite a particular AMP or two AMPs, but we did have several that were cited of plant-specific AMPs, so licensee, you figure out what it is, and then we'll review it, and if we're happy with it, then everything is fine. And we got an -- I believe this is an informal comment from the industry, well, can you look at those plant-specific AMPs, identify when you really have in your mind what you want? And again, as you asked, Mr. Skillman, built out with what goes in the safety evaluation reports, and let's, you know, cover those.

So I will give you an example. We had for the regenerative heat exchanger, exchanger tubing. That was a plant-specific AMP. But, you know, for the plants that had to address that, what did they do? Well, they did radiation monitoring of the component cooling water side and looked for temperature deltas, right? What program could you build that into? You easily build that into the closed cycle cooling water program.

CHAIRMAN SKILLMAN: Wait a minute. You had radiation monitors, and you were doing temperature monitoring?

MR. HOLSTON: Well, both.

CHAIRMAN SKILLMAN: Okay.

MEMBER BALLINGER: Yes, people, yes, they --

CHAIRMAN SKILLMAN: Because --

MR. HOLSTON: -- radiation --

CHAIRMAN SKILLMAN: -- radiation --

MR. HOLSTON: -- monitoring, they did temperature monitoring. Obviously --

CHAIRMAN SKILLMAN: Okay.

MR. HOLSTON: -- the radiation monitoring is probably more sensitive, right?

CHAIRMAN SKILLMAN: Just making sure we got the right --

MR. HOLSTON: Yes, yes --

CHAIRMAN SKILLMAN: -- discussion item --

MR. HOLSTON: Yes --

CHAIRMAN SKILLMAN: -- here.

MR. HOLSTON: -- yes, that is --

CHAIRMAN SKILLMAN: Thank you.

MR. HOLSTON: -- that is --

CHAIRMAN SKILLMAN: Okay.

MR. HOLSTON: Yes.

CHAIRMAN SKILLMAN: Okay.

MR. HOLSTON: And so we revised that line item now to cite the AMP 21-A, which is the

closed cycle cooling program, and we have the guidance in there. There is no second-guessing.

Also, when we have plant-specific AMPs, the -- the staff had to write up each of those aging management review line items specifically talking about the plant-specific AMP. Now there is a consistent AMP in there, it flows through much quicker.

CHAIRMAN SKILLMAN: Okay.

MR. HOLSTON: We reviewed -- the third bullet, we reviewed a good deal of industry and of course outside-the-nuclear-industry information on copper alloys and determined that exposure to air, concrete, there were no aging effects. And you might say, well, that is pretty obvious, Bill. We see a lot of copper around out there. We see the green patina, you know, and, you know, it is fine. But that is now documented in the GALL. There are no aging effects there.

In contrast, though, we did find that copper alloys exposed to well water -- well water potable, which is principally municipal water supplies, wastewater and soil and underground, would be subject to general corrosion. The advantage though of taking general corrosion out of

other environments such as treated water, close cooling water cycle, fuel, lube oil, was that a lot of times, these are engaged, the copper tubings -- or copper alloys associated with heat exchanger tubing. How are you going to tell general corrosion except to do eddy current testing, right?

Well, by taking away the general corrosion as a mechanism for those other environments, that then leaves you with just cracking -- or crevice and pitting, which you can observe with a borescope instead of doing an eddy current test.

MEMBER BALLINGER: But M33 still has leaching in it, selective leaching is still --

MR. HOLSTON: Absolutely, yes, selective leaching for the copper alloy greater than 15 percent or greater percent -- 8 percent aluminum, that is still selective leaching inspections, yes sir.

MEMBER BALLINGER: Okay.

MR. HOLSTON: And then the last one we did was we eliminated the potential one-time inspection for fuel or piping materials constructed as the same material as a fuel tank. That's a lot of words, but if you go into the aging management

program for the fuel system, the tanks are required to be inspected every ten years, so if you have a tank that is not internally coated and you have a whole lot of piping that is not internally coated, then there is no need to be doing one-time inspections for the piping if every ten years you are looking at the entire inside surfaces of the fuel storage tank, and so we changed -- changed that.

So are there any questions on that slide?

MEMBER KIRCHNER: Yes Bill. So you looked at six recent LRAs and you're doing burden reduction. Did anything pop out that wasn't in the current AMP programs?

MR. HOLSTON: No. We --

MEMBER KIRCHNER: I mean, unforeseen or unexpected or --

MR. HOLSTON: No. We -- no. We -- we didn't see -- I mean, we saw those -- the addition of those 100 line items, and like I am saying, it is about maybe 40, you know, material environment aging effect combinations, but we didn't see anything unusual. We have been pretty much evaluating, even amongst some plants where they are

pretty common materials, we just didn't have them in GALL Rev. 2, or materials in environments.

MEMBER KIRCHNER: Thank you.

MEMBER BALLINGER: Back to the one-time inspection for the fuel oil tanks and the like: has there been any operating experience where they have had failures, leaks in the tanks in particular, earlier than ten years? I mean, my experience is that sometimes, you get water in there that you don't know, and there's sand or something, and underneath that, you get accelerated corrosion, and it doesn't take ten years, it takes a heck of a lot longer than that.

MR. HOLSTON: Well yes --

MEMBER BALLINGER: A lot shorter than that --

MR. HOLSTON: Sorry.

MEMBER BALLINGER: -- excuse me.

MR. HOLSTON: Yes. No, we -- from looking at the operating experience at the plants, we have not seen any through-walls in the fuel tanks, so the -- the inspection interval of every ten years is -- seems to me pretty appropriate. And also recognize that the plants that are going into subsequent license renewal would have had this

as a requirement in their first period of extended operations, so they are building up a pretty good monitoring and trending history.

MEMBER BALLINGER: Thank you.

MR. HOLSTON: Yes.

MEMBER BALLINGER: Thank you.

MR. HOLSTON: Okay. I guess we're ready for slide 11?

So we looked at the number of buried pipe inspections that are being conducted, and over time, we had had the opportunity to review somewhere on the order of 90 to 100 individual buried piping inspections. We have had folks attending the EPRI buried pipe conference, either myself or another individual, Brian Alec (phonetic), and so of course we saw a lot of industry operating experience in regard to buried piping.

And in contrast to 2009, where the picture did not look very good, the -- the facts of the inspections were we weren't seeing any threat to a loss of intended function. We were seeing, you know, minor coating damage, as you might expect to see, but even where we saw minor coating damage, there were -- there were no cases where there was

significant enough -- well, there was one case, but -- and I will talk about that separately -- but, you know, there was no -- except for that one case, there was no real through-wall. And in all cases, even where we had the one through-wall, which is at a plant up in northeast, there was no loss of intended function, and that was in the auxiliary feedwater system, they actually, you know, it was very well-documented the analyses they did and all that.

So we recognized that the number of inspections that we were recommending in the GALL report were -- were probably excessive for the state of the industry of what we had seen.

So there's four categories of inspection, categories you can get yourself into in the buried pipe program, and the first category is your cathodic protection system is -- you have an installed cathodic protection system. It is meeting the performance goals. The performance goals are it is online 85 percent of the time and that 80 percent of the points when you do your annual cathodic protection surveys are meeting the acceptance criteria of -850 millivolts or some of the other criteria we developed since then.

And for that category, you do one inspection every ten years. We didn't change that. That seems reasonable. It's a check and adjust just to make sure.

We had a second category which is when you can prove you don't need cathodic protection. We have not had a plant yet that has gone for that category. It is probably a pretty difficult row to hoe, but it is there, but I won't cover that any further.

The third category is you have cathodic protection installed, but it is either less than 85 percent of the time online over the last inspection interval or it is not meeting the 80 percent, and so we call that cathodic protection not meeting performance goals. We used to recommend 29 inspections over the 30-year period. We reduced that to nine. Where do we get that nine number? Well, NEI 09-14 was a buried and underground piping initiative. We have talked about that at other times in ACRS, but it required the entire industry to upgrade their buried pipe programs.

One thing they did in there was they -- they had a flow chart that said if you have done, you know, indirect inspections and the results are

such, then you would do X number of inspections, and the highest number it really got to was three. They allowed guided wave inspections to qualify to get those numbers down below. We are not comfortable yet with the guided wave. We have been down to EPRI several times. We appreciate the value of guided wave in telling you where possibly to look, but not to tell you the pipe is going to meet structural integrity requirements. So we used that three value, three -- three every, you know, every ten years, basically aligned ourselves with what 09-14 was suggesting at the maximum.

So the next category was the cathodic protection was not meeting performance goals --

CHAIRMAN SKILLMAN: So -- so Bill, before --

MR. HOLSTON: Oh --

CHAIRMAN SKILLMAN: -- you go --

MR. HOLSTON: -- yes sir?

CHAIRMAN SKILLMAN: -- on --

MR. HOLSTON: Yes?

CHAIRMAN SKILLMAN: -- how does three every ten years relate to the nine?

MR. HOLSTON: Well, the three every ten years, then there's -- so it would be three times

the three because we -- we start those inspections in the 50th to 60th year. So you've got a whole lot of GALL Rev. 1 and GALL Rev. 0 plants that basically had one inspection in their whole period of extended operation, and so they will come along in the 50th to 60th year, even though they are not going into the subsequent period of extended operation, and have to do those three inspections.

CHAIRMAN SKILLMAN: Okay, then, the three 60 to 70, and then three 70 to 80?

MR. HOLSTON: Yes sir.

CHAIRMAN SKILLMAN: I understand now. Thank you.

MR. HOLSTON: Okay. Yes.

CHAIRMAN SKILLMAN: Okay.

MR. HOLSTON: Okay.

CHAIRMAN SKILLMAN: Thanks.

MR. HOLSTON: So the next category was likewise cathodic protection not meeting performance goals, but in this case, you have adverse operating experience or soil conditions are corrosive, and we originally had 60 inspections over that 30-year period, and we shifted those to 18 inspections, in other words, six in each inspection interval.

We will continue to monitor operating experience. This is a significant part of our AMP audits when we go out and look at those. We continue to attend EPRI to look at -- keep an eye on the entire industry and what is going on with buried piping. If we have to adjust them back upwards again, we will adjust them back upwards again, but these seem to be those that will provide reasonable assurance that intended functions be met.

Since that was a rather long one, does anybody have any comments or questions on that one before I shift to the next one, next bullet?

(No audible response.)

MR. HOLSTON: Okay. And then since -- when we first issued back in December and we briefed you all, we were -- had added aluminum and stainless steel cracking to our external surfaces program and our above-ground tanks program, and at the time we did, we said that the licensees would have to do surface examinations, or they could do a visual examination if they performed stress calculations that would demonstrate, well, I can see this big of a crack, and if I see this, by the time of the next inspection interval, it is not

going to grow big enough to cause a loss of intended function. And after, we received an industry comment on that and we looked more closely at the VT-1 inspections mandated by ASME Section 11 and added that as an additional option to those surface exams, or the visual supported by stress calculated.

With that, if anybody doesn't have any other questions, I will turn it over to Jim.

MEMBER KIRCHNER: So Bill, may I ask --

MR. HOLSTON: Yes sir, yes.

MEMBER KIRCHNER: -- more a -- I will call it an intuitive engineering question? The recommended frequency or intervals for inspections, say you have a piece of equipment. Over the course of its lifetime, you expect it to be used in some way, so there is some -- and there is usually adequate margin. But in general, you expect a diminished state from initial installation or after it had been repaired or whatever. So are you still comfortable with the frequency that you're doing, or does the aging beg the question of more frequent or periodic inspections, especially when you go from 60 out to 80?

MR. HOLSTON: Well, we built in a

couple --

MEMBER KIRCHNER: That's a philosophical --

MR. HOLSTON: Right, yes. First off, we are comfortable. I mean, not everything is ten-year based. There's five-year based inspections, there's refueling-outage-based inspections. We base those upon the potential for that degradation to occur more rapidly, and we built into -- if you find an adverse inspection result and you -- you haven't opted to replace all of that material that is exposed to that environment aging effect, then the -- the -- each of the programs now has an increased inspection.

So for example, let's say you go out and you have done a wall thickness measurement in accordance with our one-time inspection program, and out of the 25 wall thickness measurements you do, one of them, when you project it out, would have challenged the intended function of the system. Then you have to do five more wall thickness measurements. You know, we basically say you go in a corrective action program, you determine how many, but it can't be less than five more.

So we are -- and then if you find one more in that five more, then you have to do an extent of cause, an extent of condition. If you're familiar with Appendix B, corrective action, that is basically cause analysis territory, right, to determine how many more you've got to look at.

So we believe coupled with the frequency of the inspections, the number of inspections, then those follow-up corrective action provisions, we are pretty comfortable, anything -- you are going to know what is going on at your plant, and you're going to take action with Appendix B.

MEMBER KIRCHNER: Thank you.

MR. HOLSTON: Yes.

MEMBER SUNSERI: So I had one follow-up question as well: you mentioned that you're working with the industry on the guide wave technology. You haven't accepted it as a -- or can't remember exactly what you said, but what -- do you all know what it is going to take to get comfortable with using that technology? I mean, what --

MR. HOLSTON: We don't --

MEMBER SUNSERI: -- information or data or research you're going to need?

MR. HOLSTON: Yes, we don't know -- we don't know yet, and I apologize for giving you an answer of that nature. We have -- we have been down -- it has been about two years since we've been down at EPRI. We went down at EPRI, I went down, some other folks, but two people are very heavy in ultrasonic examination techniques, and because of the -- you can have changing coating conditions, you can have changing compression of backfill or changes of backfill that can kind of fool you, and we're not convinced that it will give you a quantifiable value that will tell you, you know, when you project your wall loss, that kind of thing, it just -- it isn't there yet.

It is excellent for telling you where to look, and -- but it is not -- it is not there, and it is probably -- we're probably about due time to go down there and see what EPRI has developed further, and, you know, see if they have quantified it a bit better.

MEMBER SUNSERI: Okay. So what I am hearing you say, it's like there may be a change in state in where the pipe is, in the geometry or something, and --

MR. HOLSTON: Yes sir.

MEMBER SUNSERI: But I mean so that kind of becomes then a question of placement of the collars for, you know, extending your links, right? And if you get that right, I mean, are you good in the interval, or -- or are you just not happy with setting the right interval, or --

MR. HOLSTON: Well, yeah, and a lot of plants put permanent collars in. They do the effort the dig up, and then they put the permanent collars in so they can take the readings. We are just -- we are not -- we are not comfortable with that range yet.

MEMBER SUNSERI: Okay. The only reason I am kind of pressing it is it's a very efficient methodology, so it would be a benefit. All right. Thank you.

MR. HOLSTON: Yes.

MEMBER BLEY: Just to follow on that, because I haven't followed this in any detail, is this widely used in the field now, and are we getting reports back so that you can develop some confidence here, or not a lot of confidence?

MR. HOLSTON: Well, the -- yes, there are more folks using it. As a matter of fact, folks are using it for above-ground piping also.

MEMBER BLEY: Yes.

MR. HOLSTON: There is one Exelon plant that is using it with pretty good results in above-ground. They quantify it. They can then go zero in to look.

But again, our bottom line comes down to what we're interested in is either if the coating is gone, how much wall loss have you lost? Project that, because, you know, buried pipe is not like above-ground pipe that your operators can see every day, right? And we just don't believe that the guided wave is there yet to do that. We're not going to give up on it. I agree that, you know, hey, that's a lot easier technique than digging up piping. You dig up, put a collar on, you can look at 50, 100 feet of pipe, and -- but we are just not there.

MEMBER RICCARDELLA: Yes, this is Pete from Denver. I think that the -- you know, the experience has shown that the -- the guided wave attenuates much more rapidly in buried piping than it does in above-ground --

MR. HOLSTON: Oh --

MEMBER RICCARDELLA: -- piping.

MR. HOLSTON: -- yes, it does, yes.

CHAIRMAN SKILLMAN: Please proceed.

MR. HOLSTON: All right. I'll turn it over to Jim Medoff.

MR. MEDOFF: Okay. Slide show up, please?

Hi. I am Jim Medoff. I was one of the few technical leads for the -- the AMPs, the AMRs, the TLAs for the reactor coolant system. I am going to talk about changes to 4 AMPs, and I am going to start off with two of them for the boilers. If we can go to slide 13 please?

The prior reports, GALL reports, inclusive through Gall Revision 2 had -- from their start had a couple of AMPs for BWR feedwater nozzles and BWR CRD return line nozzles. Those are AMPs XI.M5 and XI.M6. Both of these AMPs were similar in that they used some augmented inspection guidelines in NUREG-0619 to recommend aging management protocols for looking for cracks in the nozzles that could be induced by cyclical loading and fatigue. The NUREG methodology has basically augmented the code requirements for performing the volumetric examinations on these components by maybe tweaking the frequency or tweaking the coverage requirements for the inspections.

When we looked at the update for the GALL report, we initially in the draft document got rid of the XI.M6 because we felt that the code requirements, meaning not only those in ASME Section 11 but also the performance demonstration requirements in 10 CFR 50.55(a), would be adequate for these nozzles. We received a perspective and some comments back from the industry that we could also get rid of AMP XI.M5, which is the one for the feedwater nozzles, as well, because it is based on the same NUREG reports.

We basically consulted with the Division of Engineering to talk about the PDI, the performance demonstration initiative, requirements to see whether they were adequate when coupled to the ASME Section 11 code exams, and the consensus was that they were, so therefore, we -- we agree with the industry that we can get rid of the other AMP as well, which is XI.M5.

What we did is we now recommend that you use the ISI AMP, which is AMP XI.M1 for aging management. We adjusted the AMRs to indicate that, so I think the industry and the staff are well-aligned on this at this point. Any questions on that?

(No audible response.)

MR. MEDOFF: Okay. If not, we will go to slide 14.

The next AMP I am going to talk about are the changes to AMP XI.M16, 16A. This is the AMP for pressurized water reactor vessel internals. This was a new AMP in GALL Revision 2. It is based on the industry augmented inspection methodology in EPRI report MRP-227-A and ISG -- LR-ISG-2011-04. We updated that AMP to be consistent with the approved methodology.

When we got around to the GALL-SLR report, we -- we were struggling with -- with whether we wanted to continue use of this AMP in the updated guideline because the MRP methodology isn't based on an assessment of aging that is evaluated through 60 years of operation. EPRI has yet to update that methodology to cover an 80-year period, so we didn't know whether to keep it, and if we kept it, what to do initially, and we decided against it. So in the draft document, we basically decided not to retain the AMP, and then instead to write a further evaluation section in the SRP for SLR where we would recommend that a plant pose a plant-specific aim for the internals.

When we put the guidelines out for public comment, we received an alternative perspective from the industry. They felt that they should be able to use the old AMP as the starting basis for the AMPs they would develop for their applications --

CHAIRMAN SKILLMAN: When you say you received an alternative, an alternative --

MR. MEDOFF: To the plant-specific --

CHAIRMAN SKILLMAN: -- message from industry, was this a what are you, out of your mind? Or was this hey, we -- we would prefer you to do this?

MR. MEDOFF: I --

CHAIRMAN SKILLMAN: What was the tone of the industry?

