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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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723rd MEETING

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

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THURSDAY

MARCH 6, 2025

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The Advisory Committee met via video teleconference, at 8:30 a.m. EST, Walter L. Kirchner, Chair, presiding.

COMMITTEE MEMBERS:

WALTER L. KIRCHNER, Chair

GREGORY H. HALNON, Vice Chair

DAVID A. PETTI, Member-at-Large

RONALD G. BALLINGER

VICKI M. BIER

VESNA B. DIMITRIJEVIC *

CRAIG D. HARRINGTON

ROBERT P. MARTIN

SCOTT P. PALMTAG

THOMAS E. ROBERTS

MATTHEW W. SUNSERI

ACRS CONSULTANT:

STEPHEN SCHULTZ *

DESIGNATED FEDERAL OFFICIAL:

CHRISTINA ANTONESCU

*Present via telephone

ALSO PRESENT:

RICHARD BURTT

WILLIAM KEARNEY

STEVE DOWNEY

PAMELA GREENLAW

DAN HOANG

BETH JENKINS

MATTHEW McCONNELL

KEITH MILLER

JASON PAIGE

MAC REED

APRIL RICE

JUDD RUTH

SHABAZZ RAYMOND

CHUCK TOMES

JOHN WISE

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

8:30 a.m.

CHAIR KIRCHNER: Good morning. This meeting will now come to order.

This is the second day of the 723rd meeting of the Advisory Committee on Reactor Safeguards, ACRS.

I'm Walt Kirchner, Chairman of the ACRS. ACRS members in attendance in person are Ron Ballinger, Greg Halnon, Robert Martin, Scott Palmtag, Dave Petti, Thomas Roberts, Craig Harrington, Matt Sunseri, and Vicki Bier. Attending virtually is Vesna Dimitrijevic.

And today, I do not think we have any of our consultant joining us. Or, Steve, are you there?

MR. SCHULTZ: I'm here.

CHAIR KIRCHNER: Okay. Steve Schultz. Thank you.

If I've missed anyone, either ACRS members or consultants, please speak up now.

(No response.)

Kent Howard of the ACRS staff is the Designated Federal Officer for this morning's full Committee meeting.

No member conflicts of interest were

identified for today's meeting.

And I note that we have a quorum.

The ACRS was established by statute and is governed by the Federal Advisory Committee Act, or FACA. The NRC implements FACA in accordance with our regulations.

Per these regulations and the Committee's Bylaws, the ACRS speaks only through its published Letter Reports. All member comments, therefore, should be regarded as only the individual opinion of that member and not a Committee position.

All relevant information related to ACRS activities, such as letters, rules for meeting participation, and transcripts, are located on the NRC public website and can be readily found by typing "About Us ACRS" in the search field on the NRC's home page.

The ACRS, consistent with the agency's value of public transparency and regulation of nuclear facilities, provides opportunity for public input and comment during our proceedings. We have received no written statements or requests to make an oral statement from the public. However, we have set aside time at the end of the meeting for public comments.

Written statements may be forwarded to

today's Designated Federal Officer. And again, that's Kent Howard.

A transcript of the meeting is being kept and will be posted on our website.

When addressing the Committee, the participants should first identify themselves and speak with sufficient clarity and volume, so that they may be readily heard. If you are not speaking -- this is important -- please mute your computer on Teams or, if you are participating by phone, press *6 to mute your phone, and *5 to raise your hand on Teams.

The Teams chat feature will not be available for use during the meeting.

For everyone in the room, we ask that you please put your electronic devices in silent mode and mute your laptop microphone and speakers.

In addition, please keep sidebar discussions in the room to a minimum, since the ceiling microphones are live.

For presenters -- and this is important -- these microphones are unidirectional. You'll need to speak into the front of the microphone to be heard online, especially by our court reporter.

Finally, if you have any feedback about today's meeting, we encourage you to fill out the

public meeting feedback form on the NRC's website.

During today's meeting, we will consider the following topic, which is the V.C. Summer subsequent license renewal application.

Portions of this meeting may be closed to protect sensitive information, as required by FACA and the Government in Sunshine Act. Attendance during the closed portion of the meeting will be limited to NRC staff and its consultants, Dominion Energy, and those individuals and organizations who have entered into an appropriate confidentiality agreement. We will confirm that only eligible individuals are in that closed portion of the meeting.

And with that, unless there are any comments from members, I will now turn the Committee's deliberations over to our License Renewal Subcommittee Chairman, Matt Sunseri.

Matt?

MEMBER SUNSERI: Thank you, Chairman Kirchner.

As you mentioned, during today's meeting the ACRS full Committee will receive a briefing on the technical issues for the Virgil C. Summer Nuclear Station Unit 1 subsequent license renewal application from Dominion Energy, South Carolina, and the NRC

staff.

We review these subsequent license renewal applications to assure that the aging management programs that the licensee is implementing are well-suited to support the period of license extension.

And we contribute by adding our own operational experience on aging management to the process. As you know, aging management is important in our operating experience for input to the review process. And so, this gives us an opportunity to share our experience with the process.

For those followers that observe ACRS meetings closely, you will notice that we are doing a different approach to this subsequent license and initial license renewal reviews. Because of the maturity of the industry's experience with aging management programs and the license renewal processes, and the repetitive quality submittals by the applicants, very high quality submittals, this allows us to forego having a Subcommittee meeting specifically on the topic. What our Subcommittee does is we review the material virtually in preparation for this meeting.

So, just assuring, although there wasn't

a Subcommittee briefing, but, specifically, the Subcommittee has done a deep-dive review of all the material that was submitted. And it was pretty substantial. For those that don't really know a subsequent license renewal application, I think this one had over 1400 pages or something like that. So, it's a pretty in-depth process.

But, for transparency reasons, then we bring forward the briefing into the full Committee meeting. So, the staff and the Applicant will present their cases today. We will deliberate in the light of sunshine, and then, we'll produce a Letter Report with our findings following today's briefing.

So, as Walt also mentioned, there is a session reserved for some proprietary information. I don't necessarily anticipate any, unless there's some questions asked, and then, we may have to go into a proprietary session to discuss those. But we'll just see where that goes.

Anyway, that's all I have as far as introduction. Any questions for me?

(No response.)

So, without any further questions, I'll turn it over to Mr. Jason Paige, Acting Director of the Division of Engineering and External Hazards.

Jason?

MR. PAIGE: Thank you, Chairman.

Good morning. Jason Paige, Acting Deputy Director of the Division of (audio interference) Licenses in the Office of Nuclear Reactor Regulation.

We appreciate the opportunity today to present to the ACRS the results of the staff's review on the application for subsequent license renewal.

This application was submitted by Dominion Energy for the V.C. Summer Nuclear Station Unit 1 located in Jenkinsville, South Carolina.

For background, V.C. Summer Unit 1 received approval for its initial license renewal from the Nuclear Regulatory Commission April 24th, 2004. The NRC review at that time was performed using guidance from the initial version of the Generic Aging Lessons Learned Report, or the GALL. The initial GALL Report was issued in 2001.

The NRC Guidance for License Renewal has evolved over the years through enhancements and improvements based on lesson learned from the NRC application reviews and from consideration of both domestic international industry operating experience.

The initial GALL Report for License Renewal went through two revisions with additional

Interim Staff Guidance revised changes following Revision 2. Gall Report Revision 2, along with these ISGs, were used to develop the guidance for subsequent license renewal that's contained in the GALL-SLR Report.

In addition to the previous license renewal guidance, the GALL-SLR report includes additional focus on aging management and time-limiting aging analyses for operation in the 60-to-80-year time period.

Regarding our review team for the V.C. Summer application, the NRC Project Manager for the V.C. Summer subsequent license renewal application Review is Marieliz Johnson. And she will introduce the staff who will be presenting today and addressing your questions regarding the safety review.

Staff's safety review of the V.C. Summer subsequent license renewal application is documented in the Safety Evaluation issued on January 21st, 2025, and was revised on March 4th, 2025, to address an administrative change that more accurately describes the Applicant's implementation of an aging management program. Merieliz will provide additional details on that aging management program.

I would like to note that the staff

completed its review with no confirmatory items in the Safety Evaluation.

And finally, we will address any questions you may have on the staff's presentation. We look forward to a productive discussion today with the ACRS.

At this time, I would like to turn the presentation over to Mr. Keith Miller, Subsequent License Renewal Supervisor at Dominion Energy, South Carolina, to introduce his team and commence the presentation.

MR. MILLER: Thank you.

Good morning, Chair Kirchner and Members of the Committee.

My name is Keith Miller and I'm the Engineering Supervisor responsible for the V.C. Summer Subsequent License Renewal Project. By way of my background, I've with the Dominion SLR team since 2017 and my group is responsible for the relicensing of the Dominion nuclear fleet.

V.C. Summer is the third subsequent license renewal project for us following the successful North Anna and Surry Projects.

We appreciate the opportunity to speak with the ACRS Committee today on V.C. Summer's

application. It's a very important day and we look forward to presenting the application highlights to the Committee.

Next slide, please.

Here's the agenda for the discussion today: I'll introduce the team here with me and remotely. We'll discuss an overview of the station and its performance; the development of the subsequent license renewal application; a few technical topics and closing remarks.

Next slide.

I'd like to introduce the team assembled here with me today.

With me to my right is Beth Jenkins, the V.C. Summer Site Vice President. Beth joined the Dominion family in January, and previous to that, she was the plant manager at Watts Bar, and then, Sequoyah.

Chuck Tomes is at the table to my left. Chuck is an SLR Technical Lead and he will be speaking on one of the topics today.

Pratt Cherry, our SLR team mechanical lead, is at the end here.

With us on the Teams link is Richard Burtt. Richard is the Manager of Nuclear Site

Engineering and will also be presenting a technical topic.

Although he can't be with us today, I want to recognize Calvin Pugh. Calvin is the Director of the Subsequent License Renewal Organization.

We also have several team members and corporate and station leaders in the audience here in the room.

James Holloway, who is the Vice President of Nuclear Engineering, is here, and the SLR organization falls under James' purview.

And Brenda Brown is here. Brenda is the Director of Nuclear Engineering at V.C. Summer.

Last, but not least, Roger Rucker is here. Roger is the electrical engineering lead for the Subsequent License Renewal Project.

We also have numerous technical staff from Dominion and Westinghouse available in the virtual audience, should we need some assistance on any questions the Committee may have. If needed, they'll identify themselves and address your questions.

And with that, I'll turn the presentation over to Beth Jenkins to discuss an overview of the station.

MR. SUNSERI: If I might interject, we're

going to interrupt you a lot here today. So, I apologize in advance for that.

But I just want to say, you mentioned an impressive commitment by your company to bring these resources here like this. And to us, you know, sometimes we don't want to be a burden, but we want to fulfill our obligation as well.

But to see this kind of support gives us a good feeling of how important this is to you and the care you put into these programs. I just wanted to highlight that before you get too far into it.

MS. JENKINS: Thank you.

And good morning, everyone.

I'm Beth Jenkins. I'm the Site Vice President of V.C. Summer Nuclear Station.

We're going to start today with an aerial view of the station. I'm going to highlight some of the more significant features to help the Committee get oriented.

To the north of the station is the Monticello Reservoir. One unique aspect of the Monticello Reservoir is that it not only serves as a source of makeup cooling water for V.C. Summer, but also serves as the upper pool for the Fairfield Pump Storage Facility.

You can see the Fairfield Pump Storage Facility in the upper left here, and the Parr Reservoir serves as the lower reservoir for the Pump Storage Facility. And that can be partly seen to the left.

The reactor building is in the center of the circle, and the service water pond lies just to the east. And we'll be discussing the service water pond in a little more detail later in the presentation. The switch yard is just to the south.

Next slide, please.

This slide lists a few of the significant milestones in the station's history. A few of them were mentioned earlier in the presentation.

V.C. Summer was originally licensed in 1982 for 2775 megawatts thermal and uprated to 2900 megawatts thermal was approved in 1996.

In 2004, the operating license was renewed the first time.

The station entered the first period of extended operation in the fall of 2022.

The current license which we're seeking to renew a second time expires in 2042. So, renewal will permit station operation to 2062.

Next slide, please.

V.C. Summer is a three-loop Westinghouse pressurized water reactor. The unit operates on an 18-month refueling cycle.

As far as regulatory status, V.C. Summer is in column 1 of the reactor oversight process actions matrix, and all ROP indicators are green.

At the bottom is a brief table that summarizes the station's capacity factors over the last five years. And I'll just mention that the outliers are predominantly driven by whether or not we had a refueling outage that year or extended outages.

MEMBER PALMTAG: Thanks for anticipating that question. Because when I looked at the numbers, they looked a little off.

MS. JENKINS: Varied?

MEMBER PALMTAG: Yes. Varied, yes. I wasn't sure if that was all due to -- so, the refueling outages were longer than the (audio interference)?

MR. MILLER: Correct. Yes.

MEMBER PALMTAG: Okay.

MR. MILLER: The lower capacity factors are if we extended --

MEMBER SUNSERI: I'm sorry, Keith, you need to use your mic and introduce yourself for the

court reporter each time you speak.

