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 Renewing Nuclear Power Plant Operating
 Licenses - Environmental Review

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON THE PROPOSED RULE RENEWING
NUCLEAR POWER PLANT OPERATING LICENSES -
ENVIRONMENTAL REVIEW

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TUESDAY

MARCH 28, 2023

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The Meeting was convened at the
Marriott Chicago Naperville, 1801 N. Naperville
Boulevard, Naperville, Illinois and via
Videoconference, at 6:00 p.m. CT, Lance Rakovan,
Facilitator, presiding.

PRESENT

LANCE RAKOVAN, NMSS/REFS, Facilitator

BRETT KLUKAN, R-I, Online Facilitator

JENNIFER DAVIS, NMSS/SLED

KEVIN FOLK, NMSS/SLED

TRISH HOLAHAN, NMSS/SLED

YANELY MALAVE-VELEZ, NMSS/SLED

A-G-E-N-D-A

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

(6:00 p.m.)

MR. RAKOVAN: All right, good evening, everyone. My name is Lance Rakovan. I am an environmental project manager at the U.S. Nuclear Regulatory Commission, or NRC, and it's my pleasure to facilitate tonight's meeting, along with my associate, Brett Klukan, whose name I always mispronounce, who is assisting on the virtual aspect of this meeting.

We're going to do our best to try to make tonight's meeting productive, and we hope you'll help us with that.

Our purpose today is to provide information and receive public comments on the proposed changes to NRC regulations, draft Revision 2 to NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, otherwise known as the LR GEIS, and associated guidance.

This is a comment-gathering meeting, by NRC's definition, so we will be actively seeking your input after we complete our presentation.

You can find we'll be speaking from today in the NRC's ADAMS electronic filing system, using the Accession Number ML23069A013, which is up on the

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screen, and on slide 2 as well. You can also find a link to these slides on the public meeting schedule page for this meeting.

We'll be going through the various ways that you can provide comments later on in the meeting, and we'll go through how you can provide your comments at this meeting, once we have finished with our presentation.

However, please be aware that we do want to hear from you directly. So, we have turned off the chat feature on MS Teams.

Keep in mind that we are recording and transcribing tonight's meeting, to make sure that we fully capture your comments. You can help us get a clean recording by identifying yourself and any group you are with, if you choose to speak.

You can also help us get a clean recording by minimizing background noise if you speak, and for those of you in the room, if you could silence or turn off your electronic devices, that will cut down on distractions.

For those of you in the room, obviously the doors are to my left, and then the closest exit is immediately to your right.

With that, I will go ahead and hand

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things over to Trish Holahan, and I'll be back after we are finished with our presentation and we move to our commenting portion of the meeting. Trish?

DR. HOLAHAN: Good evening, everyone. Welcome. As Lance said, my name is Trish Holahan. I'm the director of the Subsequent License Environmental Directorate, or commonly known as SLED, in the Office of Nuclear Material Safety and Safeguards at the NRC.

Thank you all for coming out tonight and participating in the meeting. With me at the table are Jennifer Davis and Kevin Folk, senior environmental PMs; and online presenting is Yanelly Malave, Rulemaking PM.

In the audience we also have Sherri Miotla, Bob Hoffman, and Bill Rogers. And we also have a facilitator, Brett Klukan, monitoring the questions online.

There are other members of the organization either in the audience or on Teams, to listen to your comments as well.

The purpose of tonight's meeting is to obtain public comment on the draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants and the proposed rule. I'll refer to

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these in the future as the proposed rule package. Both these documents were published on March 3, 2023.

We're going to start off with a brief presentation by the staff, and we want to maximize the amount of time that we have tonight to hear from you.

I just want to start off with a few general comments on our rulemaking process at the NRC.

Writing regulations is one of the most important things that we do at the NRC. It's a vehicle we use for implementing national policy and standards. It's also the mechanism we use at the NRC to fulfill our goals, which is maintaining health and safety and security, and protecting the environment.

The meeting we are having tonight is a very important part of that rulemaking process. It's the opportunity for the public and other interested parties to comment on what the staff has done in draft form.

Over the past few months, the Directorate has been involved in an effort to develop a rulemaking that aligns with the Commission adjudicatory order, and recent Commission decisions, regarding the NEPA analysis of subsequent license renewal applications.

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We want your perspectives and your input. I also want to point out that in this proposed rule package the NRC is asking for your input regarding whether this rulemaking should apply to more than two license renewal terms, the initial and one subsequent.

Your feedback will help us improve our final documents and will provide valuable input to the Commissioners during their deliberations on the final rule and the final generic impact statement.

So, we encourage you to actively participate tonight and to provide us with your input. In addition, we are also receiving written comments on the draft proposed rule and GEIS, and Yanelly will get into that later in the presentation.

This is one of several hybrid meetings we will be having on this proposed rule package. The others will be in the vicinity of the other NRC regions later on this month and next and they will be in a similar format, and we'll be receiving public comments at those meetings, as well as in writing.