MR. MEDOFF: I think it was like we were out of our mind, sort of, because --

CHAIRMAN SKILLMAN: They were saying leave well enough alone?

MR. MEDOFF: Yes, but we had a lot of dialogues with the industry on this, and I will probably discuss that in a little bit, but they felt that they should at least be able to use that AMP, even though it was only a 60-year basis, as

the starting point for their AMPs. The concern we would have had was since the EPRI has yet to update that methodology to cover an 80-year period, since a lot of the aging mechanisms that were evaluated were based on time-dependent aging effects like cycles or fluents, we wouldn't really know what type of changes would have to be made to the augmented inspection methodology if EPRI were to assess this over an 80-year period, so that is sort of what we were struggling with.

We had a -- a -- dialogues with the managers of the staff here in the Division of License Renewal as well as those in the Division of Engineering to -- to figure out how to sort of adjust this more in line with the industry perspective, and we decided to put the AMP back in, but not the version that we had before because we are still struggling with the 80-year question.

What we decided was we -- we had an associated further evaluation section in the SRP, so what we did was we kept the plant-specific option in the further evaluation, but we also put in an adjustment of the further evaluation which would allow an applicant to use the old AMP in the MRP report as its starting basis for the AMP they

would develop for the applications, but then we told them that they -- in the further evaluation section, that they would have to subject this to a gap analysis, and the gap analysis would be performed by the applicant to see if -- if they assessed aging over 80 years relative to their plant design for the internals, whether they would have to do some adjustments of the aging management protocols in the MRP report.

And that is sort of how we adjusted the protocols for this. We took the AMP, we modified it to include criteria for the gap analysis, we discussed the gap analysis in the further evaluation guideline, and so we put the AMP back in, and then we adjusted the AMRs to say yes, you need further evaluation on this as subject to the gap analysis.

CHAIRMAN SKILLMAN: Okay. Thank you for that explanation.

MR. MEDOFF: Okay.

CHAIRMAN SKILLMAN: Thank you.

MR. MEDOFF: So we --

CHAIRMAN SKILLMAN: Okay.

(Simultaneous speaking.)

MR. MEDOFF: -- this out with EPRI and

the industry so they know where we stand on this, and I think the industry and the staff are aligned at this point.

MEMBER SUNSERI: So just kind of following up on that discussion that you just provided, as we go into the extended period of operation, the current period, I am sure we're going to learn some things over the next 20 years that we may not have thought about when we put the programs in place, and I suspect a similar kind of learning may occur for the subsequent 20 years.

So my question is as these AMPS are constructed, are you comfortable that as we learn new things like baffle bolt failures or whatever, they would be picked up and included in the aging management strategy for the going-forward time period?

MR. MEDOFF: Absolutely. We already have Revision 1 to the report, which is still 60-year basis, but EPRI is proposing some change. That report is under review right now. We -- in the SE for the report, if that is approved, we will figure out how to factor that into license renewal. There may be some portion of the SE that addresses that.

EPRI always says this is an augmented inspection program. It is implemented under the protocols of NEI Report 03-08. They say it is a living program. Every time something happens -- like the baffle bolts is a perfect example. The industry really worked hard. They got some -- Westinghouse did an NSEL alert letter to tell the industry what to do if their plant -- based on the vintage design of their baffle bolts, they had some adjustments that they are recommending for the industry to follow based on their design.

EPRI went out and put out some additional alert letters too that were more in lines with the Westinghouse, so when this happens, the industry is very quick to -- to get on the issue and figure out what they need to do to the report methodology, so right, as things occur, the -- the methodology would be tweaked. And then if it was altered a lot, then we may assess the need for writing an ISG and updating things.

MEMBER BALLINGER: So what you're saying is that you expect surprises, but that the system is capable of dealing with that --

MR. MEDOFF: Right.

MEMBER BALLINGER: -- event?

MR. MEDOFF: Right, because the minute something happens like the baffle bolts, the staff is already talking to the industry, Westinghouse, the affected licensees, and EPRI to figure out what to do with it.

MEMBER SUNSERI: Thank you.

MR. MEDOFF: Any other questions on this? Okay.

CHAIRMAN SKILLMAN: Proceed.

MR. MEDOFF: Next slide.

The final AMP I want to talk about is a new AMP that we developed. It is AMP X.M2. This is one of the AMPs that -- that, and it's a new AMP for us, but it's one of the AMPs that is used to -- if an applicant wants to approve a given TLA with the TLA acceptance criteria in 10 CFR 54.21(c)(1)(iii). That is the acceptance criteria that says, okay, I have this time limit aging analysis. It is evaluating an aging effect, but we're going to find the acceptable by taking an approach that is going to manage the aging effect that was evaluated in the report. So like the analogous one would be X.M1, which is the fatigue monitoring program. You can monitor cycles and use that for cyclical loading assessments.

This was an AMP that relates back to the neutron embrittlement TLAs for the reactor vessel. We addressed that in some of the subsections in the SRP that are further evaluation sections. These are the TLAs that relate to embrittlement of the reactor vessel. They have neutron fluence as their time-dependent input.

The reason we developed this AMP is we had something like fatigue monitoring where we were monitoring cycles for the fatigue TLAs, but we didn't have that for the neutron embrittlement TLAs, and there are a number of them in Section 42 of the SRP, PTS upper shelf, PT limits, maybe some of the relief or that type of TLAs for the RP, reactor pressure, vessel circ welds for the boilers, all these have neutron fluence as the time-dependent parameter. So we developed this in a manner that you could use X.M1 for the fatigue-related TLAs.

We did get some comments on that. They didn't -- the industry didn't initially understand why we were doing this. They thought we were forcing an AMP down their throat, and one of the things I want to say, that just because we developed the new AMP does not mean we're forcing

it down the industry's throat.

What we decided is if you had a TLA, and -- and you wanted to manage the TLA using the iii criterion in 10 CFR 54.21(c)(1), you could use this type of AMP, so that was sort of the perspective of the AMP. We --

CHAIRMAN SKILLMAN: As you say that, it sounds almost as if this new AMP is an optional AMP.

MR. MEDOFF: Yes, yes.

CHAIRMAN SKILLMAN: And is it clear that this an option?

MR. MEDOFF: Well, the -- the fact -- well, actually, the fact of the matter is any AMP in the GALL is not a mandated AMP. An applicant develops its LRA and picks those AMPs that -- out of the GALL that it finds that are conducive to development of their license renewal application. Just because we have an AMP in the GALL does not force an applicant into using it. They can always develop a plant-specific AMP, or for that component, they can always propose a different AMP in the -- in the GALL if they felt that was good enough, so the applicant always has options.

CHAIRMAN SKILLMAN: Okay. Thank you.

Okay.

MR. MEDOFF: The one thing I wanted to say about this AMP is we also included reactor internals in that -- in -- in the scope of the AMP. The reason for that is a lot of these other AMP internals, like the one I just talked about, XI.M16A, which is based on the MRP report, XI.M9 for the BWR vessel internals, since it is based on a number of BWRVIP reports, a lot of those reports have bounding fluences on -- on their internal components, so if you're using one of those other AMPs for like as a condition monitoring AMP, an inspection AMP for those components, this is a case where if an applicant wanted to, they could sort of look -- use this AMP to sort of make sure that the fluences for their internals would still be bounded by the assumptions in the -- in the industry reports.

So that is the reason we added vessel internals into the scope of this AMP. It was not to put in an additional burden -- burden on the applicant. If they do decide to use it for either the vessels or the internals, we do expect them to have approved fluence methodologies for those types of components.

Any other questions on this AMP?

CHAIRMAN SKILLMAN: Please proceed.

MR. MEDOFF: That completes my presentation. I will turn this over to Dr. Seung Min.

MR. MIN: Thank you, Jim.

The next slide, slide 16, discusses the change to AMP XI.M19 steam generator program. Consistent with recently issued license renewal ISG 2016-01, the staff added visual inspections of steam generator head interior surfaces, including divider plates and tubesheet primary side. These inspections are intended to identify signs that cracking or loss of material may be occurring, for example through identification of rust stains.

This guidance also addresses the potential that cracking, any cracking in divider plates or tube-to-tubesheet welds are made propagating to adjacent reactor coolant pressure boundary components such as steam generator heads or tubesheets. Based on this change, the steam generator program is used as existing program to manage aging effects of primary water stress for the cracking for divider plate assemblies and tube-to-tubesheet welds and loss of material due to

boric acid corrosion for steam generator heads and tubesheets. Any questions on this topic?

CHAIRMAN SKILLMAN: Yes, I do. For the -- for the RSGs, Westinghouse and combustion, you've got one primary face. On a BMW, you've got two.

MR. MIN: That is correct.

CHAIRMAN SKILLMAN: What -- are there -- that's a bad question.

MR. MIN: So --

CHAIRMAN SKILLMAN: What does that difference create in terms of difficulty for the licensee?

MR. MIN: So first of all, before addressing the question, we used the term "steam generator head" as a generic term to reference, refer to channel heads Westinghouse recirculating steam generator as well as ones through steam generator involving two heads, bottom and top heads. In that case, those work through steam generator heads, two heads.

So as indicated in the line item, we call aging management items in the ISG. In this case, visual inspections are applied to channel heads and also one through steam generator heads,

bottom and -- upper and lower heads, both of the case, and then we haven't received any comment -- public comment on that position during public comment disposition period.

CHAIRMAN SKILLMAN: I am -- I am having a flashback to what it takes to look at a tubesheet from the inside, and this is not an easy task, so I guess there are people that are very very smart that know how to do this, and this is commonly applied technology these days, but it sounds like a very high hurdle.

MR. MIN: In relation to the comment from Member Skillman, when steam generator head interior areas are accessed to perform technical-specification-related tube inspections, any probing guide should be guided through the steam generator tubes, and that -- those type of activities should involve a certain level of visual means to identify the positions of poles and the implement utilized.

So the staff does not view that there should be a significant burden to perform this type of general visual examination to identify ghost cracking or abnormal conditions involving gross stains or degradation of tubesheets, and also, we would like to point to that lately, U.S. PWRs have

been performing these type of general visual inspections as part of their steam generator task force initiated activities based on floating operating experience specifically described in Information Notice 2013-20.

So considering the ongoing industry activities and also the, you know, inspection-related activities, tubesheet inspection to us is not really burden, and also, we believe that industry agreed to this type of general visual inspection.

CHAIRMAN SKILLMAN: Thank you.

MR. MIN: Thank you.

CHAIRMAN SKILLMAN: Thank you. Okay.

MR. MIN: And the next slide --

MEMBER KIRCHNER: May I ask, so you've added something, so that often suggests that you've seen issues in the existing plants. Is that the case, that suggested adding this requirement? It seems like the industry's doing it already. Have you uncovered serious problems of aging-related degradations in the steam-generator heads?

MR. MIN: Thank you for the comment, and as I previously mentioned, NRC information mode is 2013-20 describes one major event from an

initial plant. It's, that is the cavity formation in the bottom area of steam generator head.

But I'd like to mention that to, for that type of aging degradation, basically it is most likely loss of moisture due to boric acid corrosion. For of all, cladding of the, interior cladding of the base material of the steam generator head should be degraded to an extent, so that the access, I mean exposure of the base material to treated water conditions should occur.

So at this point until now, the specific costs of that operating experience, once again fully operating experience, has not been identified. But potentially manufacturing defects and/or potential interruptions of the cladding with loose parts might be likely cause, actually.

So in terms of operating, it's a major one came from foreign experience. But the industry and the NRC staff agree that it is prudent and needed for us to look at, you know, periodically we'll get internal conditions, not just, I mean, not just specifically identify a shallow cracks or detailed crack texturization, but indications of degradation like, you know rusting, or some degradation, which might lead to structurally

challenging conditions.

So we believe that this is necessary and that what we pretty much establish aligns with the industry positions too.

MEMBER KIRCHNER: Thank you.

MR. MIN: Thank you, the next slide describes a change to the proposed staff position described in, include, that had been included in the draft guidance. So there was a staff-proposed position provision for bottom-mounted instrumentation nozzle, and its susceptibility to primary water stress cracking.

So staff had proposed one-time baseline, volumetric inspection, of susceptible bottom-mounted instrumentation nozzles, which are susceptible to primary water stress and cracking.

And during the public comment period, the staff received public comments, industry comments, indicating that that provision is not necessary. And the basis of the comment can be summarized like first, existing bare metal visual examinations as required by 10 CFR 50 55RFA, in-service inspection requirements have been effective for aging that is meant to manage this potential aging effect.

And the current operating experience have not revealed any significant aging-related degradation requiring additional inspections.

So originally, staff focused on the benefit of performing volumetric examination that is capable to detect cracking before crack makes a through wall cracking or leakage, so that any indication detected by vulnerability utilization can be proactively monitored and trended before leakage happens.

So originally, we focused on that benefit, but based on the current operating experience, including two leakage events such as South Texas Project and Palo Verde more recently, basically even though leakage events happens through wall cracking in the BMI nozzles, they're showing no degradation, aging-related degradation has been identified or detected in the adjacent lower head base material.

So based on that, and the staff agreed to public comments, industry comments, and we moved that proposed provision from the draft items.

MEMBER BALLINGER: So this would also apply to, for example, South Texas, the repair as well.

MR. MIN: Yes, that's right.

MEMBER BALLINGER: Thank you.

MR. MIN: And also they applied casting, the examinations to all the BMI nozzles. There was only, I believe, one or two, yeah, two cases.

MR. MIN: Two leakage leaking yards.

MR. POEHLER: I'm going to talk about aging management program XIM12, that's thermal aging embrittlement of cast austenitic stainless steel. And the purpose of this aging management program is to manage loss of fracture toughness due to thermal aging embrittlement of cast austenitic stainless steel or CASS, as we abbreviate it, components.

This program is mainly focused on reactor coil and system piping. However, it also includes pumps, pump casings, and valve bodies. And I'd like to point out that the way this program basically works is you start out by screening for thermal embrittlement based on the chemical composition and ferrite content of the CASS material.

If you fail the screening, in other words, the material is determined to be

potentially, or thermal embrittlement could be potentially significant, you have to do either an augmented examination, which would typically be ultrasonic, and/or a flaw tolerance evaluation.

So in the draft GALL for subsequent license renewal, we removed the exemption for pump cases. Pump cases were firmly exempt from having to go through the requirements of this aging management program, and that was based on virtually all plants having implemented code-cased N-481. And at least, I want to say all PWR plants.

N-481 was a code case that provided an alternative to volumetric examination of pump casings, using a combination of visual examination, plus a flaw tolerance evaluation for the pump casing.

Code case N-481 has been withdrawn by ASME, and some but not all the provisions of the code case were incorporated into, directly into ASME Section 11. Specifically, one that was not incorporated was the provision to do the flaw tolerance evaluation for the pump casings.

Next slide.

MEMBER RICCARDELLA: Excuse me, before we leave that slide, this is Pete Ricardella.

MR. POEHLER: Go back one.

MEMBER RICCARDELLA: We just completed a research review of a NUREG, an update of the data on this CASS material, NUREG/CR-7185. I assume that this updated AMP will take into account the new data correlations that are in that document?

MR. POEHLER: The NUREG -- can you repeat, the NUREG you were referring to?

MEMBER RICCARDELLA: CR-7185. It's a Argonne National Lab review of (telephonic interference) aging and (telephonic interference) radiation on crack growth and fracture toughness of cast stainless steel.

MR. POEHLER: Yeah, well, first, this AMP that I'm discussing only applies to non-rated material.

MEMBER RICCARDELLA: (telephonic interference) -- thermal aging, it covered both thermal aging and --

MR. POEHLER: Yeah, so yeah, when we were developing this AMP, the panel was aware that there was a revision. At the time, that revision to the NUREG had not been issued. Actually, NUREG/CR-4513 Rev. 1 was the basis for the screening criteria in the original GALL and also in

this version of the AMP.

There is now a Rev. 2 of that NUREG that has been issued as well, and I think the data for thermal aging is the same or very similar to what's discussed in the NUREG/7185. And yes, we are aware that there was some new data and there was new, there was a recommendation made as far as changing the screening criteria a bit.

But at the time, we had not, the NRC had not formally taken a position on the content of the NUUREG. So at the time we were developing this, the existing screen, there was no obvious reason to change the existing screening criteria.

Now, of course, in the future, we do intend to determine whether these revised, the revised data on CASS merits a change to the screening criteria. So if that's necessary for safety, we would do that in a future revision, I'm sure. But at this point, we haven't changed the screening criteria.

MEMBER RICCARDELLA: Okay, thank you.

MR. POEHLER: Hopefully I answered the question.

MEMBER RICCARDELLA: You did. I just, I'm assuming that at some time in the (telephonic

interference)

CHAIRMAN SKILLMAN: Hey, Pete, you're breaking up pretty significantly. If you just perhaps speak more slowly or back away, we can hear your full transmission.

MEMBER RICCARDELLA: Okay, I will.

CHAIRMAN SKILLMAN: Thank you, Pete.

MR. POEHLER: Next slide please. So in the final version of the GALL-SLR, we added some language to allow for alternatives to the screening and other actions for pump casings. And we also clarified that no further actions are needed for pump casings.

If the applicants demonstrate that the original flaw tolerance evaluation performed as part of code case N-481 implementation remains bounding and applicable for the SLR period, or is revised to be applicable to 80 years.

The reason we added this language was because we had some comments from industry, and they pointed out that everybody has already done an evaluation. Basically, if you did, if you wanted to implement this code case, you had to do this flaw tolerance evaluation. Plants have it in their records.

However, the staff, we still had some concerns that those evaluations would not take into account thermal embrittlement for 80 years, because most of them were only done for the initial 40-year operating term.

But this was back in the early 90s, when most plants were implementing this code case. So that's why we require them to go back and make sure it's applicable for 80 years or revise it.

Also, the last bullet here in the slide, this was an additional change we made to the AMP in the detection of aging effects area, and this is actually a good change, because the AMP now references code case N-824, which is a code case that provides a methodology for doing ultrasonic examination of CASS piping.

And that code case is actually incorporated by reference directly into the forthcoming rulemaking for 10CFR 5055A, which should be coming out any day now. And there are some conditions on the use of that code case in the forthcoming rulemaking, so that applicants would have to follow those conditions.

But they can use this code case if they have to do ultrasonic examination on piping that

doesn't meet the screening criteria.

That completes my presentation. Are there any more questions?

MR. BLOOM: We need now to change the panel members at the front, so give us a second to change our members out. We will have members out talking about the --

MEMBER BLEY: Before everybody leaves --

MR. BLOOM: I'm sorry.

MEMBER BLEY: Just a quick question for Bennett Brady.

MS. BRADY: Yes.

MEMBER BLEY: You indicated on your last slide that you're going to issue a NUREG late this year that provides the technical bases. Now, as I read through the GALL report, every section has technical bases. So what's the difference, and what's coming at the end of the year in the technical bases that are already given in the GALL report?

MS. BRADY: In the GALL report, we tell what we're doing and we do some, present some reason for why we're doing it. The technical basis document will compare what was in GALL 2 for first

license renewal with what is in the GALL-SLR now, and say we made this change, why did we make this change, and what was the technical basis for --

MEMBER BLEY: So it's a comparison and justification for the change.

