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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

DIVISION OF SPENT FUEL MANAGEMENT

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DSFM REGULATORY CONFERENCE 2019

(REG CON)

+ + + + +

TUESDAY

SEPTEMBER 17, 2019

+ + + + +

The conference met in the Crowne Plaza
Philadelphia-King of Prussia, 260 Mall Boulevard, King
of Prussia, Pennsylvania, 19406, Freedom II Conference
Room, at 10:00 a.m., Daniel Mussatti, facilitator,
presiding.

PRESENT

DANIEL MUSSATTI, Facilitator

MICHAEL LAYTON,

Director, Division of Spent Fuel Management

RAY LORSON,

Regional Deputy Administrator, Region I

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Session I:

JOHN McKIRGAN, DSFM

CHRIS ALLEN, DSFM

BRUCE WATSON, DUWP

ROD McCULLUM, NEI

JOHN WISE, DSFM

ALSO PRESENT

HAILE LINDSAY, NRC Staff

CARLA ROQUE-CRUZ, NRC Staff

TOMEKA TERRY, NRC Staff

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

10:00 a.m.

MR. MUSSATTI: Good morning, everyone, let's get started. If you could take a seat please.

My name is Dan Mussatti, and somewhere in the back of the room is Carla Roque-Cruz. She and I are your facilitators for this two-day event. And on behalf of Carla and myself I would like to welcome you to the Division of Spent Fuel Managements Regulatory Road Show, REG CON 2019, bringing the spent fuel management program to you.

Just like the Antique Road Show, we're on the road. And I'm going to leave that metaphor right there and you can take it wherever you want, antiques or value or whatever. Mainly antiques from the looks of this room.

My job and Carla's job is to make sure that this meeting is informative, productive and on time.

We're going to be a long day today. Starting now and ending at about 8 o'clock in the evening. And then tomorrow we're going to have a bit of a shorter day.

We have longer breaks, please do not abuse them. Come back right away so we can get started right away and nobody misses anything that we've got here.

And before we get started, I'd like to start

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out with a little bit of housekeeping.

First of all, please notice that we're not in the NRC's building. That means your badges don't limit where you're going, you can go wherever you want in here. You don't have to have an escort when you go any place, so feel free to take your breaks as you need them because we're having long sessions.

The restrooms are through those back doors.

Take a right, go through the glass door and then follow the wall around to the left, just a short little distance past the outside doors that we would be taking if we were asked to leave this building, is where you'll find the men's room and the lady's room.

And speaking of the emergency exit that we'll have, like I said, take a right outside the doors, go through the glass doors and an immediate left to go out into the yard. Once we get outside, please don't wander away because in case there is an emergency where we have to evacuate the building, we're going to need to take a headcount outside. Which is why you signed in this morning when you came in.

Which reminds me, if you haven't signed in, you need to do so just so in case we do a headcount we didn't accidentally leave your head inside the building where there's a danger.

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All right. This meeting is being Skyped.

If you're Skyping this conference we strongly encourage you to use our telephone bridge line to listen to the building and to provide comments.

If you're using your computer's headphones, please take a moment and dial this number and give this pass code. Grab a pencil. 1-888-318-4510. And your pass code is 2068937. One more time on the number, 1-888-318-4510, your pass code is 2068937.

For you Skypers, you can also submit questions by instant messaging, which will be managed today by our web manager, Haile Lindsay. I'll be asking Haile personally whether he has received any comments every once in a while, so please be patient, your questions will be read into the record.

Our phone lines are being managed by an external operator. Her name is Natasha. And she will be coordinating our calls, the comments that come in by the telephone.

Natasha, would you please take a moment to explain to our callers how they get into the line to be able to ask a question?

THE OPERATOR: Sure. If you would like to ask a question or make a comment, please press *1

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from your phone, unmute your line and speak your name clearly when prompted. Your name is required to introduce your question.

If you would like to withdrawal your question, you may press *2. Again, if you would like to ask a question, please press *1, speak your name clearly when prompted.

MR. MUSSATTI: Thank you, Natasha. I really appreciate this. Us being to work with someone like you makes our phone calls a lot less confusing and a lot easier to handle.

THE OPERATOR: Thank you.

MR. MUSSATTI: If you're on the phone and you have a problem, please contact Natasha and we'll see what we can do to resolve to your problem. Whether it's a hearing problem or you're not being recognized for going into the queue, whatever it might be.

This meeting is being recorded so that we can get an accurate transcript, which our valid transcript person, Andrew, is going to provide for us.

And to that end, we have some other rules that we need to follow here. For the people in the room, we ask you to turn off anything that buzzes, beeps, that makes any sorts of noise that could possibly distract us.

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I know there are a lot of us around here that can't turn off our phones because we have safety reasons that our phones have to be on, we have personal reasons, like a family member that we're trying to monitor for health reasons or whatever, or whatever reason it is.

If that is the case and you cannot physically shut your phone off, please put it on vibrate or some other silent way of notifying you of the phone call. And then as you take that call, make your way all the way into the foyer out front before you actually start talking, so that you can minimize the disruption in the room.

Not the disruption because we can't handle it, it's because Andrew needs to have a clean transcript. And if there is talking over the top of the speakers, it garbles the transcript and we don't get a good record of this meeting.

Which reminds me, the other rules that we have here, we don't want to run this like a Robert's rule of order, anything like that. Nothing like the British system, order, order. What we would like to do is be more casual than that.

And we've done very well in the years before. I don't think I see very many new faces at

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all. We've all gone through this.

One speaker at a time. If you want to have a side bar conversation, please take it outside.

If you have a comment that you want to make in rebuttal to somebody that has spoken before, please make sure that you keep it polite, you keep it on topic.

And make sure that whenever you speak, what you do first is you give us your name and your affiliation. And speak directly into the microphone.

When you don't speak directly into the microphone, sometimes it's hard to hear in the room as to what you're saying. Probably not me because I've got a big voice, but you need to speak into the microphone.

If you're talking to somebody else, turn the microphone with you or make sure that the microphone is directly in front of your mouth so that we get the best possible recording that we can.

We have a limited time and a lot of things we want to cover. So we need to limit our comments to about three minutes. Questions and answers.

And what we don't want to do is have somebody ask a panelist a question and then the panelist answers, and then questioner asks a second question and the panelist answers, and then the questioner asks

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a third question. That's called a conversation. We want to keep this limited as much as we possibly can to keep it focused and on point.

If you have further comments, please refrain until we're towards the end of the session and then we can pick you back up again and you can pick up where you left off. But we want to make sure as many people as possible, especially those that have traveled a long distance to get here, have an opportunity to speak.

And that goes especially for the people from the NRC. We've got the opportunity to call each other, grab each other in the hallway, go down to the cafeteria and have a cup of coffee and talk over all kinds of issues. We don't need to do housework here.

So, as much as possible, let's defer to the guests that we have and let them do the speaking first and then we'll fill in the gaps towards the end of the session with our own NRC comments.

One last point before we start. These microphones in the room are hot continuously. That means two things.

Number one, we don't want to be standing in front of them talking with somebody about things that are proprietary or have some sort of

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confidentiality to them. Please take those off into the corners of the room or someplace where there is no chance of you being overheard because these mics will broadcast, just like most of our Presidents in the United States have found out at one point or another.

The other thing is, is that although we will be talking about technical things, neither the Industry nor the NRC will be making any regulatory commitments during this conference.

So, this is just an information gathering, an information sharing process. We don't want to get to the point to where somebody is expecting us to have done something because it sounded like we were promising it.

Okay, are there any questions in the room?

All right.

From the agenda you can see we got a lot to do, so I want to get started by introducing Michael Layton, the division director for the division of spent fuel management. Michael.

MR. LAYTON: Thank you, Dan. Well, good morning, everyone. Glad you can make it.

So, for those of you that came in last night to the airport, how did you like the traffic getting here?

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(Laughter.)

MR. LAYTON: Really great, isn't it? So I'm going to share a little story with you. Our keynote speaker, Ray Lorson, lives in New Jersey. And apparently there was some traffic kerfuffle on the bridge and he was delayed on the Jersey side of the river.

He's on his way. And here he is.

(Laughter.)

MR. LAYTON: Timing is everything. Welcome, Ray. So, as Dan mentioned, this is a different REG CON. As you can tell, we're not at NRC headquarters in the auditorium. We didn't have to go through security, those types of things.

We decided, based on some comments that we received from the past REG CONs to change things up a little bit. Part of it was, many of you commented that it was difficult to get into D.C., to get into headquarters, get through security, be escorted around.

So with that, we took that to heart and said, well, why don't we move the REG CON out of headquarters. And then we talked about it for a little bit and said, well, why don't we move it even further out and see how we can actually get out to more of where the plants are.

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And we looked around and we kind of settled on Region I, because we needed that support tether and that network back to the NRC regional office. So we settled here at the Crowne Plaza in King of Prussia, right across from the mall.

So those of you that will go out for lunch, you'll have multiple venues around. Lots of good eating here. Compared to, you really got to hike and drive whenever you're at NRC headquarters.

But regardless, give us your feedback, let us know how this REG CON works. We always are interested in what you think so that we can improve what we do with the REG CON.

So, there are some changes going on with spent fuel management. Not just that we move the REG CON out of headquarters.

Some of you know that in about three weeks I'm going to be transitioning to the Division of Material Safety, Security and Tribal liaison. And that material division is the Radioactive Materials and Sealed Sources Division.

Andrea Kock, who is the division director for that division will be coming down and managing the spent fuel program about the same time in mid-October.

Andrea is on a recruitment trip to her alma mater in

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Michigan. She's on her way. She should be here, I would guess, probably after lunch.

I don't know that she anticipates the wonderful ease of traffic from the airport to King of Prussia, so I'm hoping that she'll get here before the end of the day. That said, we'll introduce Andrea whenever she arrives.

Another change that's going to be happening is a reorganization. And this is a NRC or NMSS office wide reorganization that's going to occur, again, in mid-October.

In addition to some consolidation of some functions, what we call centers of expertise with environmental and financial analysis in with our other center of expertise in rulemaking, there's going to be a combination of divisions.

The division of spent fuel management and the division of fuel cycle, I'm going to get the acronym wrong, fuel cycle safety and environmental division, will be combining into one division. It will be a rather large division. There will be seven branches.