So, once again, welcome, and thank you for joining us tonight. And now, I'll turn it over to Jennifer.

MS. DAVIS: Thank you, Trish. Again,

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my name is Jennifer Davis. I'm one of the technical PMs for this rulemaking.

In terms of agenda, first we'll provide a brief overview of how we got here. Next, we're going to discuss the purpose of NUREG-1437, which is the Generic Environmental Impact Statement for License Renewal of Nuclear Plants, or as we simply call it, the License Renewal GEIS, or LR GEIS.

We will also go over our methodology for developing the draft GEIS and proposed rule, summarize the proposed amendments to the NRC's environmental protection regulations at 10 CFR Part 51. We will also discuss our schedule, and review how comments can be submitted. Slide 5, please.

So, the NRC's regulations at Appendix B to Subpart A of 10 CFR Part 51 state that on a ten-year cycle, the Commission intends to review the material in this appendix, including Table B-1, and update it, if necessary.

The last ten-year review and update of the License Renewal GEIS was completed in June of 2013. In August of 2020, the NRC staff published a scoping notice in the *Federal Register* announcing the staff's intent to review and potentially update the

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2013 License Renewal GEIS.

This notice also provided the results of the staff's preliminary review, which included addressing subsequent license renewal, and requested from the public comments and suggestions for other areas that should also be updated.

During the scoping period, the NRC staff conducted four public webinars on August 19th and 27th of 2020, and the scoping period ended on November 2nd.

The staff used the information gathered from the public scoping process to develop a rulemaking plan, which then culminated in a series of rulemaking plans for the Commission's review and approval, between July 2021 and April of 2022.

All of the staff's rulemaking plans, included amending Table B-1 and updating the License Renewal GEIS and associated guidance, to include addressing their applicability to subsequent license renewal and other pertinent updates, which will be discussed on the next slide.

On March 25, 2022, the staff submitted a revised rulemaking plan, titled SECY-22-0024, to request approval to proceed with the rulemaking that aligned with Commission orders that were issued in

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February of 2022.

The orders, in part, concluded that the staff had not conducted an adequate NEPA analysis for subsequent license renewal reviews that were previously conducted. Slide 6, please.

On April 5, 2022, the Commission approved the staff's rulemaking plan and directed the staff to initiate a rulemaking that aligned with Commission orders indicated here on the slide, CLI-22-03, two [CLI-22-02] and four [CLI-22-04], remove the word initial from NRC regulations at 10 CFR 51.53(c)(3), revise the License Renewal GEIS, Table B-1 and associated guidance to fully support subsequent license renewal, and account for changes to applicable laws and regulations, new data, and incorporate lessons learned and knowledge gained from reviews completed since 2013.

They also directed the staff to conduct this rulemaking, and complete it within a 24-month period. Slide 7, please.

The primary purpose of the License Renewal GEIS is to identify all environmental issues associated with continued nuclear power plant operations and refurbishment during the license renewal term (audio interference), and evaluate those

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environmental issues considered to be generic for all, or a subset of, nuclear power plants.

The GEIS also identifies and provides information on issues that need to be addressed in plant-specific environmental reviews, and the NRC documents the plant-specific reviews in supplemental environmental impact statements prepared to the License Renewal GEIS. Slide 8, please.

Now, the License Renewal GEIS is the technical and regulatory basis for the proposed rule, the findings of which are codified in Table B-1, in Appendix B, of Part 51.

The environmental issues evaluated in the License Renewal GEIS and listed in Table B-1 are characterized as either Category 1 or Category 2.

Category 1 issues are considered generic, as the impacts have been found to be essentially the same or similar at all or a subset of nuclear power plants, and that additional plant-specific mitigation measures are not likely to be sufficiently beneficial to warrant further consideration.

Category 1 issues are only reevaluated in plant-specific reviews if there is new and significant information.

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In contrast, Category 2 issues are those that much be considered on a plant-specific basis. A nuclear power plant environmental review must consider Category 2 issues.

Table B-1 summarizes the findings of both Category 1 and 2 issues in the regulations. Slide 9, please.

So, the purpose of the NRC staff's evaluation was to determine whether the findings presented in the 2013 License Renewal GEIS remain valid for initial license renewal, and to ensure that the analysis and assumptions support subsequent license renewal reviews.

In doing so, the NRC considered the need to modify, add to, or delete, any of the 78 environmental issues considered in the 2013 License Renewal GEIS.

The proposed changes are intended to maintain the accuracy of the License Renewal GEIS and to ensure that future environmental reviews meet the hard-look standard to fully account for the environmental effects of initial and subsequent license renewal, as documented in the draft revised GEIS. Slide 10, please.

As illustrated on this slide, the staff

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used a systematic approach to evaluate the environmental effects of initial license renewal, focusing on the effects of subsequent renewal, as directed by the Commission.