MS. BRADY: Yes, for everything we do. We did have a NUREG, one NUREG before GALL 2, NUREG-1950, that had both the technical basis and the public comments. But we got too big and they say we had to make two documents.

MEMBER BLEY: Fair enough.

MR. BLOOM: Okay, thank you. As I said, now we're going to be talking about reactor pressure vessel, we'll have a conversation on structural AMPs, and then finally we'll have one on electrical AMPs which have had significant changes. So if you bear with us a second while we change out our players.

CHAIRMAN SKILLMAN: Cliff, by your feet there's a blue package. Does that belong to somebody? Thank you, Cliff.

MEMBER BLEY: I notice that all the green lights are on on the front table.

CHAIRMAN SKILLMAN: Okay Steve, back to you, sir.

MEMBER BLEY: Before they go ahead, all your green lights are on at the front table. You ought to only have them on if you're talking. Otherwise, it makes noise on the phone lines. So turn them off unless it's your turn, please.

MR. BLOOM: Okay, as I said, the first one is reactor pressure vessel AMP, and that'll be Dr. Alan Hiser.

MR. HISER: I guess first thing, I'm not Carolyn Fairbanks. She prepared the material but was unable to be here. So next slide. And what I will talk about is XI.M31, Reactor Vessel Materials Surveillance Program.

First thing I want to do is talk about some of the challenges with this program. Many of the AMPs, the plants have a similar situation, the have buried pipe, similar materials. Reactor Vessel Surveillance Program is a little bit more of a challenge overall.

First of all, there's significant diversity in the conditions between the programs at different plants. First of all, the program design requirements changed over a function of time, so some plants were tied to different versions of ASTM standards, and that has an impact on the materials,

the number of capsules that are in the programs.

Secondly, the operating periods, neutron fluences, the leak factors for the capsules vary significantly. Some plants have leak factors that may be up to an order of maybe three or four, and the leak factor in that case is the ratio of the neutron flux at the capsule relative to the peak location of the vessel.

In other cases, actually, it's sort of a negative leak factor, it's less than one. So that creates a difficulty in trying to project what the embrittlement will be because the capsule really related to a prior year.

A third issue relates to, in some cases, they're plant-specific programs, where a plant has capsules within its own reactor vessel. And other cases that they don't have a plant-specific program but there's an integrated surveillance program.

For example, for the BWR plants, there is one BWR program, that ISP integrated surveillance program, that has the materials for all the BWRs. And that program is responsible then for providing data that is applicable to all of the BWRs.

Last item that I'd like to cite is that the number of capsules that were originally in the program, how many capsules have been withdrawn and tested, how many capsules have been placed in storage, and how many capsules are still in the vessel varied widely from plant to plant. And I'll show a couple of examples that I think will illustrate some of these differences.

Therefore, the status of plant programs is the plants and/or subsequent license renewal vary significantly. So it's very difficult to come up with a generic program that meets all the types of situations that may occur.

Some of the specific concerns that the staff had relative to plant-specific circumstances are listed in these three bullets. First would be long periods of time and large range of neutron fluence values between capsule data.

Again, the purpose of the surveillance programs is to provide a look ahead as to what the embrittlement of the vessel is. If the data are lagging the vessel, then that's not really an optimum condition.

In addition, if you have a substantial period of time between your withdrawal and testing

of your last capsule and the next planned test and withdrawal, then that's really not optimum. You want to periodically monitor the embrittlement of your vessel materials.

Let's see, and I guess the last bullet there, which I'll show an example of, is in some cases for license renewal, we allowed a plant to take its original license 40-year capsule and push it out to a higher fluence to accumulate data for 60 years. In at least one case that I'll show, that creates a very substantial time gap for the plant.

Next slide. And what I'll do the next two slides is just show two examples and what's illustrated here is the capsules for a plant. Five capsules have been tested, they're indicated by the filled circles. There is one untested capsule for this plant.

Now the, what's shown on the chart is neutron fluence on the Y axis and the date on the X axis. Plant started operation in this case in 1969. As you can see, every, what, ten, fifteen years, they pulled a capsule. So they have a very consistent tracking of the material performance, both as a function of fluence and also as a

function of time.

Now, what I've shown in orange solid lines are the neutron fluence and the time frame at which the plant would hit 80 years of operation. The blue dash lines represent 60 years. So you can see the fifth data point that was roughly ten years ago, little less than ten years ago, provides the data needed for the 60-year fluences.

Now, the one untested capsule in this case is, I believe, today still in the vessel. But the licensee plans to withdraw it when it exceeds the 80-year fluence. So that would enable it then to have a data point that meets the 80-year fluence requirement. That is not a part of their current program, a part of their, if you will, Appendix H surveillance program.

But it's a spare capsule that they have that's available to them. So in this case, I would say this plant has a very good program from the perspective of the number of capsules first of all, the spacing of the data, and the ability to test a capsule to achieve the 80-year fluence. Next slide.

In other cases, such as this plant, the situation's a little more difficult. Right now,

there are four capsules that have been tested, the peak fluence is equivalent to just over 20 EFPY of fluence, or 20 years of operation. Last capsule was tested almost 20 years ago.

In this case, the license renewal application proposed to take the capsule that would have been tested in around 2011 at fluence, it would have met the 40-year fluence but not the 60-year fluence. Instead, this capsule was just, the testing of it was delayed for about ten, fifteen years. So they would now achieve the 60-year fluence.

Now, one of the concerns we had with this program was that this capsule should not also be delayed again to meet the 80-year fluence, what -- and as I'll talk on the next slide, one of the issues that we wanted to deal with was to not allow capsules to continue to be delayed, to have the testing of them delayed.

So in this case, the capsule, to achieve the license renewal fluence, will be tested in about ten years, and that plant will have confirmation of its embrittlement level for that fluence level.

CHAIRMAN SKILLMAN: Allen, just a

simple question. What's the anomaly here in that 1980-1990 data point? It's a different location?

MR. HISER: Yeah, it's a different location. The peak fluence occurs at roughly eight locations around the vessel. The holders for these surveillance capsules are affixed either to the pressure vessel, maybe the thermal shield.

And so they are fixed in time, and just depending on what the ratio of the neutron flux at that location versus the vessel -- so the fourth capsule that was tested obviously was just a lower flux location. So the fluence was a little bit lower.

MEMBER BALLINGER: Could this plant be lucky enough to be similar to another plant with the same chemistry and the like, and be able to take advantage of some data, not from them but close enough to add value?

MR. HISER: Yeah, there are requirements in the PTS rule.

MEMBER BALLINGER: Yeah.

MR. HISER: NCFR 50.61, that require that plants consider data from other plants that is relevant to their vessel. So in this case, if this is, for example, a Lindy 80 weld, which I don't

know if it is or not, but there would be potentially data from other plants that could fill in the trend as a function of fluence.

MEMBER BALLINGER: Because there's a chart that I recall in 50.61 presentations which identified plants which may or not have to deal with PTS in 60 or 80 years. And the column to the right had a few plants that said maybe. It didn't say for sure.

MR. HISER: Yeah, so, but plants are required by the rule to consider all of the available information for their materials. Next slide.

MEMBER RICCARDELLA: Al, this is Pete, can you hear me?

MR. HISER: Yes.

MEMBER RICCARDELLA: Are these, are both these examples you just cited PWRs?

MR. HISER: Yes, they are.

MEMBER RICCARDELLA: Okay, thank you.

MR. HISER: Okay, now the changes that are implemented in the GALL-SLR that was made available to the committee, so that would represent our final version. Some of the changes are indicated here.

First of all, there has been a longstanding provision in GALL that you should have data that's a factor of one to two times the projected vessel fluence at the end of the PEO, or in this case, a subsequent period of extended operation.

So that provision is still there. The one clarification that we made is that that fluence should address the time that limited aging analyses for the plant as described in the plant COB and as described in the standard review plan for SLR.

For PWRs, for example, that's always going to be the surface fluence, because PTS consideration looks at the vessel, the fluence on the vessel surface. For BWRs, depending on the circumstances, it may be the fluence at a quarter T through the vessel wall.

So that would be a substantially lower fluence in some cases. We don't tell plants what their COB is because, again, COB differs from plant to plant. So they have to make that determination for themselves and identify the fluence that they are targeting for their surveillance program.

The second relates to having a capsule

that has data for fluence that exceeds the subsequent PEO fluence. So what we're looking for is that in some cases, maybe a plant already has a data point that addresses the 80-year fluence.

If that's the case, we don't think that it's necessary for the plant to do more testing. If they had not done a test at the 80-year fluence, then they would be, AMP indicates that they should withdraw and test at least one capsule during the subsequent PEO.

And the last bullet there is just a note that says, Don't plan to take your 40-year or your 60-year capsule and push it out to 80 years. So you would be, the program would specify that you should continue to test your capsule that's in your license renewal, or in your renewed license program. And then added an additional capsule, if necessary, for the subsequent license renewal.

And that's all that I have.

MEMBER RICCARDELLA: Al, you know, for plants that find themselves in a tough situation with regard to remaining capsules, is it possible to take a capsule and remove just some of the samples for testing and then put it back in to get more fluence?

MR. HISER: I think many things are possible. Some of the things that are available are what are called reconstitution, where samples that have already been tested may be welded onto end tabs to create new samples. And then that capsule could go back into the vessel to accumulate additional fluence.

I would not want to speculate about the number of things or the ingenuity that plants may have in trying to come up with a program that provides reasonable assurance. Certainly, I think that the case that you cited would also be one that would be a reasonable approach.

MEMBER RICCARDELLA: Thank you. Yeah, so the plant that got into the situation, the last example you just cited, would have some options.

MR. HISER: Absolutely. I think there's numerous options.

MEMBER RICCARDELLA: A longer period of time.

MR. HISER: Yes, that's correct. If there are no more questions, then turn it over to Bryce Lehman.

MR. LEHMAN: All right, good afternoon, my name is Bryce Lehman, and I'm going to

summarizing the significant changes to the structurally AMPs. And these are changes to the draft document, so not since Rev. 2, but since the draft document. Next slide.

The first AMP I'll start with is AMP XI ASME Section XI, Subsection IWE, which covers in-service inspection of metal containments and metal liners. The first change, significant change, was the guidance on liner plate bulges.

In the proposed draft, there was a requirement in there for quantitative exceptions criteria for the bulges. And based on industry comments, we removed that explicit requirement or recommendation, and now rely on the acceptance criteria that's already in the ASME code program.

However, there's still a discussion, discernable liner plate bulges need to be monitored. So it draws the attention of applicants to the fact that it is an issue, but then it defaults to the IWE acceptance criteria for that.

CHAIRMAN SKILLMAN: So what does that mean to a licensee? So you do your walk-down, you're heading into the PEO, and you find this bulge. And so you disposition the finding in accordance with the ASME code, but you still have

this bulge. So you're saying keep an eye on it, or walk away from it?

MEMBER BLEY: That's basically a keep an eye on it. I mean, like you said, they would have to do something under the IWE code. And I think the concern from the industry comments was, Well, what is the NRC expecting now? Do you want us to -- how do you want us to quantitate these bulges and then accept them?

And so we just wanted to sort of draw attention to the fact that if you have a bulge, you need to be aware of it under IWE, and address it. And the IWE is a visual inspection, so if we didn't expect them to go do laser mapping of the containment and find bulges that are not, you know, visible to the eye.

But if there's a bulge there, you should be tracking it and be aware of it. And they've accepted it under their program, and they have a justification for why it's acceptable, that's fine, as long as it's not changing through the subsequent period of extended operation.

CHAIRMAN SKILLMAN: Thank you.

MR. LEHMAN: Now, and so the next issue, there was some clarification on volumetric

examinations. There was a recommendation in the draft to do volumetric examinations if there had been corrosion on the liner from the inaccessible side.

So we clarified what exactly the staff was expecting there. And it's a one-time examination if corrosion has initiated on the inaccessible side and it's been identified since issuance at the first renewed license.

And the examination should provide 95-95 confidence level. The accessible portions of the liner are not experiencing corrosion. And I realized as I was reading that just now that's a little bit confusing with the accessible and inaccessible.

So by accessible, we mean, like, with the liner, the accessible area from one side should not be experiencing corrosion from the backside. It's inaccessible. That's what the intent of the examination is.

So, not necessarily completely inaccessible areas, like under the base mat, or the concrete in the containment. That's it for the IWE. We can go to the next slide. The next one is XI.S3, ASME Section XI, Subsection

IWF, which is the in-service inspection program that covers supports for ASME glass piping. This is a sampling program, and the draft guidance proposed -- it's a sampling program that keeps the sample, the guidance keeps the sample throughout the life of the plant.

So the draft guidance proposed a new inspection of five percent of additional supports outside the existing sample. In the final guidance, we clarify that that new inspection supports should be five percent of the sample size, not five percent of the entire population of supports.

And that the inspection is a one-time inspection that should occur within the period of five years prior to the subsequent period of extended operation.

CHAIRMAN SKILLMAN: Approximately how many sites would a five percent new population bring into the review category?

MR. LEHMAN: Well, it's the sample for class one is 25%, and class two is 15, and class three is 10%. So of that sample, it would be five percent of that.

CHAIRMAN SKILLMAN: So in round

numbers, how many more locations would need to be inspected? We're talking ten or a hundred or a thousand?

MR. LEHMAN: I mean, it would depend on each class, but it would not be a thousand, no. I'm not positive on numbers, I'm going to have to get back to you on that.

CHAIRMAN SKILLMAN: I'd sure like to get that number. I mean, are we talking about a colossal effort, or one that is, if you will, in the stride of the normal inspection programs where --

MR. LEHMAN: Yeah, within --

CHAIRMAN SKILLMAN: Individuals with qualification and credentials can handle this, you know, with some confidence.

MR. LEHMAN: Yeah, I'd like to turn it over to Angie Buford, maybe she can provide a better answer.

CHAIRMAN SKILLMAN: Okay.

MS. BUFORD: Class three inspections have the most for the IWF program. Currently in the program, there's on the order of a couple hundred currently. And so then five percent more of that would be, say, ten to twenty. And the

additional five, of the five percent that they would do prior to the subsequent period of operation.

CHAIRMAN SKILLMAN: Thank you.

MR. LEHMAN: We'll move on to the next slide, XIS 5, masonry wall. And this is actually kind of a minor change that we talked about at the last meeting, so I just wanted to close the loop there.

We removed the recommendation that unreinforced non-braced walls be inspected on three-year frequency. Now, this change was sort of based on public comments and the lack of operating experience, so it's gone back to what it is in Rev. 2 now, which is a five-year frequency like the rest of the masonry walls.

And if there's no other comments on this or other structurally issues, this was my last slide.

CHAIRMAN SKILLMAN: Thank you. All right, electrical.

MR. SADOLLAH: Good afternoon, my name is Mohammed Sadollah. I'll be talking about the basic significant highlighted changes in the electrical AMPs.

So the first slide, slide number 30, talks about the EQ. So EQ program is one of the aging management programs that the previous GALL has, and the new SLR GALL also has that aging management program.

So EQ basically, yeah, it's covered under 10CFR 5049, and every plant has an EQ program. As in license renewal field, that program is credited as an aging management program, and we audit it to make sure it meets the ten elements of an aging management program.

So moving to subsequent license renewal period, you're drawn into a couple of situations where from the 40-60 years, a lot of the EQ programs, they took advantage of the some of the conservatives, and some of the margins, some of the original assumptions that were in the EQ calculations that may have been too broad, too conservative.

And some of those numbers were re-used in re-analysis to recalculate and gain extra life. As you go from 40 to 60, to 60 to 80, now some of these assumptions, some of these margins, they kind of tighten up. So now you're faced with a couple, two, three different options.

Either replace the part, or re-analyze, or go through what's called ongoing qualifications and decide what's the best, or do some repairs to get more life out of the equipment that you have, or replace them.

So the basic changes that we had to propose for subsequent license renewal has to do with things like environmental monitoring, or looking at the original assumptions, looking at uncertainties. And we added a discussion of what's called adverse localized environments.

Because if you have an adverse localized environment in a given part of the plant, or there's a huge run of cable, but then parts of that cable run might be exposed to a localized hot spot or extra radiation because some insulation was removed, some of the pipe, so obviously that affects that particular component or device in that area, and that might throw some of your calculations off.

So we defined, we added definitions of, and expanded definitions of adverse localized environments, and kind of made attempt to draw attention to that, to be monitored and maintained.

Also, in terms of environmental data

collection gathering and analysis, there's a little more clarification and expansion on better monitoring, so it helps you maintain your qualifications through the period of 60-80 in a more effective way. And if there are no questions on that slide, we can go to the next, slide 31.

So the next slide talks about, this is the aging management program that has to do with potentially -- submerged or potentially submerged cables, cables that run on the ground, basically. So this originally was one aging management program that covered all cables that are in scope of license renewal.

In subsequent licenses, 60-80, we took this AMP and split it in to three different parts. We basically segregated the medium voltage into, cables into one AMP, instrumentation and controls into another one, and then low voltage power cables, less than 1,000 volts, into another AMP.

And the main reason is different cables and different cable constructions, different material, and different voltages and applications, they tend to age differently, they tend to react differently to the environment. They tend to have various testing or considerations when you're aging

managing them.

So we separated them to create a, hopefully a more effective aging management program. And hopefully it will be easier for the plants to maintain and monitor each one and it will be easier for us to audit them and later on maybe inspect them.

And as part of that, being that low voltage and ISC cables were kind of a little bit of a controversial area, whereas, is there really enough of a operating experience to indicate that those cable deteriorations, degradations, are serious? Or do they really degrade that they deserve to have an aging management program?

One of the things that the plants can do, according to this aging management program, they can take credit for existing testing that they do, other testing they do, existing surveillance, existing calibrations. So if these cables are looked at for other reasons under other programs, either maintenance rule or tech spec surveillance, they can take credit for those testings.

But otherwise, the programs are designed so you do a visual inspection, and depending on the visual inspection results, what

you find in the visual inspection, you may be prompted into doing some testing to get better confidence or a better feel for actual conditions of the cables.

Also, there's a couple of known cables, like Vulkene and Raychem, cross-linked polyethylene cables that are kind of known to be prone to issues with submergence, issues within wet environments.

So those, we're recommending that if you have those, you might as well just test them from the beginning. Just do a onetime test and take a look at it and keep track of the degradation that way. Because we know those are, have been identified as potential issues. And not many plants have those.

And it would be up to the applicant, it's the applicant's responsibility to determine the type of testing. There's a variety of electrical, mechanical, chemical, physical testings out there. And none of these AMPs, they do not prescribe a particular temperature condition monitoring testing to be done.

It's up to the plants to decide which ones they use, which one is more relevant, more applicable, which one would be best for that

particular application. And then document what they need and justify it, and we will look at that justification, we will review those justifications.

CHAIRMAN SKILLMAN: Mohammed, let me ask this question. Back in 2014, the topic of electrical cables was one of the focus areas for EPRI. Here we are, about two and a half years later, hearing that this AMP has been divided into three sub-AMPs, into several AMPs that really get to the heart of cable life for life beyond 60.