And the branches will be fairly large.

The logic behind that is that over the course of the last few years some of the NRC programs have declined in activity. And fuel cycle was one of

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them.

But when you look at the skill sets that we have in spent fuel, where we have materials engineers, criticality engineers, structural engineers and radiation safety engineers, it's the same skill set that the fuel cycle program utilizes.

So that combination is going to help augment both programs in doing what they do with their licensing and with our certificates of compliance. So that will be occurring and Andrea will be overseeing that combined division.

So, on break, feel free to talk to any of the NRC folks and learn a little bit more about what the reorganization is going to entail.

And, again, feel free to give us your feedback by email. I don't know if we have note cards, but if you want to pass a note card to Haile we'll be happy to take your feedback.

But without any further delay, I'd like to introduce Ray Lorson. You didn't have to swim to get here but he got here just in the nick of time.

So, Ray has been with the NRC, I would say, your close to 30 years now? Because I know it's close to 30 years because I remember Ray from my earlier time here at NRC.

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Ray is the Deputy Regional Administrator for Our Region I Office in King of Prussia. He's been in that position now for about a year. He's no stranger to the spent fuel management program.

Ray did a rather extensive tour of duty in headquarters. He was the deputy division director for the spent fuel management program around 2007, 2008, that time frame. So many of you may remember Ray from those days.

And in Region I, the spent fuel inspection program for this region is under Ray's purview.

And also, I saw Jim Trapp here, who is the Division Director for Division of Nuclear Material Safety. That inspection program is ran out of Region I.

So with no further delay, Ray Lorson.

(Applause.)

MR. LORSON: Okay. Thank you, Mike. And thank you to everyone for your attendance here this morning. And I would like to welcome everyone to the Spent Fuel Management Regulator Conference or Regulatory Conference as we refer to it.

And I am Ray Lorson, I'm the deputy regional administrator here at NRC Region I. I would say that I was driving in this morning and I got stopped on a

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bridge that, I live in South Jersey, and so to get here is about 33 miles. That can take an hour or it can take three hours, depending upon traffic.

And this morning I was stuck on the bridge.

They have the bridge closed down to one lane and then they close it down completely. And so I was on the bridge.

And so the concept of jumping off the bridging and swimming across the river and the Ubering up did come to my mind.

(Laughter.)

MR. LORSON: However, I thought if I did so it would probably be a noncompliance. I didn't want to be cited for an improper turn there.

(Laughter.)

MR. LORSON: But it was funny. I did call, I spoke to Tony Dimitriadis, who is our branch chief in the NRC's Region I office responsible for decommissioning, and the independent spent fuel inspection program, and he relayed the message to Mike.

And I asked Tony, I said, hey, does Mike seem flappable or upset about it, he said, oh no, no, Mike is very calm, no problem.

I mean, I think it was helpful if I was in that position I wouldn't be calm, I would be pretty

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steamed. So, Mike, thanks for your patience.

Mike did talk about the decision to move the conference here. I think, Mike, you picked a great location. This is a fantastic area.

I would encourage you, if you're from out of town, take some time to enjoy the area. We're only about two miles from the Valley Forge National Park.

Also, if you're into biking you could go down to Conshohocken, there is a place where you can rent bicycles and you bike along the Schuylkill River, all the way down to the steps of the art museum. And if you want to unleash your inner Rocky, you could run to the dock. If you make it, you can snap a selfie.

(Laughter.)

MR. LORSON: Also, as you know, Philadelphia, we have Independence Hall, we have Liberty Bell, so if you have time, it's only about 20 miles from here. If you haven't seen the before, I would highly encourage it.

Mike did talk, I think he mentioned that there is a mall across the street. And it's reportedly one of the largest malls in America. I don't want to say it's the largest mall in America, because if I say that, that evokes controversy that it's greater than anything I have ever heard at a public meeting relative

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to nuclear power.

(Laughter.)

MR. LORSON: But we're also a host here in Philadelphia to some of the world's great cuisines that were actually invented here. If you get a chance, I would encourage you to sample a cheese steak, a taste cake and the stromboli. All three of those great food products were invented here in Philadelphia.

And I did recently see something on the internet. It must be true because if I want it to be true I tend to believe it.

And it indicated that the food recommendations from, I think the USDA, were going to change to three major food groups. And I'm sure they had cheese steak, a taste cake and strombolis in mind when they came up with that approach.

But no, really, it is great to be here today. Just want to give you a little bit of an insight in terms of the NRC structure.

Many of you aren't familiar with the NRC structure but we do have four regional offices. We have offices here in King of Prussia, we have an office in Atlanta, an office in Chicago and an office out in Dallas, Texas.

And by and large, the regional offices

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actually pretty much perform all of the similar types of functions. Regions I, III and IV are virtually identical in terms of the types of things that we do.

Region II is a little different because they have responsibility for the oversight of the construction of the Vogtle reactor. And they also are responsible for oversight of the fuel fabrication facilities.

In Region I, we have quite a portfolio. We have currently 23 operator power reactors that we provide inspection oversight for. Soon to be 22.

And that's with the impending shutdown of the Three Mile Island Nuclear Plant, which is located about 80 miles from here. Just outside of Harrisburg, Pennsylvania.

As part of our reactor oversight program, we have both what we call resident inspectors, as you know, which are two full-time NRC inspectors. Typically two. It can vary depending upon the site.

Two full-time inspectors that are really kind of our daily eyes and ears. They look, see and observe what's going on at the facility.

We also have in the region what we call region-based inspectors. Region-based inspectors look at a variety of technical areas that includes

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things like cybersecurity, it can include things like emergency preparedness, it can include engineering, it can include things like operator licensing.

So, we also have what we call region-based inspectors. And between the residents and the region-based inspectors, we provide the oversight for the 23 operating power plants that are in our region.

We also have three plants that have permanently shut down that are currently in the process of going decommissioning. Active decommissioning.

In addition, we have five more plants that are in what we call a SAFSTOR. And in SAFSTOR, just so we're all referring to the same term, that refers to a process where you put the facility into, basically a safe condition, and you wait a period of time before beginning active decommissioning.

We also do inspections of the independent storage, fuel storage installations here in the region.

I believe every operating plant and every shutdown plant in our region has a SOC associated with it.

We are also responsible for oversight over what we call nuclear materials. Mike Layton mentioned that he's going to be changing jobs here in the next couple of weeks to go to our nuclear materials group at NRC headquarters.

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Nuclear materials are basically other uses of nuclear materials that are not associated with operating reactors. They could be things like a medical facility, they could be things like industrial radiography, they could be activities that you might see, such as a fixed gauge at an industrial facility.

So we have about 800 licensees in the nuclear materials area. And basically, our span of control in nuclear materials includes the entire eastern seaboard, all the way down to including the Commonwealth of Puerto Rico and the U.S. Virgin Islands.

There is also a unique aspect associated with our nuclear materials program, and it's something called our agreement state program. Agreement states, if you go back and you take a look at the Atomic Energy Act, basically it requires that the NRC shall relinquish regulatory authority to any state that requests it, provided that they have a program that's adequate and compatible with NRC requirements.

So, as part of our regional activities, we do provide frequent communications and support for 17 agreement states here within the Region I area.

I say 17, in approximately two weeks it will become 18 as the State of Vermont, which it did apply to become an agreement state, it was approved

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by the Commission here within the last month. And they're slated to become an agreement state on October 1st.

So that gives you kind of a little bit of an insight in terms of Region I, what we are and what we do.

I know one of the things that you'll hear from time to time is the concept of, are the regions operating similar, do they have what we call region reliability in terms of, if I have an issue at one particular region, won't be dispositioned identically at another region.

And to that extent, I would offer we actually do have quite a bit in terms of frequent communications with our peers across the NRC. And in particular, from across the other regional offices.

Yesterday I had no less than 25 emails between myself, my peer deputy regional administrators in other regions. Primarily discussing some aspects related to human capital management, but often we will go back and forth and communicate and kind of compare notes, if you will, on proposed actions.

Particularly if there is a regulatory action that is being considered that might be potentially complex or potentially confidential. So,

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I know from your perspective you may see that things operate differently from the regions, but I can just assure you that we do frequently communicate with our peer regions.

And we have a number of panels that we've established throughout the years to try to give us consistency as we implement the regulatory programs.

Primarily, were we able to establish a panel to look for more consistency in areas where new and emerging areas. So what could that be an example of?

One example could be in the area of cybersecurity. Cybersecurity, when I was an inspector at the facilities many years ago, wasn't a particular concern. But in the last several years it's received additional attention.

The NRC has provided rules and requirements and has developed a program on how we implement cybersecurity. Because it was an emerging area or a new area, we've taken extra time to coordinate across the regions as we implement the programs.

So that's just one example of cases where, or an example of where we've provided a lot of oversight to try to make sure that in the regions we're implementing the programs in a consistent manner.

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I'd like to turn to this conference. And really, the reason why all of you are here today, first I'd like to start by thanking Mike Layton and his staff, including Haile Lindsay and Tomeka Terry, for all of their efforts to bring this conference together.

And I'd just like to stop for a minute and ask that we give a round of applause to Mike and his team for their efforts in coordinating the conference.

(Applause.)

MR. LORSON: You know, these conferences don't come together by themselves, it takes a lot of planning. And from my experience, and Mike had mentioned I had some previous experience in the spent fuel storage division, I know that these conferences, often you would start planning the next conference, immediately following the completion of the conference that just ended.

So three days from now, or two days from now when we complete this conference, we'll have to start thinking about the next conference. What will be the venue, where it will be had and we'll have to start to scope it out a little bit.

So, it does take a tremendous amount of effort. And, Mike, thanks to you and your team.

I'm really excited about this particular

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regulator conference. As I mentioned, I was in the spent fuel storage division from 2008 to 2010. And during that period of time I remember that the regulatory conference was a really great opportunity to kind of share insights, new ideas, evaluate new ways of doing business.

And I think it really helped us be effective in a number of key changes that we implemented during that period of time. We, for example, developed a work prioritization approach for a standard review plan, which kind of guided licensed reviewers on the level of the detail to apply when reviewing applications for dry storage systems.

We also developed guidance on how to license renewed applications for independent spent fuel storage installations.

And I lost one of my pages here. Maybe I left one in the river.

(Laughter.)