The staff focused on describing the activity or aspect of power plant operation or refurbishment that could affect a resource, identify the affected resource, evaluate past license renewal reviews and other available information, assess the nature and magnitude of the potential environmental impact, characterize the significance of the effects, determine whether the results of the analysis applied to all nuclear power plants or a subset, or are plant-specific in nature -- that is, whether they are Category 1 or Category 2 -- and consider additional mitigation measures for adverse effects.

Most importantly, lessons learned and knowledge gained from previous license renewal reviews provided a major source of new information for this review.

Public comments received during plant-specific license renewal reviews were also reexamined to validate existing environmental issues, and to identify any new issues.

Since 2013, fifteen commercial nuclear

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power plants have had their initial licenses renewed. The staff also considered five subsequent license renewal reviews, including two reviews where the staff had issued a draft supplemental environmental impact statement, but not a final. Slide 11, please.

In the proposed rule package, the NRC staff identified a total of 80 environmental issues that may be associated with continued nuclear power plant operations and refurbishment during the renewal term. Of the 80 issues, the staff identified 59 as Category 1, which would be codified in the proposed Table B-1 of Part 51.

Applicants and the NRC staff would be able to rely on the generic finding for each Category 1 issue, as supported by the analysis in the draft revised GEIS, subject to the consideration of any new and significant information.

The staff also identified 20 issues as Category 2. These issues cannot be evaluated generically, and must be evaluated by the applicant in its environmental report, and the NRC staff in its supplemental environmental impact statements, using plant-specific information.

One environmental issue, electromagnetic fields, in the draft revised GEIS, is listed as N/A,

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not applicable.

Studies have not uncovered consistent evidence linking harmful effects with field exposures, because the state of the science is currently inadequate, no generic conclusion on human health impacts is possible at this time. If in future the Commission finds that there are adverse health effects from EMFs, as agreed upon by other federal health agencies, the Commission would then treat this issue similar in a manner to Category 2. Until such time, applicants are not required to submit information on this issue.

Now, as indicated on this slide, no environmental issues were eliminated, but certain issues were consolidated for clarity. And one issue was subdivided into three distinct issues.

Next, we'll summarize the key changes to environmental issues, as evaluated in the draft revised GEIS, which are proposed to be included in Table B-1 under the proposed rule.

In general, all changes reflect new or updated technical and regulatory information, as described in the draft revised GEIS.

Again, the proposed changes are intended to enhance the effectiveness of the NRC's license

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renewal reviews under NEPA.

And now, I'll turn the presentation over to my colleague, Kevin Folk, who will discuss the detailed changes that we're proposing to make to Table B-1.

MR. FOLK: Thank you, Jennifer. And good evening, everyone. We should be on Slide 12.

My name is Kevin Folk and I will summarize the major technical changes in the proposed rule package.

For this first issue, the staff proposes to combine two closely related issues, shown on the left side of your slide, into a consolidated Category 2 issue.

This revised issue is named, "Groundwater quality degradation, plants with cooling ponds." The broader scope of this combined issue considers the possibility that groundwater quality and beneficial water uses can become degraded from the migration of contaminants discharged to cooling ponds from operating nuclear power plants.

The existing Category 2 issue only considers plants with cooling ponds at inland site locations. This revised consolidated issue recognizes that plant discharges to cooling ponds can

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degrade groundwater or surface water quality in coastal areas, as well as at inland sites. This is depending on such site-specific differences as cooling pond construction, operations, water quality, and site-specific hydrogeologic conditions.

This proposed change is based on new information identified by the NRC staff during the environmental review for the Turkey Point Nuclear Plant in Florida. Slide 13, please.

This renamed, consolidated issue is titled, Impingement mortality and entrainment of aquatic organisms, plants with once-through cooling systems or cooling ponds."

The issue pertains to cooling water intake effects on aquatic organisms, including finfish and shellfish, at operating nuclear plants with once-through, or open-cycle, cooling systems.

The proposed rule combines an existing Category 2 issue, with the impingement component of an existing and related Category 1 issue, in order to more fully address environmental impacts. The staff also proposed to revise and rename the issue to consider impingement mortality, rather than simply total impingement.

This change is consistent with United

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States Environmental Protection Agency's 2014 Clean Water Act, Section 316(b) regulations, and its revised impacts methodology. Slide 14, please.

This next issue has the same underlying regulatory and technical basis as the previous issue and combines two existing Category 1 issues into one new Category 1 issue, named "Impingement mortality and entrainment of aquatic organisms, plants with cooling towers."

The consolidated issue pertains to nuclear plants using cooling towers which are closed-cycle cooling systems. For this combined issue, the NRC staff has determined that no significant impacts on populations of aquatic organisms have been reported at any existing nuclear power plants that rely on cooling towers.

Therefore, this combined issue is generically resolved with an impact level of small. This finding is consistent with the U.S. Environmental Protection Agency's revised Clean Water Act, Section 316(b) regulations that establish Best Technology Available standards, or BTA, for cooling water intake systems, where cooling towers are recognized as best technology for minimizing adverse impacts on aquatic organisms. Slide 15, please.