How has this AMP and the new AMPs been informed, how have these been informed by the EPRI work that was advertised back in 2014?

MR. SADOLLAH: So one of the things that kind of drove this, and that prompted this, is that, so EPRI has guidelines for low voltage and ISC cables, and they have guidelines for submerged cables, and guidelines for cables in medium voltage applications. There are not many high voltage cables, hardly any, in operating plants.

So yes, so yeah, EPRI has been focusing on various applications, various cable makes, models. We are looking at more and more information and studies that are out there. As you know, DOE has been doing a lot of cable research.

So a lot of all these things are kind of coming together within the next two or three years, we hope.

All the research efforts by DOE, by EPRI and by us -- we meet once, sometimes twice a year in the cable users group meeting to discuss and to understand what are the latest and greatest condition monitoring techniques, what is the latest lessons learns and operating experiences to feed into these aging management programs.

As we speak today, as I said, these AMPs do not prescribe a certain test or a certain condition monitoring, I said, because we don't have all that data yet, data that would strongly protect or support a statement of saying, Yeah, this cable is good or this cable has six years more life or 50 years more life.

That kind of information and research is still being done as we speak. There's a lot of good work being done by a lot of testing service companies that they look at the existing data and the existing testing that has been performed for a number of years, for one or two decades, such as frequency reflectometry, time delay reflectometry.

They're looking at these data and

putting them in algorithms and translating that information into, and correlating it with chemical and mechanical tests to create like these bands of green, yellow, and red for cables. Nobody, as of yet, had come up with a method, with a model that says, I can predict the life of this cable.

But we're getting closer in the sense that we know that we can at least maybe within the next two or three years, have certain testing that could categorize this cable into whether it's in the green region or yellow region or a red region.

CHAIRMAN SKILLMAN: Let me ask the question, that question differently. What changes in GALL-SLR reflect learnings from EPRI, recent learnings from EPRI? I get a green light here.

MR. DOUTT: Cliff Doutt, DLR. Actually, the, next slide please, actually the three AMPs are a reflection of that. The guidance that has come out is separated, the testing, and the material and voltage and stresses are different. So the tech acceptance criteria, the tests that may be run, that's all a reflection of why that's been split.

The other thing too is a kind of preparatory to, when it's in three sections, as we

go forward, we've already broken that out. So if tests are applicable to B and C, or just C, whatever, that guidance is out there.

The other thing that has occurred, besides EPRI work, I mean, there's obviously DOE work, there's PNL work. The NRC's issued Reg Guide 2118 on condition monitoring. There's 7000, NUREG-7000 was issued. So a lot of that's reflected in these changes here, from that point of view, is that helpful?

CHAIRMAN SKILLMAN: That's very helpful. What I was really going after is 2014, we had about seven items that were, the long-range items that EPRI was focusing on. My question was, okay, two and a half years have passed, what is in GALL-SLR and GALL-SRP that reflects that research.

And I think what you just told me is this reflects updates as a consequence of that research from EPRI. I may have overstated it, but I think that that's what you were trying to communicate.

MR. SADOLLAH: Yes, so, the work is ongoing. There's more knowledge being gained as we speak. But yeah, so splitting it is one step into going to the ultimate goal of having a good

condition monitoring for a given application.

CHAIRMAN SKILLMAN: When Bennett opened with her slides, she showed four items that are still waiting further attention. There were actually seven on the original list, and this is one of the original seven. So I'm wondering, has this become an orphan? And you're saying, No, it's not.

MR. DOUTT: It's actually a combination. EQ was one issue, and then after that was condition monitoring cable health type issues, which is actually -- EQ currently going forward, it would be nice to know qualified life.

And to maintain qualification, you could do either ongoing qualification per 5049 procedure, or a condition-type approach, or there's analysis and replacement. But no, those options, we're trying to keep those options available. That work is going on in different EPRI, DOE, you know, us, we're doing work as well.

CHAIRMAN SKILLMAN: Okay, let's back up. Number one, you've answered my question, thank you. Now, let's march, let's keep on going. Okay.

MR. SADOLLAH: Next slide. So this is a new AMP, so we created a new aging management

program for high voltage insulators.

So high voltage insulators in the previous, in the GALL Rev. 2, they were not addressed under an AMP. They were treated as further evaluation site-specific, that every site would look at it and they would decide whether they needed an aging management or the kind of maintenance they do is adequate.

In SLR, we felt that --

CHAIRMAN SKILLMAN: Question, high voltage insulators, these are output breaker insulators, these are 230,000 volt, 400,000 volt, 500,000 volt --

MR. SADOLLAH: Right, typically in the run between the switch yard and usually the first transformer, auxiliary transformer, start-up transformer, that run, it could be 120 KV, it could be 35 KV, it could be high, it could be 230 KV. That run of transmission conductors would have high voltage insulators supporting the transmission.

CHAIRMAN SKILLMAN: Yeah, I was onsite when one exploded. And I will tell you, it is a startling event.

MR. SADOLLAH: They can be nasty.

CHAIRMAN SKILLMAN: So I understand.

Go ahead, keep on going.

MR. SADOLLAH: So yes, so these high voltage insulators, among other things, they're susceptible to building a coating or build-up of contaminations that comes from cooling tower plumes, salt sprays, dust, other contaminants, industrial effluents, industrial pollutants from nearby factories that can -- and these cause flash-overs and ultimately failures.

We've seen that, and there's more recently, looks like, I'm not going to say there's been an uptick of issues, but we've seen Oconee and a couple other plants reporting some failures of these insulators.

Also, mechanical movements that they experience under windmill conditions can cause loss of material due to fatigue, due to movement of parts. And that can also result ultimately into failure.

So for those reasons, and for the operating experience, and for the fact that we think that it's important of an issue enough to have its own aging management program, this aging management program has been included in SLR. And so, but then again, these are only in-scope

insulators.

Usually, there aren't that many of them, which is, it's only the path that's on the SBO recovery path. It's in the loss of offsite power path to the plant.

CHAIRMAN SKILLMAN: Well, what's important is these can create a loss of offsite power.

MR. SADOLLAH: Absolutely.

CHAIRMAN SKILLMAN: I mean, these can be the origin of the loss of off --

MR. SADOLLAH: Or when you need them, they can fail on you.

CHAIRMAN SKILLMAN: Exactly.

MR. SADOLLAH: And are there any other questions on this slide? Next.

So next slide, this is basically the changes to SLR3.6. And it's basically bringing SLR SRP in line with the GALL. So the changes that were made into the AMPs in GALL are reflected into SRP, that's one item.

Another item that was changed, like for instance, this high voltage insulators that used to be in SRP as a further evaluation site-specific, now it's shown as an AMP and it's reflected in

there.

And also, there was one item that was kind of left out in the past, that didn't have either an aging management program and did not have a prominent mention in the further evaluation, and that was the cable boss.

Some plants, not many, they have an arrangement that doesn't fall under a metal enclosed boss or isolated phase, iso-phase boss. They're called cable boss, which is a combination of runs of medium voltage cable in boxes that look like cable trays, but they're actually a little bit more to it than just a cable tray and some cables.

They're called cable boss. And some plants have a lot of them, some plants don't have any. Most plants don't have any. So in the past, it was not specifically mentioned.

In this SLR SRP and the GALL, they're mentioned as a site-specific further evaluation item. So that was an addition. And also, any AMR line items that were affected because of a change in the GALL were also changed in SRP SLR. And that's about all the electrical changes, significant changes, in SLR.

CHAIRMAN SKILLMAN: Well, thank you.

MR. BLOOM: We have one more presentation from the staff. Are you ready to keep going?

CHAIRMAN SKILLMAN: I would say we are going to take a 15-minute break.

MR. BLOOM: That's fine with me. Okay.

CHAIRMAN SKILLMAN: We are in recess until 3:15 on that clock.

(Whereupon, the above-entitled matter went off the record at 3:01 p.m. and resumed at 3:14 p.m.)

CHAIRMAN SKILLMAN: The meeting will come back into session. We are on the record.

Steve, please proceed.

MR. BLOOM: Okay, I'm sorry, yes.

So, the next presentation, actually, our last part is on what we have called optimization, SLR optimization, which I know kind of has caused some confusion.

What it is, we have had our staff look and evaluate the SLR application review process and develop recommendations on how to make the process more efficient and effective.

With that, I will turn it over to Billy Rogers and Nancy Martinez.

MR. ROGERS: Good afternoon, everyone.

My name is Bill Rogers. I'm a Senior Reactor Engineer with the Division of License Renewal, and I was the staff lead for the Subsequent License Renewal Optimization Working Group.

And to my left is Nancy Martinez, who evaluated the staff's review of the Applicant's SLR environmental review. And that has been performed along with the review of the subsequent license renewal application and is used in development of the Environmental Impact Statement. So, those two work in tandem for the completion of the staff's review.

Okay. Slide 2, then, please. Okay.

So, the purpose of this presentation is to inform the ACRS Subcommittee of the additional activities performed by the Division in preparation for the receipt and review of the subsequent license renewal applications and to share items that may affect the ACRS Subcommittee and ACRS full Committee reviews, and might be of general interest.

I will provide an overview of the activities, communications with utilities and

stakeholders, and then, we will discuss several of the staff's recommendations for both the safety review and the environmental review.

The Division of License Renewal established a Subsequent License Renewal Working Group in 2015 in order to evaluate the subsequent license renewal application review process, as Steve said, and develop recommendations as to how the process could be made more efficient and effective, and to optimize the staff's performance relative to timeliness application of staff resources and quality of products.

The Working Group evaluated both the safety and environmental reviews, since both reviews produced products, the Safety Evaluation Report and the Environmental Impact Statement, that are both required to be completed prior to issuance of a renewed license.

Okay, next slide, please.

Okay. This is a list. It shows the activities at the Subsequent License Renewal Optimization Working Group. I would like to refer to that as the SLR Working Group from now on, if that is okay.

These are the activities performed by

the staff during the license renewal review, and we evaluate those to consider how these activities impacted the length of the license renewal review.

As shown on this slide, most of the activities and tools are at the operational level. These were managed by Branch Chiefs and also subject to NRR Office instructions. There are day-to-day activities and the building blocks of how we produce the documents.

Along with the concept of optimization was that of assuring that the activities in the subsequent license renewal review process will be aligned with the NRR Office instructions. So, we wanted to realign and to be in alignment with other activities in the office that follow the same guidances and are the same size, impact, and review structure.

Finally, after evaluating the SLR activities, tools used and the products, the SLRO Working Group evaluated the timeline to determine whether the timeline should be modified. The important point there was we did not start with a target review top line and, then, try to build towards that. And we have shared this with other interested parties. We evaluated all the

activities against the current timeline to see how long the appropriate length would be.

CHAIRMAN SKILLMAN: Speak more about what you mean when you use the word "appropriate". Appropriate for the staff? Appropriate for the licensees?

MR. ROGERS: Yes.

CHAIRMAN SKILLMAN: What are you really talking about?

MR. ROGERS: Okay. Well, we started with the licensees suggesting a date, a timeline date, a period of review. And we take that into consideration as a comment, but our initial response to that was that we would have to review all the activities and, then, we would place them on the timeline to see what the appropriate length would be.

And the question of appropriate is there are ways that we could do things more efficient. There are ways that we might align activities to be in parallel as opposed to in sequence, to adjust the length of the timeline.

As you will see, later on there is one key component that took quite a bit of time, and we decided that we could perform the process without

one of the middle products. And that allowed us to reduce the timeline.

But the answer is we didn't work towards a length of time. We built the model and, then, we could determine what the length of the model that we built would be.

CHAIRMAN SKILLMAN: Thank you.

MR. ROGERS: You're welcome.

Okay, next slide.

Okay. The SLRO Working Group evaluated the areas identified with the support of the majority of DLR, Division of License Renewal, technical staff, the DLR management, the regional staff, and regional management. The ideas were formulated, discussed, and, ultimately, developed into a set of recommendations as to how the SLR review process might be modified.

The Working Group recommendations were compiled into several areas: project management, technical review and inspections, and, ultimately, were presented to the DLR senior management for review and establishment of proposed staff positions to be presented to the public. So, we formulated the ideas as recommendations and ran them through the various managers prior to

presenting them to the public.

Subsequently, the SLRO Working Group held several public meetings with NEI, potential applicants, and other stakeholders to discuss the proposed staff positions. So, we have had three meetings, public meetings, in 2016 in the spring, the summer, and the fall. In addition, there were related discussions between DLR and NEI during several NEI quarterly meetings.

The staff received comments from NEI stakeholders during these public meetings. They have considered all comments.

I also want to note that the first point of discussion was prompted by the potential applicants and the industry related to the structure of the subsequent license renewal application. So, we discussed that promptly in-house. And I think the first presentation of the information was the Director of DLR at the time presented the response in a forum with the utilities, that we anticipate the structure not being different, the structure for the subsequent license renewal application not being different from the structure of the license renewal application.

The reason that was important to the utilities to know that quickly was that they were in the process of building their structure for those subsequent renewal applications. So, that was one of the earliest communications.

Okay, next slide now, please.

Okay. I would like to discuss several of the proposed recommendations that impact the staff, the utilities, and would be, I think, of interest to stakeholders and the Subcommittee.

The first item relates to the staff's safety review bases. The SLRO Working Group reaffirmed that the staff safety review requires the evaluation of all information contained in the SLRA and will be performed in accordance with 10 CFR Part 54, the Standard Review Plan, SLR, the Generic Lessons Learned SLR Report, and the Office of Nuclear Reactor Regulation Guidance.

This reaffirmation was based on the review of the license renewal statements of consideration; the SLR staff requirement memorandum; pertinent regulations, including the license renewal rule, and NRR and NRC policy and guidance documents.

The first recommendation I would like

to discuss concerns the top line. So, concerning the SLR, a review timeline. After completion of the Working Group evaluation for both safety and environmental, the staff recommended a subsequent license renewal review timeline of 18 months, which will begin at the completion of the staff's SLRA acceptance review. And I will discuss the basis for this modification to the top line in the next slide.

But I will make a point of note here. The 18-month timeline, which begins at the completion of the acceptance review, will add one month to that review in practicality approximately. Because, currently, the way the timeline is set up for license renewal applications, it is the clock starts when we receive the application and it is docketed. So, to be in alignment with NRR Office policy, we propose to start the top line at the completion of the acceptance review.

CHAIRMAN SKILLMAN: And how long does the acceptance review currently take?

MR. ROGERS: Yes, there is, in the LIC guidance, the office guidance, there are requirements for completion of the acceptance review. However, there is also an exception for

large-scale products.

And I am going to ask Steve to address what our typical timing is for the acceptance currently.

MR. BLOOM: Currently, it is about 45 days to do an acceptance review. But, as we said, I mean, what you want to get it done in doesn't mean you can't get it done faster than that.

MR. ROGERS: So, having asked that question, I will make a point that this process is still fluid to some degree. We are still working towards nailing down the operational aspects of the review cycle. And that would be one area that still could be modified, I mean, if we chose to.

CHAIRMAN SKILLMAN: Bill, you highlighted or you emphasized without a hearing. Why did you emphasize that, please?

MR. ROGERS: Well, as you know, now the hearing adds a bit of time to the schedule that we propose. So, if we have a hearing, there will be, most likely, an automatic lengthening of the schedule.

CHAIRMAN SKILLMAN: So, the purpose for that highlight is just a heads-up to industry? Is that what that is?

MR. ROGERS: Yes.

CHAIRMAN SKILLMAN: Okay.

MR. ROGERS: And stakeholders, yes.

CHAIRMAN SKILLMAN: Okay. Thank you.

MR. ROGERS: You're welcome.

Go to the next slide, please.

The next area is the Draft Safety Evaluation Report. Staff has proposed not to issue a Draft SER with Open Items for SLRA reviews. Well, when we reviewed the timeline, one thing that was obvious was that the SER with Open Items adds approximately four months to the 3G timeline. So, the elimination of the Draft SER with Open Items was the primary contributor or the bases for the reduction of the staff review timeline from 22 months to 18 months without a hearing.

What we didn't need to do to reduce the timeline was to compress the amount available for technical review. That was a key element, that there was a desire not to squeeze the staff any further in the timeline than what we currently do, you know, with a little bit of movement back and forth. But where we could get the most efficiency relative to the timeline was the removal of that SER with Open Items.

MEMBER KIRCHNER: So, that begs the question, then, Bill, or it presumes a very high-quality application. Are you thinking that you can anticipate no open items because of the previous license renewals and/or that you have been working closely with industry and you anticipate that they anticipate what you expect in terms of a submittal? I mean, there are some assumptions here, right, that you are making to say I can do away with open items?

MR. ROGERS: There are. There definitely are. And we have had that discussion, and I would say it is still ongoing to a bit, on what is the definition of a quality application, as you called it, that would allow us to not have any open items.

And the answer to that is there are a couple fundamental starting points. One would be that the application has considered all RAIs that are issued that are applicable to that plant with their operating experience up to this point, and have addressed those in the application that is presented.

Now that is not to say that utilities don't do that or attempt to do that up to this

point, but that would be a minimum requirement for not having RAIs that could have been more easily addressed prior to receipt of the application during the initial construction of it.

MEMBER KIRCHNER: So, what would the optics of this be to a critic, the public, as a going-in presumption? I mean, why do you have to say this? Why wouldn't you just say, "We expect a best estimate for completing such a Draft SER would be 18 months," and let it go at that, rather than say, "We're eliminating open items."?

MR. ROGERS: Okay. Well, the way I would answer that question -- and this is my opinion based on my years in this business -- if you think about what a Draft SER with Open Items is, it is a little bit of a construct in the middle of the review cycle. Because it moves back and forth, in that where you set the SER up determines whether the technical issues are closed or they are still open.

And we have had ongoing conversations with the Advisory Committee that we can only really do so many open items in a meeting. We have talked about that. We can't have 20 or 30. It is just too onerous and it indicates that we are not

farther along in the review process to have the meeting be of benefit to everyone, to maximize the benefit of the meeting.

So, we work for a rough shot of maybe five open items in the past, something on that order. And that is certainly not anything prescribed, but it is a working-level establishment of when you can develop the SER with Open Items.

This doesn't fully address your question, but that is where that construct came from, presenting on a certain timeline and showing where we were in the review. I don't see that that is -- and I was planning on addressing this -- if you were able to close all of the open items, the Final SER with the items closed contains all the information used to address anything that might have been an open item in a different process. So, all that information has to be contained in the Final SER.

MEMBER BLEY: Is it just the formalism of issuing the Draft with Open Items that takes you four months or are you anticipating you won't have as many RAIs and issues in the future?

MR. ROGERS: It is really more of the formalism. That is a big task to --

MEMBER BLEY: Sure.

MR. ROGERS: -- to develop that Draft SER with Open Items. That is a feat. It is actually developing an entire SER with the exception of some pieces. So, it is a big task.

MEMBER BLEY: But you still have to do the same thing, except it is when it is all done.

MR. ROGERS: Yes.