MR. LORSON: No, we actually, we did quite a bit more things. We developed a number of procedural guides, interim staff guidance memorandums to look at things like how do we do leak testing.

I met one of the branch chiefs that was up here, Meraj Rahimi whose out in the audience

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somewhere, spoke to him last night. There he is.

We talked about that we had developed guidance on how to apply burn up credit. Which had been a longstanding issue.

So, I think, you may hear a lot about the NRC being a changed environment and transformation, however often, we've been active in change in new ways of doing business for a long, long time.

So, those are some of the things that I recall from the 2008 to 2010 time frame. And particular I recall that the regulator conferences were a big part of our success.

Another part, or another benefit of these conferences is the concept of openness. Openness is one of the NRC's organization values and is a responsible regulator with a very important safety and security mission, our values guide us in maintaining certain principles in the way we carry our regulatory activities.

Openness also appears in our principles of good regulation and states that nuclear regulation is the public's business and it must be transacted publicly and candidly.

The public must be informed about and have the opportunity to participate in the regulatory

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processes required by law. Open channels of communication must be maintained with congress of the government agencies, licensees and the public, as well as the international nuclear community.

In keeping with our openness value and principle, this year's theme for the regulatory conference is bringing the spent fuel management program to you.

We start our activities for this conference last night with an open house that we held over our, at our Region I office, approximately four miles from here. And appreciate those of you who were able to make it.

The goal for last night was to give you an opportunity to dialogue with NRC Staff in matters related to spent fuel management. And we will continue that throughout the conference.

As Mike mentioned, the conference was selected here to be in the northeast to eliminate some of the burden associated with getting in and out of the headquarters facility. And also to be closer to the stakeholders for the facilities that we regulate.

I think if you look at the agenda, one other key point is that the agenda start and stop times are not consistent with those start and stop times that

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we typically associate with a normal business day.

But we've kind of adjusted the scheduled start and stop times to give more facility for, or excuse me, to give more ability for folks that may be members of the public that may have full-time jobs, family commitments, were not able to make it here during part of the day or to participate via the webinar through the day, it really gives them an opportunity by expanding the hours to participate in certain aspects of the conference. So that was another change we implemented with this conference with the idea of improving our openness.

If I look to the accomplishments to this past year, while the NRC safety and security mission remains unchanged, I think we are looking for ways to do our business in a more efficient and effective manner.

The Nuclear Energy Innovation and Modernization Act, which was passed by Congress in the last year, helps guide us in that area and helps direct that we become more efficient in our regulatory processes.

And keeping with the improvement theme, I want to emphasize, our overall mission doesn't change but how we do our mission, how we do our job on a daily

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business may evolve to look at new ways of doing business that are more risked informed and more efficient.

In the spent fuel area, we have a number of activities that are underway. For example, we continue to make progress on updating Regulatory Guide 3.72, which is our regulatory guide for providing guidance on how to implement 10 CFR 72.48, which is changes, tests and experiments.

This revision will ensure that future license and certificate and compliance amendments will be focused on the changes that really necessitate NRC review and approval.

In addition, we continue to make progress in our review of the transnuclear pilot application for implementing a greater approach to support the decision making to the appropriate level of detail required for a certificate compliance, including the formal basis for the technical review guidance in the future.

At the end of the month, we expect to get a report from a working group that we've tasked within the NRC to look at our inspection program for the independent spent fuel storage installations.

We expect to give recommendations that we will then use to update our inspection guidance and

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we'll have a very active public engagement to support any changes that we pursue.

We also continue to make progress in our review of two license applications for consolidated interim storage facilities. We're currently looking at the applications in the phase of issuing requests for additional information.

And just recently published a schedule back in July with an anticipated issuance date of mid-2020.

With respect to the SSCs renewal applications, the NRC has been continuing to review site specific applications and specific compliances, with the latest example being the issuance of the Trojan license renewal that was issued in August.

With the completion and publication of NUREG-2214, managing aging processes in storage this past summer, and NUREG-2224, storage of transportation of high burn fuel is scheduled for finalization by the end of 2019. The NRC will be better prepared to receive the peak number of renewal applications projected in 2020.

In support of regulatory decisions, the NRC is continuing to perform technical research in the areas of spent fuel cladding, in canister integrity, canister thermal performance and criticality in

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shielding computer code validations.

Most have thought all of these topics will covered in more detail in presentations throughout the conference.

Now turning to the agenda for the conference. We have five tracks with a variety of topics in each that will cover licensing, oversight, external engagement, future enhancements and technical issues.

The licensing track will be chaired by NRC's John McKirgan and will cover a range of topics to include reactor decommissioning issues and challenges, dry cast storage and license and certificate of compliance renewal licenses learned.

The oversight track will be chaired by, co-chaired by Brian Gutherman of Gutherman Technical Services. I'm sure Brian spent a lot of time coming up with the name for the company.

(Laughter.)

MR. LORSON: Where is Brian? No offence Brian. Good to see you again.

(Off microphone comment.)

MR. LORSON: It's actually been about ten years since I saw Brian and he actually looks the same.

(Laughter.)

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MR. LORSON: Which is not really true, but I thought it would be nice to say.

(Laughter.)

MR. LORSON: But having said that, I could say the same thing about a lot of us, including myself.

But no, great to see you again, Brian.

MR. GUTHERMAN: Same here.

MR. LORSON: Also, chairing that oversight panel will be Tony Dimitriadis, who I mentioned earlier.

Tony is right there.

This track will include presentations on dry storage cask during inspection, mitigation and repair, and on the staff efforts to prepare for inspections of spent fuel transportation campaigns.

The external engagement track will be chaired by NRC's Yoria Diaz-Sanabria. In the back.

In this track you will hear a variety of perspectives, to include a presentation on developing a working relationship with federal recognized Indian tribes and a presentation on the importance of public perception in the nuclear industry.

The future enhancements panel will be co-chaired by Bruce Montgomery of NEI. Bruce? And Veronica Wilson of the Nuclear Regulatory Commission. Veronica?

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And will include topics such as advanced fuels update on the front end of the fuel cycles and reflections from the NEI transportation tabletop exercise, which occurred this past May.

The final track on technical issues will be co-chaired by Sylvia Saltzstein of the Sandia National Laboratory. And Chris Bajwa of the NRC.

And will include topics such as the application of modeling technics and licensing reviews. And the NRC spent fuel research activities.

As you can see, the agenda is packed full of really interesting topics. And I am confident you'll find the next two days to be very engaging, relevant to the challenges we face. And a continued reliance on dry cask storage systems.

I would like to thank you for your attention. And at this point, I will turn it over to any questions that folks might have.

THE OPERATOR: As a reminder, if you would like to ask a question, please press *1 from your phone, unmute your line and speak your name clearly when promoted. One moment as we wait for any question.

MR. MUSSATTI: And for anyone in the room, just step up to the microphones.

MR. LORSON: Any questions from the room?

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Eager to get into licensing.

(Laughter.)

THE OPERATOR: There are no questions in queue at this time.

MR. LORSON: Okay, thank you.

MR. PHEIL: Ed Pheil from Elysium Industries. What is the NRC doing to reduce the cost of nuclear plant operations so that we don't have as many nuclear plants shutting down?

MR. LORSON: The question relates back to the NRC's overall cost structure. I did mention that as part of our transformation efforts we are looking to areas where we can be more transformative in terms of more efficient in our application of the regulatory processes.

Our fundamental mission of safety and security, that remains unchanged. That is not driven by cost.

However, we do look at, are there ways we can do business that help minimize burden in the sense where we're doing regulatory activities that are duplicative or unnecessary.

And let me give you a very small example.

Every one of the NRC offices has some type of independent radiological safety program that we use

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to ensure that our workers can operate safely when they go out to licensed facilities.

In the past, every single office maintained their own set of standards that were consistent with an NRC broader standard. But what we had was we had folks that were back doing work to kind of update, maintain and revise standards independently at all the different offices across the NRC and across all the different regions.

We said to ourselves, hey, that doesn't make a lot of sense, there is a lot of efficiency we can gain here, why don't we just have one standard that we all live to.

And so, that's an example where it doesn't impact the safety oversight of our inspectors. They're still able to go out and work safely. But it does require a little bit less effort.

And so, by continuing to look for areas where we can gain efficiency, we will be able to maintain, I think, the overall cost of the industry.

At the end of the day, if you look at the impact of the NRC on the industry, it does have an impact. I think a large part of the cost pressures that the industry is current facing relate to the cost of energy. Specifically the cost of cheap natural gas.

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In Pennsylvania here, that's a big concern. We've had a number of, what, we have Three Mile Island that's shutting down here in the next couple of weeks, strictly for economic reasons.

And some states have offered relief to the plants to keep them operating, some have not. In the case of Pennsylvania, they did not provide any relief for Three Mile Island. But thank you.

Okay. Well, thank you for your time and attention. Then I'll turn it over to John McKirgan.

(Applause.)

MR. MCKIRGAN: I'll ask my speakers to come on up, take a seat. Thank you all. Good morning.

My name is John McKirgan, I'm chief of the spent fuel licensing branch. I'm excited to be here today. It's good to see everybody.

I do love this conference. It's a good chance to talk to a lot of people. In my position, I get to talk with a lot of people one-on-one, and I enjoy that tremendously.

But it's nice, it's an efficiency to get to talk to so many people in such a short period of time. And so, I really appreciate this conference. I hope you all find value when you have time to talk to peers and colleagues from across the industry.

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I'm very excited about this panel today. We've got a mixed bag of topics that we're going to talk about. Some updates, some new and exciting topics of what's coming. And so, I'm going to jump right into it.

I'm going to, just logistically I'll give a brief bio on my speakers. Speakers, I'll let you decide whether you want to come to the podium or sit at the table. I'll leave that up to you. Whatever you're more comfortable with.

And so, my first speaker, Chris Allen. So, Chris is a project manager at the NRC. He's in my branch.

He is responsible for the technical review of applications for storage and transportation, which is a little unusual. A lot of the project managers in my organization will focus on one or the other. Chris is a versatile player and so he can switch hats for me, which is excellent.

Prior to joining the NRC, Chris worked as a field engineer and technical reviewer on projects dealing with transporting and storing irradiated fuel and radioactive waste. As well as project engineer for completing construction of the Watts Bar Unit 2 reactor.