MR. MILLER: Thanks for that reminder.

Yes, my name is Keith Miller. I'm the SLR Supervisor.

Yes, the lower capacity factors were primarily due to extended outage, an outage longer than (audio interference).

MEMBER PALMTAG: And why were they extended?

MR. MILLER: Well, if you look, in particular, at the 2021 capacity factor rated 2.69, that outage was extended about 25 days due to a main transformer fire. So, that was the main contributor there.

MEMBER PALMTAG: Okay.

MEMBER PETTI: Question. This is Dave.

How do you get a capacity factor over 100?

(Laughter.)

You operated above your --

MS. JENKINS: No, so we had no outage that year, no refueling outage that year.

(Laughter.)

MEMBER PETTI: Okay.

MS. JENKINS: And the factor is based on our maximum dependability capacity and that is based

on lake temperature of 85 degrees. So, if we're less than 85 degrees, we have increased efficiency.

MEMBER PETTI: Thanks.

MS. JENKINS: Next slide.

V.C. Summer has continued to invest in the safety, reliability, and long-term operation of the station. And this slide shows some of the significant plant upgrades that have been performed since initial license renewal. Many of these upgrades support improved aging management of the station's system, structures, and components.

We intend to make similar investments as we approach the subsequent period of extended operation and will continue to make investments to ensure the safety and reliability of the plant.

Now, I'll turn the presentation back over to Keith to discuss the subsequent license renewal application.

MR. MILLER: Thank you.

In the next few slides, I would like to discuss how the subsequent license renewal application was built and some high level results.

The V.C. Summer Subsequent License Renewal Project is the third for Dominion Energy. Many of our project team members have remained with us since

Surry. And in addition, many of our staff have experience on the Dominion initial license renewals and experience from other utilities' license renewal projects. That depth of experience has been invaluable in our efforts to build a high quality application.

We've been active participants in the Nuclear Energy Institute License Renewal Task Force over the years. And we've also participated in several peer reviews of other subsequent license renewal applications.

VICE CHAIR HALNON: Keith, this is Greg.

Since the company, or the plant changed hands from the license renewal to the subsequent, did you have any original members of the license renewal team on the subsequent license renewal team?

MR. MILLER: We didn't, actually, not from the initial V.C. Summer license renewal. None of those folks transitioned over to our team.

VICE CHAIR HALNON: How did you translate that deep knowledge that those folks have to the plant over the last 20-30 years to the subsequent license renewal team?

MR. MILLER: Yes, I would say it wouldn't necessarily be deep knowledge of the station itself,

but knowledge of the license renewal process and how to build applications and get through the reviews, things like that.

VICE CHAIR HALNON: Okay. But you still have to have experienced input into the process. And I get the process piece, but was the application produced in Richmond or was it produced in Jenkinsville?

MR. MILLER: So, we produced the application in Richmond. But I'll say that we've had great participation with our station partners throughout the process.

We started the project in the summer of 2021. And in the fall of 2021, we started writing aging management programs. Those aging management programs were reviewed and commented on between us and the program owners. Because they're closest to the programs, we want to understand the OE like they understand it on a daily basis.

VICE CHAIR HALNON: Having the program managers from the site into the process?

MR. MILLER: Correct, correct. Every aging management program that we wrote was concurred on by the program owner at the site.

VICE CHAIR HALNON: Just top of the head,

was it a significant change from the control, from SCE&G style to the Dominion style? In other words, did you have to do a complete rewrite of those programs or was it pretty close?

MR. MILLER: Yes, so V.C. Summer the first time around was GALL Rev 0. So, generally, the approach we've taken for all three stations was to pretty much start from scratch. We used the initial license renewal documentation, certainly, as we were doing our research, but we found it's been more efficient just to start from a clean sheet of paper.

VICE CHAIR HALNON: There's some value in that, too.

MR. MILLER: Yes.

VICE CHAIR HALNON: Thanks.

MR. MILLER: Okay. The application was built with an eye towards maximizing consistency with the regulatory and industry guidance. And in constructing the application, we performed several benchmarking activities. We looked at other subsequent license renewal applications and correspondence between the NRC and the applicants, such as requests for additional information and supplement letters, and incorporated any learnings there. We built on our experience with North Anna and

Surry and attempted to incorporate any lessons learned from those NRC reviews.

And just as evidence, the application quality has been steadily increasing. The number of requests for additional information that we received during the NRC review has steadily decreased from Surry to North Anna, and now to V.C. Summer.

Also, we conducted a peer review of our subsequent license renewal application to gather any insights from our industry peers.

Next slide, please.

On this slide, I would like to discuss some of the high level results.

First, in the area of aging management reviews, we did achieve high consistency with the GALL. Greater than 99 percent of the AMR items utilized the standard notes.

In the area of operating experience, we reviewed 10 years' worth of operating experience, such as Condition Reports, for aging-related insights.

A self-assessment was performed in 2021, as the station prepared for the IP-71003 inspections prior to entering the first period of extended operation. And then, once the 71003 inspection was performed, the report documented no findings or

violations.

In the area of aging management programs, there are 49 programs for SLR, which we'll talk about a little bit on the next slide.

This slide summarizes the various categories of aging management programs and their respective consistency with GALL. Roughly 20 percent of the population are new AMPs. Just under half of the aging management programs are consistent with GALL, and five of the new programs are in the electrical area.

Next slide, please.

There were several technical topics that we would like to briefly discuss, based on requests from the Committee.

The first is the service water pond configuration and any aging management activities related.

The second is related to emergency diesel generator performance.

And the third is primary shield wall fluence and vessel support inspections.

Next slide.

So, the first topic we'll address is the service water pond configuration and then, aging

management activities related to it.

The service water pond is a safety class impoundment of about 41 acres within a small arm of the much larger Monticello Reservoir, which is about 6800 acres.

The photo on the left shows a zoomed-out view to give you a decent feel for the orientation, and the photo on the right is a more closeup view.

The pond was formed by using a portion of the Monticello Reservoir shoreline, the west embankment, and utilized to higher elevation natural areas close to the shoreline. And these natural areas can be thought of as islands, if they weren't connected as they are now.

Three small earthen dams were built which connect the west embankment to the two raised natural areas. The north dam is there where the pointer is. The east dam is there, the L-shaped, and the south dam is there. And that forms the perimeter of the pond that separates it from the Monticello Reservoir.

And as mentioned on the site overview slide, the reservoir serves as the upper pool of the Fairfield Pump Storage Facility. And due to that facility's normal operations, the water level in the reservoir could fluctuate up to 4.5 feet. So, the

service water pond boundary enclosure serves to maintain a consistent water level and volume in the pond during the normal fluctuations of the reservoir.

Next slide, please.

VICE CHAIR HALNON: And I suppose it goes without saying that you're in a (audio interference), right?

MR. MILLER: Correct.

VICE CHAIR HALNON: Good assuming.

MR. MILLER: This slide lists several of the aging management activities that are being performed for the service water pond. Dams and embankments are inspected for erosion, movements, surface cracks, sloughing, et cetera, on an annual basis. Dam elevation, alignment, and slope surveys are conducted every five years.

Two bottom elevation surveys have been performed in the past to monitor the extent of sedimentation in the pond. And we have created an enhancement to the water control structures aging management program to conduct those sedimentation surveys periodically moving forward.

And last, the Federal Energy Regulatory Commission, or FERC, inspects the dams every three years.

MEMBER BIER: A quick question this slide. This is Vicki here.

When you say, "embankments inspected," I assume that covers kind of natural earth embankments as well as constructed dams and levees, is that correct?

MR. MILLER: That's correct.

MEMBER BIER: Okay. Thank you.

MEMBER MARTIN: So, Keith, can you go back to the previous slide?

MR. MILLER: Sure.

MEMBER MARTIN: Can you speak to the chemistry control in the service water pond?

MR. MILLER: Yes. Well, I'm going to actually turn to April Rice in the V.C. Summer Conference Room.

April, can you provide a little input on that? The question was related to chemistry control in the service water pond.

You have to take yourself off mute.

MS. RICE: Thank you.

This is April Rice.

Let us get to the chemist and we'll get right back to you with that response.

MEMBER MARTIN: Okay. Thank you.

MS. RICE: Okay.

VICE CHAIR HALNON: So, while we're on this picture, I realize the islands, or whatever you call them, are not constructed earthen dams, but are those inspected as well when you do the inspection?

MR. MILLER: Islands are inspected as well.

VICE CHAIR HALNON: Okay. And how often -- I'm sorry -- how often was the inspection?

MR. MILLER: Five-year frequency.

VICE CHAIR HALNON: Okay. And the qualifications of the people who would do those inspections, can you speak to that?

MR. MILLER: I'm going to actually ask Judd Ruth from V.C. Summer to answer that question. And the question was, qualifications related to the folks doing the inspections of the service water pond structures.

MR. RUTH: Yes. This is Judd Ruth at V.C. Summer. I'm a civil engineer with the design engineering team.

Yes, we have professional engineers, PE-licensed folks who oversee those inspections, along with other civil engineers that have experience with doing those inspections.

MR. MILLER: Thanks, Judd. And greetings to all you folks back in the conference room.

When I looked at the qualifications required, PE was one of them, civil engineering, graduated from an ABET school, 10 years of concrete structure experience, and ASR qualifications. Is that consistent with what you would say is your qualified folks? ASR is Alkali-Silica Reaction.

MR. RUTH: Yes.

MR. MILLER: Okay.

MR. RUTH: Yes. This is Judd Ruth again.

As far as the embankments, there's no concrete really involved with those inspections. So, I wouldn't say that that applies to the earthen portions. But, yes, if we do concrete inspections, that would be a qualification.

MR. MILLER: Right.

VICE CHAIR HALNON: And I don't think it gives you a choice, I think if your Code requires those for the inspectors. So, I'd suggest you go back and look and make sure that, if you do have an exception, it's at least acknowledged and you understand how it goes.

MR. MILLER: So, any more questions on the service water pond?

VICE CHAIR HALNON: One last question is, can you address a potential failure of the Monticello earthen dam? How does that affect the service water pond? How does it maintain its water level?

MR. MILLER: Yes. So, the service water pond boundary enclosure is designed that, if we lose the dams that form the Monticello Reservoir, the service water pond structure will be not impacted. It will maintain water level. Those dams are designed to maintain level, even with total loss of the Monticello Reservoir.

VICE CHAIR HALNON: So, for lack of a better term, it's got to be checked-off?

MR. MILLER: Correct. Correct.

VICE CHAIR HALNON: And the Monticello dams, are they inspected to the same frequency, just for convenience's sake, or are they inspected by FERC at all?

MR. MILLER: I'll ask Judd Ruth again. The question was related to inspections of the Monticello Reservoir dams, the periodicity.

MR. RUTH: Yes, this is Judd Ruth from V.C. Summer design engineering.

Yes, FERC does inspect those or does inspect the Monticello dam. As far as the frequency,

that is controlled by corporate folks and we don't control those inspections.

VICE CHAIR HALNON: Okay. That's similar to other earthen dams, that they're on the FERC cycles.

MEMBER HARRINGTON: This is Member Harrington.

Just the inspections and the frequency, all that, has that changed because of initial or subsequent license renewal, or has that been the case throughout plant life or?

MR. MILLER: I can't speak to plant life, but it has not changed during the subsequent license renewal and subsequent (audio interference) period.

VICE CHAIR HALNON: Yes, this is Greg one last time.

I know there's a tech spec on temperature probably for the pond. South Carolina is not Ohio. So, you, obviously, get some extremely hot temperatures. How do you -- have you had to derate the plant or shut down, based on temperature that you found in the near past? I mean, you have some really hot temperatures for a couple or three years.

MR. MILLER: I'll turn to V.C. Summer to answer that question.

The question was related to derating due to temperature in the reservoir, if that's happened in the past or not.

MR. KEARNEY: This is Will Kearney. I'm the Plant Manager at V.C. Summer Station.

I believe the question was about the service water pond temperature limits. We do have a tech spec limit on that. We have not had to derate the units at any time due to challenges to that temperature.

VICE CHAIR HALNON: Is there a spray system in place just in case you have to cool it down?

MR. KEARNEY: We do not have a spray system. That is something that we have conceptually looked at in the distant past, but it is not something that we have ever pursued beyond that.

VICE CHAIR HALNON: I see.

MEMBER SUNSERI: I know you're still working on the question regarding the chemistry control. It's my experience with configurations like this that degradation mechanisms, either sediment buildup or biofoulings -- I suspect that you're treating the water for biofouling and checking the sediment ever so often?

MR. MILLER: Yes. So, the sedimentation

surveys are performed periodically. In the past, we have done two 15 years apart and we have a work order to do the next one in 2027, I believe, and then, it will be every 15 years, likely, ahead.

But, yes, it is treated for biofouling. I don't have the specifics on the chemistry control. So, I don't want to speak out of turn. But I do know that biofouling is one of the things that we're treating for in the pond and the components downstream.

MEMBER SUNSERI: Yes. Thank you.

VICE CHAIR HALNON: And this is Greg.

The reason I asked about the chemistry is it's a relatively stagnant --

MR. MILLER: Yes.