MEMBER BLEY: I guess that is not even something that -- from my point of view, having sat here, I don't think we have -- my impression had always been you wanted to do that because you thought it would expedite the schedule, coming in and getting a partial review partway through. But it is usually down, as you say, to four or five at most. So, for us, it doesn't make any difference, I don't think. Do you, Dick?

CHAIRMAN SKILLMAN: You know, to me this is a good news/bad news story. The good news is the body of evidence, the track record of the license renewals, the state of knowledge and the current practice gives an excellent starting point for being able to, for the staff being able to pull together a safety evaluation, in my view, quite handily. I mean, this is not new. This is not

rocket science. The staff knows how to do this, and they do it quite well, by the way.

The bad news is they have got to do it right the first time. And so, the staff just needs to know, if they come in with a bunch of surprises, our charter would have us react quite strongly and we would write that in a letter. You know, we would say, "This is nice, but it doesn't cut it, and here's why."

So, as long as the staff is aware that that is a potential outcome for what I would say a B- effort on the safety evaluation, then I think we are off to the races. But I think, when you say, "Guess what? We're going to cut out four months," with that decision comes the accountability to make sure that what comes before this Committee is excellent.

MR. ROGERS: I understand that, sir, yes. Yes, I think that the development of the Draft SER with Open Items does not relate directly to the quality of the staff's review. I think the staff's review is what it is and documenting it in two pieces or one piece does not, in my experience, impact that.

CHAIRMAN SKILLMAN: And it may also,

this may also require additional effort or maybe different effort with the licensees to make sure that the application has really shaken down the AMPs and the TLAAs to where the staff is not surprised, to where you are very comfortable with the quality of the information that you are receiving, so that you are, then, able to write your Draft Safety Evaluation that becomes your Final Safety Evaluation, to do with great efficiency.

So, there may be some changes that are required on your part to make sure that the licensees are giving you a thoroughly excellent product, so that when you begin, you have got something excellent to start with.

MR. ROGERS: Understood.

CHAIRMAN SKILLMAN: Dennis, to your question, I don't have a negative reaction to not having an SER with Open Items. I just think there needs to be caution in how the staff interacts with the licensees and how the staff prepares their document for the record, the SER.

MEMBER BLEY: Yes, and I think we have seen over the last 10 years or so the processes, except for weird things that have turned up, the

processes work pretty well.

CHAIRMAN SKILLMAN: Yes.

MEMBER BLEY: And I didn't see a lot of advantage to the open items, bringing us a report on open items.

CHAIRMAN SKILLMAN: Yes.

MEMBER BLEY: It is typically been three to five months usually until you get back with a final one.

CHAIRMAN SKILLMAN: Yes.

MEMBER STETKAR: The only benefit is when those occasional --

CHAIRMAN SKILLMAN: Surprises.

MEMBER STETKAR: -- weird things, as you characterize them, it could be beneficial to get some early discourse with the Subcommittee or the full Committee.

CHAIRMAN SKILLMAN: You might say, what kind of a weird thing? We had a couple of folks come in here and say, "You know, we have these studs, but we're not going to use a couple of them." Well, that has a visceral reaction for some of us. I think when you go into your PEO, your reactor vessel ought to be fully intact, just the way it was intended to be designed. I would say

that is a surprise. We have had a number of those, just for example. So, in my view, things like that need to be shaken down very, very well before they come in here.

MEMBER BLEY: I think maybe where John was coming from, we have done this on other kinds of issues, not on license renewal. Going ahead this way probably makes sense, but there might be a case where you see a real technical issue that you want to come in and just talk about that one issue for the Subcommittee.

MEMBER STETKAR: Yes, it might not require a formal, you know, 700-and-however-many pages they run to SER with Open Items on them. It might require just a discussion of that issue.

MR. ROGERS: That is a good point.

CHAIRMAN SKILLMAN: And thank you for alerting us to it. Let's keep on going.

MR. ROGERS: Okay, sir.

CHAIRMAN SKILLMAN: Okay.

MR. ROGERS: Okay. So, that would lead to the fundamental change anticipated relative to this is that the Draft Final SER will be presented at the ACRS Subcommittee and, also, the ACRS full Committee meetings, with any necessary revisions

made to the SER between the meetings.

Okay, the next slide, then, please.

So, that leads us to the -- let's see if I'm in the right spot. Okay. Thank you.

Okay. With the presentation of the Draft Final SER presented at both the Subcommittee and the full Committee meetings, the staff will propose scheduling of the ACRS Subcommittee meeting and the ACRS full Committee meetings to occur in consecutive months, if possible.

And the basis for this request will be that the staff anticipates the Draft Final SER not to be significantly revised between the ACRS Subcommittee and the full Committee meetings, and this scheduling would contribute to the staff's efficiency for the SLR application review timeline.

MEMBER STETKAR: Bill, that efficiency is, again, if there is any technical issue that you are struggling with, it behooves the staff to come to us earlier rather than later.

MEMBER CORRADINI: Particularly if it is a technical issue --

MEMBER STETKAR: No, that's what I said, a technical issue, whether it is generic or

even plant-specific. I mean, we have had some pretty plant-specific things that we have discussed.

MR. ROGERS: Does this relate back to the earlier suggestion of --

MEMBER STETKAR: Yes, it does--

MR. ROGERS: Okay.

MEMBER STETKAR: -- because, you know, this presumption that you are going to come in, the Subcommittee is going to say, "Yes, everything looks good," and bring it to the full Committee within the next month, month-and-a-half, something like that, pretty much presumes that there aren't going to be any surprises from Subcommittee discussions, which pretty much presumes there aren't going to be any difficult plant-specific or potentially generic technical issues.

MR. ROGERS: I understand. This all went through my mind a few times when I have been doing this. So, I understand that things have to fall in place smoothly --

MEMBER STETKAR: I mean, just remember that everybody, the staff, the ACRS, and the industry, on first license renewal are now well past the hump on the learning curve. So, things

are going pretty smoothly. The industry knows what to expect. You know, very few surprises, if any.

MR. ROGERS: May I offer a thought on that? Considering what you heard earlier before us relative to the technical issues, those are some things that clearly will require focused effort. But we, for much of the SLA application, this is mature; we are really familiar with the plants. So, we have a high level of familiarity and, hopefully, we will have fleshed out a majority, if not all, of those issues during the first license renewal review, and we are focusing on the differences, the technical aspects of the review, not the information or the content of the application, but just which parts would be maybe difficult, would have been more difficult to address in the aging management area. I guess we will see on this, you know.

MEMBER SUNSERI: So, let me offer maybe a devil's advocate perspective. I am a new member to the Committee and have been with this about a year now and see how things work. And the one-month delay from Subcommittee to full Committee is a pretty normal sequence of things.

But realizing that you perhaps remove

some of the margins to success by eliminating the first review, why would we continue to press for the standard process? I mean, wouldn't you not consider maybe moving up the Subcommittee meeting a month, hold the full Committee fixed, and give yourself some margin to resolve any concerns that the Subcommittee might have before the full Committee? I mean, it is just a thought.

MEMBER BLEY: You probably don't want to come to the full Committee and get a letter saying, "Come back after you resolve the following issue. We can't support this at this time."

MR. ROGERS: No, we would not want to do that. That's true, yes.

MR. BLOOM: I guess the idea would be that, if we come to the Subcommittee and there are a lot of issues, we would cancel the full Committee and reschedule that for later. If we thought we came and we thought everything was going to be great, but we show up and it is not, we won't have the full Committee. We are not going to ask to have that. We will cancel it.

CHAIRMAN SKILLMAN: Thank you.

MR. ROGERS: So, I understand you would do that, but, I mean, you know, you can kind of

probably lay these things out in a sequence to support your 18 months. So, the scheduling of the full Committee is a critical -- I don't want to belabor this thing any more, but I have made my point.

CHAIRMAN SKILLMAN: Okay, Matt, thanks. That's a good point. Thank you. It is something for you to consider on your 18-month schedule. Maybe you want to be just vigilant with the idea that you do not want to come before this Committee and have this Committee, for a lot of reasons, say, "We cannot support this."

And there are a lot of ways to get in front of that, by having pickup meetings, by notifying the staff members of emergent issues that are more difficult than you had anticipated, or areas of friction that you think could derail a Subcommittee meeting. So, I think there is a way to work our way through this.

MR. ROGERS: Okay. Yes, I think these have been helpful. Thank you.

CHAIRMAN SKILLMAN: Let's continue.

MR. ROGERS: Okay.

CHAIRMAN SKILLMAN: Thank you.

MR. ROGERS: Okay. The next area is

regional inspections. For this one, I am going to actually read through a bit of a prepared document, because I would like to lay out the basis, the thought process of how we got here, because I think this might be helpful.

So, this is related to, actually, the first bullet, although they both get addressed in this. The staff proposed that the pre-licensing inspection, IP-71002 license renewal inspection, which was previously performed during the initial license renewal application review, will not be reperformed for a subsequent license renewal application review. So, that is the IP-71002.

So, the basis -- it has a number of parts to it -- the IP-71002 is a pre-implementation inspection that was previously performed for all initial license renewal reviews except for --

MEMBER BLEY: I don't know --

MR. ROGERS: Please.

MEMBER BLEY: -- these by number. Is this the inspection that is, for every license renewal, we have had the Regional Inspector come and present the inspection results?

MR. ROGERS: Yes, that is that one.

MEMBER BLEY: So, even after 20 years,

we are not going to have them go back and take a look? We found those extraordinarily helpful in understanding the conditions at the plant. Without that, that seems kind of surprising to me, anyway.

MR. ROGERS: Disappointing --

MEMBER BLEY: By the way, I know after the full Committee you are looking for a letter in this area. Is this material included or is it just the draft on the --

MR. BLOOM: I'm not sure I understand the question.

MEMBER BLEY: -- SRP?

MR. BLOOM: You said it is just in a draft. I didn't understand. You said --

MEMBER BLEY: I'm sorry?

MR. BLOOM: I don't understand what you mean by a draft.

MEMBER BLEY: My understanding is you're coming to the full Committee to seek a letter on issuing the SRP and the GALL.

MR. BLOOM: Correct. But this really is not part of those documents. This is --

MEMBER BLEY: Are you looking for us to respond to this material as well in our letter?

MEMBER STETKAR: We can ask them to

present it to the full Committee.

MEMBER BLEY: We certainly can, and I think I would ask that right now.

CHAIRMAN SKILLMAN: Well, that is why I asked for this to be part of this briefing, and I would ask that it be part of the full Committee briefing.

MR. BLOOM: Understood.

CHAIRMAN SKILLMAN: This is a process change.

MEMBER BLEY: Yes, this is significant. I'm looking forward to hearing why we don't need this inspection. You were about to tell us.

MR. ROGERS: Yes.

MEMBER BLEY: And it is troublesome.

MR. ROGERS: Okay. I think I will address at least some of your questions in the following information.

MEMBER BROWN: Can I make an observation? This one stuck out at me the same way it did you all for one reason. I come from the Naval Nuclear Program and had experience -- I mean, we operated an aircraft carrier, the Enterprise, for over 50 -- 52 years. And the Nimitz, the first of the CDN68 class, I believe was commissioned

around 1974 or 1975. So, we are approaching 43 years on those. And I was directly responsible for a large number of areas, the electrical areas, reactor plant electrical areas, for 22 years and with the Nimitz class for about 28 years.

And I can speak from experience that we achieved those times not through -- I mean, it was literally through inspecting the hell out of these plants every time they came in. I mean, this was on a two-year -- you know, they would go out and deploy. They would come back in, and we would have people down going through it.

And the maintenance, we performed maintenance just like crazy. We increased our maintenance levels, made sure stuff was working right, and inspections and maintenance are the key to me. And it says we can do that.

And those ships, those plants, were operated in a manner that was far more stressful than any of these commercial plants, which that is a positive aspect in that materials are materials. I mean, we haven't invented eternium to put into naval vessels and we don't have it in the commercial plants.

But I am really on edge about it, not

doing inspections to see what the level of maintenance is and what things look like, as well as I would think you are just going to have to have an extended type of inspections and maintenance periods to ensure that everything stays up-to-snuff. I'm just throwing that in just from an experience standpoint.

MEMBER STETKAR: Bill, just for the record, this inspection is where we generate things like scoping and screening audit reports and content.

MR. ROGERS: Yes.

MEMBER STETKAR: Okay. It is not inspection of the actual materials or anything?

MR. ROGERS: No.

MEMBER STETKAR: Thank you.

MR. ROGERS: Yes, I think good points. I will address some of these.

MEMBER STETKAR: But I will echo what Dennis said. I have, in 10 years, I have found those reports, those audit reports extremely useful because they have identified site-specific things that in some cases are not particularly evident when you look at the SER.

MEMBER BLEY: And our ability to have a

discussion with the inspector has given us very useful information and helped us build our confidence as well.

CHAIRMAN SKILLMAN: Okay, Billy, please proceed.

MR. ROGERS: All right. So, the 71002 inspections, a pre-implementation inspection, was previously performed for all the initial license renewal applicants with the exception of Calvert Cliff, although Calvert Cliff did receive significant levels of inspections during the review process. It just was not categorized as an IP-71002 at the time.

MEMBER STETKAR: Is that because Calvert Cliffs -- was Calvert Cliffs the pilot?

CHAIRMAN SKILLMAN: Yes, they were No. 1.

MR. ROGERS: Yes, the first application.

And then, as you said it, Mr. Stetkar, the two primary areas inspected during the 71002 inspection are the scoping and screening methodology with a focus on non-safety affecting safety, and the aging management programs.

So, I will focus on scoping and

screening first. The first area of scoping and screening methodology with a focus on non-safety affecting safety, that was during the initial application reviewed by both the Regional Inspectors and Headquarters staff, including walkdowns during the initial license renewal reviews.

The staff has determined that the overlap between the two types of reviews, the inspection and the technical review audit, can be reduced by having the Headquarters staff perform the technical review of this area for subsequent license renewal with walkdowns performed as necessary during the onsite audit.

I personally have been the team leader for the majority of the scoping and screening methodology audits for probably 10 or more years. And we have had inspectors on the audits. We have had a variety of interactions with each other.

But the scoping and screening methodology will be similar between both applications. The A2 information should be similar. It was pretty solid early on in the review cycle. I was part of the ad hoc committee that established the information which ended up

getting codified in NEI 95-10, Appendix F. That's a non-safety affecting safety, the guidance that the utilities use. I was part of that group.

And I have gone back recently and looked at early applications, and I have read what we accepted in the scoping and screening results and the A2 review, and it looked good to me today. In general, I still think the SERs looked no different than current staff positions in those areas. So, with that being in mind, I think that that piece we can do with the Headquarters staff to verify that.

MEMBER BALLINGER: I have a question. Since the subsequent license renewal will probably be dominated by the aging management programs --

MR. ROGERS: Yes.

MEMBER BALLINGER: -- and this inspection, you just said that it is not going to be done, and part of that inspection is related to the aging management programs.

MR. ROGERS: Yes.

MEMBER BALLINGER: Do you run the risk of having a gap here that you end up getting surprised?

MR. ROGERS: Well --

MEMBER BALLINGER: That seems to me, boy, that is a tank trap.

MR. ROGERS: Maybe I can address that then. I think I can. That is the area with the scoping and screening piece.

Now I will move on to the aging management programs next.

CHAIRMAN SKILLMAN: While you are talking with us, would you please make clear what it is you are speaking about relative to the difference of 71002 and 71003? You have already said you are not going to do 71002. We understand 71002 was, quite candidly, the recon that we used, and that we use, for our license renewal activities. You're saying, "We're not doing that. We're doing 71003."

So, for the comments that you are making, please make clear whether those comments are related to what you are proposing as the path forward.

MEMBER STETKAR: Bill, just for clarity for the record, the thing you talked about for the scoping and screening report is part of 71002, is that correct?

MR. ROGERS: Yes.

MEMBER STETKAR: Okay. Thank you.

MR. ROGERS: Yes.

MEMBER STETKAR: And what you are going to eventually get to perhaps, the aging management audit, is also part of 71002?

MR. ROGERS: Yes.

MEMBER STETKAR: Okay.

MR. ROGERS: That's the two fundamental pieces --

MEMBER STETKAR: Yes.

MR. ROGERS: -- that relate to this activity, yes. Yes. Yes. Okay.

MEMBER STETKAR: Speak quickly or we'll forget.

(Laughter.)

MR. ROGERS: Okay. Okay. So, the AMPs now, we will begin with that. The initial license renewal aging management programs that were expected in accordance with the IP-71002 procedure have now been fully implemented. They have also been subject to an IP-71003 inspection, proper to the receipt of -- they have to be subjected to that prior to going to PEO. So, our plants that are PEO went all through the 71003 inspections also.

So, when they come in for subsequent

license renewal, they will have gone through another set of inspections. The 71003 does have an AMP review component to it. And then, if they are NPO, they will be active programs. That is an important piece.

Yes, sir?

MEMBER KIRCHNER: Bill, just a quick question. The 71003, that is done after the license is approved?

MR. ROGERS: That's correct.

MEMBER KIRCHNER: Okay. And then, how frequently is that revisited or is it?

MR. ROGERS: So, the way that 71003 is set up -- well, first of all, I will go back. The 71002 is done during the initial review when we are establishing whether they will receive a license by the review process. And at that point, the AMPs, some of the programs are actually operational; some are not, but it is considered pre-implementation for the aging management programs.

So, then, the license is issued. And then, the 71003 is performed. Phase 1 and phase 2 is done just prior to PEO. I think it is the last. Refueling outage is No. 1. And then, within I think three months -- is that correct, Heather? I

just looked at Heather Jones, one of the License Renewal staff people. That is done within three months.

So, with the refueling outage, you can get certain areas into your inspection, and then, the rest can be done and followed up on. The two phases, Part B, a third phase following PEO.

MEMBER KIRCHNER: And just for the record, what does the third phase include?

MR. ROGERS: I think Heather is going to address that. She stood up.

MS. JONES: So, as Bill said, yes, there are two phases that are performed in the PEO. The first phase is done at the last outage or the second-to-the-last outage prior to PEO to look at any areas that are normally inaccessible. The second phase, that is the large phase performed three months prior to PEO, typically, three months prior, where you are looking at the implementation of all the AMPs and all the license renewal activities.

Then, you have a third phase, which is optional, but it is typically performed a year into the PEO. That is where you follow up on any -- sometimes we have license renewal activities that

are due to be completed during the PEO. So, we will go back and we will look at those.

And we have just recently updated the procedure to add a fourth phase. That is performed five to ten years into the PEO. And that is where it is really looking at AMP health and AMP effectiveness, and it is really useful actually for the SLR applications because that is where we get to see -- you know, we have had some runtime with the AMPs. We have had a couple of outages into the PEO. We get to see how the AMPs are actually working, how the licensee is identifying any aging management issues, and how they are characterizing those issues in their corrective action program.

MEMBER KIRCHNER: So, I was asking a leading question. Coming up at the end, towards the end of this first license renewal, initial license renewal, you've got 20 years under your belt. But what is going to be submitted for the subsequent license renewal is going to build strongly on those very same programs. So, the presumption is the health and execution of those programs is an important component of the SLR. So, if you don't inspect -- you said phase 3 is 5, 10, 15 years?

