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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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10 CFR 2.206 PETITION REVIEW BOARD (PRB)

CONFERENCE CALL

RE

SPENT FUEL STORAGE PETITION

+ + + + +

TUESDAY

SEPTEMBER 12, 2023

+ + + + +

The conference call was held at 3:00 p.m.
EDT, Jamie Heisserer, Chairperson of the Petition
Review Board, presiding.

PETITIONER: MARK LEYSE

PETITION REVIEW BOARD MEMBERS

JAMIE HEISSERER, Deputy Director

Office of Nuclear Reactor

Regulation (NRR), Division of Operating

Reactor Licensing (DORL)

PERRY BUCKBERG, NRR

JAMES KIM, NRR

DANIEL KING, NRR

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RAUL HERNANDEZ, NRR

MATTHEW YODER, NRR

WILLIAM RAUTZEN, NRR

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ROY HARDIN, RES (Office of Research)

MICHAEL SALAY, RES

BRIAN WAGNER, NMSS (Office of Nuclear Material
Safety and Safeguards)

DAVID HOSTETTER, NSIR (Office of Nuclear
Security and Incident Response)

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T-A-B-L-E O-F C-O-N-T-E-N-T-S

Notice of Meeting Between Mark Lleyse and the U.S.
Nuclear Regulatory Commission (NRC) Petition Review
Board (PRB) Regarding 10 CFR 2.206 Petition Submitted
on February 28, 2023 (EPID L-2023-CRS-0000)

	<u>PAGE</u>
Welcome	5
Introduction and Logistics	
Mr. Perry Buckberg	5
Ms. Jamie Heiserrer	12
Petitioner Discussion	
Mr. Mark Leyse	16
Question and Answer Period	38
Public Interaction	
Mr. Thomas Popik	42
Adjourn	
Mr. Perry Buckberg	45

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

3:11 p.m.

MR. BUCKBERG: I'd like to thank everybody for attending today's meeting.

My name is Perry Buckberg. I'm a Senior Project Manager at the Nuclear Regulatory Commission, the NRC. And, I'm the NRC's agency 2.206 petition coordinator.

In February, Mark Leyse submitted a petition pursuant to Title 10 of the Code of Federal Regulations, 10 CFR Section 2.206.

Which included a request that the NRC issue an order to all NRC licensees, requiring them to promptly transfer all adequately cooled spent fuel to dry casket storage.

The purpose of today's meeting is to provide Mr. Leyse an opportunity to address the Petition Review Board, or PRB, and clarify or supplement the petition, based on the results of the PRB's initial assessment of the petition.

The PRB will then consider information obtained today in it's final assessment of the petition's acceptability, for further review.

Welcome, Mr. Leyse. Finally.

MR. LEYSE: Hi.

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MR. BUCKBERG: This is a comment gathering meeting, a comment gathering meeting being conducted in accordance with NRC Directive Handbook 3.5, "Attendance at NRC Staff Sponsored Meetings."

And Section III.F of NRC Directive Handbook 8.11, "Review Process for 10 CFR 2.206 petitions."

As such, the public is invited to observe this meeting and will have an opportunity to provide feedback on the 2.206 process.

A description of the three categories of NRC public meetings can be found on the NRC public website.

As this is a public meeting, there will be no safeguards or official use only information discussed. All public.

The meeting began roughly at 3:00 o'clock p.m., and is scheduled to end at 4:00 o'clock, Eastern Time.

After introductory remarks, Mr. Leyse will address the PRB, followed by a brief question and answer phase.

The meeting is being transcribed by a court reporter. The transcript will become a supplement to the petition.

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The transcript will also be made publicly available.

Now, is the court reporter present and able to record the meeting? Please speak up.

THE COURT REPORTER: Yes, sir.

MR. BUCKBERG: Thanks very much.

A Petition Review Board, PRB, is assembled for certain 2.206 petitions, and typically consists of a petition manager, a chair who is usually a senior executive service manager, and members of the NRC staff based on the content of the information in the petition.

The PRB chair is Jamie Heisserer, Deputy Director of the NRC Division of Operating Reactor Licensing, DORL, in the Office of Nuclear Reactor Regulation, NRR.

PRB members will introduce themselves shortly.

I'd like to open this meeting with introductions. To better facilitate introductions virtually, I'll read attendee's names and when you hear your name, please introduce yourself.

Again, my name is Perry Buckberg, and I'm a Senior Project Manager in DORL.

So, let me go through.

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Brian Wagner?

(No audible response.)

MR. BUCKBERG: You're muted if you're talking.

MR. WAGNER: Yes, I'm here.

MR. BUCKBERG: Thanks.