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He's a graduate out of Georgia Tech and North Carolina State University. And so with that, I'll ask you to welcome Chris Allen.

(Applause.)

MR. ALLEN: So I am going to, I had planned to, or when I was thinking I would be sitting down and making this presentation, so since I have that option I'm going try it from here, but if we have some technical difficulties in moving the slides then I'll move over to the podium. I'll try it from the podium and see if we can do it from there.

So, I just want to start off with providing a high-level overview of the rules and responsibilities of various government entities in transporting spent fuel. I also plan to briefly discuss the status of the NRC's Part 71 rulemaking.

Tomeka? Tomeka, next slide.

MR. LORSON: Move your microphone closer.

MR. ALLEN: Okay. Is that better?

I am also going to talk about changes to Part 71 certificates of compliance, which may impact consolidated interim storage facilities.

And I also want to talk about anticipated technical issues for transporting accident tolerate fuel, higher enrichments and spent fuel having higher

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burn ups. There we go.

So, as you can see on this slide, the Department of Transportation regulates the transport of all hazardous materials, including spent nuclear fuel. But the Nuclear Regulatory Commission also licenses commercial use of radioactive material, which includes the transportation of spent fuel.

So, how do we do this without stepping on each other's toes and getting into a mess? Well, the DOT and the NRC are responsible for the joint regulation of the transportation of spent fuel. And a memorandum of understanding was developed and published in the federal register on July 2nd, 1979, which identifies the respected responsibilities.

The Department of Energy, as it says on here, regularly transports spent fuel. An example would be the transportation of research reactor spent fuel.

And another example would be Naval reactor fuel. And for those who were not present at the REG CON last year or who may have forgotten, the Department of Energy made a presentation on that very topic.

Now, unless required by statute, to use an NRC certified package, the Department of Energy does have the authority to transport shipments, excuse me,

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transport spent fuel in transportation packages per 49 CFR 173.7, if the shipment originates and terminates at a Department of Energy facility.

State governments also may impose additional safety requirements provided those requirements do not contradict or are not incompatible with DOT requirements. An example would be, a state can require training more frequently than the Department of Transportation regulations. The state and local governments also have the lead role in responding to accidents.

So, the responsibilities that the NRC has includes establishing regulations for packaged designed standards, evaluating package designs for both initial issuance and amendment of transportation certificates, overseeing and inspecting certificate holders, packaged fabricators, licensee shippers and carriers. The NRC also approves routes for shipment of commercial spent nuclear fuel.

Periodically, the DOT and the NRC revise the transportation regulations to ensure compatibility with the international atomic energy agency regulations.

Both the NRC, NRC and the DOT are in the process of doing this and revising its regulations.

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The NRC develops a regulatory basis and publishes it for comment in the federal register.

Based upon the comments received, the NRC will either publish a final regulatory basis in the federal register, move directly to the proposed rule stage or determine the rulemaking is unnecessary.

On April 12th, 2019, the NRC published a draft regulatory basis in the federal register which outlined proposed changes to maintain compatibility with the IAEA regulations.

Based upon the comments received, the only substandard change is an increase in the time for phasing out packages which do not have either a -85 or a -96 in the package identification number from four years to eight years. Therefore the NRC plans to publish a proposed rule in late 2020 and a final rule in early 2022.

The DOT is also developing a draft rule, which they plan to issue later this year. The NRC is coordinating our rulemaking efforts with the DOT.

Currently, the regulations in 10 CFR 71.19 require that if a package does not have a -96 in the package identification number, cannot be fabricated.

The NRC is considering amending 10 CFT 71.19 to disallow the fabrication of transportation packages

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with a -96 and the package identification number in 2029.

If the NRC amends 10 CFR 71.19, certificate holders will need to demonstrate compliance with the revised regulations for any package with a -96 in the identification number.

Also, for 10 CFR 72.48 allows spent fuel storage system designers, and users, to make changes without NRC approval under certain conditions.

If the 72.48 change impacts the NRCs approval of a spent fuel transportation package, such as either the drawings listed in the Part 71 certificate or the transportation package operating instructions.

Part 71 certificate must be amended to include those changes. So, went for shipment accident tolerant fuel and higher enrichments.

Criticality analyses are typically performed using a defined geometry. For fuel shipments, demonstrating fuel assemblies maintain a specific geometry requires knowing the material properties of the cladding in order to perform the structural and thermal evaluations for the fuel assemblies.

For the next bullet, where it talks about transporting UF6. I thought I needed to provide a

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little bit of a background.

10 CFR 71.55(b) requires criticality analyses to assume moderator is present. So this is true unless a transportation package utilizes design features, which prevent moderator from leaking into the package. It is also true unless the material being shipped is UF6 enriched to five weight percent or unless, and the package meets all the requirements in 10 CFR 71.559(g).

Currently, most packages which ship UF6, the UF6 is loaded into 30B cylinders. So, shipping packages of UF6 designed to transport these 30B cylinders with an enrichment greater than five weight percent in a packaged design for five weight percent or less, will require either additional criticality analyses or an exemption request from 71.55(b).

Alternatively, new package designs, or new cylinder designs, may also be an option.

Critical, we also note that critical experiments from enrichments greater than five weight percent is limited. Which makes benchmarking criticality analyses from enrichments greater than five weight percent challenging.

And validation of high burn up fuel source terms. And if the package uses burn up credit, high

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burn up fuel isotopic composition is also needed.

So, the take aways from all of this is that there is a significant coordination between the NRC, the DOT and DOE to ensure spent fuel is transported safely.

Based upon the fact that there could be a number of changes to transportation safety certificate due to the rule regulation changes and changes made to storage systems, the NRC would really like to, or think it would be very applicable for as many pre-application meetings as possible.

And we would also encourage a thorough technical evaluation to ensure that all technical information and issues have been identified and clearly communicated. And with that, I thank you.

MR. MCKIRGAN: Thank you, Chris.

(Applause.)

MR. MCKIRGAN: So, yes, so thank you, Chris. So our next speaker is Bruce Watson. Bruce is chief of the reactor decommissioning branch in the division of decommissioning uranium recovery and waste programs in the Office of NMSS.

Bruce has been with the NRC since March of 2004. Extensive experience in the decommissioning of reactors materials sites. And there is a list here.

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Some of these are pretty interesting.

There's a technical lead for the licensing determinations at Trojan, Maine Yankee, Rancho Seco and Big Rock Point. So, Bruce has been around to many of the sites that you guys are associated with.

In May 2010, Bruce was appointed as chief of the reactor decommissioning branch and is responsible for power reactor and research reactor and complex materials. And I'm sure there is a whole history as to what complex materials means. I'll Bruce explain that.

Uranium decommissioning project, all of that licensing management. Bruce is responsible for the licensing of the decommissioning of those kinds of facilities.

He's also got extensive international experience, safety guides, working with IAEA on training programs. He's served as a technical expert in Korea and Twain.

Prior to joining the NRC, Bruce had experience with management of decommissioning projects, including Rocky Flats. And international projects in Spain, Italy and the United Kingdom.

So, Bruce has 20 years of reactor operating experience and served as the radiation safety manager

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at Calvert Cliffs. He has a B.S. from Virginia Tech and is certified by the American Board of Health Physics.

He has 40 years of experience in health physics, including 30 years of management experience.

So please welcome Bruce Watson.

(Applause.)

MR. WATSON: I'll see if I can get through the slides in a reasonably timely manner. I have a lot of information. I thought that I would take the opportunity to fill in those that are really just involved in the spent fuel, to hear a little bit more about the decommissioning side that goes into this.

So, I will plan to talk about these topics.

Hopefully it's not too much of a repeat for many of you, but I wanted to remind everybody, our mission in decommissioning is still safety. And so, between headquarters licensing actions and inspections that are conducted by the regional offices, we maintain the same level of protection we hope for the public health and safety. And of course, the environment.

And we'll be there until the site is decommissioned and the licensed is terminated. And of course, we will continue to be there with the spent fuel there.

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Overall, our experience is fairly extensive. At one of the public meetings this last week, one of the, I'll say members of the public, said we had no experience in decommissioning. However, I want everybody to know that the collective NRC, the NRC experience is more than the collective decommission experience worldwide.

So, we've terminated ten power reactor licenses. Unfortunately, seven of those still have dry fuel storage associated with them, which we continue and inspect.

And of course, the total is almost 80 complex decommissioning sites, which have had their licenses terminated by the NRC.

I have to get a new slide or make it into multiple slides, but since 2013 we've had multiple sites shut down. I included TMI 1 one on this one because we originally were told it would shut down by the end of this month, but apparently it's going to be September 20th. So they're moving that up. So, anyway. So, things have changed in the last decade.

I thought I would throw in a little bit on rulemaking. For those who have been around for a while, actually, the commission started on rulemaking back in the year 2000. After the plants had shut down

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in the 1990s were decommissioned and felt rulemaking was appropriate.

However, industry, and also the 9/11 attack, changed everybody's mind since at that time the industry thought that every plant would be going for license extension and would be operating for a long time. So, we put that on hold, and low and behold, we had the plant shutting down in 2013.

So, in 2014 the Commission directed us to do rulemaking. And so, it includes a number of topics.

However, we'll go into those in just a second.

But the bottom line here is, the rulemaking was put on a very aggressive schedule. We submitted to the Commission in May 2018 the proposed rule.

And has been with the Commission since then. And since the Staff doesn't set the priorities on the Commission on their work, we're waiting on them to make the decisions on how to move forward with the proposed rules we've given them.

So, it's a fairly comprehensive rule. It covers all these topic areas, including spent fuel management planning. I believe it aligns, better align Part 50 with Part 72 for a dry fuel storage facilities.

Of course, the path forward again is we're waiting on the Commission direction. We are hoping

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that we'll get on their agenda soon to vote on it, so we can move ahead.

And right now we're looking at mid-2021 to issue the final rules. So it's not been as aggressive as we would like, but it's been with the subject of the priority of the Commission and not the Staff.

Another issue that we have in the works is that the generic, decommissioning generic and environment impact statement, NUREG-0586, is being revised. It is being revised by our environment review branch in NMSS.

Really, it's time to update it. The last supplement was issued in 2002. And there has been some change in that area, so the Staff is working on those changes.