VICE CHAIR HALNON: -- set of waters. You have evaporation and you have concentration in the sump tank.

MR. MILLER: Right.

VICE CHAIR HALNON: And that's why I'm asking about the chemistry. So, when you get that, I'd appreciate the feedback.

MR. MILLER: So, if there are no other questions on the service water pond, I'll turn it over now to Richard Burtt, on the virtual line, to discuss

the second technical topic, which is emergency diesel generator performance.

MR. BURTT: All right. Good morning.

I'm Richard Burtt. I'm the Nuclear Site Engineering Manager here at V.C. Summer.

I'll discuss our emergency diesel generator performance, specifically, on the topic related to a white performance deficiency we received in 2022 associated with failure to identify and correct conditions adverse to quality, specifically, on our fuel system piping and cracks in the threaded portion of that piping.

The direct cause was cracking in a Schedule 40 threaded pipe circumferentially during a 24-hour run. And then, our regulator, looking back, said we had identified opportunities we had previously had to identify cracking vulnerability and could have corrected it during prior maintenance activities.

So, we performed a root cause on this former deficiency and the event. We identified two root causes.

First, organizationally, it was focused on our Corrective Action Program. And at the time of the events, our Corrective Action Program failed to derive effective evaluation and resolution of the fuel piping

cracks in previous events.

And then, the second root cause was associated with the fuel piping design itself being Schedule 40 piping, hard connections, a black iron pipe that was inadequate for mechanical adjustments and allowing maintenance and causing challenges during maintenance to correct leaking connections.

So, next slide.

Prior to that, we did pursue a fuel piping design change. We replaced the Schedule 40 piping with Schedule 80, mostly welded joints, and installed first-of-the-kind-in-the-industry flexible hoses on a fuel oil header. And we also included flange connections to allow for ease of maintenance.

Related to the Corrective Action Program, at the time of the previous events, we were under our SCANA Corrective Action Program in the version it was. We have since transitioned to our Dominion Corrective Action Program. And part of that had improved some of the vulnerabilities as far as what was considered conditions adverse to quality. More is screened in under the Dominion process.

But, beyond that, we also improved our Corrective Action Program for any identified through-wall leaks or repeat conditions to drive a

higher-level evaluation. Those do get specifically identified during our corrective -- or sorry -- our CR review teams. We've also included this into our plant health process to look at longstanding issues, strive for resolution.

We also implemented a prevention, detection, and correction culture. That was mainly focused to improve plant equipment reliability, but we have also included it in our improvements from this event. And we also have an annual review of those longstanding items.

And just to identify, since these events, we've had satisfactory surveillance runs during our monthly runs.

And with that, I'll turn the presentation to Chuck Tomes.

MEMBER SUNSERI: Thank you.

Before Chuck begins, just a question about that kind of culture model. I mean, since you made these changes to your Corrective Action Program, do you have any notable example of where, outside of the diesel generator fuel oil system, where you --

COURT REPORTER: This is the court reporter. Could I ask the person posing the question to identify himself for the record?

MEMBER SUNSERI: Sunseri.

I lost my train of thought.

Okay. So, any notable examples of where you, for lack of better words, connected the dots on screening, maybe minor problems that were leading to bigger problems, like this one with the diesel generator? Any examples of where your culture improved in that area?

MR. KEARNEY: This is Will Kearney again, the Plant Manager.

It is a diesel generator example, but it's not fuel-piping-related. We did take the opportunity to replace the OEM jacket water piping on the emergency diesel generator. These are Fairbanks Morse engines. The OEM design employs a partial penetration butt weld type of assembly for that, for all those jacket weld or jacket water piping.

There was industry OE on through-wall leakage on that jacket water piping. Our peer station under Dominion Millstone Power Station had addressed that at their end by replacing that with full-pin jacket weld piping that they fabricated at their facility. So, based on that OE and on their experience with manufacturing it, we proactively fabricated and replaced all of our jacket water piping

to preclude a jacket water through-wall leak at service station diesels.

MEMBER SUNSERI: Thanks for those examples.

I know I'm preaching to the choir here, but when a plant runs as good as yours appears to be running over the years, it's very important to be able to connect the dots on these lower-level issues to prevent them from turning into bigger issues -- maintaining high reliability and safety. And it looks like you're doing it correctly.

MR. KEARNEY: Thank you.

CHAIR KIRCHNER: So, Keith, let me ask you a question to follow up on Matt's.

Since you are taking the corporate view on this SLR, did you go back to North Anna and Surry and look at the emergency diesel generators as a result of what you found in Summer?

MR. MILLER: So, I would say that that was likely looked at by North Anna and Surry, outside of my organization. The V.C. Summer issues were not directly aging-related, related to the fuel oil piping cracking. But, as a fleet, in general, yes, when we have a problem at one station, we evaluate it at all the other stations for applicability and whether it --

CHAIR KIRCHNER: I can't remember what diesel generators are at North Anna and Surry, whether they're Fairbanks Morse or not. But I'm just curious to see if you want back, based on this experience, and looked at your other plants.

MR. MILLER: Yes, it is. In general, yes, it is always looked at for significant issues in our fleet.

VICE CHAIR HALNON: So, this is Greg.

You said it wasn't aging-related, but it exists since 2004, which would make it almost 20 years old. It sounds aging to me.

MR. MILLER: Yes, so it was primarily piping configuration and there were a lot of mechanical joints in the piping and they were leaking from the mechanical joints. So, as fixes were made in the past, it disturbed other joints and leaking issues occurred. But not a direct aging-related mechanism.

CHAIR KIRCHNER: But wait a minute, though. Let's pull the string on this a little bit there.

I mean, these diesel generators vibrate. I mean, you get a lot of -- your fix here, obviously, the flexible piping is a good way to isolate the vibrations and the fatigue that comes with that for

things like diesel generators. Because those things, you know, the way you cycle them to test them, the way they vibrate, I mean, that puts aging in all those joints.

MR. MILLER: Correct. And the solution I think that the station implemented is a fix-it-forever, hopefully, solution that we look to do, if possible.

MEMBER SUNSERI: Go ahead.

MR. TOMES: Good morning. My name is Chuck Tomes.

And I want to thank you for reviewing the V.C. Summer --

VICE CHAIR HALNON: I'm sorry. Before we get off of the diesel generator, I thought there was another slide that we were going to see with the pictures.

In 2022, you had another diesel generator problem for an erratic governor. I can't remember if it went into a white finding or not, but it was definitely at least a (audio interference) issue.

What kind of confidence can you give us that the program -- if you don't want to call it "aging," I'm good with that -- but the program to monitor the health of the diesel generators is strong?

Because for about four years, you had degraded diesel generators. And it kind of shakes the confidence that the diesel systems are being watched over and being carefully taken care of.

So, how can you provide us better confidence that that's all taken care of?

MR. TOMES: Yes, thank you for the question.

I think that we would look back at Richard's previous slides on the corrective actions that were taken following the events, plural, with the diesel generator.

VICE CHAIR HALNON: Okay. So, you're kind of blaming the old scam of corrective action process and culture in some ways, saying that the new one fixes it. In that case, what about the other safety systems that came under the V.C. Summer old Corrective Action Program for years? Did you take a comprehensive look back at all the corrective actions and problems for years to make sure that it's not latent problems that are just sitting out there waiting for the next failure to do an extended condition?

MR. TOMES: I'd ask, Richard, could you speak to any extent-of-condition, extent-of-cause

initiatives that were performed as a result of the diesel generator issues, not necessarily with the diesels, but outside those particular systems?

MR. BURTT: Yes. Again, this is Rich Burtt from V.C. Summer, Site Engineering Manager.

So, kind of backing up a little bit to this question, specifically, with the diesel generators, we have taken a harder look at their reliability. We have performed third-party vulnerability reviews and we are in the midst of kicking off a substantial, down-to-the-subcomponent-level vulnerability deep dive on those diesels that should take us about three to four months to find vulnerability opportunities to improve and prevent any future failures.

As far as extended condition and extended cause out of this event, we did go to the other safety systems. We covered all the mitigating systems as far as condition related to Schedule 40 or threaded piping, but also with the cause, we did a comprehensive review of conditions on each of those systems for any trends or anything identified, load level, that could indicate we had not evaluated strongly enough under our previous program.

Also related to this, all of our

performance deficiencies were reviewed under a common cause analysis for the whole station, that then drove further improvements.

VICE CHAIR HALNON: Thanks, Richard.

And again, in Matt's words, I'm kind of preaching to the choir. I always had felt that very strong indication of plant safety and how well the system is being taken care of are the number of self-reviewing violations or findings and/or issues that come up. Because those are the latent issues that just, they fail; something happens.

So, I would suggest that, if you haven't, to go back and look at the self-revealed problems over the last however many years and make sure that you have really investigated those to the point where you're satisfied that in your new program/new culture, looking at corrective actions, it's satisfactory, especially the diesels.

I mean, it sounds like you failed the diesels. Just looking at Schedule 40 pipe throughout the plant is a good thing, but it's pretty narrow, when you come up with statements like the Corrective Action Program and plant health process have changed. And that's what the bullet on the slide says, that it's one of the things of how we fixed it.

So, I just want to, again, make sure that the diesel, like the other safety systems, are poised to go forward.

And it's not a critique, but a lot of times in front of the Committee, when we're talking about a specific component, it speaks volumes if you have that system engineer speak to the ownership of that system. Because I've noticed it's, you know, Plant Manager, Engineering Managers talking. And it would be really nice to hear from the system engineer who takes care of the diesels. Just a little coaching there, not that you're going to get a subsequent license renewal program again. Maybe in the future plants. It does speak volumes to have the actual owner talk to the points.

Thanks.

MEMBER SUNSERI: We are falling behind. It's not your fault; it's our fault. We're asking a lot of questions. But just keep that in mind. Thank you for your patience.

MR. TOMES: Thank you for reviewing the V.C. Summer SLR application. We appreciate it.

The next technical topic we'd like to discuss is assessment of the primary shield wall and reactor vessel supports due to radiation dose.

The way we approached that was to contract with Westinghouse Electric Company to create an integrated fluence model for assessment of the reactor vessels internals, the reactor vessel direct vessel structural integrity, the concrete biological shield, and our reactor vessel supports.

The model uses inputs from both in-vessel and ex-core dosimetry. The fluence model is an extension of the NRC-approved Reg Guide 1.190-compliant model used for assessing the reactor vessel for P-T curves, P-TS, and upper shelf energy.

This slide illustrates the configuration of the primary shield wall relative to the reactor vessel supports in the reactor pressure vessel.

Assessment of reduction of strength in mechanical properties due to radiation for the primary shield wall and reactor vessel supports is documented in the SLRA Section 3.5.2.2.2.6, as amended in Supplement 4.

The assessment shows that the level of neutron and gamma dose to the primary shield wall and reactor vessel supports are in excess of the screening criteria. The primary shield wall was evaluated to assess the radiation effects. For regions where the dose threshold levels are exceeded, the concrete was

not credited in the structural evaluations or assessment of SLR.

This evaluation demonstrated that the primary shield wall will maintain a structural integrity and perform its current licensing basis design functions in excess of 80 years. During the subsequent period of extended operation, the primary shield wall will be monitored under the structures monitoring program at a frequency of every five years.

For assessment of the reactor vessel supports, the analysis uses design basis loads and does not consider the reductions that would be considered with leak-before-break approvals. The various portions of the metal supports are flaw-tolerant due to either the stress levels being lower than the critical stresses or the potential defects, such as postulated defects that are incorporated into a flaw tolerance evaluation, are less than the critical flaw sizes.

During the subsequent period of extended operation, at least one of the six reactor vessel supports will be inspected on a five-year frequency under the ISI Section 11 IWF Program, and all six of the reactor vessel supports will be inspected on a 10-year frequency under the ISI Section 11 IWF

Program. The reactor vessel supports were most recently inspected during the 2024 refueling outage with acceptable results.

If there are no questions, I'll turn it back over to Keith.

MEMBER SUNSERI: So, the inspection results you are seeing, how would you characterize that? I mean, is that significant degradation, not significant degradation?

MR. TOMES: There is no degradation been detected on metal supports.

MEMBER SUNSERI: Yes, I thought you said there were some flaws that you picked up.

MR. TOMES: No, in the fracture mechanics evaluation, we postulate a flaw, and then, we grow it over the 80-year time period to see if it will reach the stability criteria.

MEMBER SUNSERI: Got it. Got it, yes.

MR. TOMES: It's to ensure that, if there's an undisclosed flaw that we hadn't considered, it won't grow to the level where it would compromise the structure.

MEMBER SUNSERI: So, in light of these analyses, you have not seen any degradation then?

MR. TOMES: Correct.

MEMBER SUNSERI: Because of the low margin, you're monitoring them?

MR. TOMES: Yes.

MEMBER SUNSERI: Is that a way of characterizing it?

MR. TOMES: Well, we have calculated the margins, and I wouldn't say that they're low. But, coincidentally, we have aging management programs that look at these reactor vessel supports anyway. And we're ensuring that we perform inspections that are consistent with what we would want to take credit for under the SLR aging management program for structures monitoring, which is that five-year frequency. So, we've enhanced our program to increase the frequency of inspection that was being performed every 10 years to ensure that we also perform an inspection on a five-year frequency.