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This consolidated issue, named, "Infrequently reported effects of thermal effluents," combines several closely related, but seldom reported or observed, effects of nuclear plant thermal effluent discharges on aquatic organisms.

These various combined effects include, for example, cold shock, thermal barriers for migrating aquatic species, accelerated maturation of aquatic insects, and effects on dissolved oxygen and other water-quality changes.

It also consolidates the thermal effluent component of an existing Category 1 issue. This is shown on the left slide of your slide.

As stated in the proposed rule package, these infrequent effects would be minor, and would not destabilize or alter any important attribute of aquatic populations in receiving water bodies. Thus, the impacts have been small.

The NRC staff also projects that these effects or impacts would continue to be small for operating nuclear power plants during any license renewal term. Therefore, the combined issue is generic in nature, or Category 1. Slide 16, please.

Here, the staff proposes dividing an existing Category 2 issue into three separate

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Category 2 issues that address the potential impacts of operating nuclear power plants on federally protected ecological resources.

This proposed change will promote clarity and consistency with the separate federal statutes and interagency consultation requirements that the NRC staff must consider.

The first issue concerns listed terrestrial and freshwater species and their critical habitats under the Endangered Species Act, or ESA, subject to U.S. Fish and Wildlife Service jurisdiction.

The second of the three issues concerns ESA-listed marine and migratory species and their critical habitats under National Marine Fisheries Service jurisdiction.

The last issue concerns essential habitat for regulated marine fisheries under National Marine Fisheries Service jurisdiction, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act. Slide 17, please.

As described in the proposed rule package, the NRC staff has also identified three new environmental issues for inclusion in Table B-1 of 10 CFR Part 51.

First, a new Category 2 issue titled, "National Marine Sanctuaries Act, Sanctuary Resources," would be added to evaluate potential effects of continued nuclear plant operation on protected resources.

Currently, five operating nuclear power plants are located near designated or proposed national marine sanctuaries. Four of these are on the Great Lakes, one is on the Atlantic Ocean. This addition would enhance and clarify the NRC's interagency consultation requirements.

Specifically, Section 304(d) of the Act requires that federal agencies consult with the National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, for any actions that may injure sanctuary resources.

The NRC staff would perform a plant-specific impact assessment as part of each license renewal environmental review, to determine the potential effects on these resources, and would consult with NOAA, as appropriate.

The remaining two issues are closely linked and will facilitate the NRC staff's environmental reviews regarding greenhouse gas emissions, or GHGs, as well as climate change.

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The NRC staff has been addressing GHGs and climate change in its licensing reviews, in accordance with Commission direction, since 2009, but such issues were not explicitly included in the 2013 License Renewal Generic Environmental Impact Statement and Rule.

Now, a new Category 1 issue, named, "Greenhouse gas impacts on climate change," would be added that would evaluate the GHG impacts on climate change associated with continued nuclear power plant operations during the license renewal term.

Based on the NRC staff's evaluation, continued nuclear plant operations and refurbishment activities emit small quantities of GHGs from such common industrial sources as diesel generators, pumps, boilers, motorized equipment, and motor vehicles.

Staff analysis shows that the impacts of GHG emissions on climate change during the license renewal term from these plants would be small for all nuclear power plants.

Additionally, a new Category 2 issue would be added titled, "Climate change impacts on environmental resources." This new issue addresses the impacts of climate change on those environmental

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resources that may also be directly impacted by continued power plant operations during the license renewal term.

Changes in resource conditions, such as water temperature associated with climate change, could result in environmental changes, and interact with the incremental impacts of continued nuclear power plant operations.

The impacts of climate change on environmental resources are location-specific; therefore, they cannot be evaluated generically. The NRC staff, therefore, proposes to perform a plant-specific impact assessment as part of each license renewal environmental review. Slide 18, please.

The proposed rule package reclassifies the current Category 2 severe accidents issue, to Category 1. Under the NRC's current regulations, license renewal applicants must perform a Severe Accident Mitigation Alternatives analysis, or SAMA, if not performed previously for the nuclear plant. This requirement would not change.

However, as proposed, this issue would be resolved generically for the vast majority, if not all, license renewal applicants. This is because expected future license renewal applicants will have

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previously completed a full SAMA analysis. All future applicants will still have to identify any new and significant information subject to independent review by the NRC staff.

The proposed change from Category 2 to Category 1 is further supported by new information and analyses performed by the NRC staff which shows an overall reduction in population dose risk, and that severe accident regulatory improvements have reduced the likelihood of finding additional beneficial plant safety upgrades.

This new and updated information supports the Commission's expectation that further SAMA analysis would not be necessary for plants that have previously completed a SAMA analysis, or similar analysis, such as a Severe Accident Mitigation Design Alternative analysis, also called a SAMDA.

Therefore, the NRC staff has concluded that the probability-weighted consequences of severe accidents during both an initial and a subsequent license renewal term would be small.

I will now turn it over to Yanely, who will provide additional information on the rulemaking. Thank you.