Within the decommissioning area, we issued a revision to NUREG-1700, which is the standard review plans for license termination plans. That was issued last year, along with the Regulatory Guide 1.179 that accompanies that, was issued this year.

We continue to work on NUREG-1757, Volume 2, which is the consolidated decommissioning guidance.

I'm hoping it will get out the door soon. It is currently, I believe, with our office of general counsel

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for final review before it's sent out to the public.

Also, a key document in decommissioning is NUREG-1507. And it really deals with an update on the HP instrumentation and how to do measurements in the field to demonstrate compliance with the actual field measurements you need to make to show to us that you've meet the dose criteria and the decommissioning process.

Then of course we are, one of my staff members I assigned to revise Volume 1 of NUREG-1757, which really deals with the material sites, it's a graded approach to those. And by the way, the definition of a complex material site is basically anyone that has potential for groundwater, has groundwater contamination. And so, those generally get assigned to the headquarters as opposed to the regions for the decommissioning activities.

We are in a, with the rulemaking we will be revising a number of the regulatory guide. Some of those are out for draft already.

We continue to look at the, some of the decommissioning reg guides, and will be updating, I believe, the one on fire protection in the next year.

So we continue to make progress in that area.

We did a revision to Inspection Manual,

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Chapter 2561, which is the power reactor decommissioning inspection manual. We are currently, hopefully getting to the end of revising the procedures.

And we'll revisit 2561 when we're finished with revising all the procedures to bring it up to date also.

I guess one of the key issues we have going on right now is the decommissioning business models.

In the old days, the licensees would self-perform. They may still have that option.

The licensee manages a decommissioning contractor, which still continues today. We've had a number of temporary license transfers to a decommissioning company and then returned the land in the spent fuel to the original licensee or utility, in most cases.

And of course, most recently we had the asset sale and license transfer for the plant, the decommissioning trust fund. The spent fuel are sold and the permanent license is transferred to a non-utility company to do the decommissioning.

And then we have, recently have an application in from Crystal River which is, still quite a little bit different, but is kind of a hybrid of the few. And that's under review right now.

So, I just thought I'd give you some

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pictures here. This is Humboldt Bay. Up there in the left is the two fossil plants and the nuclear plant where the big stack is. Keep in mind, the containment building was underground.

So, does this have a pointer on it? Yes.

This was huge excavation, quite an engineering thing to decommission the containment and remove it from under its sub-terrain resting spot.

So this was a major activity in a earthquake seismic area, tsunami zone which had all kinds of precautions associated, safety precautions associated with this. So a very good job by PG&E on getting this work accomplished safely.

This picture is from October 2018. You can see that they built some additional peeking units there for handling the load in Northern California.

We were there just to, in the end of August, and they were just planting grass on it. We had, Region IV was there doing, with our independent contractor, Oak Ridge Associated University is doing final confirmatory surveys in probably the last inspection at that site.

This is Zion and it's managed by Zion Solutions. It was a two-unit facility, as you can see here. And now it's basically going through the final

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status surveys.

Of course, the dry fuel storage is still there. I think there was one at Humboldt too, I just didn't point it out in the picture. But we expect the final inspections to be done this fall also, at Zion.

And La Crosse, same similar situation. Dairyland Power transferred the license to Energy Solutions, or La Crosse Solutions, to complete the decommissioning.

This is actually the basement of the containment building. And then you can see here they're finishing the remediation and cleanup of the site. And we expect also to be doing final status surveys and confirmatory surveys there this year.

So, in all, we expect those four plants to terminate their licenses in 2020. So, we will have 14 power reactors. Twice as many have been done worldwide, as far as decommissioning experience.

Asset sale and license transfers, obviously Vermont was completed last January and North Star is doing some, started on the decommissioning there. We were there this past week associated with a NEMA meeting and they're making good progress.

Pilgrim was just transferred this month, which created, I'll say some excitement at the NEMA

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meeting we held last week.

And of course, Oyster Creek was done in July. And then you had the plants that are on schedule.

Or announce to be. Have their sale on license transferred.

The decommissioning is going to start at Savannah very soon. It's been transferred up to Philadelphia to do some prep work.

San Onofre we expect to get into significant decommissioning activities once they complete the fuel moves.

The same thing with Fort Calhoun. They're in the process, I believe, of negotiating a contract with Energy Solutions to get that facility going.

And Crystal River announced, we have an application to transfer, temporary transfer of the license to decommission the plant to Advance Decommissioning Partner, Accelerated Decommissioning Partners, which is North Star in Orano.

But the land will be returned to the site.

However, ADP will continue to manage the spent fuel facility until it's transferred.

Future shutdowns, well, the good news is five plants have been found to be economically viable and will continue to operate, at least for the

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foreseeable future.

Three Mile Island is shutting down this Friday, September 20th, I believe, as opposed to making it to the end of the month. And then we have these plants scheduled to shut down or announced that they are shutting down.

It may be the states will come to rescue a few of those, and we'll see.

Public meetings, we have, we participate in a number of public meetings. These are the typical ones we have been doing over the last few years.

We've done a lot of briefings with the Congress over these issues. Met with the staff in both the House and the Senate.

We've done congressional briefings in town hall meetings. And continue to interface with Native American tribes, and also community advisory boards.

Which brings me to some of the comments we received from them. I've highlighted a lot of those.

Asset sale transfer applicants. There's a lot of concern about who's buying these plants and the use of the funds.

And of course, the economic loses in the community when the plant shuts down. And of course, emergency response reductions.

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And of course, the big issue is always the spent fuel. And we continue to hear the discussions about how we allow thin walled dry storage casks in the course of the future transportation.

Current issues at the NRC is we continue the demand of growing decommissioning program. We continue to right size the NRC. But we also have an aging workforce in consolidating the org, we consolidate some organizations at headquarters in the regions.

We've been challenged to be more innovative, become more efficient and become more risk informed in our decision-making process.

Current issues also are the nuclear energy, Nuclear Energy Innovation and Modernization Act. We are in the process of conducting our public meetings.

Six have been completed and we still have five to go.

So, we're going to be up in the mid-Atlantic and the mid-West soon and then down to Florida.

We are required by the Congress to provide a best practices report on citizen advisory boards or community advisory boards by next July.

So, we continue to manage the transitioning of these plants that are shutting down with our counterparts with NRR. And of course, continue to

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attend, have public meetings and listen to concerns.

As far as the big other issues are, right now as we are looking at GE exemption request to exceed 60 years. And also talking with Naval Reactors.

Like I said, we had this request in from GE Vallecitos. We're expecting to have a commission paper on what we've concluded going up to the Commission this fall. They're actually, their 60 years would be up at 2025.

And this is the DWR. You can see how it's partially decommissioned. And it has some issues structurally, we think, and so they're evaluating those.

The other potential new work is with the Naval Reactors. We've been working with them over the surface ship support barge, which is the ship on the left. That was a refueling, it's basically a floating refueling spent fuel pool. And so, we are working with them on an MOU.

We also worked with them on the notational framework, meeting they held. And of course, the solicitation of interest meeting. And so, we are on the process of working with them on the MOU.

Of course, the big prize is all the safety, all the decommissioning ships, nuclear ships, after

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the SSB, if we're successful with that in our relationship with Naval Reactors, the Enterprise will be the next one that is under consideration.

So, one of the things we look at, with all the decommissionings, especially with the new licensees, are they compliance driven, do they have the appropriate safety culture. We're really concerned about near misses and preventable safety accidents.

I do want to reiterate that the license termination plan is a license amendment, it's a compliance document. It's not something that you think you might want to think about doing but it's a compliance actually amended to the license.

And of course, we expect people to continue to follow NRC guidance, which would include MARSSIM.

But we do entertain better ways to do it.

And seriously, I didn't highlight this one, but are there enough qualified people to do these decommissionings?

Part of the new business model is they retain most of the plant staff, which is good for the near-term, but we look at the overall potential, we may have a real issue here.

With Three Mile Island shutting down, there

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will be 23 power reactors in decommissioning. Thirteen of those are in active decommissioning right now. Ten are in SAFSTOR. We expect to terminate Humboldt Bay, La Crosse and design units in the coming year.

We're down to only three research reactors in decommissioning. And two of them we expect the licenses to be terminated at General Atomic's next year. We just did final surveys with Region IV there.

And the material side of the house has shrunk to only four. And then of course there is ongoing work with the long-term monitoring of the uranium sites.

And of course, with Wyoming becoming an agreement state, we're down to only one operating in-situ uranium facility, recovery facility, under NRC's jurisdiction.

So with that, I'll turn it back over to John.

(Applause.)

MR. MCKIRGAN: Thank you, Bruce. So our next speaker is Rod McCullum. Many of you know Rod. Rod has been working regulatory issues at NEI since 1988. Thirty years' experience in nuclear engineering, licensing, management, regulatory policy.

Currently at NEI he leads the industry

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efforts to reduce business risks associated with used nuclear fuel management, commercial nuclear power plant decommissioning and emergent material degradation issues by directing broad scope, technical and regulatory programs.

He's held prior positions in government with Department of Energy and industry. He has a bachelor of science degree in nuclear engineering and an MBA. So, please welcome Rob McCullum.

(Applause.)

MR. MCCULLUM: Thank you, John. And I really liked what you had to say at the outset of this session here about all the one-on-one conversations we have and then we have the opportunity to have more efficient conversations when we can talk with a larger audience here.

So certainly I'm hoping for questions. But I'll also point out that since my talk is not efficient, I now have an efficient opportunity to talk about efficiency.

And I think this conference, as Ray Lorson mentioned in his remarks, has been useful in improving the efficiency of NRC's regulatory processes. So, what we have here is a group of people that, I see a lot of you here and I certainly know many of you, we're

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going to get a wide range of industry, NRC and stakeholder perspectives.

I know in terms of improving our process, who here thinks that the dry storage regulatory process is perfect and doesn't need any improvements whatsoever? I didn't think so.

So we do have more work to do. And I think this is a great opportunity, so I really thank NRC for that opportunity.

I will point out that this is the second time this year that I have driven into this part of Pennsylvania to give a presentation. The first time was this spring when I went up to Harrisburg to talk to a legislature committee as part of our effort to save the Three Mile Island Plant. To get them to take action to help us save the Three Mile Island Plant.

As has already been noted, Three Mile Island is shutting down next week, so I will try to do better this time.