You can, if I'm calling your name, I see that you're in the meeting, you can introduce yourself with any additional information, or make it brief, either way.

Let me go back for a second. Let me start with Jamie. You want to say hi?

MS. HEISSERER: Good afternoon, my name is Jamie Heisserer, as Perry said. I'm one of the Deputy Directors of the Division of (telephonic interference) and Licensing, and I am the PRB chair.

MR. BUCKBERG: Brian was brief. We'll keep going.

David?

MR. HOSTETTER: Good afternoon, David Hostetter, NSIR. DPTP Reactor Security Branch.

MR. BUCKBERG: Thanks. Daniel?

MR. KING: Hi, I'm Daniel King, Project Manager in DORL, and I'm a core team member for 2.206 process.

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Thanks.

MR. BUCKBERG: James Kim -- thanks.

MR. KIM: Yes, this is James Kim. I'm a Project Manager in the Division of Operating and Reactor Licensing, in the Office of Nuclear Reactor Regulations.

I'm also a member of the NRC's 2.206 petition core team.

MR. BUCKBERG: Thanks, Jim.

Matthew Yoder?

MR. YODER: Yes, this is Matt Yoder. I'm a Senior Chemical Engineer.

MR. BUCKBERG: Mike Salay?

MR. SALAY: Good afternoon, I'm Michael Salay. I'm a Senior Reactor Assistant Engineer in the Fuel and Source Terms Code, Dalton Branch in the Office of Research.

I work with severe accident source terms, and the MELCOR code.

MR. BUCKBERG: Thank you.

Raul? If you can talk.

MR. HERNANDEZ: Yes, this is Raul Hernandez. I am a Safety and Plant Systems Engineer from the Containment and Plant Systems Branch.

MR. BUCKBERG: Thank you.

Reena?

MS. BORUK: Hi, I'm Reena Boruk, Chemical Engineer in the Corrosion and Steam Generator Branch.

MR. BUCKBERG: Thanks.

Rob?

MR. CARPENTER: Good afternoon, Robert Governor, Office of the General Counsel, Security and Enforcement Division.

MR. BUCKBERG: Thanks.

Roy?

MR. HARDIN: Roy Hardin, Electrical Engineer in the Office of Research Division Engineering, Electrical Engineering Branch.

Thank you.

MR. BUCKBERG: Thanks.

Steve?

MR. WYMAN: Steve Wyman, Acting Branch Chief, Reg Guide Branch, Office of Research

MR. BUCKBERG: Thank you.

Bill Rautzen?

MR. RAUTZEN: Thanks, Perry.

Bill Rautzen, Health Physicist in the Radiation Protection and Consequence Branch, in the Division of Risk Assessment.

MR. BUCKBERG: Let me read off some names

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of other NRC staff in attendance, just for expediency.

Brent Ballard, Demetrius Murray, Jason Paige, Michael Marshall, Ngola Otto, Nick Smalley, Nick Smith, Patty Jehle, Scott Burnell, Thomas Byrd, Tony Sierra. A bit of a crowd.

Let me get back to my prepared words.

Mr. Leyse, would you like to introduce yourself again?

MR. LEYSE: Sure. Mark Leyse, I'm the petitioner.

MR. BUCKBERG: Thanks very much.

Are there any licensee staff in attendance? If you are, you have the choice of introducing yourselves.

(No audible response.)

MR. BUCKBERG: Hearing none, it is not required for members of the public to introduce themselves for this call.

However, if there are any members of the public on the phone that wish to do so at this time, please state your name for the record.

Any members of the public?

(No audible response.)

MR. BUCKBERG: Hearing none, I'd like to emphasize that we each need to speak clearly and

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loudly, I hope I'm doing so, to make sure that the court reporter can accurately transcribe the meeting.

If you do have something that, that you would like to say, please first state your name for the record.

For those who dialed into the meeting, please remember to mute your phones to minimize any background noise, or distractions.

If you do not have a mute button, this can be done by pressing the keys *6, and then to unmute, press *6 again. Thanks.

At this time, I'll turn it over to PRB Chair Jamie Heisserer.

MS. HEISSERER: Hi, good afternoon. As Perry said, my name is Jamie Heisserer. I am the Deputy Director of the Division of Operating Reactor Licensing in NRR, at the NRC.

Welcome to this meeting regarding the 2.206 petition submitted by Mr. Leyse.

First, I'd like to share some background on our process. Section 2.206 is Title 10 of the Code, the Code of Federal Regulations, describes the petition process.

The primary mechanism for the public to request enforcement action by the NRC in a public

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process.

This process permits anyone to petition the NRC to take enforcement-type actions related to NRC licensees, or licensed activities.