MS. JONES: No, the phase 3 is typically one year into the PEO. It is the phase 4 where we look five to ten years into the PEO and we are looking at the AMP health that could ultimately form what they are going to do for a subsequent license renewal or how they are doing for subsequent license renewal.

CHAIRMAN SKILLMAN: Heather, would you identify yourself for the record.

MS. JONES: My name is Heather Jones.

CHAIRMAN SKILLMAN: Thank you, Heather.

MS. JONES: And I would like one more comment. Please don't -- we do have, you know, these plants are being inspected by the Regions under the ROP, and we have updated a lot of the baseline inspection procedures to include aging management inspection guidance. And we continue to update those inspection procedures. So, it is not like these plants are never going to be inspected again. So, they continue to be inspected.

MR. ROGERS: Yes, if I may, I think that was in response to Mr. Brown's question, correct?

MS. JONES: Yes. Yes.

MEMBER BROWN: No.

MR. ROGERS: Or at least partially?

MS. JONES: No, I'm sorry, the gentleman next to him.

MR. ROGERS: I think the earlier question that he asked --

MS. JONES: Yes.

MEMBER BROWN: I was focusing as much not only on the inspection, but the maintenance. Just maintenance has to be -- the inspections should be ensuring that the maintenance is being properly done, that small things aren't being put off. You've got periodic refueling periods that are coming up, you know, that are done periodically. So, you have got opportunities to get those done.

And that is what we found to be very important to keep these ships operating, was making sure the maintenance was not deferred. And it is a heck of a lot less expensive to get that maintenance done than it is to build a new plant. That is why we did it on these carriers. They are not cheap. All you have to do is read the paper.

CHAIRMAN SKILLMAN: Bill, what I am not hearing in the presentation that you are making is why IP-71003 is at least as good, and maybe better,

than 71002 for the time at which it is presented.

Again, the tool that we have been using for years for life renewal, for 40 plus 20, has been that 71002 that has been giving us the inspector's point of view at fine detail. And that has discovered all kinds of issues that likely would never have been raised to this Committee.

And so, when you say we are not going to do that inspection module IP-71002, we are going to use inspection procedure 71003, it seems that the words we need to hear from you in sum are words that communicate here is why 71003 gives you all that you wanted in 71002 plus here's why it is the right tool for going into life after 60. We are not hearing that, and that is an important message that we need to hear.

MEMBER STETKAR: Bill, again, this is a Subcommittee meeting, so personal experience. The most valuable stuff that I have ever seen from those AMP audits or inspections, whatever they are called, is the inspector's characterization of plant-specific operating experience and how it dovetails into their proposed programs.

And from what we just heard, part of that is operating experience in terms of normal

maintenance and that kind of stuff, and part of it will be some of the staff's experience from the 71003 inspections in the first renewal period that we at the ACRS never see. I mean, we don't see the 71003 things. I think we have been briefed on them, but I could be making that up. And if we have, it has been, you know, just a general briefing by an inspector.

But the really valuable stuff, from my perspective, has been how the actual plant-specific now operating experience dovetails with the adequacy of those aging management programs, not the programmatics part. And I think losing that somehow, from my perspective, will make our lives a lot more difficult in terms of understanding the adequacy of the programs going forward.

MR. ROGERS: Well, I have some more information to present.

CHAIRMAN SKILLMAN: Yes, please go ahead.

MR. ROGERS: With the idea of the implementation review being performed on AMPs that are now currently fully operable and in place, it seems like the 71002 activities would duplicate certain activities previously performed for AMPs

during the initial 71002 inspections, because they are implemented now. It is not a pre-implementation. It wouldn't be a pre-implementation, generally speaking.

For the SLR applications, there will be several AMPs. I think we have five new AMPs and they will be plant-specific AMPs that have not been subject to the inspection. For those AMPs, we consider this following information:

The overlap of activities between 71002 and the Headquarters staff's technical review of audit activities, both the 71002 inspectors and Headquarters staff perform a review of the AMPs and also performs necessary walkdowns. For SLR, this would be most applicable to the small population of AMPs that have not yet been implemented. So, for pre-implementation, this is going to neck down to a small collection of AMPs.

And then, the next part would be the initial license renewal 71002 activities performed by Headquarters staff and the Regions resulted in similar outcomes and the documentation of issues. For the initial license renewal, the inspection outcomes for identification of questions, issues related to AMPs, documentation of these issues was

in the form of RAIs, and the resolution got collected and documented in the SER.

The point is, when the inspections were performed, they did not result in inspection findings; they resulted in changes to the application and potentially modification to the aging management programs. So, in this particular case, these inspections resulted in similar outcomes to a technical review or an audit. That is not a common circumstance, but it is applicable to this process.

Therefore, the staff determined that the new GALL SLR AMPs and the new plant-specific AMPs could be reviewed during the Headquarters technical review and the onsite audit.

Now we have had a lot of discussions with the regional staff and management on this issue. Heather Jones was the lead for the Working Group on working with the Regions, and I participated in many of the telecom meetings.

So, to support this review, it was agreed with the regional staff that they would be requested to participate in the AMP onsite audit and perform AMP evaluations and plant walkdowns. So, the inspectors were requested to participate in

the aging management program onsite audit. They seemed enthusiastic and generally agreed to it.

The difference is that we will be in the audit process at that point and not an inspection process. We will not be in 71002. We will be under an audit plan as part of the technical review. But the Region will have an onsite presence during that AMP audit. That is our expectation.

MEMBER BALLINGER: I suppose I am going to expose my ignorance here, but, for process, from the point of process, we have had a lot of discussion about trying to basically establish a baseline for the subsequent license renewal. This inspection, I presume that you would know long before that licensee is going to submit. So, they are not just going to come in on a Monday and say, "Here's my submittal." So, you will have knowledge that they are going to submit long before that. Can something be done to -- I don't know what kind of inspection you would call it -- to do an additional inspection before even the submittal, so that you have a baseline to go from maybe? I am probably not saying it correctly, but -- because there is the one-year and the five-year.

MS. JONES: Yes, and that is where I was going to head. I think that is where the phase 4 is -- my name is Heather Jones -- I think that is where the phase 4 is going to really come in handy there, because you are doing it, you know, five to ten years in a PEO. And if you look at the timeline, that can bump up against right before an applicant is about to submit an SLR application. I know for Peach Bottom it is going to be pretty close. So, we can leverage that phase 4 inspection, is what I am saying.

But it would be, you know, as part of the 71003, and I am sure that the auditors could use that information in the report, so that it informs some of the reviews. But just keeping in mind it wouldn't necessarily be part of the subsequent license renewal application review. It would be an inspection for the IP-71003, but a lot of useful information can be gained from it.

MEMBER BALLINGER: Thank you. Okay.

MEMBER KIRCHNER: And I wanted to note here I am all for efficiency. That is not your No. 1 objective. It is effective determining an acceptable level of safety.

It would seem to me -- you know, I am

trying to look at this as the lay public -- what they want is confidence, right? We are extending the life of these plants.

It would seem to me that a good -- and I will probably not use the correct terms -- audit inspection, as part of the application, would enhance confidence that the applicant had well-managed the aging management programs, and that would, then, allow you to focus on the five new AMPs and any open -- oops, I won't say "open items" -- any issues that might be plant-specific and, hence, allow an expeditious review, thorough but expeditious, and then, issuance of the SER. That is my thinking about how one builds sufficient confidence that you are addressing the acceptable level of safety in a process sense. So, maybe this phase 4 does that for you.

MR. ROGERS: Yes, I think that is the idea.

MEMBER KIRCHNER: Allow you to accept almost on paper, because that is what you are dealing with with the SER part, that the substance is behind this in terms of the applicant's programs for managing his or her facility and, hence, the confidence that would go with it.

I am just looking at what I will call optics from the public perspective.

MR. ROGERS: Well, I agree. I think that the idea of having, actually, the idea of having a phase 4 which is going increase, in addition to the inspection, collection of inspections for plants in PEO, is exactly that. It builds your confidence level that AMPs are meeting their intended desire. The results tell you that, because that is what we were trying to do with that.

MEMBER KIRCHNER: Thank you.

MEMBER BLEY: If I understand what you have said, and I have quickly been reading through 71003, it is really pretty thorough. It covers all the things we care about, although it is done before they enter the period of extended operation and verifies these things. So, the Committee wouldn't see this at the time of the approval of the subsequent renewal application.

MR. ROGERS: That's correct.

MEMBER BLEY: Okay. That is what I thought.

MR. ROGERS: Yes. I did want to note another thing related to my last point. So, I just

focused on the new AMPs, the plant-specific GALL AMPs, but that is not to -- my point is not to imply the review is limited to the new AMPs. Actually, all AMPs, AMR line items, and TLAs are subject to technical review and will be part of any aging management audits to cover the entire application.

Yes, that's all I was going to say here.

MEMBER BLEY: So, at the time a licensee brings forward its application and you review it, there will have been audits? I mean, first of all, we have been issuing the first license renewal. We haven't had AMPs and that sort of thing. Now they will have had them for some period of time, and you will have had the ability to have audits and see how they are doing on them.

You can apply for this at any time, I assume?

MR. BLOOM: Excuse me. You can only apply for it within the 20 years prior to your needing it.

MEMBER BLEY: Okay. So, we have seen people apply pretty early for first renewal. So, somebody who just starts into the period of

extended operation on their first license renewal could immediately apply --

MR. BLOOM: Technically, yes.

MEMBER BLEY: -- and you will have no history of how they are doing on the AMPs at that time?

MR. BLOOM: Correct. Correct. And that goes back to a point that I wanted to make sure, and I think maybe we didn't say this clearly enough. The 71002 was supposed to say, are they ready to implement, and 03 was, now that they have implemented, how did they do?

MEMBER BLEY: Yes.

MR. BLOOM: And so, that is the distinction. So, our thinking was with the SLR, since they have already implemented the programs and we have looked at phase 1, 2, 3, and 4 and seen how they did really long-term, you can say, well, do they really need to -- do we need to see them, see if they are ready to implement again? Because, as Billy said, for the majority, the program is already in existence, and for the others, we can do more of a spot-check and look at those with an audit as opposed to starting from scratch and saying, can this licensee implement a --

MEMBER BLEY: Please silence your phone.

CHAIRMAN SKILLMAN: Hey, Pete, put it on silence.

MR. BLOOM: So, we already know they can do it because they are in the PEO. So, we know they can do it. So, that was our thinking on it.

I think what we want to do, I know Billy -- I don't know if he has any more to say on it. I think I have taken the action item that, for the full Committee, we will come back to you with more information to better explain why we got rid of 71002, but, then, to explain in different terms what we are doing to take its place. And I think that is part of what maybe we didn't do as good of a job today to explain to you what is taking the place.

MEMBER BLEY: I think beyond 71003. I have been looking through that. That is pretty darn good, I think.

MR. BLOOM: Okay.

MEMBER BLEY: But that might not happen for a long time. That might not happen until just before they go into their next period --

MR. BLOOM: So, we will be ready for

the full Committee to have that explanation.

MEMBER BLEY: Yes.

CHAIRMAN SKILLMAN: Good. Steve, thank you. Billy, thank you.

Let's keep on going. We've got a few more important presentations we want to get through this day.

MR. ROGERS: Well, that concludes my presentation, but Nancy is going to do a presentation.

CHAIRMAN SKILLMAN: Nancy, you're next, please.

MS. MARTINEZ: Thank you, Bill.

Good afternoon. My name is Nancy Martinez. I'm an Environmental Tech Reviewer in the Division of License Renewal.

As Bill mentioned, the Working Group evaluated also the environmental review process to identify areas that can be optimized for the review of the SLR application. The staff identified four major areas, and we did present these at public meetings last year in the spring and the fall.

The major areas consist of staff encouraging and recommending that applicants consider requesting pre-application meetings with

the NRC to make the staff aware of any new and significant information, issues not previously assessed during the initial license renewal, changes in environmental conditions specific at the plant site, or new site-specific information.

The next area pertains to incorporation by reference. As part of the review, the staff will develop an Environmental Impact Statement, and the staff anticipates implementing incorporation by reference of relevant information in the SLR Environmental Impact Statement from prior EISes, environmental assessments, or environmental reports, in accordance with 10 CFR Part 51. And this will eliminate repetition and, also, the size and length of the Environmental Impact Statement and, similarly, the environmental report.

Staff encourages the applicants to provide updated or new biological surveys to support and increase the efficiency of the staff's consultation with other agencies.

And the last area consists of or pertains to alternatives. In accordance with 10 CFR Part 51, the staff will evaluate alternatives to the proposed action. And for SLR Environmental Impact Statements, the staff will focus on the

evaluation of replacement power alternatives in the Environmental Impact Statement that were not previously assessed or that have changed since the initial license renewal.

MEMBER BROWN: What does that mean? You mean you are going to have investigate solar panels and windmills on the sites, the existing sites, as alternative power or --

MS. MARTINEZ: As part of the environmental review, we do look at a range of reasonable alternatives to nuclear power. That analysis is contained in our Environmental Impact Statements.

MEMBER CORRADINI: So, I guess I'm not going to repeat what Charlie said. But I thought, isn't that more a Public Service Commission or a Public Utilities Commission state issue than a federal issue? Am I missing something?

MS. MARTINEZ: It's required. It is required for us to address alternatives to the proposed action. While we do not make a decision on those alternatives, we look at the range for a comparison to the proposed action.

MEMBER CORRADINI: Based on what forecasting, though?

MEMBER BROWN: EIA?

MEMBER CORRADINI: I mean, so you use the EIA forecasting mechanisms? I mean --

MS. MARTINEZ: Correct. We look at a range of energy portfolios, state regulations.

MEMBER CORRADINI: Okay. I was going to say something, but I won't say it.

Economic, though, forecasting?

MS. MARTINEZ: I would actually like to request if Bob Hoffman can address some of these questions. He is our expert on alternatives.

MR. HOFFMAN: Yes, cost and economics get factored in, but in the environmental report that the applicant submits they will often refer to their innovative resource plans or planning documents that the transmission, for the transmission organizations. And that gets factored into what looks like a reasonable mix.

Should the nuclear plant not get relicensed, the review of alternatives satisfies the National Environmental Policy Act requirements, and the agency looks at, satisfies that requirement to look at alternatives to the proposed action by looking at other power technologies.

MEMBER CORRADINI: Colleagues, thank

you.

Nancy, thank you.

MS. MARTINEZ: Thank you.

MEMBER CORRADINI: We are coming to the end of this portion of the meeting. I would ask my colleagues if they have any questions for Billy or for Nancy.

(No response.)

Hearing none, Steve, back to you. Any more from your team?

MR. BLOOM: No, there's nothing left. I will now turn it over to NEI who has a quick presentation.

MEMBER CORRADINI: There's a lot left, but let's get NEI up here.

(Laughter.)

MR. BLOOM: As we leave, yes, we will turn it over to them to give a presentation as to what is going on from their standpoint.

CHAIRMAN SKILLMAN: Yes, sir. Thank you.

So, we are inviting NEI to the front of the room, please.

Jerud, welcome. I ask you to please proceed.

MR. HANSON: Thank you, sir.

Everyone can hear me?

Thank you. I'm Jerud Hanson with the Nuclear Energy Institute. I represent the industry in second license renewal. I am the lead for SLR for NEI. I am going to provide an update that mainly focuses on the progress and activities we have made or had over the past year mainly. And at the end, I am going to get into some information regarding an unofficial survey we have conducted regarding application submittals.

Next slide, please.

As Steve noted earlier, Steve Bloom, industry submitted over 300 pages of comments to the NRC staff on the Draft GALL that was published in February of last year. Within those over 300 pages, we had identified 23 significant, what we considered significant, technical concerns, and we participated in nine public meetings over the next year in 2016, to focus mainly on those significant concerns we had.

This was an extremely beneficial process and interaction for us, because what it did is it allowed us the opportunity to sit down with the NRC staff and discuss while the Draft GALL was

being rewritten some of the concerns we had with the language. We were able to provide our position. We were able to hear the NRC position. We were able to talk those out and come to an understanding, which I think in the end will result in a much better document. So, I just wanted to make a note of that, that that was a very important process for us, and we think it will pay off.

In the end, ultimately, we did feel satisfied that all of our concerns that we had identified were resolved to our satisfaction. And we did conduct a drop-in with Bill Dean to discuss some of these issues, as well as a couple of concerns we had. Leading up to the meeting, we were able to get our technical concerns resolved. So, we were able to speak to Mr. Dean about some other areas we were concerned about concerning staffing within NRR, optimization for the application review process, as well as the survey that I am going to get to at the end of this presentation.

MEMBER KIRCHNER: Jerud?

MR. HANSON: Yes, sir?

MEMBER KIRCHNER: Could you just give a synopsis of what the major 23 industry concerns

were? I haven't read your 300 pages of commentary. I mean, what were the real crux issues?

MR. HANSON: With the majority of those, we thought that some of the language within the Draft GALL was going beyond the scope, necessary scope, for aging management programs. And that was, to sum it up, we thought it was going a bit too far. So, I think Eric Blocher can provide a little more insight on that. So, I will turn it over to him.

MEMBER BLEY: Before you do --

MR. HANSON: Yes?

MEMBER BLEY: -- from both of you, I guess, right here, are you talking about what you did in the past or the way you believe it is right now?

MR. HANSON: This first section of the slides, sir, is talking about the past.

MEMBER BLEY: The past?

MR. HANSON: Yes.

MEMBER BLEY: Okay. So, these don't apply to the new draft?

MR. HANSON: No. I'm going to get to that in the next bullet there, sir.

MEMBER BLEY: Okay.

MR. HANSON: Eric?

MR. BLOCHER: I'm Eric Blocher, License Renewal Team.

The 23 issues that were identified, the staff have addressed each of those in their presentation. So, many of the comments you heard from the staff, for example, in the structural area of Bryce Lehman's discussion of the UT one-time inspections for inaccessible areas. That was one of our comments. The same with a number of the comments that Bill Holston presented in his presentation. They have all been addressed.

And of those 23 comments, with the exception of one, all have been addressed with the industry. One way or the other, we have come to an understanding of the requirements.

CHAIRMAN SKILLMAN: Thank you, Eric.

Jerud?

MR. HANSON: Okay. So, last month the semi-final GALL was published ahead of this meeting. So, we took an opportunity to conduct a review of that. We have provided the NRC DLR with some feedback based on our review. And this focuses on ensuring that those 23 technical issues that we previously identified are appropriately

addressed, and we are working with the NRC right now to work those out or ensure that is the case.

So, the environmental report. We had a meeting with the NRC to discuss optimizing the SLR NEPA review process. This was in May of last year. The Environmental Task Force for NEI has drafted a model SLR New and Significant Assessment Approach for Severe Accident Mitigation Alternatives, and we have been working on this with the NRC since July of 2016. The final version will provide a consensus approach for SLR applicants regarding compliance with the regulatory exclusion for providing SAM analysis in SLR environmental reports.

Next slide, please.

This is some of the activities and progress. So, in 2015, we began hosting some site visits focusing on SLR, specifically aging management programs that were being conducted at various facilities throughout the United States.