MEMBER SUNSERI: That's helpful. Thank you.

CHAIR KIRCHNER: May I follow up, Chuck, and ask you? So, what did you find in your inspections about -- obviously, you were looking in and around the concrete. So, what does the concrete look like in terms of assessing that, even though you don't credit that in the support of the vessel?

MR. TOMES: Much or some of the concrete on the ID surface of the primary shield walls is difficult to see, but we use fluoroscopes and we inspect the reactor vessel supports. And we look at the concrete adjacent to the supports. And if we detect -- we haven't found any level of cracking at all. And the practice would be, if we had any degradation in the grout adjacent to the reactor vessel support structure, we would provide that information to our structures monitoring engineers through the Corrective Action Program, and they would evaluate it.

CHAIR KIRCHNER: Thank you.

MEMBER BALLINGER: This is Ron Ballinger.

I might add that, with respect to the concrete, historically, there was a thought originally that there would be significant irradiation effects, but that data originally was from places where they're completely non-representative and there was this fall-off and everything. And it resulted in a program to do a lot of research and everything related to concrete degradation because irradiation effects.

But, eventually, we've discovered or realized that, when you get new data, that there really isn't an issue with them. And so, the NRC

ultimately dropped it.

CHAIR KIRCHNER: No, but I wasn't going there so much on the irradiation. Just the concrete condition. You know, any moisture getting in there and such --

MEMBER BALLINGER: Yes.

CHAIR KIRCHNER: -- and then, interacting with the supports, et cetera. So, I got the answer I was looking for.

MR. SCHULTZ: Chuck, this is Steve Schultz.

You mentioned the Westinghouse calculations associated with fluence. They had applied a fairly large uncertainty factor to their fluence calculations, or that's what they were discussing in the overall report they sent. How is that applied? How has that been applied going forward in your overall fluence evaluations, either to the concrete or the vessel?

MR. TOMES: Thank you for the question.

Yes, we did calculate the uncertainty for the radiation model that's used for the reactor vessel, the concrete biological, and the reactor vessel supports. The areas that are adjacent to the reactor vessel have a calculated uncertainty, in

accordance with the methods used in Reg Guide 1.190, of about 20 percent, while the area up where the reactor vessel supports are located have an uncertainty of about 25 percent.

So, we have increased the radiation support or radiation that's been calculated in those regions by 20 percent and 25 percent to be consistent with the uncertainty in the models. In addition to that, there's fuel on the outside of the periphery, and we've increased the dose there by 10 percent. So, we believe that the models that we're using are conservative.

MR. SCHULTZ: And with those adjustments, it allows you to operate beyond 80 years?

MR. TOMES: That's correct.

MR. SCHULTZ: It would allow you?

MR. TOMES: That's right.

MR. SCHULTZ: Thank you.

MR. TOMES: The reactor vessel supports are flaw-tolerant and the region of the primary shield wall that has radiation levels in excess of the limits has been discounted in our calculations, and the unaffected region of the primary shield wall is adequate for curing the loads to the reactor vessel during all design basis transients.

CHAIR KIRCHNER: Thanks for the description.

MEMBER SUNSERI: Members, any other questions?

CHAIR KIRCHNER: May I change topics, Matt?

MEMBER SUNSERI: Sure.

CHAIR KIRCHNER: I just note it was mentioned that there are five AMPs added in the electrical area. Could you just explain what they were and what the focus of those was and why you added them?

MR. MILLER: Yes. So, the five new AMPs came in with the SLR GALL.

CHAIR KIRCHNER: Right.

MR. MILLER: There's an AMP for connectors, high voltage insulators, insulation for I&C cable, insulation for low voltage cable, and -- what's the fifth, Roger? The fifth new AMP?

MR. RUCKER: The fuse holders.

MR. MILLER: Fuse holders. Fuse holders. So, those were, as the GALL evolved --

CHAIR KIRCHNER: Right. Okay.

MEMBER ROBERTS: Hey, this is Tom Roberts. I had a followup question.

Did you evaluate whether any of those programs should be instituted sooner than six months prior to the period of extended operation?

MR. MILLER: So, we did a 10-year OE search. And we really didn't see much related to those programs. So, you know, implementation will be a project down the line. But based on the OE that we saw in our 10-year scrub, I don't think that they need to be implemented tomorrow.

MEMBER ROBERTS: Okay. Thank you.

Yes, the one that jumped out at me is it said, the procedure is being revised with regard to inspecting the water it required, the in-scope manholes after event-driven occurrences, such as heavy rain, rapid thawing of ice and snow or flooding.

That just seems like good practice, good housekeeping. I'm wondering if you're already doing that.

MR. MILLER: The station is. Yes, they're already --

MEMBER ROBERTS: So, this is formalizing what you're already doing?

MR. MILLER: Correct. Yes.

MEMBER ROBERTS: Okay. Thank you.

MR. MILLER: It's to bring it up to what

the GALL standard is.

MEMBER ROBERTS: Yes. Thank you. That's helpful.

MEMBER SUNSERI: Maybe to tag onto Tom's question, I would assume -- maybe I shouldn't do that -- but maybe say presume that, if you identify any issues through your Corrective Action Program, through performance monitoring of the station going forward, perhaps it would bring you back to (audio interference) in this area. Is that fair?

MR. MILLER: That's fair.

MEMBER SUNSERI: Okay. Thanks.

CHAIR KIRCHNER: So, in that OE scan that you conducted, Keith, did you find anything that rose to your attention that required additional focus or --

MR. MILLER: There were several items. So, the OE search we did was quite exhaustive. We started with several thousand Condition Reports that we went through.

Not necessarily in the electrical area, but one of the key things that we looked for in mechanical fluid systems is evidence of recurring internal corrosion, where you get pinhole leaks on a section of piping repeatedly.

CHAIR KIRCHNER: Right.

MR. MILLER: We created an enhancement in an open cycle cooling water system, after we identified recurring internal corrosion in one section of piping there, to retire that piping from service, because it's no longer used for coolers.

But there were other, there were a couple other instances of recurring internal corrosion that we identified and were able to either mitigate with existing activities to the stationary new valve, such as the Fire Protection Program piping replacement campaign, or something new, like the open cycle cooling water connect that we took.

CHAIR KIRCHNER: That was the next one I was going to ask. So, how is the fire protection system? At your other sites, that was one of the items that kind of rose to the prominence in terms of needing attention. How is it here at the Surry plant -- or at the Summer plant?

MR. MILLER: So, for V.C. Summer, we have had some pinhole leak issues in aboveground fire protection piping. And the station is actually undergoing a piping replacement/valve replacement campaign now, where they're taking sections of the system and replacing it. So, that is an ongoing activity that we've recognized in the application.

CHAIR KIRCHNER: Okay. Thank you.

MEMBER SUNSERI: Members, anything else?

MEMBER HARRINGTON: This is Member Harrington.

One of the questions earlier, you talked about the transition from the initial license renewal to subsequent license renewal, and, basically, starting over. "Blank page" is the word used. Can you clarify how much that was in the application side as opposed to the plant program details? How did those relate?

MR. MILLER: So, a big part of the new content is new aging management programs that have just, as the GALL evolved -- we were GALL Rev. 0 for initial license renewal. So, it's two revisions of GALL, plus the SLR GALL. Some of that newness was introduced by just GALL revisions.

I'd say that, you know, a lot of the enhancements that we have written for subsequent license renewal are related to aligning with the SLR GALL. Now, those activities might not necessarily be new per se. It might be just aligning language. For example, like looking for specific keywords and phrases that the GALL mentions. We're doing inspections for those things, but we want to enhance

the program to say specifically we're looking for cracking, or whatever.

So, I guess to tie a bow on it, I'd say that many of the activities are not completely new. The station is doing them already. But a lot of the language in the application and the aging management programs is to align to the GALL.

MEMBER HARRINGTON: So, it wasn't so much starting over with plant programs as it was just cleaning up, making everything align?

MR. MILLER: That's correct.

MEMBER HARRINGTON: Thank you.

MR. MILLER: Okay. So, to summarize, Dominion has produced a quality subsequent license renewal application with a high degree of consistency with the GALL Report. That leverages our learnings from the previous subsequent license renewal applications, both Dominion stations and fuel utilities.

The teams highlight experience, with many of our members having participated on previous applications. And we intend to continue to invest in people and program enhancements and station modifications throughout the subsequent period of extended operation. And that's going to advance the

company's overall mission to provide reliable, affordable, increasingly clean energy to our customers.

With that, I'll close and I'll say that we do have somebody from the station that's prepared to answer the previous question on service water pond treatment.

MEMBER SUNSERI: Okay. Let's go ahead with that.

MR. RAYMOND: Hello. This is Shabazz Raymond, Superintendent of Chemistry at V.C. Summer.

There was a question regarding our service water chemical treatment. So, we do treat our service water pond. We have four chemicals that we treat it with. Two of them are for, basically, biological control, and then, we have one which is a corrosion inhibitor, and the other one is a dispersive that we treat the pond with as well. And that helps keep any type of silt from forming in the tubes -- the heat exchanger. Excuse me.

VICE CHAIR HALNON: Yes, this is Greg. I asked the question.

Part of the question was also the chemistry control which includes monitoring the chemistry. How often do you sample the chemistry and

do a check on it for chlorides?

MR. RAYMOND: So, the chemistry, we monitor it. Whenever we do chemical treatments, we get samples. We monitor to see what our chlorine residual is, to see what the effectiveness is for our procedure, and we also obtain samples for our vendor to analyze. That vendor, they analyze on that to see what our phosphate concentration is, which is a corrosion inhibitor that is in there. And we also look at biological activity to see what that is. So, if we do need to change in our regime as far as increased frequency, we can do it based on that.

And what we're also doing is thermal performance testing with engineering, and that gives us a great indication of how effective our treatment is. So far, we have been very successful with that.

VICE CHAIR HALNON: So, how often do you sample for chlorides, sulfates, and pH?

MR. RAYMOND: So, the chlorides, sulfates, and pH, that is normally done monthly and when we do the other tests. They're done whenever we do the chemical addition to the pond, whenever we ramp up concentrations. So, if I change my strategy to three days per week, based on temperature and per our procedure, we'll sample it three days out of the week,

based on those concentrations.

And normally, you sample your operating train that you're injecting into to make sure that you're seeing what you would expect from the outlet of that sample, the healthy water.

VICE CHAIR HALNON: Okay. Thank you.

MR. MILLER: And just for the court reporter, that was Shabazz Raymond and he's the Superintendent of Chemistry at V.C. Summer.

MEMBER SUNSERI: Does that wrap up your presentation?

MR. MILLER: It does.

MEMBER SUNSERI: Members, any additional questions before we release them?

(No response.)

All right. Well, thank you for answering our questions and this thorough presentation.

At this point, we'll transition over to the NRC staff.

Marieliz Johnson?

They'll set up here in about a two-minute transition period.

(Pause.)

MEMBER SUNSERI: So, we're running quite a bit behind. We have five minutes.

(Laughter.)

Just kidding. We'll grant you the full 35 that you're allotted. Whatever it takes, though.

(Pause.)

MS. JOHNSON: Okay.

MEMBER SUNSERI: All right, Mr. Chairman, it looks like we're ready to resume.

All right. You may proceed with the staff presentation.

MS. JOHNSON: Good morning, Chairman and Members of the ACRS.

My name is Marieliz Johnson and I'm the Safety License Renewal Program Manager, and we'll be presenting on the safety review of the subsequent license renewal application for Virgil C. Summer Nuclear Station Unit 1, V.C. Summer for short.

The staff's safety review of the V.C. Summer subsequent license renewal application is documented on the Safety Evaluation issued on January 21st, 2025, and revised on March 4th, 2025, to more accurately describe the Applicant's implementation associated with the inspection of overhead heavy load and related to refueling and handling systems.

Joining me today at the table are Steve Downey, Region II Reactor Inspector; Mac Reed, Senior

Resident Inspector at V.C. Summer, and our Senior Technical-Level Advisor for Aging Management, Dr. John Wise.

Also joining us today, both in the audience and virtually, are some of the Regional staff, along with members of the Office of Nuclear Reactor Regulations, technical staff who participated in the review of the application and the associated items.

We will begin today's presentation with an overview of V.C. Summer's licensing history before moving into Summer's aging management programs. We'll then discuss the significant technical areas that we believe is of interest to the ACRS and hear from Region II on inspections completed at V.C. Summer, as well as material condition of the plant. Then, we will share the conclusions on the staff's safety review.

V.C. Summer Unit 1 was initially licensed in November 12th of 1982. In August of 2002, the Applicant submitted an initial license renewal application. The initial renewal license was issued on April 23rd of 2004, extending the expiration date by 20 years to August 6th, 2042.

On August 17 of 2023, the Applicant

Dominion Energy, South Carolina, Inc., submitted a subsequent license renewal application for V.C. Summer. The application was accepted for review on October 16 of 2023 and a Safety Evaluation was issued January 21st and revised on March 4th, with no open or confirmatory items.