Depending on the results of its evaluation, NRC could modify, suspend, or revoke an NRC issued license, or take any other appropriate enforcement action.

The staff's guidance for the disposition of 2.206 petition requests is Management Directive 8.11, which is publicly available.

The purpose of today's meeting is to give the petitioner, Mr. Leyse, an opportunity to provide any relevant additional explanation and support for the petition, after having received the PRB's initial assessment.

This meeting is not a hearing, nor is it an opportunity for the petitioner or other members of the public to question or examine the PRB, on the merits or issues presented in the petition request.

During the question and answer phase, the NRC staff may ask clarifying questions of the petitioner, and were any licensees online, they may ask the Board questions related to the issues raised in the petition.

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And then the petitioner and any licensees, if any join, may ask the PRB questions related to the 2.206 petition process, in general.

This is consistent with Management Directive 8.11, Section III.F.

No decisions regarding the merits of this petition will be made at this meeting.

Following this meeting, the Petition Review Board will conduct its internal deliberations.

The outcome of this internal meeting will be provided to the petitioner in a letter.

I would like to summarize the scope of the petition under consideration, and the NRC activities to date.

Mr. Leyse submitted a petition to the NRC on February 28, 2023, and supplemented the petition on March 26, and April 18.

The petition requested that the NRC take enforcement action against all U.S. nuclear power plants in the form of an order, to promptly transfer all of the sufficiently cooled spent fuel presently stored in spent fuel pools, to dry cask storage and to reduce the density of remaining spent fuel assemblies, to prevent a Zirconium fire, if a significant portion of the spent fuel pool cooling water were lost.

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To provide some process background, the PRB first evaluates petitions using Management Directive 8.11, Section III.C.1, Criteria for Accepting Petitions, to assess whether or not further review is warranted.

A petition must basically provide facts not previously reviewed and/or resolved by the NRC, to warrant further review.

On July 21, 2023, the petition manager contacted you, Mr. Leyse, via email, to inform you of the PRB's initial assessment that your petition did not meet the criteria for accepting petitions.

The petition manager explained in his email that these concerns from your petition that are within the NRC jurisdiction, those four concerns, are diverse and flexible mitigation capability, or FLEX equipment reliability; station blackout leading to core meltdown; MELCOR computer core, computer code capabilities; and, the risks of Zirconium fires in spent fuel pools, have previously been the subject of facility specific, or generic NRC staff review, and the petition does not provide significant new information that the staff did not consider in the prior reviews.

This email also included responses to the

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concerns outside of the NRC jurisdiction, consistent with MD 8.11, Section III.C.1(b) (ii).

The PRB's initial assessment is not to accept your petition for further review.

The petition manager offered you an opportunity to address the PRB, to clarify or supplement your petition in response to this assessment, and you requested to address the PRB in this forum.

As a reminder for all participants, please identify yourself if you make any remarks, as this will help us in the preparation of the meeting transcript that will be made publicly available.

Thank you.

Mr. Leyse, I will now turn it over to you to provide any information you believe the PRB should consider, as part of this presentation.

I recognize we started this a little bit late. You will still have the allotted 50 minutes for your presentation.

Thank you.

MR. LEYSE: Well, okay, well, thank you very much. And again, as I told Perry just so other people will know, I may be cut off at some point because see, I'm in the mountains. I can't call from

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my cell phone.

And, the, we have this alarm system that will disconnect the phone for around two minutes.

So I apologize for that inconvenience. Unfortunately, since I'm doing all the talking, it may take me a little while to realize people aren't there.

I thought this would actually happen already. Anyway, so I, again, I apologize for that inconvenience.

So, I did have some questions to ask about the process. You had mentioned that a petitioner is allowed to ask questions about the process for evaluating and reviewing the petitions.

So, I'm just wondering does, does every Petition Review Board member actually read the petition in full?

MR. BUCKBERG: Yes, it is expected that every member would read it in full.

MR. LEYSE: Okay.

Yes, because you know, this thing's like over 100 pages long.

MR. BUCKBERG: 147.

MR. LEYSE: Oh, okay.

MR. BUCKBERG: I read it.

MR. LEYSE: And then, what I'm wondering is

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also in terms of process, do you have a process for selecting references?

For example, the electrical, the EPRI reports that you selected, you know, to you know, like a reference that you select to quote from, to then give your perspective on something.

In this case, space weather, or coronal mass ejections, and what effect they may or may not have on the electric grid.

Is there a process for selecting references?

MR. BUCKBERG: There's not a documented process as such. Each of the PRB members brings a specific expertise to the Board. And they have their resources.

If they feel that something's been covered before, or brought to the NRC's attention, they'll reference that resource.