The first one began at Salem Hope Creek. We went to Oak Ridge National Lab, Pacific Northwest National Lab, AREVA, EPRI, Westinghouse, and we are specifically looking at AMPs on concrete, cables, and metal. This just gave us the

opportunity, industry and NRC, to go out and take more of a hands-on approach and get a look, some presentations, on some of the aging management programs that are going on in these facilities.

And we were able to have some very good meetings as a result of that and, if anything, see some additional resources as we move forward past 60 years.

Our next one is scheduled next month at the University of Tennessee in Knoxville, where we are going to be looking at some concrete-focused aging management research.

MEMBER CORRADINI: Is this going to result in some sort of NEI or EPRI document that says like all this is helpful and is going in the right direction or there are things that should be changed or improved? What is going to be the result of all these visits?

MR. HANSON: It won't result in an actual document. What I think it results in that we have found beneficial is the discussions that we are able to have. I will give an example of that.

When we took a trip out to Oak Ridge in 2015, some of the information that we saw at Oak Ridge, it made some of the NRC and some of the

industry realize there were some additional questions that needed to be asked and some additional information, basically, some conversations that needed to be had.

So, we scheduled a series of deep-dive meetings. I think we had six total. And they focused on concrete, cables, and reactor vessel research. And over the series of those discussions, I think the NRC was able to gain some additional information that they didn't have in the past. So, that was one of the good results just of having one of these meetings and going out to a site.

I think Sherry wants to add some additional information.

MS. BERNHOFT: Yes. Yes, this is Sherry Bernhoft with EPRI.

A partial response to that, too, is, as the research results complete, we roll those into the EPRI reports. So, you're seeing the research in action when you go out on these site visits, but the final results do get rolled into the EPRI reports.

CHAIRMAN SKILLMAN: Okay. Thank you, Sherry.

MR. HANSON: Thank you, Sherry.

CHAIRMAN SKILLMAN: Okay, Jerud, go ahead.

MR. HANSON: All right. So, our next, we'll call this a milestone, is NEI 1701. This is a rewrite of NEI 9510, which is the guidance for the industry on submitting an application for license renewal. The industry took that document and conducted a rewrite specifically to address submitting an application for second license renewal. We have finished that this month and submitted it to the NRC for endorsement earlier this month. So, we are expecting that, hopefully, within the next couple of months.

We have a final meeting to address SLRA optimization on May 11th. We have participated in three public meetings with the NRC so far to look at optimizing the application review process, providing our own information and recommendations on streamlining the process, as we just heard through the last presentation.

As was already noted, NRC has agreed to an 18-month SLRA review objective. And industry, we know that the ball is in our court regarding ensuring we have a quality application, so that we

can be sure to do everything we can to meet that 18-month goal.

Next slide, please.

So, for the lead plant update, we heard from Mike Gallagher and Paul Aiken. Peach Bottom is on track for BWRs for a submittal in third quarter 2018. Their peer reviews are scheduled for April of 2018. Surry Station is on track for PWR submittal the first quarter of 2019. They are working with Westinghouse to form a site-specific gap analysis to address MRP-227 this year. And their peer reviews and workshop are scheduled to take place in the May 2018 timeframe.

So, the next bullet refers to a recent presentation that was provided by NEI to the NSIAC committee with NEI, which is the Nuclear Strategic Initiatives Advisory Committee. And the point of the presentation was to ensure industry commitment to supporting the success of lead plants to ensure the success of subsequent license renewal.

Specifically, we emphasized the importance of conducting peer reviews. We have a very good process that we are using to complete these applications. And what has proven to be a very valuable part of that is conducting peer

reviews. And we have Peach Bottom and Surry scheduled, and we ensured we had industry commitment to supporting these peer reviews, so we could get the feedback that will ultimate produce an even higher-quality application to be submitted to the NRC.

CHAIRMAN SKILLMAN: Are the peers, Jerud, that will participate in those peer reviews prospective peers to also do subsequent life renewal? In other words, are they utilities that intend to have some skin in the game?

MR. HANSON: I would say yes. Yes, that's the group we are looking at.

CHAIRMAN SKILLMAN: Okay. Thanks.

MR. HANSON: All right.

So, moving on to the survey, just to give some background on the slide we are about to see, last year in May, NEI conducted an unofficial survey. The purpose was just to try to gain some insight on how many applications, SLR applications, we could potentially be expecting and when.

So, on the next slide we have the results of that survey. And just to go into a little detail on the nature of the survey, our objective was to keep it as generic as possible.

That is why you don't see any site names up here. And the numbers you see refer to plants. It is not reactor-specific. This is nuclear power plants.

The survey asks, basically, two questions. If you don't have any plans to submit for second license renewal at this time, check this box. And if my memory is correct, I received about 13 responses that said no plans to submit at this time.

Then, you had another section that said, if you plan to submit for second license renewal, how many plants and when? And this was the result of that.

So, we had three parts of this as far as responses. We had the people who checked the box that said no plans to submit. We had the people who responded and gave us the results. And then, we had people who didn't respond at all. So, this is what you are seeing, and this add up to 20 plants going from 2018 to 2047.

This was done in May 2016. And the plan right now is to reconduct this in the late summer or fall of this year.

CHAIRMAN SKILLMAN: And, Jerud, this indicates --

MR. HANSON: Yes?

CHAIRMAN SKILLMAN: -- approximately when they would submit their applications?

MR. HANSON: Yes, by years.

CHAIRMAN SKILLMAN: By years? Okay.

MR. HANSON: So, the 2019, 2020, all the way up to 2047, and how many within each year. So, you will see in 2022, in 2026, that is when we have the most plants submitting right now, three in one year.

So, this served a couple of purposes. One, it was for us, just so we had something, even if it wasn't even official, so we knew what to expect. But it could also, the hope was it could be used as a tool, even to provide to the NRC, to say this is what we were expecting, and so, we can give you a heads-up for staffing purposes, budget, everything. This is what we can give you for now.

So, the good news is we are planning to resubmit this in late summer or fall this year. It is a very important timeframe that we chose to do that. Most importantly is that the GALL, the final GALL, will be issued in July. So, we are giving time, at least a little bit of time, for the industry to realize that, okay, this is what the

GALL looks like. We know what to expect. As long as they know what to expect, they can determine how predictable it is, and it can add some additional confidence.

And even more importantly, Bennett made a comment earlier during her presentation. She referred to the dates that Peach Bottom and Surry had provided a couple of years back as far as when they were going to submit. Third quarter 2018; first quarter of 2019. And after everything we have been through, after all the work that has been done, they are still on track to meet those dates.

So, being able to go to the CNOs and provide that information should be very, very helpful when we reconduct the survey. And I'm about 99 percent sure, about 99.9 percent sure that the numbers on the survey are going to go up.

So, when a plant is on track, we will have the GALL that is finished. We will have industry guidance on submitted application that should be endorsed by that time, and everyone should have a very clear set of expectations as far as what we have to look at going forward with second license renewal.

CHAIRMAN SKILLMAN: Jerud, thank you

very much for coming here.

MR. HANSON: All right. Thank you.

CHAIRMAN SKILLMAN: Colleagues, any comments, please?

MEMBER BLEY: Yes, I have a question.

CHAIRMAN SKILLMAN: Please.

MEMBER BLEY: And it is not for you directly, Jerud; maybe staff, maybe industry.

Some years ago when we wrote our first letter, at that time we had recommended that there only be one GALL and that it just be expanded to cover these new things. Last year, staff anyway told us that, no, there's going to be two. And the reason is there is only a handful of plants that have to go through first license renewal. So, that will be over with and we won't need it anymore.

It could be as early as 10 years from now you could be getting applications for first license renewal for a new generation of plants that are still under construction. What is your intent? Are you going to keep the old GALL? Are you going to turn this into GALL for everything? We don't want to lose what we have got when we are going to need it again in the not too -- that is not very far in the future, actually.

MR. BLOOM: So, to address your question, sir, the GALL Rev 2, which is based on going out to 60 years, will stay in existence. Like you said, Watts Bar still has to come in, all the new generation plans. Vogtle and Summer 3 and 4 and 2 and 3 have to come in eventually, if they do come in.

So, that document will be used to go from 40 to 60, and then, we will have the SLR which goes from 60 to 80. And the reason is that we have information -- now, if at some time in the future we get to the point where we have so much information because of all the research, and we can realize that the program is actually the same, well, then, maybe we will make changes and we only will have one document.

But, right now, when we only have data out to 60 that we are definitively sure of, and then, the data that goes out to 80 is still in flux, so to speak, that is why we have the plant-specific programs or further evaluations. That is why you have to have them differently.

I really don't think we want to impose having further evaluations or plant-specific ones in the GALL SLR and have to impose that on a plant

that is coming in for the first one, when we already have the data that would make it where we already know what generically you want out to 60 years. It just would be putting more onus on a plant where you don't need to.

MEMBER BLEY: It strikes me -- two things. And I thought we talked about this a year or so ago. You have learned some things in coming up with the GALL SLR that you probably would want to put back into the original GALL or GALL 2, I guess. And maybe that gets done.

I am just a little nervous about the whole focus is going to be on GALL SLR for a while as we get applications and fine tune that. And the other one is going to kind of lie dormant. Just I don't want you to -- you don't need to respond to this --

MR. BLOOM: Well, for the next five years that is true.

MEMBER BLEY: -- but I hope you have been thinking about this.

MR. BLOOM: For the next five years, actually, we have River Bend coming in later this year. We have one plant coming in 2020 and one in 2021 and 2022. So, we still have a couple of

plants that are still coming in for their first one.

MEMBER BLEY: No, agree.

MR. BLOOM: So, you saying "laying dormant for the next five years". That is not actually true. We are going to have two different documents that will be used for those individual reviews for those plants.

MEMBER BLEY: Okay.

MR. BLOOM: And maybe, like you said, you know, if we learn something, it will get incorporated by using our Interim Staff Guidance, which, then, will be rolled in at the next revision, if we need to.

MEMBER BLEY: Okay.

CHAIRMAN SKILLMAN: Steve, thank you. Jerud, thank you. Thank you, everyone. You may go back to your seat.

Before we proceed, colleagues, do you have any questions?

(No response.)

Now, while we are opening the phone line, is there anybody in the room that would care to make a comment or raise a question?

(No response.)

Hearing none, on the phone line, good afternoon. This is the ACRS License Renewal Subcommittee. If you are there, would you please indicate your presence just by saying hello? The bridge is open.

MEMBER RICCARDELLA: Hello.

CHAIRMAN SKILLMAN: Okay. Would anybody care to make a comment, please?

(No response.)

Hearing none, please close the bridge line.

Colleagues, let us go around and have any final comments.

Charlie, would you start today, please?

MEMBER BROWN: I have nothing else at this time. Good presentation. I appreciate it.

CHAIRMAN SKILLMAN: Charlie, thank you.

Walt?

MEMBER KIRCHNER: Nothing to add. Thanks to the presenters. Thank you.

CHAIRMAN SKILLMAN: Thank you.

John?

MEMBER STETKAR: Nothing more. Thank you.

CHAIRMAN SKILLMAN: Thank you.

Dr. Bley?

MEMBER BLEY: Nothing more for me. Thanks.

CHAIRMAN SKILLMAN: Thank you.

Dr. Corradini, sir?

MEMBER CORRADINI: Thanks to the presenters. I don't have anything else.

I would, if you are getting eventually to what should be in a letter, I do think a presentation by the last group, by staff, in addressing what has happened relative to -- I get all the phases confused about --

CHAIRMAN SKILLMAN: The process.

MEMBER CORRADINI: The process --

CHAIRMAN SKILLMAN: The process.

MEMBER CORRADINI: -- I think ought to be part of the letter, so we can have that clearly in our recommendations.

CHAIRMAN SKILLMAN: And we have asked for that for the full Committee meeting that will be in April.

Very good. Thank you.

Dr. Powers, sir?

MEMBER POWERS: Nothing.

CHAIRMAN SKILLMAN: Matt?

MEMBER SUNSERI: I appreciate all the presentations that were, obviously, thoughtfully done, and I think we have a good opportunity here to build on the existing program and successfully implement a subsequent license renewal process.

Thanks.

CHAIRMAN SKILLMAN: Matt, thank you.

Ron?

MEMBER BALLINGER: Nothing.

CHAIRMAN SKILLMAN: Okay. Thank you.

Oh, yes, Pete? Hello, Pete.

(Laughter.)

MEMBER RICCARDELLA: I'm here.

CHAIRMAN SKILLMAN: I was not going to forget you, Pete. Any comments, sir?

MEMBER RICCARDELLA: Actually, I am pleased to see the staff and industry progressing cooperatively on this program.

And I would like to speak a little bit about OE. I see that operating experience is used extensively to define the time-limiting aging mechanisms and to inform the aging management programs.

But I would like to emphasize the importance of ongoing OE during the period of

continuing operation to ensure that the AMPs are, and continue to be, effective. And even though it wasn't covered at the meeting today, I am happy to see that this topic is addressed in Appendix 84 of the Standard Review Plan, which requires programmatic activities for the ongoing review of plant-specific and any experience that might affect AMPs or even require new ones.

That's all I have.

CHAIRMAN SKILLMAN: Hey, Pete, thank you very much. Thank you for sticking with us for the whole meeting. Thank you.

Colleagues, anything else for today?

(No response.)

To all of the presenters, to all the travelers, thank you very much. Safety in your travels home.

We are dismissed. We are adjourned.

(Whereupon, at 4:47 p.m., the meeting was adjourned.)

Subsequent License Renewal Final Generic Aging Lessons Learned Report and Standard Review Plan Guidance Documents

ACRS Subcommittee on Plant License Renewal

March 23, 2017

Agenda

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Licensing Background
- Subsequent License Renewal (SLR) Guidance
- Schedule
- Significant Generic Changes and Burden Reduction
- SLR Technical Issues
  - Mechanical
  - Reactor Pressure Vessel
  - Structural
  - Electrical

Safety Continues to be Maintained Beyond 60 Years

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- License renewal principles would continue to be effective to ensure safety
  - Regulatory process ensures that the current licensing basis provides and maintains an acceptable level of safety
  - Each plant's licensing basis must be maintained
  - Additional focus on aging management effects is achieved through the verification of aging management programs (AMPs) implementation

SLR Guidance

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report (NUREG-2191)**
  - Provides generic evaluation of existing aging management programs
  - Acceptable method to manage aging effects, plant-specific alternatives may be proposed
- **Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants (SRP-SLR) (NUREG-2192)**
  - Provides guidance to NRC staff reviewers to perform safety reviews of SLR applications

SLR Significant Technical Issues

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Neutron embrittlement of the reactor pressure vessel at high fluence
- Stress corrosion cracking of reactor internals and primary system components
- Concrete and containment performance after long-term irradiation and high temperature exposure
- Environmental qualification, performance, and inservice testing of cables

SLR Guidance Schedule

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Timeframe	Description
April 6, 2017	• ACRS Full-Committee Meeting
April 26, 2017	• Commission Meeting
July 2017	• Issuance of final GALL-SLR Report and SRP-SLR NUREGs
December 2017	• Issuance of Technical Bases and Public Comments NUREGs
2018	• SLR Application – Peach Bottom
2019	• SLR Application – Surry

U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Significant Generic Changes And Burden Reduction

Office of Nuclear Reactor Regulation
Division of License Renewal
Bill Holston

Significant Generic Changes Since the Prior Meeting

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Common wording for projecting extent of degradation
  - Projected to next inspection or end of subsequent PEO
  - Focused on inspection results with quantifiable versus inconsequential degradation
  - Acceptance criteria – meet intended function

Significant Program Changes Since the Prior Meeting (cont.)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- UFSAR Supplement Summary descriptions revised to cover key aspects of AMPs
  - Periodicity of inspections
  - Timing of inspections
  - Citing industry consensus documents
- Closure bolting inspections for air-filled or gas-filled systems
- Common wording for inspection parameters

Burden Reduction

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Reviewed six recent LRAs and added ~ 100 line items.
- Eliminated a significant number of line items citing a plant-specific AMP.
- Copper alloy exposed to air and concrete, no aging effects
- Copper alloy cites general corrosion only with exposure to raw water, raw water (potable), waste water, soil, underground
- Elimination of OTI for fuel oil piping materials constructed of same material as the fuel oil tanks

Burden Reduction (cont.)

U.S.NRC
United States Nuclear Regulatory Commission
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- Reduced buried pipe inspections based on a significant review of industry OE (audits, attendance at EPRI conferences)
  - Cathodic protection (CP) not meeting performance goals from 29 to 9
  - CP not meeting performance goals and adverse OE/soil conditions: 60 to 18.
- Additional flexibility to perform inspections for aluminum/SS for cracking
  - As issued for comment – surface examinations or visual if supported by stress calculations
  - Added VT-1

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Mechanical AMPs Significant Changes

Office of Nuclear Reactor Regulation
Division of License Renewal
Jim Medoff
Seung Min
Division of Engineering
Jeff Poehler

AMP XI.M5, BWR Feedwater Nozzle, and AMP XI.M6, BWR Control Rod Drive Return Line Nozzles

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- Staff retired these AMPs in the final version of the GALL-SLR Report

- AMP XI.M1 (ISI) acceptable for management of cracking in these components

  - XI.M1 will implement volumetric inspection basis in the ASME Section XI

  - XI.M1 will implement NRC NDE performance requirements (10 CFR 50.55a)

AMP XI.M16A, PWR Vessel Internals

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- The staff retained a revised version of AMP XI.M16A in the final GALL-SLR Report
  - The AMP permits MRP-227-A to be used as the starting point for AMP
  - A gap analysis will be needed in conjunction with the AMP
  - Criteria for performing the gap analysis were incorporated into the program elements for the AMP

New AMP X.M2, Neutron Fluence Monitoring

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- New AMP was included to provide one method that may be used to accept RPV neutron embrittlement TLAAs in accordance with 10 CFR 54.21(c)(1)(iii)
- Analogous to use of AMP X.M1, Fatigue Monitoring, for fatigue TLAAs
- If used in an SLRA, the AMP is to be used in conjunction with GALL-SLR AMP XI.M31, Reactor Vessel Material Surveillance
- May be used for non-TLAA bases (e.g., AMPs for reactor vessel internals)

AMP XI.M19 Steam Generators

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- Consistent with LR-ISG-2016-01, the staff added visual inspections of steam generator head interior surfaces (including divider plates and tubesheet primary side)
- These visual inspections are intended to identify signs that cracking or loss of material may be occurring (e.g., through identification of rust stains)
- The steam generator program is an existing program to manage aging effects of: (a) primary water stress corrosion cracking for divider plate assemblies and tube-to-tubesheet welds and (b) boric acid corrosion for steam generator heads and tubesheets.