MS. MALAVE-VELEZ: Thank you, Kevin. My

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name is Yanelly Malave, and I'm the rulemaking project manager for this project.

I know we have provided a lot of information, so I would like to summarize the proposed amendments. Slide 20, please. I'm sorry, Slide 19. You're okay. Sorry.

We will revise the existing requirements for environmental reviews of applications for a license renewal of operating nuclear power plants.

The proposed amendments will codify the updated generic conclusions of the draft revised License Renewal GEIS for those issues for which a generic conclusion regarding the potential environmental impacts of issuing an initial or subsequent renewal license for a nuclear power plant can be reached.

These conclusions have been updated to account for subsequent license renewal, as well as initial license renewal, and other new information since the 2013 License Renewal GEIS update. These issues are identified as Category 1 issues in the draft revised License Renewal GEIS.

The Category 1 issues identified and described in the draft License Renewal GEIS may be applied to any initial license renewal or subsequent

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license renewal application for an operating nuclear power plant and have been determined to have a small impact for all plants or a subset of plants.

Table B-1 in Appendix B to Subpart A of 10 CFR Part 51, summarizes and codifies the Commission's findings for all Category 1 issues.

The revisions to Table B-1 account for subsequent license renewal, reflect lessons learned, knowledge gained, and experience from license renewal environmental reviews performed since the development of the 2013 License Renewal GEIS.

It also considers changes to applicable laws and regulations, and factors in new scientific data and methodology with respect to the assessment of potential environmental impacts of nuclear power plant license renewal.

In addition, we made conforming changes to the provisions of 10 CFR 51.53(c)(3) and 51.95(c). We also clarified that it only applies to one term of subsequent license renewal, but we do have a question in the proposed rule package, as to whether it should be applied to more than one term of subsequent license renewal. Slide 20, please.

The NRC staff submitted the proposed rule package to the Commission on December 6, 2022, and

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the proposed rule was published on March 3rd. The FR citation is 88 FR 13329.

We are conducting multiple public meetings during the 60-day public comment period, which ends on May 2nd. After the conclusion of the public comment period, the NRC staff will respond to comments received on the proposed rule, the License Renewal GEIS and associated guidance, and will update the package, as appropriate.

The NRC staff plans to submit the final rule package to the Commission for its review and approval, by the end of November. The estimated date of publication for the final rule is April 2024. Slide 21, please.

We have created a public website with information related to this project and links to the associated documents. In addition, all the documents can be found through ADAMS, and the table in the slide shows the corresponding ML numbers for each of the documents. Slide 22, please.

There are multiple ways that you can provide your comments. One of them is at today's meeting. The second option is via regulations.gov. Just be sure to search for Docket ID, NRC-2018-0296.

You can also email comments to

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rulemaking.comments@nrc.gov. If you do not receive an automatic email reply confirming your submission, please contact us at (301) 415-1677. Slide 23, please.

You can also submit your comments via mail to the Secretary, at the address shown in the slides. And also, a friendly reminder, the comment period ends on May 2nd. Slide 24, please.

I would also like to point out that in the proposed rule, the NRC is seeking comments on whether the proposed rule should be expanded beyond two license renewal terms. Please provide a rationale with your response. Slide 25, please.

The current slide shows the points-of-contact for this project. If you have any questions, please feel free to reach out to any of us. And now, I will turn it over to Lance for further information as to how you can provide comments and questions.

MR. RAKOVAN: Thank you. Let's go ahead and go to Slide 26, please.

So, for those of you who are participating on Teams, and for those of you in the room, we'd like to take a moment just to see if anyone has any clarifying questions, if there's any confusion on the presentation that was provided.

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For those of you in the room, I'm going to run a microphone up to the stand momentarily, and we'll go ahead and you can come up to the microphone.

For those of you on Teams, you can use your raise-your-hand feature if you're on Teams directly. If you've called in, you can hit *5 and that will raise your hand. And we'll take the hands in the order that we see them.

Once we do call you on Teams, you will probably still need to unmute yourself, so that's hitting the little microphone.

If you are on the phone, you can hit *6 or unmute your phone. If there are glitches, there's a few things that we can try.

So, again at this point, we'd like to move, just if there's any clarifying questions to the presentation. I'm not looking to get into any in-depth discussions, but just to see if there's any questions. And I'm going to move this microphone momentarily.

Brett, do we have any hands-on line for clarifying questions?

MR. KLUKAN: Lance, we do not. Again, if you'd like to ask a clarifying question, you can use the raised-hand function within Teams. If you're

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participating via the app, or if you're participating via phone, press *5 -- again, that is *5 -- at this time.

All right, let's go ahead and go to Slide 27. Open things up to comments. We'd ask that you keep your comments to three-to-five minutes just to start out with.

Obviously, if there's more time, than you can have another shot at the microphone, or several, depending on how the case may be.

Again, if you're on Teams, you can hit *5 to raise your hand. If you're on the phone, or you can just raise your hand if you're directly on Teams.