So there's not a specific process, it's just the expertise of each member, and what they rely on for their finding.

MR. LEYSE: Okay.

So, yes, because I wanted to, one thing I heavily quote from in the petition is a rulemaking petition that Thomas Popik, Tom Popik submitted in

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2011.

It's PRM 50-96, and that has a couple, I want to make a couple points regarding that. But first is I want to point out that the Petition Review Board actually mischaracterized the Electric Power Research Institute's reports, which I'll call the EPRI report. Its 2017 reports.

Now, are you aware that that EPRI report actually does not discuss space weather? It does not discuss coronal mass ejections?

MR. BUCKBERG: That's not really something we want to discuss on the fly during this meeting. Really, if that's a concern you want to bring up, we'll, we're obligated to address it.

MR. LEYSE: Okay, so --

(Simultaneous speaking.)

MR. BUCKBERG: Whether in writing or --

MR. LEYSE: -- I'll, I'll explain.

And oh, I should also say, I did send you some written comments I don't know, maybe 20 minutes ago or so. Or actually now it's been probably like half an hour ago, so.

Okay, anyway, I'll just read this off. In part of the PRB's response to specific concern number 1, the PRB states, further, the Electric Power

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Research Institute, EPRI, has documented research to better understand the impacts of space --

(Telephonic interruption.)

MR. BUCKBERG: Are you there, Mr. Leyse?

(No audible response.)

MR. BUCKBERG: His phone number didn't disappear, but obviously the connection did.

He's reconnecting.

(Lengthy pause.)

MR. BUCKBERG: I don't see him calling back in just yet.

For any other guests, the meeting is not over, just a connection problem.

(Pause.)

MR. BUCKBERG: Welcome back.

MR. LEYSE: Hi, yes, sorry about that. Like, I'm not sure at what point I was cut off.

MR. BUCKBERG: You were only a handful of words. You might as well start over, I think.

MR. LEYSE: Oh, okay, I apologize because I, I did hear a beep and then I guess that wasn't at the moment of cut off.

Okay, yes, I am so sorry for this. It's not going to happen again though, so that's the good news.

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Okay. Okay, I just want to say that this EPRI report from 2017 is, the title is, "Magnetohydrodynamic Electromagnetic Pulse Assessment of the Continental U.S. Electric Grid Voltage Stability Analysis."

And to quote the PRB, you say that the EPRI concluded in part the grid failures from extreme space weather, would likely result in transformer saturation that would cause overcurrent tripping before most transformers would be damaged.

It also concluded that the largest shutdowns would be in the most densely populated areas, in the northern latitudes.

The EPRI report evaluation did not show any scenarios where a national grid collapse would occur.

Based on this information and existing NRC requirements, staff asserts that recovery from this type of shutdown would happen within the timeframe encompassed by the existing mitigating procedures.

So, that may be all fine and good, but the problem is that the EPRI report, the title even says it, you know, magnetohydrodynamic electromagnetic pulse assessment.

So, it's about the phenomenon of

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electromagnetic pulse, and it's clearly stated in the report that they are not talking about coronal mass ejections.

(Audio tone sounds.)

MR. LEYSE: I'm sorry, as you still there?
Hello?

MR. BUCKBERG: Yes, we're all here.

MR. LEYSE: Oh, sorry, I had heard a sound,
I apologize.

Okay, it's about electromagnetic pulse. It is not about coronal mass ejections. So, it is about a scenario in which you have the detonation of a nuclear weapon at a high altitude, and that is what is causing the electromagnetic pulse.

And if I recall, I can only cover so much in this but the, there's a timeframe of just a couple minutes. It's a simulation, and this all like I say, it's in my written statement.

There's a timeframe of a couple minutes where if you have coronal mass ejection, and the geomagnetic you know, the problems that we have here with the geomagnetic field, that, that issue can last for hours, to days.

Like, the Carrington event was intermittent I think, in two separate periods of a

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couple days. But it went on for 8 days total.

And, it covered a very large geographic you know, basically you could see Aurora down in Cuba.

It was covering the, a very large area where off the top of my head, I think the area of this EPRI report was something I think they said 1,600 kilometers, you know, by 1,000, basically you know, 1,600 by 1,600 kilometers patch of area.

So, it, there's no comparison. Plus like I said, they're completely different phenomenon.

So, I think what you should do is just look at your own work product. It's your Federal Register notice, which I quote from quite a bit in the petition.

It's on pages 12 to 13 I state, in 2012 the NRC issued a Federal Register notice regarding a rulemaking petition PRM 50-96, submitted by Thomas Popik, of the Federation for Resilient Societies, in which the NRC posited an extreme solar storm geomagnetic disturbance intense enough to cause hundreds of extra high voltage transformers to fail, might occur as frequently as once in 150 years to once in 500 years.