The V.C. Summer subsequent license renewal application described a total of 49 aging management programs consisting of 40 existing programs and 9 new programs. This identifies the Applicant's original disposition of these aging management programs, as initially submitted on the application, in the left column, and the final disposition, as documented in the Safety Evaluation on the right.

All aging management programs were evaluated for consistency with the GALL SLR Report. Ultimately, all programs were found to be consistent with the GALL Report with acceptable enhancements or exceptions.

I'd like to also speak to the way we reviewed the aging management activities and other technical information in the application.

As part of our review, the staff conducted an aging management audit to review operating experience, aging management programs, and

time-limited aging analysis. The audit spanned 19 weeks from November of 2023 to March 2024, to include both onsite and virtual activities.

In the audit, the staff leveraged an electronic document portal and breakout sessions held with the Applicant.

The staff also performed a limited-scope audit held in August of 2024 related to the biological shield wall. During the review, the Applicant submitted four supplements to the subsequent license renewal application.

The staff issued 13 requests for additional information and no second request for additional information during its review.

Based on its review of the application, the results of data, and additional information provided by the Applicant, the staff concluded that the Applicant's aging management program activities were consistent with the criteria of the Standard Review Plan for subsequent license renewal application and the requirements of 10 CFR Part 54.

We will have the specific areas of the review to discuss.

CHAIR KIRCHNER: Marieliz, before you go forward -- sorry to interrupt the flow -- how did you

go about, for this particular plant, setting up your audit? Was it informed by your Resident Inspector or was it informed by the GALL?

Where I'm going with this is you can just go over these AMPS, and we count them all up, and we say they match with or without enhancements, et cetera, et cetera.

But when you go actually to the plant and do an audit, what's your strategy and what are you looking for when you go to a plant? Obviously, you've got the entire list, but each plant is different. So, how did you do your audit and what were the major results from the audit?

MS. JOHNSON: So, for the audit, for the outside audit, the initial onsite audit, we had two teams. It was mostly the electrical team and the structural team.

And the electrical team, they go through the AMPs and they check what they want to see. They also look at the plant's drawings and they decide exactly what things they want to see. They also talk to the Resident Inspector and try to decide exactly what they want to see.

For the structural, the same. They go through the AMPs. They go through the drawings and

choose what they want to see. They went to the dam. They went to see the --

CHAIR KIRCHNER: This is V.C. Summer.

MS. JOHNSON: Uh-hum.

CHAIR KIRCHNER: So, what did you really focus-in on at the audit?

MS. JOHNSON: So, for the structural -- because we had two PMs for this -- I followed the structurals; the other PM followed the electrical.

And for the structurals, I know they went to the dam. They went to the attendant gallery, which is specific for V.C. Summer. And they did go see the overall of the plant. The Applicant told us how there's a crack here, a crack there. So, we went to see those.

CHAIR KIRCHNER: So, what did the electrical team really focus on?

MS. JOHNSON: Okay.

CHAIR KIRCHNER: I'm trying to get let's check the box and here is what we have.

MS. JOHNSON: Yes, yes. Matthew McConnell raised his hand. He was there.

So, Matthew?

MR. McCONNELL: Good morning. This is Matthew McConnell with the Nuclear Regulatory

Commission. I'm in the Long Term Operations and Modernization Branch within NRR.

When we perform our onsite audits, Marieliz is correct, we look at the AMPs and we have a general idea of what we are looking for.

So, when we went to V.C. Summer and prior to going to V.C. Summer, we asked to have a walkdown of various systems and components. We started with the station blackout recovery path, which, basically, went from the switch yard to the plant itself, all the way to, essentially, a switch gear for the diesel generators in 4160.

What we're looking for when we're onsite is just the aging mechanisms or any potential degradation that might be abnormal to ensure that their aging management programs are adequately developed to catch and correct any potential degradation mechanisms.

Because we have a lot of experience from every plant, you know, we know what we're looking for. V.C. Summer, no different. They did not have much, if at all, any, actually, degradation that we observed for cabling, for overhead connectors, for transmission conductors, and insulators.

I hope that answered your question.

CHAIR KIRCHNER: Yes. Thank you.

I'm just trying to prevent us glazing over on the number of AMPs with and without modification, et cetera, et cetera, and what you actually are targeting when you do an audit at one of the plants.

Thank you.

MR. McCONNELL: Yes. If I may add, we also look at manholes and cables within manholes, if they are in scope, to observe/ensure that, if they were subjected to water, they would not have any aging mechanisms observed or identified, and based on testing and inspection frequency.

MR. WISE: This is John Wise --

CHAIR KIRCHNER: Yes. Get much closer to the microphone.

MR. WISE: I'm sorry. I'll be real close here.

Hi. John Wise, NRC.

I just want to give a little more perspective. I think you're asking some kind of big-picture questions about how we approach an audit, right?

And so, when we think about, you know, why do we have an audit, historically, it's been our opportunity to just verify some of the information

that's present in the application. That's simply enough. And for those simple programs, that's not a big lift.

And then, the opportunity is to look at, dig into the plant's specific operating experience. So, our audits include an operating experience review. And that's where staff get a chance to begin to ask questions of the plant, dig into the details.

And also, sometimes plants have, evident in the application, plants have some unique -- maybe there's some unique structures or unique materials. And getting onsite is an opportunity for the staff to explore those further and to really understand if the program that they're proposing, it will be adequately covered.

But, going forward, we recognize that this is becoming a mature process, as we discussed earlier. And so, we're looking and we have actually started the process to kind of refine our audits to really focus on the staff that really matters. Some of these programs are pretty mature and we don't want to spend a lot of time unnecessarily, our time and the Applicant's time, asking about some fairly mature programs.

And so, we have an approach that we've

been highlighting for Dresden and Clinton, ongoing reviews where we actually are asking the staff to kind of pare down and focus the audits for resource savings.

CHAIR KIRCHNER: Thank you.

MEMBER SUNSERI: Well, I would add, that's much like what the ACRS does for our review. But I would caution, we just don't look -- we just don't accept something as a mature process. We factor in that operating experience extremely high, because even though a program might be mature, there might be some operating experience, a point that we need to be looking at that closely. So, we will. That's kind of how we do our reviews, a similar approach.

MEMBER HARRINGTON: This is Member Harrington.

Just to follow up on this whole thread, you focused on electrical and structures. Is that because that's where the changes in the GALL have been or is there something else that said these are two areas; we don't need to look at mechanical or something else?

MS. JOHNSON: I would say the onsite focused on structural and electrical. The audit, like John said, we focused on everything. But going

onsite, it's basically those two that they want to see.

MEMBER HARRINGTON: So, that's more typical of these kinds of audits, not just because it was V.C. Summer?

MS. JOHNSON: Oh, no. Yes. And if someone from mechanical sees something on another project on a plant that they want to go see, they go to the site. But, for this one, electrical and structural were the ones that requested going on the site. But everyone, all the mechanicals also do the audit electronically.

Oh, okay. So, regarding the inspection of the water control structure associated with nuclear power plants, the dams are inspected as part of the NRC dam safety program. These inspections occur every two or three years, and the last inspection report showed the dam to remain in compliance with federal guidelines. The report can be found in ADAMS. The non-proprietary cover letter of the report is ML243448196.

VICE CHAIR HALNON: Marieliz, this is Greg.

On the inspection, they mentioned that FERC comes in every three years. How's that formally

communicated, their finding results, back to the NRC? Is there an MOU or is there some joint effort? How is that communicated?

MS. JOHNSON: So, I know there's a report. I don't know if FERC --

VICE CHAIR HALNON: It sounds like a friend is trying to help you out.

(Laughter.)

There you go. Okay, Dan, go ahead.

MR. HOANG: Yes. Good morning. This is Dan Hoang with the staff.

The FERC has a contract with the NRC because, according to a Code mandate of 1978, the contract went to FERC to do the inspections because FERC does it for a living. And so, therefore, the FERC likes to do the inspection. However, they report to us, that we can turn to their report, and we submit a copy to the licensee. Yes.

VICE CHAIR HALNON: Okay. Very good. Thank you, Dan.

MR. HOANG: You're welcome.

MEMBER BIER: I have another question. This is similar to the question that I asked of the Licensee earlier.

Which is, when you do the dam inspection,

do you also inspect the just general surroundings of the pond? Because there can be problems with just earthen structures.

MR. HOANG: Yes. Yes, ma'am. We do inspections of the surrounding if it is involved with the structure. Because the inspector and myself, we have a structural engineering degree and, also, we have a PE license. So, we know what we're supposed to do and what we are supposed to have an inspection for and how an adjustment is.

MEMBER BIER: Okay. Thank you.

MR. HOANG: You're welcome.

MS. JOHNSON: Okay. And as a part of the license renewal review, the staff conducted a review of the plant operating experience search results to identify examples of age-related degradation, as documented on the Corrective Action Program database and provide a basis for the staff conclusion on the ability of the Applicant's proposed AMP to manage the effect of aging in the subsequent period of extended operation.

The staff did not identify any operating experience indicating that the Applicant should modify its proposed program. Based on its audit and review of the application, the staff finds that the condition

and operating experience at the plant are bounded by those for which the inspection of the water control structure associated with the nuclear power structure program was evaluated.

Regarding the biological shield wall irradiated concrete and steel, the primary shield wall, or PSW, fluence, neutron fluence, and gamma dose are above the threshold that requires evaluation discussed in the SRP-SLR. So, the Applicant performed for their evaluation.

Regarding the inspections of reactor vessel, or RV, supports, the Applicant will perform aging management activities consistent with the GALL SLR Report that include, but are not limited to, ASME Section 11, Subsection IWF, "Structure Monitoring," and various AMPs to monitor aging effects of reactor vessel supports.

Additionally, as the Applicant mentioned, the Applicant has the following ongoing proposed activities:

Official inspections of the six RV supports every 10 years, as directed by the In-Service Inspection, or ISI, program.

Further enhance with additional inspections of at least one support every five years.

Review of the RV supports inspection results under the Structural Monitoring Program for conditions that may require evaluation of the primary shield wall, concrete, and grout.

Inspection of the in core feed room under the RV twice per refueling RS. If evidence of degradation, such as debris, is noted, a Condition Report is initiated in the Corrective Action Program for evaluation.

And monitoring of the condition of the outside of the PSW concrete every five years under the Structural Monitoring Program.

The NRC review of the ancillary FSAR drawings and documents available during audit. The staff also performed a limited-scope audit and onsite audit and documented their observations in the associated audit report, ML250078234.

Following the audit, the Applicant supplemented their application to identify the needed activities to advance the further evaluation of the primary shield wall concrete and reactor vessel steel supports.

At this time, do you have any questions on this?

MEMBER SUNSERI: No questions.

MS. JOHNSON: No questions? Excellent.

At this time, I will turn it to over Steve Downey, Reactor Inspector from Region II, who will be discussing inspections and plant material conditions.

MR. DOWNEY: Yes, good morning, Chairman and Committee.

I can't hear myself.

MS. JOHNSON: I think it is okay. Get close to the mic.

MR. DOWNEY: Okay. My name is Steve Downey, as mentioned earlier. I'm the Senior Reactor Inspector out of NRC Region II, Division of Operating Reactor Safety, Engineering Branch III. I'm one of the license renewal points of contact for Region II, and I was the team lead for the phase 2 inspection at V.C. Summer.

With me is Mac Reed, Senior Resident at V.C. Summer, and we are here to discuss Region II's assessment and review of the implementation of aging management programs, the material condition of the plant, and the overall regulatory assessment of V.C. Summer Unit 1.

MEMBER SUNSERI: Yes, let me just interrupt you. Just move that stanchion right in front of you, the microphone, and make sure it's

pointed right at you.

You have some important information for us. We always like to hear from you and we want to make sure we hear you clearly.

MR. DOWNEY: All right. Just let me know if my sound isn't good for you.

MEMBER SUNSERI: Just use your outside voice.

(Laughter.)

MR. DOWNEY: That's easy enough to do.

So, the license renewal inspection program and the ROP baseline inspection program are both used to inspect aging management activities at V.C. Summer. I'll start with the activities under the license renewal inspection program, and then, we'll discuss the ROP inspections, and Mac will follow up with the material condition of the plant.

So, in order to assess the adequacy of the license renewal program for the initial period of extended operation, Inspection Procedure 71003 recommends a four-phased approach to license renewal inspections.

This slide details the specific license renewal inspections that have been or will be performed at V.C. Summer. As I discuss each line

item, I will give a bit of detail on what the inspection entails or will entail when it's performed.

So, the phase 1 inspection, which we performed at Unit 1 in October 2021, which was during refueling outage 26, which is the last outage prior to going into the period of extended operation, this is an outage inspection that focuses on observing the implementation of select aging management programs and activities, as well as any testing or visual inspections of structures, systems, and components which are only accessible at reduced power levels.

During the outage, we performed the phase 1 license renewal inspection, per Inspection Procedure 71003, as well as the baseline ISI inspection, per Inspection Procedure 71111.08. This allowed inspectors to maximize the observation of activities credited for license renewal, which includes examinations performed as part of the In-Service Inspection Program, the Buried Piping and Tanks Program, and the Chemistry Program, as well as one-time inspections performed on small-bore ASME -- ASME is American Society of Mechanical Engineers -- Class 1 piping.