I do have two folks who did register to speak when they came in. So, the first individual that I have here in the room is David Kraft with Nuclear Energy Information Services, or NEIS. David?

MR. KRAFT: Thank you. I'll probably be coming back. I'll break it into two parts. Some are comments or questions I need clarification on, on the actual process itself, but some of it is actually some observations of Table B-1. So, I'll start with those, take my three minutes, and come back later, because there'll be more stuff.

Specifically, I notice in B-1 it's

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identified that there are severe accidents and REO is reviewed for reactors, but not for high-level radioactive waste. And I find that kind of strange, simply because they'll be on the same site in most cases.

But you also changed severe accidents from a Category 2 to a Category 1, which means not site-specific, to more generic.

In the case of radioactive waste, especially here in Illinois, that doesn't make a lot of sense to us. An example would be the Zion Nuclear Facility, which of course is decommissioned, has a thousand tons of high-level radioactive waste, 400 yards from the shore of Lake Michigan, and a thousand flights a day from O'Hare Field going overhead.

To us, that at least represents a potential for one of those unpredictable -- I think that's how it's defined -- severe accidents and REOs, yet there's no mention of that in Table B-1, in terms of the waste.

So, really think that needs to be examined in some detail. I just use Zion as an example, but you could go to any of the other 92 reactors and come with their own unique scenarios, which, again, makes a thing for us that that's really

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a Category 2 issue. So, that was one observation.

I have a question, I guess. Did the analysis incorporate the latest updated seismological and geological assessments of nuclear power plants around the country?

Because, previously, there was -- I won't call it a scandal, but it was revealed that very little had been done to revise the geology in the seismic analysis at reactor sites until fairly recently, which went all the way back to, like, the 1970s.

So, I want to know if this current analysis that took place incorporates the latest geological assessments for the reactor sites.

MR. RAKOVAN: Do one of you guys want to answer that? Or do you want to take it as a comment that the GEIS should incorporate the newest of guidance?

MR. FOLK: I think we want to take that as a comment --

MR. RAKOVAN: Okay.

MR. FOLK: -- on the GEIS and scope.

MR. RAKOVAN: All right. Well, we'll take that as a comment, Mr. Kraft.

MR. KRAFT: Okay, fine. Just see here.

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And I guess this may be a comment as well, but I'm glad that the Commission is starting to look at climate change and the climate crisis, and doing analyses about that. But it would be important to put in the documents, what models are you using to come up with your assessments? They're changing every ten years, or whenever the IPCC comes out with a new analysis. And clearly, we agree it would be site-specific, which is why you have it as a Category 2.

But herein comes the problem. Much of the analysis that I've seen on the table relies on past performance, past behaviors. And that's good. That's how we do learn things. We observe the past.

But I have to point out the past does not always predict the future. And the purpose of the license extensions into the future has to extrapolate that understanding 20, 40 years out. Which is pretty tough. Nobody has a crystal ball. But it puts a whole new dynamic to how this process gets analyzed, and specifically on the climate issue, where it's a real crapshoot right now.

So, I see that as a serious category that has to really be examined, not just from what we know, but what we're extrapolating. I mean, whenever you

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see the IPCC graphs, they're always giving you ranges of three different or four different possibilities.

Have you done the same for the reactors? Probably not. And I think that needs to be examined, if you're really going to make this meaningful.

I guess I'll stop there. I do have some other process things, but we'll let other people comment as well.

MR. RAKOVAN: Great, thank you. Thank you for those comments. The other speaker that I had pre-signed up was Brian Magnuson.

MR. MAGNUSON: Brian Magnuson, IME Lead, the emergency management specialist --

MR. RAKOVAN: If you could come a little closer to the microphone, possibly? I just want to make sure that the folks online can hear you.

MR. MAGNUSON: Okay, is that better?

MR. RAKOVAN: It should be, yes. Thank you.

MR. MAGNUSON: Okay, start over. Well, my name is Brian Magnuson. I am a lead emergency management specialist at Constellation, formerly Exelon. I'm a former reactor operator, senior reactor operator, and operations shift manager, Quad Cities Nuclear Power Plant. I am speaking as a

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member of the public.

Subsequent license renewal doubles the life span of nuclear power plants that were admittedly designed when nuclear power was an infant technology.

The fire at Browns Ferry, the meltdown at Three-Mile Island, and the accidents at Fukushima, exposed major design deficiencies, and operational vulnerabilities, that were neither considered nor evaluated in the original safety designs of nuclear plants.

These and lesser-known accidents also exposed inadequate regulations. Every plant involved in a nuclear accident was assumed to be safe before the accident occurred.

Given the misguided comfort levels that continue to exist, the first consideration in subsequent license renewal should be the safety of people and the environment.

Today's nuclear power plants were not designed to protect people and the environment from severe accidents that would release large quantities of radioactive material into the environment.

Still, in 2013, the NRC issued Order EA-13-109, requiring a hardened containment vent to be

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installed at specified nuclear plants because, I quote, because of the relatively high probabilities that those containments would fail, should an accident progress to melting the core.