And initiate a series of events potentially leading to reactor core damage at multiple

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nuclear sites.

Now, that is a Federal Register notice. It goes into detail. It talks about geomagnetic disturbances that can be caused by coronal mass ejections.

It's quoting a report that I think the person's name is John Kappenman. I may have his last name a little incorrectly there.

He prepared a report in 2010 that talked about the potential problems of a coronal mass ejection, and the, how it could potentially take out say up to 300 extra high voltage transformers, and collapse large portions of the North American power grid for a period of months, to years.

And, also I want to just say also countering the EPRI report, which again doesn't even talk about coronal mass ejections, it's talking about a different phenomenon, electromagnetic pulse, EMP.

Okay, here you know, it's a fact. Solar storms have permanently damaged extra high voltage transformers.

My petition on pages 32 to 33 states, in late October 2003, relatively low intensity geomagnetic storms caused a blackout in southern Sweden, and permanently damaged 15 large power

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transformers in South Africa, by overheating them.

So, I mean, so, I think that's a pretty important thing. Like I said, that's why I asked if you read the whole report, and also why I asked what the process is for selecting references.

Because you just can't apply the reports on EMP to coronal mass ejections. They're two completely different phenomena.

And it's just, and like I said, you know better than I do, how well you have to vet a Federal Register notice if the NRC sends that out accepting a petition for rulemaking.

Because PRM 50-96 was talking largely about space weather, and geomagnetic disturbances, so that when your NRC staff reviewed that petition and I believe, you know, they recommended it for your rulemaking process.

And then it was sent to your commissioners, and they reviewed it. And they gave the a-okay.

So, that's pretty strong statements from the NRC itself. So I just don't understand why the PRB would actually be going against the NRC.

I mean, this is not information that I came up with. I'm just quoting the NRC's Federal

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Register notice.

And, which in turn, is also talking about this report that was prepared for Oak Ridge National Laboratories in 2010.

So, now and this also, now I'm just going to go on to the next topic.

I just as you stated in your introduction what my petition asked for, I requested that licensees prompt, that the NRC order licensees to promptly transfer all the sufficiently cooled spent fuel assemblies, that are presently stored in each of the spent fuel pools at U.S. nuclear plants, to dry cask storage.

And, that's clearly stated and again, you stated it yourself. And again, I provide a lot of background information.

The NRC has done a number of analyses where you see a large earthquake would be the responsible for creating a, leading to a spent fuel pool fire.

And I'm saying perhaps look at all this other evidence, including your very own, the NRC decided to you know, take Tom Popik's petition into its very own rulemaking process.

That's very strong statements talking

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about what might happen in the event of a large scale coronal mass ejection on the, something on the order of the Carrington Event from 1859.

So, now I, so you know, emergency diesel generators have, they would likely fail in the event of something that went on for months, to years if the grid went down for that long.

And the longest loss of offsite power events in U.S. history have all lasted less than one week. And I provide a reference for that in my written comments to you.

So, now I just want to say, your initial assessment lists seven specific concerns of the petition.

And I just want to clarify, I did not request that you, that the NRC remedy any of the first six of the specific concerns that the PRB listed.

So, I actually wonder if you misunderstood what my petition requested. So, I just want to say, the PRB suggests that it's inappropriate to discuss a number of different vulnerabilities of the U.S. power grid for the simple reason that the NRC does not regulate the U.S. power grid.

I want to clarify, I did not request that the NRC remedy any of the you know, well, I didn't

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request that you remedy specific concerns number 1, 2, and 6. And, I just want to list that.

So, specific concern number 1, an extreme solar storm might occur as frequently as once in 150 years to once every 500 years, and initiate widespread, long-term loss of A/C power grid, and lead to widespread spent fuel pool coolant level challenges due to multiple loss of offsite power events.

So, in your response specific to number 1, you state, grid resilience including under extreme solar storm conditions, is outside the NRC's authority, and is regulated by FERC, with participation from NERC.

Therefore, in accordance with MD 8.11, Section II.A.2(d)(vi), this issue is not appropriate for a petition under 10 CFR 2.206.

And, I'm just really perplexed by that because I did not ask you to remedy the problem. I just mentioned the problem.

Again, Tom Popik submitted PRM 50-96 to the NRC as a rulemaking petition, and he talked about coronal mass ejections and how that, the problems that might cause for the electric grid.

And so the NRC didn't tell him oh, we can't listen to, we can't accept your rulemaking

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because it is about space weather, and that's, you know, that's something that would be regulated by FERC and NERC.