(Laughter.)

MR. MCCULLUM: You know, when it comes to the nexus between efficiency and safety, this is something we're very familiar with in the nuclear industry. And I think something we have achieved, a lot of success.

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What this graph tells us here is that we had our most successful year as an industry. Last year the U.S. commercial nuclear industry put electrons on the grid, with only 98 reactors, then we ever did at any other time in history. And we had as many as 104 up at one time.

Now, you don't get there without being very good at safety. There is a whole other presentation about reactor safety and all the underlying metrics.

We say our safest plants are our most profitable plants. Certainly, if you have safety problems, you have regulatory problems and those slow you down. Well, we are not being slowed down.

And now, when you have regulatory problems that tie to safety problems, that's the kind of discussions we need to have here about improving our framework. So, this is very good news.

We had our best year as an industry ever last year. And again, there is a lot behind this in the reactor world. A lot of work to still do there. That's the good news.

And we've done this, the underling things that have allowed us to drive down cost 25 percent because the reason Three Mile Island was threatened is because we're in very competitive industry markets

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right now. Gas is very cheap, wind and solar have become very prevalent.

So, the good news is, we've kept many of these plants operating by driving down the costs. This goes all the way to the improve tech spec initiatives of the '90s and delivering the nuclear promise initiative today.

Twenty-five percent reduction in operating costs for the fleet is very significant. Unfortunately, I can tell you it's nowhere near enough.

Survival for our industry lies down around the \$25 megawatt range and lower. So you see, here we're getting to \$30 a megawatt. We've still got a long way to go.

I mean, that's good news for the consumers.

I mean, you look at the revolution of transportation that's made, is able to get all over across the country except across the Delaware River, I think George Washington probably did that faster than you did.

(Laughter.)

MR. MCCULLUM: And the revolution, all the computers and electronics.

Well, we're having a revolution in energy too, and that's really good for the consumers. And the reason why nuclear needs to be part of that, the

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reason why efficiency is very important in the nexus between efficiency and safety, being safe efficiently keeps us competitive, it keeps us in the game.

It is because of this. This is the, probably the biggest safety concern of all in the room.

Now, I'm going to start out with my picture here. And this is one of the few times I'm showing a picture in the presentation where I didn't just steal it off the internet, I actually took this picture myself.

And I was getting on the metro, this is right outside the escalator of the Metro Center Metro Station D.C., and I typically, when I walk around D.C. I avoid trying to get engaged with people dressed as sharks.

(Laughter.)

MR. MCCULLUM: So I had skirted my way around these two people dressed as sharks in front of the shark poster with, actually one foot on the escalator I noticed that their message these sharks had was about climate change, about increased Co2. Something that we combat with nuclear energy.

So I quickly took a picture before the escalator went down too far so when I got on the train I could read what their message was. And as you can

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see there, their message is, more Co2 could lead to increased shark bites, keep the sharks at bay, take metro.

Now, that is a shameless ploy, metro. The D.C. Metro, for those of you who don't know, has had real safety issues. Serious safety issues. They've also had reliability issues.

Again, as I said, there is that nexus between efficiency and safety. The trains don't run safely, they don't run on time. And because of that ridership, has really dropped.

So they're so desperate to increase the ridership. And they've improved. Metro has gotten safer, it has gotten more efficient.

But what they're saying is, get out of your car and take the metro or else sharks will eat you.

(Laughter.)

MR. MCCULLUM: Now, that is a shameless, shameless point. And I would never resort to shark imagery to make a point like that.

(Laughter.)

MR. MCCULLUM: But, the most significant safety issue still is, when you look at 55 percent of our emissions free power in this country is nuclear power. When you look at that social cost of carbon,

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what is that?

Carbon and the other pollutants. That's all the, that includes all the medical expenses and funeral expenses for people who were legitimately made sick by air pollution.

I chose to get into nuclear engineering back when I was concerned about air pollution, before I knew we would be drowning polar bears with this thing that didn't exist, because you can tell I'm kind of old. This was a long time ago, before climate change was even a thing.

When you look at that \$28 billion a year social cost of carbon. I live in Annapolis, Maryland, the social cost of carbon there includes shoring up city dock because the Chesapeake Bay is riding on us.

This is really a big safety issue, and this is why we need to be more efficient. Fortunately, well, before I get to that I, we have an opportunity here.

This is, and I said this, and you probably could all say it, I could just state, what is the thing Rod always says, and well, dry cask storage has gone from an unattended solution to an unexpected problem to one of the great industrial success stories of our time.

When you look at this, we have loaded over

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3,000 casks safely. Some of them in service over 30 years. We've got a significant portion of the operating fleet under renewal. I encountered one of you walking in here and you were looking at a renewal application as we speak.

So, we're managing a tremendous amount of material and a tremendous amount of systems and we're going to be managing it for a long time.

Just last week Congress shut down the Yucca Mountain project again, refused to fund it. But Congress did, both the House and the Senate agree, we should have interim storage. So you'll see those two stars on the map there, those are the two proposed interim storage.

So now you're talking about maintaining all this stuff, doing aging management on all this stuff, putting it in transportation overpacks and shipping it to the interim storage sites and then doing more of that out there.

In order for this to be successful, for these 3,000 casks and growing by 200 or more, actually, it's going by a lot more than 200 a year because as these sites shutdown, they get everything into dry storage faster.

So when you look at this growing inventory

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of casks, this large inventory of cask, the things we are going to be doing with these casks, if we cannot manage them efficiency, boy, that's going to just make it harder. And that's not going to be good for safety.

We really, if the licensing paperwork associated with all of this is more complicated than it needs to be to ensure safety, that is in fact counter to safety. So, efficiency, it will be vital to our ability to effectively manage all of this.

And we've done so well so far because we have been improving and we will continue to do so. But fortunately, I know Ray Lorson also referred to the principles of good regulation.

Efficiently is one of those. It talks about what the consumers and the taxpayers and the licensees are entitled to.

And what they are entitled to is regulatory activities consistent with the level of risk reduction.

Now, does anybody think here that, and this is a more dangerous question so I'm ready for a hand or two, does anybody think here that everything we do in regulatory space in the dry storage world is truly consistent with the risk reduction we're getting out of it?

There's an opportunity for efficiency there. But that's the goal. That's a principle that's

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been, the NRC has had this, along with the openness principle and the principles of good regulation now since the '90s.

So this is what has stood the test of time.

And as I showed you from, if I were to give, instead of a spent fuel presentation and reactor presentation, we have made great strides in the reactor side.

And we are, as Ray Lorson alluded to in his opening remarks, we are making also strides here in the dry storage regulatory framework, and we need to. Again, when you look at all the inventory that's out there and what we're doing with it.

But this is where we are today. This is not efficient. Now, there's a lot of words on the screen here so I'll give you time to ready those. And I'm sure the presentations they already have a ML-number, but 74 amendments to these CoCs.

This has led to a situation where you have pads, where you have identical casks sitting right next to each other and they have between two and seven different licensing basis. That's paperwork that's more complex than it needs to be. How do we get there, how can we prevent from staying there and getting further into that as we load more and more casks and more and more systems.

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Well, fortunately, well, not fortunately, I keep getting ahead of myself. This slide has a red question mark for a reason and it has a red disclaimer.

And I'm asking for feedback on this.

I've already gotten a little feedback with these numbers, so what is the cost of all this inefficiency, these 74 amendments that take two years or more to create all these different licensing basis.

Well, if you assume, and Bruce talked about the decommissioning amendments, we're trying to get a rulemaking to make them unnecessary, that's an efficiency.

You know, this has been the cost of the decommissioning licensing actions, between \$1.75 and \$4.5 million each. Fifty-five percent is the NRC review cost.

So, if you assume that a CoC amendment cost about the same as a decommissioning license action, which again, that may or may not be a good assumption, I'm asking for feedback. I expect to hear from you throughout this conference on that.

But I've heard from a few who say I'm not far off here. Certainly the ones that are unnecessary, the ones that don't link to safety are at the lower end of that. I don't want to lessen the fact that

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sometimes we do make changes and improvements and innovations that are so significant that yes, our regulatory needs to look at it, there needs to be licensing paperwork.

Okay. But that's not always the case. The ones, so I would say at the lower end of that range I would say, I think I'm, and you guys can tell me I'm wrong, but I think I'm on not too shaky ground yet.

And what we want to do is communicate this in writing to NRC, so that's why I'm putting it up here on a slide so that I can get feedback and we can sharpen this a little bit.

But we're taking about \$100 million of unnecessary effort in the dry storage world. Now, you might say, well, okay, you guys just pass those costs onto the taxpayers. Which we do.

Our lawyers have never lost a lawsuit against DOE for not taking our fuel, but that's not the point. First of all, I think everybody in here is probably a taxpayer so you should care about the \$2 million a day that you're losing for the cost of dry storage. Every day, the taxpayers lose \$2 million to our lawyers.

But, that's not the point. You guys in this room, you are the talent. And you are all highly

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educated and you all work very hard, and there is only so many of you in the world.

There is a limited supply of resources, and as the industry shrinks and NRC shrinks with us, Congress, also in addition to not funding Yucca Mountain, once again, continued the downward trend in, or at least the Senate, which the House is consistent so now they got to conference, but in NRC funding.

So, the point here is, how do we use our resources on the things that really are important to safety. As I see the time reminder is coming up. I thank Ray Lorson for making my job easier.

He talked about the first three things on this list. And these are things that a lot of the discussion came out of this conference.

You know, of the 72.48 process improvements, the aging management programs we put in place. And this graded approach to CoC that's close to closure. And I'm putting numbers on things here.

We're going to get 34 percent of the information out of the CoC. So, 34 percent of that information wasn't necessary for safety.

Now, how much will that reduce the licensing traffic, probably more than that. Because one of the things, 90 percent of the information came

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out of the fuel qualification table.

What's been driving a lot of the recent amendments is, every time we put a different population of fuel in a cask we got to revise the fuel qualification table. Now, we're still within the safety envelope.

And in this amendment, in this pilot, we're putting that envelope into the license instead of all the detailed information. So that's going to be a really significant reduction in the licensing paperwork traffic. But again, we have more work to do.

The next frontier on this, and maybe the biggest frontier, is better understanding performance margin. And what do I mean by that, we are working on a white paper, and Bob Quinn is going to talk about it later in this conference.