So, no findings of significance were identified as a result of the phase 1 inspection or

the baseline ISI inspection.

Next --

MEMBER SUNSERI: I can't help but notice your graphic says, "Unit 1 and Unit 2." Are you still pursuing other units?

MR. DOWNEY: I'm sorry, that is a typo.

MEMBER SUNSERI: Oh, okay. All right.

MR. DOWNEY: I apologize for that.

So, the phase 2 inspection, which we performed in February 2022, is a one-time major team inspection during which the inspectors evaluate the license renewal program prior to the period of extended operation by taking a comprehensive look at the implementation and/or completion of regulatory commitments, aging management programs, time-limited aging analyses, and other activities associated with the licensee's request to renew its operating license.

So, there were a total of 41 regulatory commitments linked to the renewed operating license, the initial operating license from V.C. Summer, two of which were resolved during the licensing review and not subject to further inspection, and the remaining 39 commitments were included in my sample for the phase 2 inspection and are categorized as follows:

There were 17 commitments to implement new

aging management programs; eight commitments to enhance existing aging management programs for license renewal; two commitments to perform a one-time inspection of structures, systems, or components within the scope of an existing aging management program; six commitments to perform time-limited aging analyses, and six standalone commitments. And I refer to them as "standalone" because they're not associated with an individual aging management program or time-limited aging analysis.

So, during the inspection, the team determined that the actions associated with 37 of the 39 regulatory commitments were completed. For those license renewal action items that were not completed at the time of the inspection, the team verified that there was reasonable assurance that such action items were on track for completion prior to the period of extended operation or in accordance with an established implementation schedule consistent with the licensing basis.

During the inspection, the team also verified that the licensee had taken appropriate action related to newly identified structures, systems, and components, as required by 10 CFR 54.37(b); that the appropriate processes were in place

for evaluating, reporting, and seeking approval for commitment changes, and that the descriptions of the aging management programs in the Final Safety Analysis Report were consistent with what the agency had approved.

As a result of the phase 2 inspection, no findings of significance were identified. I can provide the latest information on the two commitments that were not completed at the time of the inspection, if the Committee wishes to hear more. And that's a question for you all, if you want to hear about those.

MEMBER SUNSERI: Members?

(No response.)

MR. DOWNEY: Okay. In that case, I'll move on to an inspection that not mentioned on this slide here, which is the phase 3 inspection, because we did not perform a phase 3 inspection at V.C. Summer. But the phase 3 is a followup inspection that will be performed to address outstanding issues, if any, that were identified during the phase 1 or phase 2 inspections.

And finally, the phase 4 inspection, which typically occurs 5 to 10 years into the period of extended operation, is yet to be performed at V.C. Summer. As we all know, the site entered the PEO in

August of 2022. So, we would expect the phase 4 inspection to be performed somewhere in the range of 2027 to 2032. When performed, this inspection will verify that the licensee is managing the aging effects in accordance with their aging management programs, as described in their Final Safety Analysis Report.

I'll also note here that, if V.C. Summer is approved for a subsequent license, then the NRC inspection program will include additional phases designated as phase 5 and phase 6. And the phase 5 inspection is similar to the phases 1 and 2, in that it's an inspection that would occur prior to the subsequent period of extended operation; whereas, the phase 6 inspection is similar to a phase 4 inspection. That's an implementation of an aging management program effectiveness inspection that would occur 5 to 10 years into the subsequent period of extended operation.

Next slide, please.

So, in addition to the inspections mandated by license renewal, by the license renewal inspection program, the inspectors have several ROP -- that's reactor oversight process -- baseline inspections that could be used to evaluate the implementation of aging management activities.

For example, the baseline ISI inspection, which is performed at every outage, gives the inspectors the opportunity to look at inspections credited for aging management that are within the scope of various programs.

Another example is the heat sink inspection, which gives inspectors the opportunity to look at the service water system, including heat exchangers, the service water intake structure, and both aboveground and buried or inaccessible piping and components, all of which are within the scope of license renewal.

I will note here that, in 2024, the triennial component of the heat sink inspection, which was performed by the Region-based engineering inspectors, was folded into what we now call the Comprehensive Engineering Team Inspection, which I'll refer to a couple of times as the CETI, while the annual heat sink inspection is still performed by the Resident Inspectors.

So next, the CETI, or Comprehensive Engineering Team Inspection, and the Fire Protection Triennial Inspection Procedures, both direct the inspectors to ensure that structures, systems, and components selected in the inspection sample that are

subject to aging management review are being managed in accordance with appropriating aging management programs.

At V.C. Summer, the Regional Inspectors have found no violations or findings of significance as a result of the inspections performed under this procedures.

Additionally, the Resident Inspectors at Summer have performed a variety of inspections, including maintenance effectiveness and problem identification and resolution inspections, or PIR, on samples that focused directly or indirectly on associated aging management programs.

VICE CHAIR HALNON: Steve, this is Greg. I just wanted to do a numbers check.

MR. DOWNEY: Sure.

VICE CHAIR HALNON: In 2022, we had an erratic diesel generator governor suffer failure. In 2023, we had another diesel generator problem, another self-revealing problem on the main feedwater pump for a thrust bearing issue. In 2024, we had a self-revealing finding on P&T that failed on a chiller because of a design deficiency. Yet, you said no violations or findings were found in these.

So, help me with those numbers there.

MR. DOWNEY: Yes. So, the no findings or violations are for the Region-based inspections, which would include the ISI inspection, the heat sink inspection, triennial fire protection, and the CETI inspection.

The issues that you're mentioning would fall under the umbrella of the problem identification and resolution. The Residents are the focal point of those inspections. So, we can --

VICE CHAIR HALNON: So, Mac, you don't have to answer now because you're going to have a slide later on. Help me with your confidence in the Corrective Action Program when you get to the diesel generator discussion that you're going to have.

MR. REED: Got you.

MR. DOWNEY: So, then, that's a perfect segue, because I was going to mention the notable inspection result of the white finding of the diesel, which the licensee discussed a bit earlier and we'll discuss more on the upcoming slide.

Next slide, please.

So, at this point, I'll turn it over to Mac Reed to discuss the material condition of the plant and the Resident Inspector viewpoint.

MR. REED: Yes, Mac Reed, Senior Resident

Inspector at V.C. Summer. I've been there for about five years.

And thank you for reading the Inspection Reports.

(Laughter.)

I should say I look forward to answering any of your specific questions about that, as well as the programs at V.C. Summer.

So, specifically, I'm here to speak about the material condition of Summer from the Resident Inspector viewpoint. Again, for everybody, we are there daily. We observe the plant. We do about 150 targeted inspections every year and we do write occasionally some violations that I would be glad to speak about more, anything that you have in your mind.

So, V.C. Summer Unit 1 is in the "Licensee Response" column of the reactor oversight process. And I did note in this script that there were many diesel generator failures since I've been here the last five years.

The one specific one, I'll try to streamline that conversation, since Dominion already presented on the fuel oil piping, but there were other issues with the diesel generators not associated with the fuel piping.

Here's the slide. So, just to streamline this and give you a high-level summary, you heard the details from Dominion. Everything they said about the corrective actions was correct.

We identified that over the years maintenance activities had identified cracked threads, but they had not been adequately documented in the Corrective Action Program such that they could be trended and a global, more comprehensive corrective action could be established.

And as a result, the system vulnerabilities eventually resulted in a surveillance test failure during a 24-hour performance test. And essentially, they sprayed fuel oil everywhere and they had to shut down the diesel.

I want to focus on the Corrective Action Program because that was ultimately the apparent violation -- a failure to adequately document and assess previous issues.

So, all these issues that were identified were under the SCE&G umbrella prior to my time at V.C. Summer.

One of the things that I want to note about the Corrective Action Program through the root cause analyses that they performed for this issue, as

well as the Amphenol connection issue with the kilowatt swings that you read about, the Corrective Action Program at V.C. Summer in the last five years has improved dramatically.

The critical thing for me, and the thing that we sort of take for granted in what we assume in all of our aging management reviews, license renewal reviews, is that things will be documented in the Corrective Action Program. So, that's the "I" in PI&R for problem identification and resolution. So, the Resident Inspectors are there to ensure that things are documented in a very low threshold, and that has greatly improved.

Hopefully, that answers or at least initially answers your question.

MEMBER BIER: If I can follow up, on root cause analysis, people talk about extent of cause and extent of condition. In other words, if you find a problem with the diesel generators, is that only because of something with the diesels or is there a broader issue that might affect other SSCs, or whatever, based on what you observe?

And can you talk about how far you broaden out from the observations to look at other possible issues?

MR. REED: Yes, ma'am.

So, specifically talking about the fuel oil line rupture --

MEMBER BIER: Yes.

MR. REED: -- the licensee did do an extended condition on safety-related items. They expanded the scope to threaded connections throughout the plant, Schedule 40 piping, to determine if they had any other weaknesses where they had leaks that were not adequately evaluated or they did need uprating.

The key, in my perspective, was the vibrations that you all brought up earlier. The vibrations significantly contributed to the wear. And if you put a moment or a torque on Schedule 40 threaded connections and you vibrate it, it will eventually fail.

MEMBER BIER: Uh-hum.

MR. REED: So, they have remediated through modifications of both of their emergency diesel generators and they have performed an adequate extended condition on other safety-related components that use threaded connections. I don't think there's any other components that vibrate as heavily --

MEMBER BIER: Yes.

MR. REED: -- as the region that failed.

MEMBER BIER: Okay. Thank you.

MEMBER SUNSERI: Was there any industry operating experience shared on that issue? Because that's a configuration issue. There's other places.

MR. REED: Yes. So, INPO has an IRIS database that requires all equipment failures to be documented. So, the root cause evaluation and for other failures that you all mentioned, the self-revealing failures, those would have what we call level-of-effort evaluations, which is just a lower tier of cause evaluation. Those are put into the industry's INPO database, and some of our NRC folks have access to that in our OPI Branch. They can review those. And the expectation is that other utilities would be using that information to inform their definitive maintenance programs.

MEMBER SUNSERI: Thank you.

MR. REED: All right. So, let's skip the rest, unless you have any more questions about this specific diesel failure.

Go to the next slide.

VICE CHAIR HALNON: Yes, not specific to this, but, as someone familiar with the culture on the site, tell me if you agree. It's a high level of

ownership if the systems. I think some of the engineers would take the components home with them, if they could, to make sure they stayed (audio interference). There's a great desire to be the best in what they do.

Did you see that promulgating through this Corrective Action Program? Since the answer is so dependent on a strong Corrective Action Program, do you see that culture of ownership and desire to be excellent going through into this new Corrective Action Program? I'm calling it "new," but it's, you know, Dominion's existing.

MR. REED: They did revise their Corrective Action Program when Dominion bought SCE&G. A lot of the procedures were changed.

But, specifically to the Corrective Action Program, really the criteria did not change. The changes were the leadership from the site engaging with the Residents when we had perspectives on the threshold that they were putting things into the Corrective Action Program.

And with the significant improvements following the two white findings, as well as other issues that we brought to them, they have driven a cultural change at V.C. Summer to identify things in

the Corrective Action Program at a very, very low threshold.

And so, what we were seeing, for example, to give you some perspective, the maintenance organization is very strong at V.C. Summer. They routinely go into components and they assess the condition.

Some examples where they were going into these components and finding less-than-expected conditions, and they were writing it in the work orders and the closure notes, but those don't propagate up to the management team for review or into the Corrective Action Program for trending.

So, the knowledge that they provide when they take apart these systems was not being translated into the Corrective Action Program at the right threshold. And when things were broken or a test failed, those absolutely went into the Corrective Action Program and that was always there. The leadership team drove a lower threshold for identification.

Excellent example. It sounds like they've really embraced the new culture then.

MR. REED: Uh-hum.

VICE CHAIR HALNON: Thanks.

MEMBER SUNSERI: Does that documentation of "as found," if you will, cascade into the preventive maintenance programs, too, for adjusting frequencies of AMPs for safety?

MR. REED: Yes, and that has changed slightly over the years. But if it's less than expected and it's documented, then that would be evaluated for adjustments to the frequency.

MEMBER SUNSERI: And for the corrective --

MR. REED: Yes, sir.

MEMBER SUNSERI: thank you.

MR. REED: All right. Next slide.

Overall, for a plant that's in its first period of extended operation, the material condition is generally acceptable. The licensee has been successful at completing large capital improvement projects that maintain or improve the material condition of its SSCs -- structures, systems, and components.

Furthermore, the NRC white and green findings have not only been corrected, but the licensee has improved their corrective action and preventative maintenance programs to correct the cause.

Finally, the license renewal program

inspections did not identify any substantial weaknesses in the station's performance in managing the effects of aging onsite.

Going forward, the agency will continue to inspect and assess the licensee's ability to manage the effective aging through our baseline inspection and license renewal inspection programs. In this manner, our oversight will continue to provide us with insights into the effectiveness of the various aging management programs in place at V.C. Summer.