I did not ask the NRC to harden the electric grid to protect against solar storms. I specifically asked you to expedite the storage of spent fuel from overcrowded spent fuel pools, to dry cask storage.

And all the information that I provided on how space weather can collapse the electric grid, was just to say look, this is a pretty serious problem.

You took it seriously enough to actually do a rulemaking on this, and so it's like this is just information I listed. I didn't ask you to fix the electric grid.

Okay, now on to specific concern number 2.

An EMP with a magnitude that could cause widespread, long-term power outages and lead to widespread spent fuel pool coolant level challenges, due to multiple LOOP events.

In part of the PR, yes, you, in response to that you say, as described above, grid resilience is outside the NRC's regulatory authority.

Like I said, I mentioned this just to show a vulnerability of the electric grid. I did not ask

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you to harden the electric grid against electromagnetic pulse.

So clearly, I just want to also add that the EPRI report that you mentioned, which is about EMP, I think it would apply to you know, the issues regarding EMP.

If you want to say okay, an EMP wouldn't be so bad, fine. You have that EPRI report, but it just doesn't apply to space weather as I've already said.

And now I have another one. Specific concern number 6, power grids are vulnerable to physical attacks and cyber attacks.

In part of the PRB's response to specific concern number 6, the PRB states, power grid security is beyond NRC licensee controlled areas.

Sorry, I misquoted. Power grid security beyond NRC licensee controlled areas, is outside of the NRC's authority and is regulated by FERC.

Therefore, in accordance with MD 8.11, Section II.A.2(d)(vi), this issue is not appropriate for a petition under 10 CFR 2.206.

So again, it's like why, you're actually really criticizing me, a member of the public, who took the time to write and submit a 2.206 petition for

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discussing a number of different vulnerabilities of the U.S. power grid in my petition?

It's like, who the power grids regulators are has nothing to do with one of the main points of my petition.

And that's what some analysts say the U.S. power grid has the potential to collapse. You know, as frequently as say once every 100 years.

Or as you said yourself in your Federal Register notice, perhaps once every 153 years to once every 500 years.

So, it seems to me you're suggesting it's inappropriate to discuss a number of different vulnerabilities of the U.S. power grid, for the simple reason that you do not regulate the grid.

I mean, it's like using that same logic it would be that the PRB believes it's inappropriate to discuss earthquakes in a 2.206 petition, for the simple reason that the NRC does not regulate earthquakes.

So, I just want to cap that. I'm mentioning vulnerabilities of the electric grid. I did not ask you to remedy those.

So, it seems to me your response is that I asked you to remedy these problems with the electric

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grid, and I did not.

And I didn't ask you for the very simple reason as you point out, that it's not regulated by the NRC.

But nonetheless, just like Tom Popik pointed out, coronal mass ejection could collapse the electric grid, and the NRC took it seriously enough to consider his petition in a rulemaking.

So, I do want to ask another question. As part of its process, did the PRB get legal advice when it said that it is inappropriate to discuss a number of different vulnerabilities of the U.S. power grid, for the simple reason that the NRC does not regulate the U.S. power grid?

MR. BUCKBERG: The NRC does have (telephonic interference).

MR. LEYSE: I'm sorry, I cannot hear you.

MR. BUCKBERG: Sorry about that.

The NRC has an office of general counsel that we do work with, and consult with as needed. That's really as far as I can go regarding the response to the concerns in the petition.

MR. LEYSE: Okay.

Well again, the petition, I would then make a suggestion if you would please speak with your

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general counsel and ask their opinion also of PRM 50-96, which talks about the vulnerability of the electric grids to space weather coronal mass ejections.

Again, I did not ask you to remedy any problems with the eclectic grid. I asked you to remedy the problems with overstocked spent fuel pools.

And so, if you would please speak with your office of general counsel for guidance on that, I would appreciate it because again, I didn't ask any of that to be fixed. I just pointed it out as a problem.

Now, I want to say I'm not sure if David Lochbaum has been able to call in or not, because I think he was going to call in and the code was incorrect.

I did send, forward him the correct code, but he has actually responded to the PRB's comments on flex issues. And his comments are attached to my written comments.

So, I just wanted to say that I think he has some very important things to say in his written statement which again, it's Appendix Number 1 to my written statement.

And so, and now I just want to talk about some of the limitations of the MELCOR computer safety

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model.

But I realize that you know, there isn't a lot of time so I just want to focus, I do talk about that in the petition at length.

And, I do talk about how the OECD Nuclear Energy Agency has criticized MELCOR, talking about some of its limitations.

But I'll just focus on one, that MELCOR is incapable of simulating criticality events. And, MELCOR can actually be used in conjunction with another code called the serpent code.