This NRC order is intended to mitigate the primary containment vulnerabilities learned from the accident at Fukushima, which is a U.S.-designed reactor.

In such accidents, the NRC essentially requires plant operators to intentionally release large amounts of highly radioactive material to the environment, because containment barriers were not designed to survive the hydrogen explosions like those that occurred at Fukushima. Given this NRC requirement, environmental reviews should include plant-specific radiological impacts to the environment that would result from severe accidents that require use of hardened vents. It seems the NRC should have performed environmental reviews before ordering the issue to install hardened vents.

I recommend that plant-specific environmental reviews and accident dose calculations be performed to evaluate the radiological impacts to the environment that would result from severe accidents that require the use of hardened vents.

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To continue, before the accident at Fukushima, the design of nuclear plants did not include reliability spent fuel pool level instrumentation.

The NRC issued NRC Order EA-12-051 because, and I quote, the events at Fukushima demonstrated that the confusion in this application of resources that can result from beyond-design-basis external events when adequate instrumentation is not available.

Given this NRC requirement for a reliable spent-fuel pool level indication, and zirc [zirconium] fire windows [unclear], it seems that environmental reviews should include the plant-specific radiological impacts to the environment that would result from the consequences of severe accidents that include spent-fuel pool-draining events and zirc [zirconium] fires. This is also a recommendation.

Given these recommendations, I am opposed to the proposed rule package that reclassifies the current Category 2, severe accidents, as a Category 1 generic issue. In general, I am opposed to all the generic Category 1 classifications proposed in Table B-1 of 10 CFR Part 51.

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Instead, I recommend that each nuclear power plant applying for subsequent license renewal conduct a comprehensive design-basis reconstitution, which would proactively identify new and significant information. I recommend that design-basis reconstitutions be performed in accordance with the IAEA-TECDOC-2018 design-basis reconstitution for long-term operation of nuclear power plants.

The impacts of climate change should be factored into the design-basis reconstitutions. These reconstitutions would also ensure that Public Law 112-74, Section 402, is appropriately enforced.

It states, in part, the Nuclear Regulatory Commission shall require reactor licensees to reevaluate the seismic tsunami flooding and other external hazards at their sites against current applicable Commission requirements and guidance for such licensees, as expeditiously as possible, and thereafter, when appropriate.

Based upon the evaluations conducted pursuant to this section, the Commission shall require licensees to update the design-basis for each reactor, if necessary.

Regardless of subsequent license renewal, this Public Law essentially requires that

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each nuclear power plant perform a design-basis reconstitution. Notwithstanding, subsequent license renewal seems an appropriate time to ensure compliance with Public Law 112-74.

Accordingly, I recommend that the NRC require subsequent license renewal applicants to comply with this Public Law. I believe these recommendations are necessary to satisfy the hard look standard under the NEPA.

I intend to submit written public comments. I appreciate the opportunity to speak to you today. Thank you.

MR. RAKOVAN: Thank you, sir. Let me do a quick check-in with Brett. Brett, do we have any hands up online right now?

MR. KLUKAN: Lance, we do not. Again, if you would like, if you're participating via Teams, please use the raised-hand function to let us know that you would like to pose a comment. Or if you're participating via phone, hit *5 again, that is *5 to raise your hand.

But again, Lance, at this time we have no hands raised.

MR. RAKOVAN: Okay. Did anyone else in the room wish to have something to say before I let

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Mr. Kraft have another shot at the microphone? All right, Mr. Kraft, seeing no hands, the microphone is yours.

MR. KRAFT: Thank you again. I'll start out with both a comment and a question. How many of the NRC people here today flew in from Washington? Let me just get an idea. Show of hands.

Okay, how many of you flew in on a Douglas DC-3? The reason I ask is that it's an 80- or 90-year-old aircraft, and I suppose the case could be made if it's well-maintained, there should be no problem flying. But I see none of you took advantage of that.

And in a sense, that's how many of us feel about 60- to 80-year license extensions. Stuff fails. And it fails in unpredictable ways, even when we do our best. I think we've had incidents this year in Illinois already, which demonstrated that if you take their word for it, best-maintenance did not always work out well for the leaks that took place under Dresden for many years, the Braidwood leak of the 1990s, and now the Monticello leak up in Minnesota. Things fail. And it's a bathtub curve kind of thing. When they get older, they fail more at the end.

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So, you can maintain things as much as you want, but when I see a lot of you flying here on DC-3s, I'll have a lot more faith in the licensing process to have reactors operating for 80 years.

So, that's my first comment. I guess I need something of a clarification, in order to make the written comments that I intend to make for our organization later on.

Table B-1 evaluates the various categories, and comes up with conclusions of the risk being either small, moderate, or high. Is that correct, so far?

Many of them, not all of them, essentially. And the question I have there is, are those qualitative or quantitative measures? And to me, that's important. Otherwise, you have just a bunch of people kind of throwing darts at the board after analyzing a bunch of information. And I'm not sure that that's how you need to evaluate a 60- or 80-year-old nuclear power plant.