Mark DePauw highlight the importance of margin. It means, when you know you have a lot of safety margin there the review is not the same. The level review are not the same.

How much time do we spend in these multi-year license reviews with information that's not always important to safety?

How much time do we spend discussing the differences between NRC's model and industry's model?

But if you know a lot of margins there,

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all you have to do is confirm the credible model was used. That's what Mark DePauw said at the beginning of this year.

And also, the cliff edge is not there. The regulations already had some margin built in so we got to consider that. Yes, we can't intentionally give away all of our margin, I get that.

But recognizing the margin should simplify it. So, those 74 amendments that took years to review, maybe there is certainly a lot less than that in an amendment traffic and it's taking less time to review, now look at all that inventory, those 3,000 and growing systems. Now we really are managing them more efficiently, which means we're managing them safer.

So, this is where it comes in. This gets back to my unattended solution to an unexpected problem.

A few years ago, a few, I've gotten old in this job, but when I started doing this we didn't have a mature industry and we didn't have that much of a performance record on dry storage. We do now.

Dry storage is a very mature industry with a very strong performance record. But we still don't understand the safety margin that exists out there. We're still not factoring, as Mark DePauw suggested, factoring that safety margin into the way we do

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licensing.

So, once we get there, if we can focus on the safety significance, the graded approach, we've got a pilot, so that's good. We've got a good start there.

Performance based inspection, I think we're going to hear more about that. I know NRC is working on that, that's great news.

But this we don't do well, dispositioning low safety significant issues quickly. Low safety significant or no safety significant issues take up a lot of the resources that we currently need to use more efficiently.

So, this is why I mentioned, industry is writing a white paper to communicate to NRC some very specific recommendations for what we can do about understanding margin better and then acting based on our understanding of margin.

To me it's the biggest remaining piece of the puzzle. To make this function the way a mature industry with an established improvement track record should function as opposed to like a science project.

So, Bob Quinn, in Track 5 tomorrow afternoon, will be going through the recommendations.

Now, the preliminary recommendations. Our paper is

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not finished yet, that's why there's efficient communication talked about is so important.

I expect we'll get at least more than one idea for other recommendations. And we might get some feedback on the recommendations Bob presents.

But I don't know if he's an Eskimo, but these recommendations are going to be worth paying attention to. And you all jump for joy.

And I promised I wouldn't use shark imagery but darn it, there he is back again. Because now he is not all mad about climate change, he's jumping for joy out of the water. So, looking forward to Bob's talk, so thank you very much.

(Applause.)

MR. MCKIRGAN: Thank you, Rod. Interesting, and I'll look forward to Bob Quinn's talk tomorrow as well.

So, batting cleanup for us is John Wise.

John is a senior materials engineering at the NRC. He is responsible for the technical review of applications for the storage and transportation of spent fuel and radioactive material.

Prior to joining the NRC, John held metallurgical engineering positions in the steel industry and in failure analysis consulting companies.

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He is a graduate of Michigan Tech and Northwestern University, so please welcome John Wise.

(Applause.)

MR. WISE: Thank you. I had the perfect lead-in planned. John was going to mention my alma mater, one of my alma maters, Northwestern University, and I was going to mention that Northwestern University's quarterback started for the New York Jets last night on Monday Night Football.

But if anybody, if any of you saw that game it was not pretty. If my time up here goes anything like Trevor Siemian's Mike Layton is going to be carrying me off the floor today.

What I am going to talk about today is how things have been going and from the licensing standpoint of renewals.

I think if you were to ask people involved in the renewal of licenses for reactors, whether it's the NRC personnel or the applicants, I think they would say that that process is stable, predictable.

There is good guidance and there is good consistency in how the NRC staff reviews applications.

I think if you would have asked maybe four or five years ago could you say the same for renewals of storage system licenses and certificates? You'd

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probably get a little less certainty of whether that's really the case.

We put a lot of effort, we have, the NRC, the industry, a lot of effort in making the license renewal process for storage systems stable and predictable, and that's what I am going to try to show you today and give you a little bit of an update on where stand because we're not done, but we're getting there.

First of all, just a primer for those of you who haven't sat through one of our presentations several times, the renewal applications are all about identifying if there are any long-term aging effects that could challenge the integrity of a spent fuel storage system and doing something about it, and that might mean updating an analysis that you had that was time based, like maybe the original license was based on a fatigue analysis or a corrosion rate analysis.

Well you go back and revisit that and say is that still going to be good for the extended period.

Also, you may have to add additional monitoring inspection activities to ensure that any aging degradations that might exist won't compromise the intended functions of the storage systems.

And so as I show on this graphic the first

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term of storage that we approve or the first license that we approve from zero to 40 or up to 40 years, as materials engineers like myself and some of my colleagues we are looking at, okay, for the most part we're looking at can that material hold up for the life of that initial license, and we know that's probably going to involve some sort of maintenance on top of that, but that's kind of the focus, is the material appropriate.

But when we go into renewal space and we're really talking about extended storage periods then we got to start thinking about, okay, do we need to re-think that and add additional monitoring or inspection activities, in other words aging management to ensure the storage systems maintain safety.

I don't know if you any of you in the back of the room can see this very well, but you may have seen this graphic before. This is just a snapshot of where we stand right now.

It's the number of renewal applications versus year and we are, you know, right before that big peak, so we're in the thick of it.

Trojan, it was mentioned, got renewed in August and that came in in 2017. I believe this week Three Mile Island, Unit 2 Fuel in Idaho will be renewed,

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and we are in the thick of reviewing the applications for Humboldt Bay, Rancho Seco, the new ones that have come in, the HI-STAR 100.

So the message is the activity is increasing rapidly which makes it that much more important that we have a very stable, predictable review process.

And to that end we have been, "we," the NRC, as well as the industry, have responded with additional guidance to help this process out.

And I am not going to get into all of these, but I just want to give you a snapshot of, you know, what guidance documents are out there that help us, help applicants prepare renewal applications, help the NRC reviewing them.

The NRC has guidance documents. We rely to the extent we can, consensus codes and standards, like the ASME code or ACI, the concrete code, but, you know, NEI has their own guidance they have put out.

Everything depends upon research, so we have EPRI, we have our National Labs involved, and many of these people are here today and regularly participate in our meetings, and so I am just going to touch on just a couple of these to let you know what's been going on.

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First, from the NRC's standpoint you have already heard the introduction of the speakers talking about we have issued NUREG-2214, the Managing Aging Processes in Storage Report.

This is -- There is a similar report on the reactor side that we sort of patterned this after, which is can we generically assess what material degradation mechanisms are important for extended storage and come up with some examples of recommended or proposed aging management activities.

These are recommendations, they are not requirements. So there is something an applicant can point to if they wish or if they wish to take another route that's fine as well.

But this sort of framework has worked really well from the reactor side and I am already seeing it working very well on our side, too.

So even though the MAPS report has just come out a month or so ago applicants have been using the draft report as reference, we have seen that in some of the recent renewal applications.

And that has worked very well because if an applicant can come in and say, hey, we see what the NRC has for recommendations and for the most part we are going to follow those recommendations, maybe here

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or there we are going to take our route, that really increases the efficiency of the review.

It makes the applicant's lives easier, it makes the NRC's lives easier as well. Also, and I am sure NEI is interested in this, is while the NRC has issued guidance for what we expect in a renewal application what we expect for aging management, NEI has issued their own guidance to the industry on essentially how do you prepare a renewal application.

And there was a couple really nice things in that NEI guidance that I am going to point out. First of all is the idea that you periodically stop and assess whether or not your aging management programs are working well.

And I'll talk a little bit about that in a little bit, but it's based upon, you know, stepping back, looking at what is happening at your plant and other plants, and so is what we are doing working. They call that the tollgate approach.

Another aspect is NEI kind of instigated development of a database through which the entire industry can share operating experience through an INPO database.

So INPO, as many of you know INPO has a database for reactors but there is a certain threshold

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for operating experience is ever going to make into that database, because they are trying to capture some fairly significant issues.

What's a little different from the spent fuel storage side is we had a desire to capture mundane operating experiences. If something is going well and nothing is happening to a material over a long-term period of storage we're interested in that.

We thought that was worthy of putting into a database. So I credit, you know, NEI and industry as a whole for putting these two aspects into their recommendations for what makes a good aging management approach.

We are in the thick of endorsement of this vehicle, so I don't have any updates to tell you right now other than we're in the process and we have some publicly available letters that we have sent back to NEI regarding the aspects of this guidance we like and a few that we have a little more hesitation for endorsing.

If you are interested in the gory details we can certainly talk a little bit offline. But I do want to just spend a second, because I did really like this aspect of the NEI guidance of performing periodic AMP effectiveness reviews, or Aging Management Program

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effectiveness reviews.

You stop periodically, whether it's every five years, every ten years, you look at what has been found at your site, you look at what's been found at other sites, you look at research that has been done, whether it's at a National Lab or EPRI's latest research, and you say is my program effective.

What is interesting about this is on the reactor side when they were, when the NRC had a lot of internal discussions of well what's the rule going to look like for reactors when it goes into that second renewal, or what's subsequent renewal, from 60 to 80 years, this idea of requiring periodic AMP effectiveness reviews came up in conversation.

Ultimately it wasn't pursued to actually amend the rule to include such a provision to make it a requirement, but it was something that we have always felt it was an important part of what makes a good aging management program and that's why I am just really happy to see that this proposal, this recommendation, from NEI, because I think it makes sense and it goes a long way in not only the NRC's perception of how things are going at plants, but also the public.

Now a couple of last slides, I just want to give you a sense of, some are lessons learned, where

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as you saw from that initial slide with the bar chart we are kind of in the thick of the renewals and we are kind of halfway across that chart even though we are approaching that big peak, and we have seen a lot of things.

I would argue the process is becoming more and more stable. There are still things that we are learning, and I think the applicants are learning, too, just, you know, how to apply the regulations, how to apply the guidance most effectively.

So I will just share a few of these with you. First of all, reference to the NUREG-2214, the MAPS report, I've already seen it's helping everybody out.

We see applications now coming in that says essentially, all right, for the most part we agree with these recommendations for which aging effects are important. End of story. And as reviewers that's great, that's how we envision this guidance being used.