Now, I'll answer any more questions, and then, turn it back over to Marieliz.

CHAIR KIRCHNER: Let me put you on the spot. So, what's the condition of the plant?

(Laughter.)

MR. REED: It's generally in a very good condition. Housekeeping is really strong. There are probably areas that could be improved. Because if you don't -- some of the aging management programs we talk about require you to go look. It may not be obvious from a routine walkdown.

So, I can't speak to the things that we can't see. The things I can see are in generally good condition.

And you've read some of the self-revealed

issues that we've written up, and we've reviewed every major equipment failure to ensure that the causes are being corrected.

CHAIR KIRCHNER: And at the last outage, in containment, what was your assessment of the triple-S system?

MR. REED: Containment is in a pretty good condition. I think Dr. Downey has also toured V.C. Summer several times. So, I've had the opportunity to -- again, there may be two dozen times in my time at V.C. Summer.

The material condition is good. The coatings on the steel, especially some piping, have really degraded over time. And they do have plans to replace coatings, especially on critical components, critical piping sections.

For instance, the reactor building cooling unit, cooling last year, they underwent a campaign to scrape off degraded coatings and reapply.

CHAIR KIRCHNER: Thank you.

MEMBER SUNSERI: Members?

(No response.)

MS. JOHNSON: Okay. So, thank you.

In conclusion, for the subsequent license renewal application safety review, the staff finds

that the requirements of 10 CFR Part 54.29(a) have been met for the subsequent license renewal for V.C. Summer Unit 1.

And this concludes our presentations. So, if you have any other questions, we will be happy to respond.

MEMBER SUNSERI: All right. Well, thank you for the thorough presentations. We appreciate your perspectives on things. That adds to our deliberations.

At this point, I would like to dismiss the staff and invite the public for comments.

CHAIR KIRCHNER: So, Members of the Public, if you have a comment, unmute yourself, identify yourself, affiliation as appropriate, and make your comment.

Anyone in the room?

(No response.)

MEMBER SUNSERI: Okay. Well, I guess that concludes our review of --

MS. GREENLAW: I'm sorry, I was just able to unmute myself. I couldn't find the unmute button.

MEMBER SUNSERI: Well, okay. Go ahead then. Please state your name and your affiliation and provide your comments.

MS. GREENLAW: Okay. My name is Pamela Greenlaw. I am a nuclear power user. Okay.

I have a question. It's not related to technical. So, I'm wondering if I should save it for a different portion of this program today. But I will go ahead and pose it now.

I'm wondering why there are public hearings for the EIS and not the Safety Report.

Thank you.

MEMBER SUNSERI: Well, thank you for the comment.

We are not -- this is not a question-and-answer session, but we have recorded the question, and if you want to contact Kent Howard of our staff, he's the Designated Federal Official and he will provide our response.

MS. GREENLAW: Okay. I'm not familiar with this person. Their contact information is too difficult to find elsewhere. So, I came today.

MEMBER SUNSERI: It should be in the meeting announcement. Oh, here, yes, it's right here. Just look on the meeting announcement, Kent Howard.

MS. GREENLAW: Howard?

MEMBER SUNSERI: Yes. He's the Designated Federal Official.

MS. GREENLAW: Okay. I just saw two other names in the announcement.

You don't have a chat feature, do you, that you could put that in? Yes, you do.

CHAIR KIRCHNER: Let's just quickly give it to you here in real time.

MS. GREENLAW: Thank you.

CHAIR KIRCHNER: Kent, K-E-N-T, period, Howard, H-O-W-A-R-D, @nrc.gov.

MS. GREENLAW: "K" as in kitten, E-N-T, as in Tom?

CHAIR KIRCHNER: Yes, period, then, Howard.

MS. GREENLAW: Thank you very much. Howard@nrc? All right.

CHAIR KIRCHNER: Dot gov.

MS. GREENLAW: Dot gov. I've got it. Thank you very much.

CHAIR KIRCHNER: Thank you for your comment.

MS. GREENLAW: Thank you.

MEMBER SUNSERI: Any other comments?

CHAIR KIRCHNER: Any other comments from the public?

(No response.)

MEMBER SUNSERI: Okay. So, continuing on then, Chairman, I suggest that we will take a recess at this point in time and come back at your discretion.

But we have a Draft Letter Report that the Subcommittee has prepared. I will request to read that into the record, and then, go into deliberation on that report. There are a few changes to the draft, I noted, as a result of the staff and Applicant presentation, but we can catch those during line-by-line review, I believe.

CHAIR KIRCHNER: Great. So, at this point, we are going to recess for 15 minutes and come back and read the Draft Letter Report into the record when we resume at -- I've lost the indication of the time.

MEMBER SUNSERI: It's 10:32.

CHAIR KIRCHNER: It's 10:32 right now. Let's resume at 10:45.

(Whereupon, at 10:32 a.m., the open meeting was adjourned, and after a brief recess, resumed in closed session for Committee deliberation.)

V. C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1 SUBSEQUENT LICENSE RENEWAL APPLICATION

ACRS Committee Meeting

March 6, 2025

Dominion Energy

Agenda

- Introductions
- V.C. Summer Site Overview
- Subsequent License Renewal Application
- Technical Topics
- Closing Remarks

Introductions

Beth Jenkins, VCSNS Site Vice President

James Holloway, Vice President Nuclear Engineering & Fleet Support

Brenda Brown, Director – Nuclear Engineering – VCSNS

Calvin Pugh, SLR Director

Richard Burtt, Manager – Nuclear Site Engineering – VCSNS

Keith Miller, SLR Supervisor

Chuck Tomes, SLR Technical Lead

Pratt Cherry, SLR Mechanical Lead

Site Layout

Legend

- Protected Area Fence
- Railroad
- Building/Structure
- Site Boundary/Exclusion Area Boundary

Feet
0 1,000 2,000

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V.C. Summer Overview

Station Milestones	Year
Initial License (2775 MWt)	1982
4.5% Uprate Approved (2900 MWt)	1996
Renewed License Issued	2004
Entered Period of Extended Operation	2022
Current License Expiration	2042

V.C. Summer Overview

- Westinghouse 3-loop PWR
- Refueling frequency – 18 months
- Regulatory Status
  - Reactor Oversight Process Actions Matrix Column 1
  - All ROP indicators are Green
- Recent capacity factors:

Year	Capacity Factor
2020	91.07
2021	82.69
2022	101.52
2023	88.82
2024	87.46

V.C. Summer Overview

Significant Plant Upgrades Since Initial License Renewal

- Fire Protection Piping & Valve Replacement Campaign
- Service Water Chemical Treatment Optimization
- Emergency Feedwater/Service Water Cured-In-Place-Pipe Liner Installation
- Main Transformer Replacement
- Electro-Hydraulic Control Digital Installation
- Service Water Cavitation Mitigation
- EDG Fuel Oil Piping Upgrade
- Safety-Related Chiller Replacements

Subsequent License Renewal Application

- Project Team Experience
  - V.C. Summer SLR is the 3rd Dominion SLR project performed by this team
  - Team also has experience from SLR projects with other utilities and initial license renewal projects
- Industry Involvement
  - Participant in peer reviews of other SLRAs
  - Active participant in the NEI License Renewal Task Force

Subsequent License Renewal Application

- Regulatory and Industry Guidance
  - Focused on consistency with NUREG-2191, NUREG-2192, NRC Interim Staff Guidance, and NEI 17-01
- Benchmarking
  - Recent SLR applications and correspondence (e.g., Supplements, RAIs) reviewed for insights
  - Built on Surry and North Anna SLR experience (e.g., leveraged Fleet programs, incorporated lessons learned from NRC reviews)
  - Conducted a peer review of our SLRA

Subsequent License Renewal Application

- Aging Management Reviews
  - High AMR consistency for SLR (>99% of AMR items use Notes A through E)
- Operating Experience
  - 10 years of station operating experience reviewed for aging-related insights
  - License renewal self-assessment performed in 2021
  - NRC IP 71003 inspection identified no findings or violations (2022)
- Aging Management Programs
  - 49 programs for SLR

Subsequent License Renewal Application

AMP Category	AMPs Consistent with GALL	AMPs Consistent with Enhancement	AMPs with Exceptions	AMPs with Exceptions and Enhancements	Plant Specific AMPs
Existing 40	13	22	2	3	0
New 9	9	0	0	0	0
Total 49					

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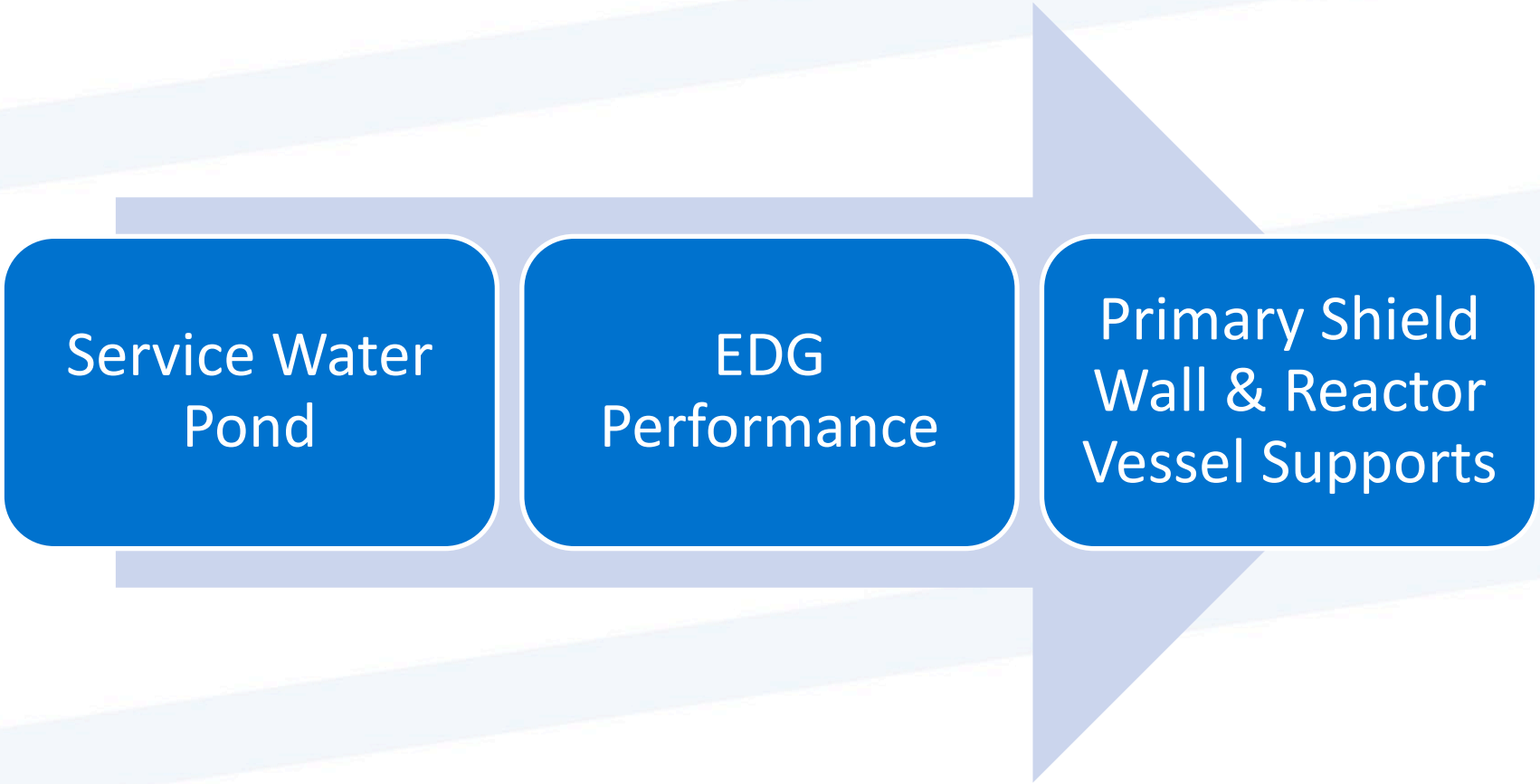
Technical Topics



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Service Water Pond

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Service Water Pond Aging Management

- Dams and embankments inspected for erosion, movement, surface cracks, sloughing, rip-rap failures, weed and brush control, animal burrows, etc – annually
- Dam elevation, alignment, and slope surveys are conducted – every 5 years
- Sedimentation – bottom elevation surveys (two) were conducted – enhancement to conduct on periodic basis
- Federal Energy Regulatory Commission dam inspection – every 3 years