AMP XI.M11B: Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Removed one-time baseline volumetric inspection of susceptible bottom mounted instrumentation (BMI) nozzles from the draft GALL-SLR Report, based on the following:
  - Existing bare metal visual inspections have been effective for aging management
  - Current operating experience has not indicated significant aging-related degradation requiring additional inspections

AMP XI.M12: Thermal Aging Embrittlement of Cast Austenitic Stainless Steel

U.S.NRC
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- Screens for thermal embrittlement based on chemical composition and ferrite content, augmented examination and/or flaw tolerance evaluation if screening criteria not met
- In GALL-SLR, removed exemption for pump casings
  - Pump casings formerly exempt from screening, etc., based on implementation of Code Case N-481
    - Alternative to volumetric examination, using visual examination, plus a flaw tolerance evaluation
    - Code Case N-481 was withdrawn, some but not all provisions incorporated into Section XI

AMP XI.M12: Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (Cont.)

U.S.NRC
United States Nuclear Regulatory Commission
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- Added language to allow for alternatives to the screening and other actions for pump casings and clarified that no further actions are needed for pump casings if applicants demonstrate that the original flaw tolerance evaluation performed as part of Code Case N-481 implementation remains bounding and applicable for the SLR period, or is revised to be applicable to 80 years.

- AMP now references Code Case N-824 as conditioned by 10 CFR 50.55a as an acceptable method for volumetric examination of CASS piping

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Reactor Pressure Vessel AMP Significant Changes

Office of Nuclear Reactor Regulation
Division of Engineering
Carolyn Fairbanks

XI.M31: Reactor Vessel Materials Surveillance Program

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

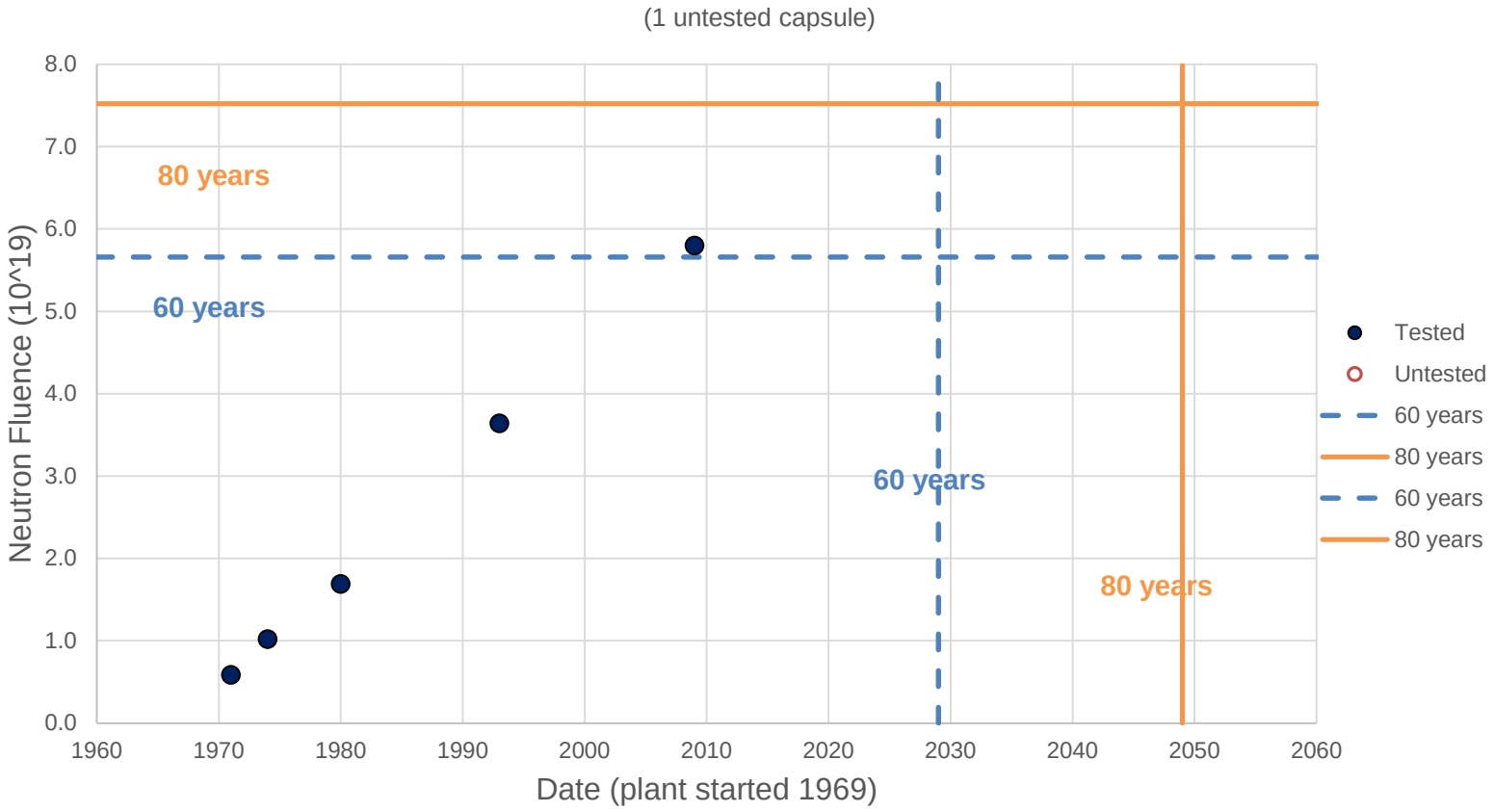
- Significant diversity of conditions between plant programs:
  - Program design requirements at time of vessel purchase
  - Operating periods/neutron fluences/lead factors
  - Plant-specific program or participation in integrated surveillance program
  - Number of capsules/withdrawn and tested capsules/capsules placed in storage/in-vessel capsules

- Therefore, the status of plant programs entering SLR vary significantly.

- Staff concern for plant circumstances:
  - Long periods of time and large range of neutron fluence values between capsule data.
  - Not bounded by data for the current operations/P-T limits.
  - Compounded by “double counting” of “40-year” and “60-year” capsules.

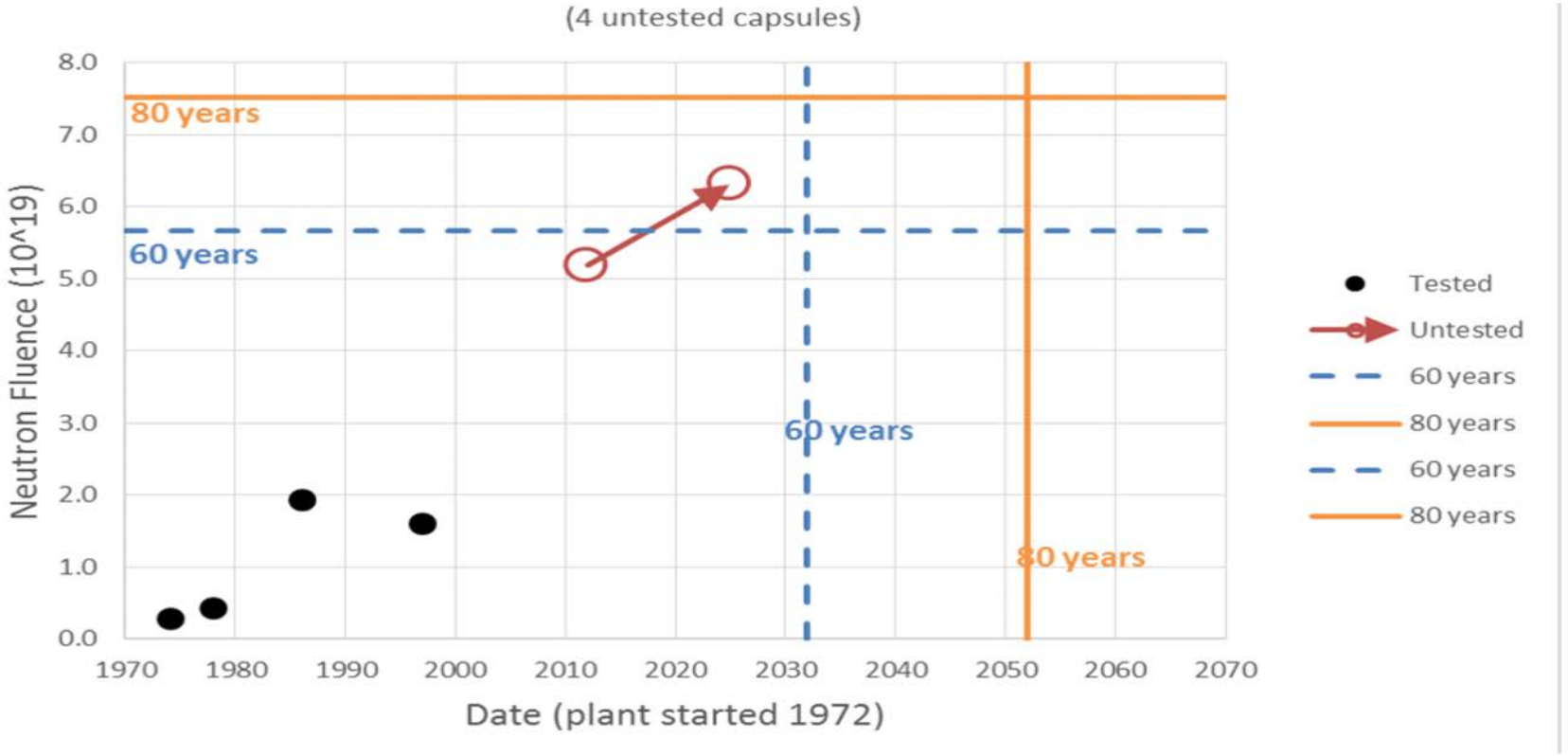
XI.M31: Reactor Vessel Materials Surveillance Program

Surveillance Program – Plant A



XI.M31: Reactor Vessel Materials Surveillance Program

Surveillance Program - Plant B



XI.M31: Reactor Vessel Materials Surveillance Program

U.S.NRC
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- Test results from surveillance capsules with 1-2 times the projected reactor vessel neutron fluence of interest at the end of the subsequent period of extended operation (PEO) should address the time-limited aging analyses for BWRs and PWRs as described in the SRP

- If a capsule that meets this criterion has not been tested prior to entering the subsequent PEO, then the program includes the withdrawal and testing of at least one capsule addressing the subsequent PEO to meet this criterion

- Note that it is not acceptable to redirect or postpone a surveillance capsule identified and scheduled for withdrawal and testing to address the PEO in order to achieve a higher neutron fluence that meets the subsequent PEO neutron fluence criterion

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Structural AMPs Significant Changes

Office of Nuclear Reactor Regulation
Division of Engineering
Bryce Lehman

AMP XI.S1, ASME Section XI Subsection IWE

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Liner plate bulges
  - Removed explicit requirement for quantitative acceptance criteria for bulges
  - "Discernible liner plate bulges" should be monitored
- Volumetric examinations of shell/liner one-side inaccessible
  - One-time examination if corrosion initiated on inaccessible side identified since issuance of first renewed license
  - Examination should provide 95-95 confidence level that accessible liner is not experiencing corrosion

AMP XI.S3, ASME Section IX, Subsection IWF

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Clarified that the new inspection of additional supports is 5% of the IWF sample (not the entire support population)

- The inspection is a one-time inspection occurring within the period 5-years prior to subsequent PEO

AMP XI.S5, Masonry Wall

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Removed recommendation that unreinforced and unbraced walls be inspected on a 3-year frequency

- Change based on public comments and lack of operating experience

Electrical AMPs Significant Changes

Office of Nuclear Reactor Regulation
Division of License Renewal
Cliff Doutt
Mohammad Sadollah

AMP X.E1 – Environmental Qualification (EQ) of Electric Equipment

- Added Adverse Localized Environment (ALE) identification and assessment
  - ALE impact on Data collection and reduction methods, and underlying assumptions reanalysis attributes (includes visual inspection walkdown)
- Expanded environmental data collection discussion (data gathering, analysis, and justification)
- Clarified re-analysis environment service conditions to be considered (also applies to ongoing qualification)
- Expanded ongoing qualification discussion including conceptual implementation and examples

AMPs XI.E3A, B, C – Electrical Insulation for Inaccessible Cables

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- XI.E3 was expanded with three new AMPs to address aspects of industry and NRC guidance related to potentially submerged cables:
  - XI.E3A: Medium Voltage Power Cables
  - XI.E3B: Instrument and Control Cables
  - XI.E3C: Low Voltage Power Cables (both alternate and direct current)
- Provides inaccessible cable inspection and test method as applicable to each AMP cable type (adds in-situ or laboratory electrical, physical, or chemical testing)
- Added provisions for credit taken for other tests and surveillance as part of maintenance programs.

NEW AMP XI.E7 – High Voltage Insulators

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- New AMP to adequately age managed high voltage insulators that are in-scope and credited for recovery of offsite power
  - Transferred from “further evaluation” based on operating experience:
    - Loss of safety function
    - Corrosion
    - Coating failure
  - Designed to periodically visually inspect high voltage insulators susceptible to adverse environments.
  - Monitors insulator and conductor connector aging effects including support degradation and surface contamination caused by salt, dust, fog, cooling tower plume, industrial effluent

GALL-SLR Report Chapter VI – Electrical Components and SRP SLR 3.6

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- Added or revised aging management review line items:
  - Revised line items for new High Insulators AMP
  - Added line items for Cable Bus for new further evaluation
  - Revised SRP to be consistent with changes to corresponding AMPs and line items

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Subsequent License Renewal Optimization

Office of Nuclear Reactor Regulation
Division of License Renewal
Bill Rogers
Nancy Martinez

Purpose of the Subsequent License Renewal Optimization Working Group

- Division of License Renewal (DLR) established a subsequent license renewal optimization working group (SLRO-WG) in 2015.
- Purpose of the SLRO-WG: To evaluate the subsequent license renewal application (SLRA) review process and develop recommendations as to how the process could be made more efficient and effective and to optimize the staff's performance relative to timeliness, application of staff resources and quality of products.
- The SLRO-WG considered both the safety review and environmental review when developing recommendations.

SLRO-WG Activities

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Subsequent License Renewal – Areas Evaluated

- The SLRO-WG evaluation included the following activities and products for both the safety review and environmental review, as applicable:
  - Acceptance review
  - Project management
  - Communications with the applicant
  - Requests for additional information (RAI)
  - Use of portals
  - Audits
  - Inspections
  - Safety evaluation reports (SER)
  - Environmental impact statements (EIS)
  - Development of the SLRA review timeline required to accomplish the staff's review

SLRO-WG Activities

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Staff Communications

- SLRO-WG engaged numerous NRC technical and environmental review staff and management during the evaluation process.

- SLRO-WG has presented the results of the evaluation to DLR management and incorporated comments and direction.

- SLRO-WG has presented proposed staff positions to industry and stakeholders during several public meetings and considered comments.

SLRO-WG Recommendations

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Staff Safety Review Bases

- Staff safety review requires the evaluation of all information contained in the SLRA and will be performed in accordance with 10 CFR Part 54, the Standard Review Plan-SLR, the Generic Lessons Learned-SLR Report and Office of Nuclear Reactor Regulation (NRR) guidance.

SLRA Review Timeline

- SLRA review timeline, for both safety (SER) and environmental (EIS), will be eighteen months (without a hearing), which begins at the completion of the acceptance review.

SLRO-WG Recommendations

Safety Review

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Draft Safety Evaluation Report

- Staff does not intend to issue a draft SER with Open Items.

  - Elimination of the draft SER with Open Items was the primary contributor to the reduction of the staff review timeline from 22 months to 18 months (without a hearing).
  - Staff intends to present a draft Final SER to the Advisory Committee on Reactor Safeguards (ACRS) Subcommittee and a draft Final SER to the ACRS Full Committee (revised as necessary).

SLRO-WG Recommendations

Safety Review

ACRS Subcommittee and Full Committee Scheduling Request

- Staff will request scheduling of the ACRS Subcommittee meeting and ACRS Full Committee meeting to occur in consecutive months.

Inspections

- Pre-licensing IP-71002, “License Renewal Inspection,” which was previously performed during the initial license renewal application review, will not be re-performed.

- Post-licensing IP-71003, “Post-Approval Site Inspection for License Renewal,” will be performed in accordance with the inspection procedure.

SLRO-WG Recommendations

Environmental Review

- Staff will expand the use of pre-application meetings with applicants.
- Staff anticipates the use of incorporation by reference in the applicant's environmental report and staff's environmental impact statement.
- Staff will request applicants to provide new or updated biological surveys to support staff's consultation with other agencies.

SLRO-WG Recommendations
Environmental Review

- Staff will focus the evaluation of replacement power alternatives on energy portfolio trends and technologies that have changed or were not previously assessed in initial license renewal environmental reviews.

Subsequent License Renewal Update

For Submittal to

Advisory Committee on Reactor Safeguards

March 2017

Nuclear Energy Institute

SLR-GALL Report & SRP

- Over 300 pages of industry comments submitted on the Draft GALL in February, 2016
  - 23 significant industry concerns
  - Industry participated in nine GALL-focused public meetings with NRC in 2016
  - Drop-in with Bill Dean in August, 2016 to discuss significant technical concerns
  - Significant industry concerns have been resolved with original draft
- Final SLR-GALL Report & SRP provided for stakeholder review Feb. 8
  - Industry team has conducted review and submitted feedback to NRC/DLR
  - Feedback focused on ensuring significant technical concerns have been addressed
- Environmental Report
  - Meeting with NRC Staff to discuss optimizing SLR NEPA review process – May 2016
  - Draft "Model SLR New and Significant Assessment Approach for Severe Accident Mitigation Alternatives" developed by NEI and reviewed by NRC Staff - July 2016 to Present

SLR Activities

- NEI has hosted six SLR site visits since 2015 at ORNL, PNNL, AREVA, EPRI, Westinghouse and Salem/Hope Creek
  - Concrete, cables and metal SLR AMP research and development were observed
  - April 19-20, 2017 DLR and RES staff participating in concrete AMP research focused site visit and tour at the University of Tennessee in Knoxville
- NEI 17-01 – Industry guidance for submitting SLRA has been completed and submitted for NRC endorsement
  - Previously NEI 95-10 for LR applications; rewritten to address SLR applications (SLRA)
- Final meeting to address SLRA optimization on May 11
  - Industry has participated in three public meetings with NRC
  - Efficiency improvements to streamline review process include use of portals, elimination of scoping meeting; overall objective of reducing RAIs
  - NRC/DLR has agreed to 18-month SLRA review timeline goal

SLR Lead Plant Update

- Peach Bottom on track for BWR SLRA submittal 3rd quarter 2018
  - Peer reviews scheduled for April 2018 timeframe
- Surry Station on track for PWR SLRA submittal 1st quarter 2019
  - Site specific gap analysis to address MRP-227 to be conducted in 2017
  - Peer reviews and workshop scheduled for May 2018 timeframe
- Industry aligned in commitment to dedicating resources needed for success of lead plant SLRAs
  - Application submittal prior to scheduled lead plants would require additional industry resources be drawn to ensure effective peer reviews are performed
  - On March 13th, industry CNOs on the Nuclear Strategic Initiatives Advisory Committee (NSIAC) committed to supporting lead plant SLRA peer reviews scheduled in 2018
    - Peach Bottom, Surry or other(s)
    - NEI SLRA industry survey will be conducted again in Fall 2017 to determine how many plants may take advantage of SLR

Anticipated SLRAs Per Year

(Survey Conducted in 2016)