And that, the serpent code actually simulates criticality events. But for some reason, in NUREG-2161 the NRC did not choose to use MELCOR in conception with the serpent code.

So, I think that's a problem with some of your analyses of spent fuel pool accidents. Just the fact that you hadn't modeled criticality.

And, I just want to give one example and it's actually in my petition on pages 77 to 79. But I just want to highlight this.

So, NUREG-2161 actually warns that criticality events might occur if a spent fuel pool were reflooded with coolant water.

NUREG-2161 states that if a criticality

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event occurred at a point at which quote, the fuel was only partially covered, the event would have an important impact on onsite dose rates, end of quote.

As NUREG-2161 points out, increased onsite dose rates would impede efforts to mitigate a spent fuel pool accident.

That NUREG also states that if criticality events were quote, were severe enough to produce significant heat, the fuel will be harder to cool, end of quote.

So, NUREG provides the results of a number of the NRC MELCOR computer simulations for loss of coolant accidents in spent fuel pools, in which there was a moderate leakage rate.

And, in those simulations water drained from the pools to an extent that enabled spent fuel pool assembly, I'm sorry, spent fuel assemblies, to become uncovered by coolant water.

Which in some cases, increased the assembly's cladding temperatures up above 3,000 degrees Fahrenheit.

In some simulations, temperatures in the spent fuel pool reached a point at which neutron-absorber materials would become ineffective in preventing criticality events after either vitrifying,

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or melting.

In some simulations, spray cooling with 2,000, I'm sorry, 200, 200 gallons per minute, or water injection with 500 gallons per minute of make-up water when those spray cooling or water injection were employed to cool the spent fuel assemblies to add water back into the pool after neutron-absorber materials had become ineffective.

But the MELCOR simulations of NUREG-2161 did not consider the possibility of criticality events occurring in the spent fuel pool, as a consequence of the neutron-absorber materials having become ineffective.

So, I just want to say, the results of MELCOR analyses of NUREG-2161 provided unrealistic results in these cases.

For example, when water was reintroduced to the spent fuel pool in scenarios in which neutron-absorber materials became ineffective, criticality events may have occurred, as the NRC in that very same document points out.

The criticality events could as I said before, increase the onsite dose rates, as well as increase fuel-cladding temperatures.

So, the MELCOR analyses of NUREG-2161

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portray cladding temperatures rapidly decreasing in scenarios in which they might actually increase, in some of these scenarios in which the neutron-absorber materials were to become ineffective.

And I think that's pretty much. Like I said, I did submit written comments, so that can provide a lot more detail on some of the things I just said.

And, I have also included references for that so you can look that up to see some of the points that I'm making.

And, I would be happy to answer any of your questions, if you have any questions at this point.

MR. BUCKBERG: Thank you - I just wanted to let you know I did receive your email just prior to the meeting. I do have your attachment; that will be put into ADAMS as a supplement. And, the PRB members will read it.

MR. LEYSE: Okay, thank you.

MS. HEISERRER: Okay.

Mr. Leyse, thank you for your presentation. Thank you for taking the time to raise your concerns, and to, to meet with us today.

The regulations in 10 CFR 2.206 provide an

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opportunity for the public to petition the NRC to take this enforcement, or enforcement related action.

And the NRC understands that this process takes time, resources, and energy by petitioners.

With that, you know, thank you again for your time, and I will turn this over to Perry for any questions from the staff, and for closing comments.

MR. BUCKBERG: Thanks, Jamie.

MR. LEYSE: Thank you.

MR. BUCKBERG: As stated at the opening, we will now enter the question and answer phase of the meeting. And, I will cue any questions up.

At this time, does the PRB, any PRB members have questions for the petitioner? Please speak up if you do.

(No audible response.)

MR. BUCKBERG: Hearing none, I believe there were no licensees present. But if there is a licensee, any licensee staff with a question for the PRB related to the issues in the petition, please speak up, as well.

(No audible response.)

MR. BUCKBERG: Again, hearing none, Mr. Leyse, do you have any more questions on the 2.206 petition process?

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MR. LEYSE: Just thinking.

No, I think I covered it all. Just was curious about like I said, the legal advice that the PRB might, or might not receive. And just the process of selecting references.

I guess I could ask, and I guess this is more internal. Do you, do different PRB members in this process ever have debates, or arguments over different points? Maybe that's something you don't want to answer. I'm just kind of curious.

MR. BUCKBERG: Oh, in general, yes. I mean, internally to the NRC, we have different processes to deal with differing opinions.

There's a lot of expertise brought to each Petition Review Board. And there's not necessarily heated arguments, but there's differences of opinion.