EDG Performance

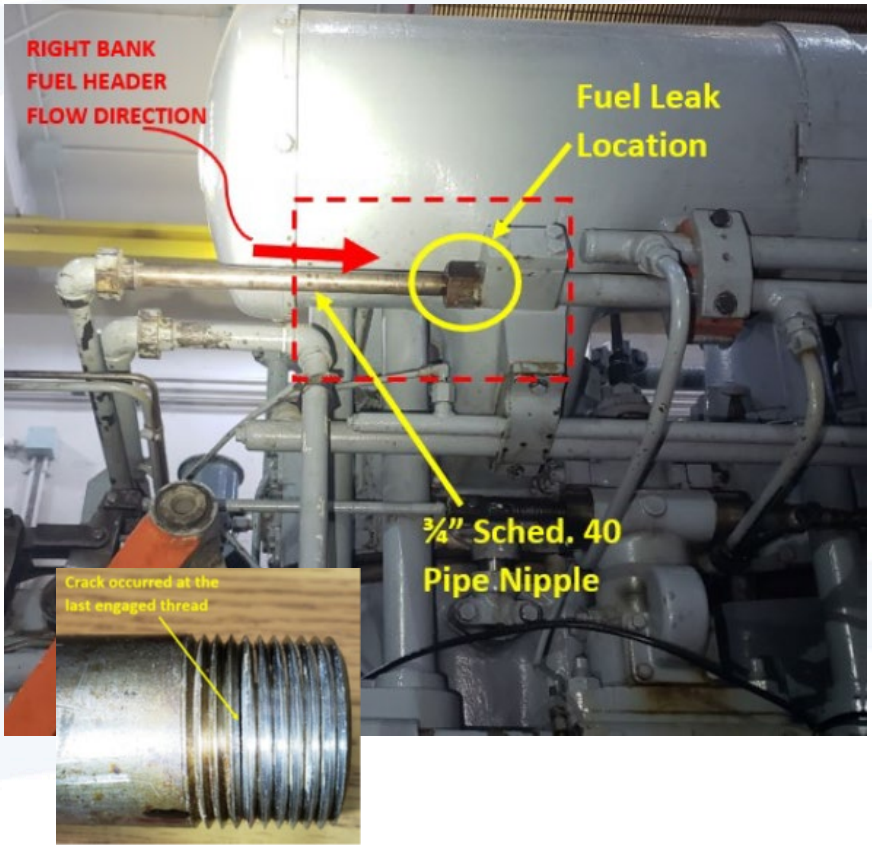
- VCSNS received a White performance deficiency identified when the licensee failed to identify and correct a condition adverse to quality for the Emergency Diesel Generator (EDG) fuel oil system that left the system vulnerable to piping cracks and eventually resulted in the failure of the ‘A’ EDG during testing on November 2, 2022.
  - The direct cause was a circumferential crack formed at the root of the last engaged male fuel oil pipe nipple thread. The crack propagated through-wall 140 degrees during a 24-hour surveillance run.
- VCSNS completed a Root Cause Evaluation (RCE) to further understand the organizational, process, and material aspects of the event.

EDG Performance

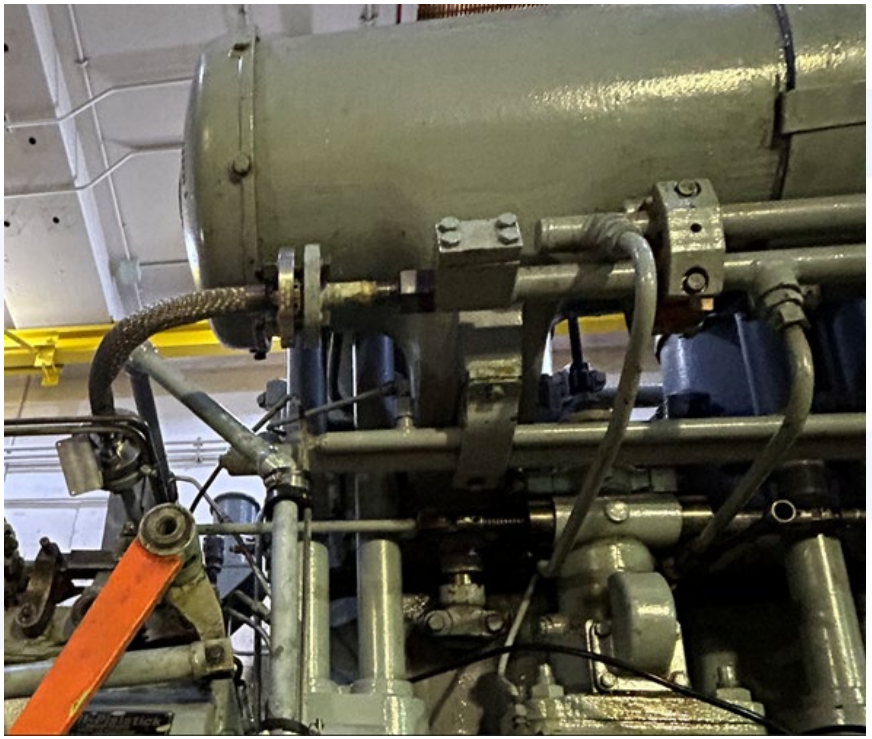
- VCSNS pursued an EDG fuel oil piping design change, to improve the design margin of the system.
  - Replaced threaded schedule 40 piping with schedule 80, mostly welded joints, flexible hoses and flanged connection.
- Additionally, corrective actions from the RCE were completed to correct organization, equipment, and process issues identified.
  - Corrective Action Program and Plant Health process changes, and the Prevention Culture Model implementation
- All monthly and periodic EDG surveillance runs since the piping modification have been performed satisfactorily.

EDG Performance

Piping Arrangement – Then



Piping Arrangement - Now



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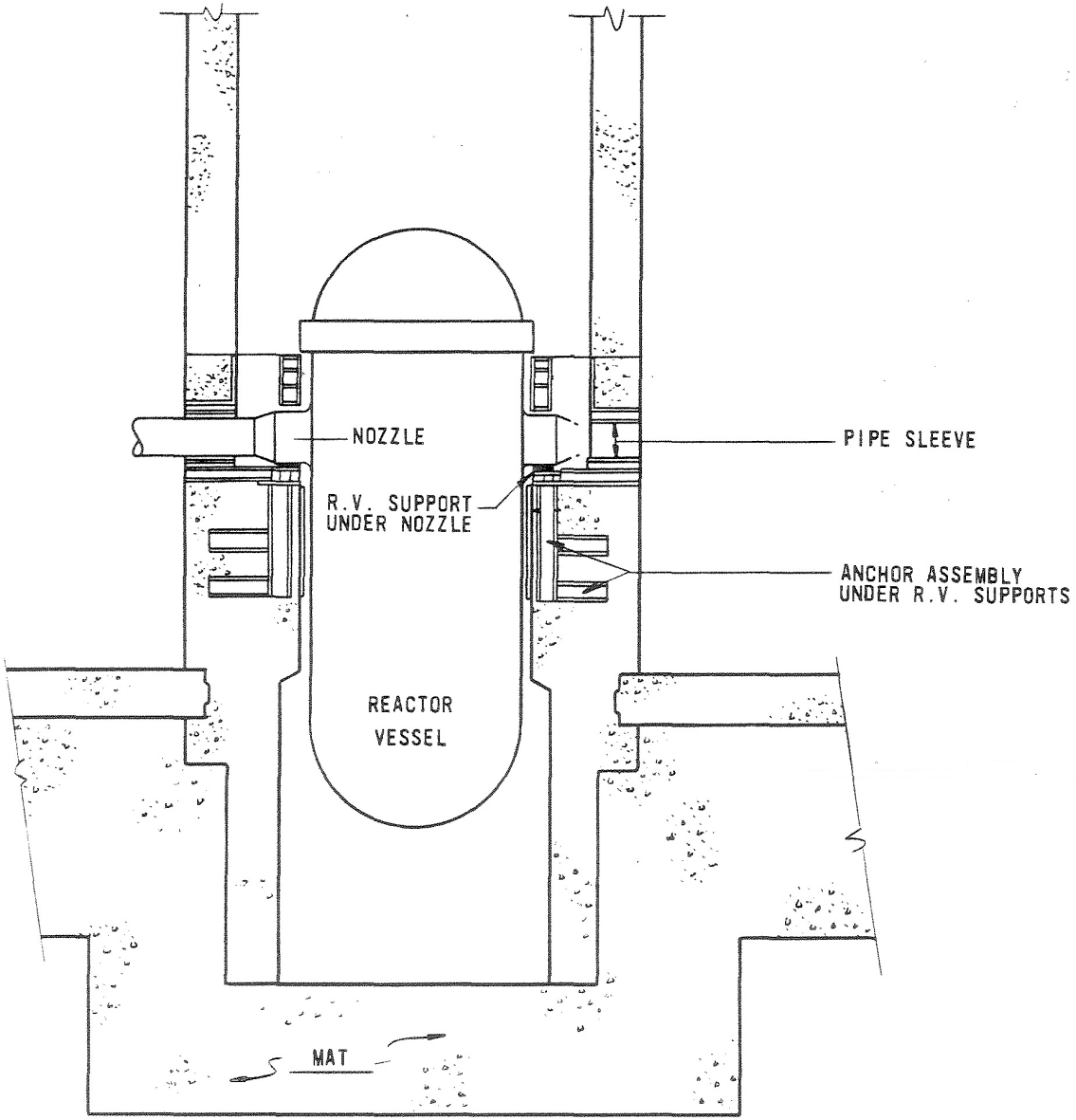

Technical Topics

Primary Shield Wall & RV Supports

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V.C. Summer SLR Summary

- Dominion has a produced a quality SLR application that has a high degree of consistency with GALL-SLR, and incorporates lessons learned from previous SLRAs
- The V.C. Summer SLRA was developed by the very experienced team that wrote the Surry and North Anna SLRAs
- Dominion Energy will continue to invest in people, program enhancements, and equipment modifications through the SPEO

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Advisory Committee on Reactor Safeguards
Virgil C. Summer Nuclear Station, Unit 1
Subsequent License Renewal Application (SLRA)
Safety Evaluation (SE)

March 6, 2025

Marieliz Johnson, Project Manager
Steve Downey, Reactor Inspector

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Presentation Outline

- Virgil C. Summer Nuclear Station (VC Summer), Unit 1 Licensing History
- VC Summer Aging Management Programs (AMPs)
- Specific Technical Areas of Review
- Inspections and Material Condition of the plant
- Conclusion on VC Summer SLRA Review

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VC Summer, Unit 1: Licensing History

Initial License Renewal

Unit	Initial License	Initial License Renewal Application	Renewed License	Expiration Date
1	11/12/1982	8/6/2002	4/23/2004	8/6/2042

Subsequent License Renewal

Application Submitted	8/17/2023
Acceptance Determination	10/16/2023
Safety Evaluation	1/21/2025

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VC Summer, Unit 1
Aging Management Programs

SLRA - Original Disposition of AMPs	SE - Final Disposition of AMPs
○ 49 AMPs in total ○ 40 existing programs • 14 consistent with GALL-SLR • 26 consistent with enhancements and/or exceptions ○ 9 new programs • All consistent	○ 49 AMPs in total ○ 40 existing programs • 13 consistent with GALL-SLR • 27 consistent with enhancements and/or exceptions ○ 9 new programs • All consistent

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Specific Areas of SLRA Review

- Inspection of Water - Control Structures Associated with Nuclear Power Plants AMP
- Biological Shield Wall - Irradiated Concrete and Steel
  - primary shield wall fluence levels
  - inspections of reactor vessel supports

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Region II
AMP Inspections

License Renewal Inspection Program for Initial Period of Extended Operations

Inspection	Dates	Results
U1 & U2 IP 71003 Phase 1	October 11 – November 5, 2021 ML22026A345	No Findings
Unit 1 IP 71003 Phase 2	January 31 – February 18, 2022 ML22069B079	No Findings
Unit 1 IP 71003 Phase 4	Expected 2027 - 2032	NA

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Region II: AMP Inspections

ROP Baseline Inspections

Inspection	Date	Aging Management Program
IP71111.08 ISI	Each outage	Boric Acid Corrosion Surveillance Bottom Mounted Instrumentation Inspection Containment ISI Program – IWE/IWL In-Service Inspection Plan Reactor Vessel Internals Inspection Steam Generator Management Program
IP71111.07 Heat Sink	Annually Triennial: 3Q 2022	Heat Exchanger Inspections Service Water System Reliability and In-Service Testing Program
IP 71111.21N.05 Fire Protection Triennial (FPTI)	3Q 2022	Ensure that selected SSCs are being managed for aging in accordance with the appropriate aging management programs
IP71111.21M Comprehensive Engineering Team Inspection (CETI)	2Q 2024	Ensure that selected SSCs are being managed for aging in accordance with the appropriate aging management programs
IP71111.12 Maintenance Effectiveness	7-8 samples per year	Maintenance Rule Structural Monitoring Program Service Water System Reliability and In-service Testing Program Inspections for Mechanical Components
IP71152 Problem Identification and Resolution (PI&R)	6-10 samples per year	Any applicable AMP based on conditions identified in the licensee's Corrective Action Program

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Region II
AMP Inspections

Resident Inspector Insight and Inspection Results

- No findings from License Renewal Program inspections
- 2023: White self-revealed finding related to the Emergency Diesel Generator (EDG) fuel oil system that left the system vulnerable to piping cracks and eventually resulted in the failure of the ‘A’ EDG during testing.

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SLRA Review Conclusion

On the basis of its review of the SLRA, the staff determined that the requirements of 10 CFR 54.29(a) have been met for the subsequent license renewal of VC Summer, Unit 1.