So, in order to make meaningful comments, we would need to know how many of those 80 criteria that you had here are qualitative assessments or quantitative. In other words, can we go to a table or a chart, or an engineering spec, that makes this a

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moderate, as opposed to a small, hazard?

And I think that's an attitude that has to be taken on a complex machine like this. You can't just throw the darts and have a bunch of folks in a room -- but then, ultimately, I guess that is what you will do, but I would like to see more quantitative information, and make that part of the decision process that's made part of the document to comment on.

Along with that, we would really benefit from the thought processes and the methodology used to make those decisions. What was the decision tree that led up to it being small, as opposed to high? That would be meaningful information in order to get meaningful comments from the public.

And I guess, ultimately, what's the point of the exercise? At the end of the day, how many moderate and high evaluations would end up denying a license?

Or does that even exist? Is that the way the decision is made? Again, it's more of a quantitative thing, but I don't see any indication coming out of 80 criteria, that if 67 percent of them were moderate, maybe that plant shouldn't get a license?

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There has to be some sort of standardization. There's some sort of -- especially if you're going to use as many generics as are in here.

There has to be some cutoffs. And you have to have some rationale for it, you have to indicate your methodology for it, and you have to be able to point to some hard data to prove it.

One more thing. No, actually I said this. It's more of a comment on the radionuclides released to groundwater. It's indicating in the chart that it's a small to moderate risk.

But as I already mentioned, and in my examples, we've already had two of those happen here in Illinois, Braidwood and Dresden. So, the question I have here -- and again, this would be an important one of those qualitative and quantitative measures, of how do you account for materials degradation and aging on these plants? I mean, all those pipes were underground. How do you evaluate that? What do you have in place that would make that determination?

I don't know, and that would be an important piece in order for us to give meaningful input back to you as to whether this process is really valid or not.

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So, I think that wraps it up for me. But if you have any answers, I'd love to hear those.

MR. RAKOVAN: Thank you for those comments. A lot of thought-provoking comments, in my opinion at least. Brett, can we do a quick check on hands?

MR. KLUKAN: Hi, Lance. We have no hands raised at this time.

MR. RAKOVAN: Okay. Again, for those of you -- yes, we have a hand here in the audience. If you could come on up and let us know who you are and who you're with, and please provide your comments.

MS. BOUDART: I'm Jan Boudart, a board member of the Nuclear Energy Information Service.

And I'm looking at Slide 18, where severe accidents are changed from Category 2 to Category 1. And I want to clarify that Category 1 issues are generic and Category 2 issues are specific. Am I right about that?

That makes me stir, because how can you evaluate a severe nuclear accident without including the demographics of the area around the nuclear power plant?

There have been some nuclear power plants where the population around the plant has increased

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many, many times since the plant was established. And different demographics include different ages of people and different family groups, different family sizes.

And so, I have that question that every nuclear power plant is going to have a different demographic profile that needs to be included in an evaluation of a severe accident.

There are some where people could be evacuated, and some where people could not be evacuated, because there's too many people to be evacuated. So, that alone means that you can't transfer severe accidents from Category 2 to Category 1.

And then I have another more general question. What is the criteria for -- well, this is a question that comes from Mary Olson's group, which is gender impact statements.

And I'm wondering, what is your generalized concept of the human being? And who are you including when you think about an accident?

I mean, the accident could occur near a maternity hospital, where there are young babies -- all babies are young -- or near a mental hospital for men who are older and less-susceptible.

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So, I have an objection to the idea that severe accidents could be put back in Category 1. That doesn't seem the least bit logical to me.

MR. RAKOVAN: Thank you for your comments. Do we have anyone else in the room?

Or, Brett, do we have any hands online of anyone who would like to provide additional comments at this time?

MR. KLUKAN: Lance, we do not have any hands raised. Again, to raise your hand you can use the raised-hand feature within the Teams app, or if you're on the phone, press *5. Again, that is *5.

MR. RAKOVAN: And again, for those of you in the room, whether you've spoken already or not, microphone's in the center. By all means, please approach. We'll go ahead and pause now. Brett, any action online?

MR. KLUKAN: No, Lance, we have no hands raised.

MR. RAKOVAN: There's approximately 25 people online. All right, I think we've tapped out our comments at this time. So, I'm going to go ahead and turn things over to Trish.

For those of you in the room, we do have some QR codes that you can scan that will take you to

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a feedback page.

For those of you online, you can go to the public meetings scheduling page for this meeting and find a link to provide feedback.

Trish, can you please go ahead and close us out?

DR. HOLAHAN: Thank you all for coming, and those online. Your comments are all going to be considered, and we'll address them in the public comment response document.

And so, we appreciate your coming and time you've taken to attend this meeting. Thank you very much. And with that, I close it out.

MR. RAKOVAN: Thank you, Trish. We are closed.

(Whereupon, the above-entitled matter went off the record at 7:01 p.m.)

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