And if it gets to the point where it's difficult to move ahead, the Petition chair will usually call the shot, and everybody will move together as a cohesive unit.

But yes, with different personalities and different areas of expertise, there can be some differences of opinion for sure.

MR. LEYSE: Okay, just curious.

MS. HEISERRER: Yes, and I'll just, I'll

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add if I may. I was part of most of the technical discussions that occurred surrounding your petition, Mr. Leyse.

And, you presented a lot of information, and some significant review and consideration went into it. So that there was a lot of healthy dialogue surrounding the issues that you raised.

So, thank you for that.

MR. LEYSE: Sure, sure.

MS. HEISERRER: And thank you to the PRB members.

MR. LEYSE: Sure, sure.

And again, I guess I'm kind of repeating myself but I guess, yes, in your process if there is like NRC precedent like the Federal Register notice from you know, announcing that PRM 50-96 had been accepted, does that carry an extra weight, as opposed to some other reference since that has actually been heavily vetted by the NRC already?

MR. BUCKBERG: In theory, any past documented NRC decisions weigh into the PRB decisions that we're undertaking.

And the PRB members, many were aware and involved with the PRN 50-96.

MR. LEYSE: Oh, okay.

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Yes, because I, I mean, I just want to say, I think it's the Federal Register notice on PRM 50-96 is a very good resource.

And, it's something that I learned a lot from reading that. And it also, of course I learned a lot from Tom Popik's petition, you know, the petition itself.

But also, just a lot of the references that the Federal Register notice quotes. But anyway, that's just my comment. I think it's a very good piece of work that the NRC did, so anyway, it's my two cents.

MR. BUCKBERG: Thanks, nice to hear that.

MR. LEYSE: Sure.

MR. BUCKBERG: I'll move on then. Before I conclude the meeting, at this time members of the public may provide feedback regarding the 2.206 petition process.

However, as stated at the opening, the purpose of this meeting was not to provide an opportunity for the petitioner or the public to question or examine the PRB, regarding the merits of the petition request.

If any members of the public are in attendance, do you have any questions about the

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process in general? Please let me know.

MR. POPIK: Hello, this is Tom Popik, I'm one of the authors of PRN 50-96. Can I ask a question?

MR. BUCKBERG: Please.

MR. POPIK: So, my question is, when a petition has been in the NRC process for some period of time, it might be years, but my petition it's actually over a decade.

If there are events that change the facts, the factual basis for a petition, can the petition be amended to incorporate additional facts which have come to light in, for example, the decade since the petition's been submitted?

MR. BUCKBERG: Your petition is in the petition for rulemaking process. Very different from this enforcement petition process.

I really don't have an answer for you. You have a contact, an NRC contact for your petition, I assume, a staff member that you deal with?

MR. POPIK: That's correct, yes.

MR. BUCKBERG: That would be the best resource. And, we have the question recorded and can make sure someone reaches out to you, as well.

MR. POPIK: Well, thank you, I'd appreciate

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that very much. Because I think you folks said earlier in this presentation, that the petitioners spend a considerable amount of time coming up with the petition. And, that's certainly true for Mr. Leyse, and also for myself.

And, I think we had a reasonable expectation that the NRC would act promptly on petitions. Especially when the matters under consideration have dramatic effects on the safety of the public.

And of course, the NRC, the reason for the NRC is the safety of the public. And so when a petition doesn't take say a year or two, but you know, we're going on 10 years, it seems to me quite reasonable that facts and circumstances would change.

And, there should be an opportunity for those additional facts and circumstances to be included.

So I just make that general statement, and then I would appreciate if the point of contact could reach out to me.

Thank you so much.

MR. BUCKBERG: Thanks for your question, your concern.

Anybody else from the public have any

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process questions? Please.

(No audible response.)

MR. BUCKBERG: Hearing none, does the court reporter need any additional information for the meeting transcript?

THE COURT REPORTER: If I could just have the spelling of Thomas Popik's name?

MR. POPIK: Oh, you need the spelling of my name, Thomas Popik?

THE COURT REPORTER: Yes, sir.

MR. POPIK: Sure. My first name Thomas, T-H-O-M-A-S, my last name Popik, that's P as in Paul, O, P as in Paul, I, K as in kite.

Thank you very much.

THE COURT REPORTER: Thank you, sir. That's all I need.

MR. BUCKBERG: Thanks very much.

In general, we want to encourage the participants outside the NRC to provide public meeting feedback to the NRC staff, via the NRC public meeting website. That would be appreciated.

And with that, this meeting is now concluded. Thanks everybody for attending.

(Chorus of thank you's.)

(Whereupon, the above-entitled matter went

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off the record at 4:12 p.m.)