We certainly validate that statement that, you know, that what is happening at a particular site is relevant to the guidance, but at the same time we don't need to spend a lot of time and we focus our activities on places where applicants are taking an alternative approach.

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Some cases, we've had a few questions here or there, nothing that we don't work through, but there is always a process of scoping in what part of your system needs to be in the discussion for renewal.

And so we've learned that we, you know, we occasionally go back and forth of making sure that, you know, we are always reverting to what's in the original license.

If it was an important to safety component in the original license then, you know, it has to be in discussion for license renewal.

Part of that, part of what we do as staff is we look at drawings just to make sure all the components are covered and we've already noticed that, and we didn't always appreciate this, that there is often two sets of drawings, there is the drawings that you see from a licensing standpoint in the safety analysis report and then there is drawings that are fabrication drawings with many more details.

In many cases when you are trying to parse out what components are in scope, what components do you need to manage for aging, sometimes you need those details in the fabrication drawings.

So that's just kind of a lessons learned we have tried to work with applicants to make sure we

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get the information we need.

Identification of aging effects, providing a technical basis for which aging effects are relevant to your system. So we've had some REIs when we were just trying to, again, understand why certain aging effects were deemed irrelevant and which ones weren't.

So we do have some back and forth with applicants about that and, again, the use of the MAPS report has really helped pare those questions down.

Another really important aspect of aging management programs is how are they actually described in the safety analysis report at the end of the day.

And so there is a level of detail, and, again, I kind of point people to the NEI document, NEI-1403, it doesn't go into great detail but it says, well, here are the kinds of things that are appropriate to put in the safety analysis report to describe your aging management programs, you know, things that you could say any person could reasonably expect to read that safety analysis report and more or less reconstruct the main elements of that program.

And, finally, there is always lots of discussions on time-limited aging analyses. It's part of the rule and there is always a discussion about what does that even really mean.

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As I said before in the simplest sense it's if your original design had a time-based calculation to define, to assess an aging effect you have to go back and revisit that calculation and determine whether or not that calculation was still valid.

Finally, we have been taking the time to perform inspections of licensees who are in their renewed storage period and under an NRC temporary instruction, the temporary instruction was written to provide the staff a vehicle for learning about how applicants or how licensees are implementing their aging management programs such that we can make an effective inspection procedure at the end of the day.

So this is a temporary vehicle to be used for a few years to inform the writing of an inspection procedure, and so we've been out at Prairie Island, Calvert Cliffs, Saucony, H.B. Robinson, there is one this week even.

And the kind of things we have learned is even the licensees are finding that sometimes they are, how do I say this, when we go onsite we say, okay, show us how you implemented your aging management program and in some cases it involves some work on the licensee's part because they know that while when they enacted an aging management program somebody went through the

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process of sort of checking off that each one of those activities did make themselves into a procedure somewhere.

But is that process very well documented?

So after the fact can somebody step up and say, hey, show me how you enacted this condition that says you visually inspect five years, where is that, do you have a trail that's easy to follow.

I think in some cases we found that was the case and some cases the trail is harder to follow, not that things weren't being done, but it was difficult from a tracking perspective.

And so I'll just move along quickly here because I am running a little long, but it's all about the details. Are all those little details in the aging management programs really getting into the procedures, and now and again sometimes we'll find details all through the cracks.

And so as I said before we are taking what we have learned and I think the final temporary inspection is being done this week to inform the creation of an inspection procedure coming up very soon which will be used going forward and is kind of going to be the subject of what was mentioned earlier about, you know, there is going to be a review of the inspection

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process and how the aging management program inspections, how are they going to fit into that process is one of the topics. And that's it. Thank you very much.

(Applause.)

MR. MCKIRGAN: Thank you, John. We'll go to Q&A and I'll ask my facilitator to help us but we'll start with -- Oh, in the back, Carla.

MS. ROQUE-CRUZ: And I just want to say please remember to use the mics and speak clearly. I can move the mic around also if you would like.

MS. OLSON: Hello. Cheryl Olson, Dairyland Power Cooperative. My question is for Bruce Watkins. It has to do with the decommissioning rulemaking which has a SOC component and I saw the timeline on when we think the new rule is coming out.

There was an opportunity for public comment and I know comments were sent in. I was wondering when we would within that timeline see a response to the public comment? Thank you.

MR. WATSON: Good question. I really don't know. Yes, those were all incorporated I believe into the regulatory basis that was put into the proposed rule that went to the Commission.

So I don't know that we specifically

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respond to every individual, but we take all the comments into consideration in developing the regulatory basis.

MS. OLSON: Yes. I guess my concern with that is there was some draft guidance documents that came out after the rule, the opportunities to submit comments for the rule, and the draft guidance at least for the areas that I was particularly interested in the comments that I had submitted through a number of different vehicles did not appear to be addressed in the guidance document and that makes me wonder if they were addressed in the rulemaking, specifically emergency preparedness, alignment between Part 50, Appendix E, and Part 72 with respect to alerts and UE.

But that's just one example. There was a number of things that I really had my attention to and the draft guidance documents didn't really show that the comments had been addressed.

MR. WATSON: Thank you.

MR. MCKIRGAN: Brian, in the back.

MR. GUTHERMAN: Thank you. Brian Gutherman. Is this on?

MALE VOICE: Yes. Go ahead.

MR. GUTHERMAN: I actually have to questions for Chris and if there is somebody behind

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me I'll split them up.

Chris, as you astutely alluded to in your presentation there is 3000 plus casks and canisters out there in storage, many of which have 72.48 changes applied to them.

Is the NRC considering maybe a narrowly tailored version of 72.48 for spent fuel packages so we could use it in Part 71 rather than cycling the Part 71 CoC amendment process over and over for modest changes?

MR. ALLEN: I am not quite I sure I understood your question, Brian, or what you are trying to understand.

MR. GUTHERMAN: With all of the 72.48 changes that affect the in-service casks out there, over 3000 of them, is the NRC contemplating a version of that for Part 71 that's maybe narrowly tailored for spent fuel packages?

MR. ALLEN: You're referring to a similar regulation for Part 71 of, a regulation in Part 71 similar to the 72.48 regulation?

MR. GUTHERMAN: Yes, but really narrow for spent fuel, because I understand 71's package is for all kinds of radioactive material.

MR. ALLEN: I am not aware of anything that

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is being planned as far as -- I am not aware of anything that is being planned and I am especially not aware of anything that is being planned for the proposed rulemaking that we are going through right now.

MR. GUTHERMAN: Okay. Thank you.

MR. MCKIRGAN: So --

MR. ALLEN: Go ahead, John.

MR. MCKIRGAN: If I could, John McKirgan for those on the phone. So, thanks. Chris is right, there is certainly nothing planned.

But, Brian, that is an intriguing concept that has been mentioned in the past. I think what you are talking about is essentially a petition for rulemaking for a narrowly focused change control provision in Part 71.

I don't want to put words in your mouth, but I think I just did. And so, you know, the agency is looking for transformative ideas and I think that is one.

It does sound like a petition for a rulemaking to me, although we could think about if there were any creative ways we could do that through guidance.

I know as we put rulemakings before the Commission we are often asked does this require a

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rulemaking, can it be done by guidance, or are there other provisions that the staff can do to pursue those, and so certainly that is one that might merit further discussion.

As Chris alluded to in his presentation, and as I think you are seeing, there are a lot of 72.48s out there and somebody is going to have to go through that inventory to figure out what, if any, changes need to be made in the CoCs for the transportation packages, and that is a chunk of work for industry.

We are open, Brian, if you've got some good ideas I'd love to hear them.

MR. GUTHERMAN: Oh, I've got ideas, yes.

I will say that industry did try that. It was either industry or it was part of a rulemaking for some reason around the turn of the century I think and it was denied by the Commission. I would have to refresh my memory on what the reasons were.

MR. MCKIRGAN: Go ahead, Meraj.

MR. RAHIMI: I think, Brian, you are right.

I mean a few years ago, actually many years ago, I think it was in the early 2000s that we looked at the, you know, 71.48, similar to that.

We went through an exercise in terms of the flexibility and how much the transport certificate,

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what kind of flexibility it provides, and I think we had a public meeting and we went through a list of -- I mean that's why, for example, the certificate, you know, we don't require a fabrication drawing.

We tell the applicant, you know, put the licensing drawing, don't put details, that will give you flexibility, you know, to change things, you know, brand name of the paint and, you know, you want to -- historically there were that type of information that the applicant had to come in with an amendment.

So we did go through, actually a meeting, a discussion, that there is flexibility, you know, to the applicant in terms of it depends, you know, how we write the certificate.

MR. MUSSATTI: Okay. Please remember that we are trying to get a clean transcript here which means you should state your name and your affiliation when you speak each time.

MR. MCKIRGAN: For the record that Meraj Rahimi, Chief of the Renewal and Materials Branch.

MS. ROQUE-CRUZ: We will go to Brian and then we'll go to the phones.

MR. GUTHERMAN: Thank you. Brian Gutherman with a second question again for Chris. You talked about 71.55(b) in your presentation and as I

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understand it that's not really a design condition associated with normal condition of transportation, it's just a requirement you got to put fresh water in the fuel cavity.

And in 71.55(c) it's only allowed to use design features on an exception basis right now, is there any thought for broadening that to more of a design basis case where a CoC holder could come in and based on design features not have to put fresh water in the cavity and then do the criticality analysis?

MR. ALLEN: I am not aware of anything but I could look into that and see if I could get a little better answer for you.

MR. GUTHERMAN: Okay. Again, I know Industry has tried a couple times on that and was unsuccessful getting it on a broader basis than the exception basis. So, okay, thank you.

MS. ROQUE-CRUZ: Let's go to the phones.

THE OPERATOR: As a reminder if you would like to ask a question please press star, the number one from your phone, un-mute your line, and speak your name clearly when prompted.

Our first question comes from Donna Gilmore. Your line is open.

MS. GILMORE: Okay. Can you hear me okay?

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MR. MCKIRGAN: Yes, Donna. Please go ahead.

MS. GILMORE: Okay, thank you. Okay, one of the things I haven't seen addressed anywhere is well specifically with the Holtec systems, both the below ground systems and above ground cask system.

They used an improvised loading system that results in metal to metal scraping or gouging of the above ground system, its vertical canister channel guides.

Let me say that again, MPC channel guides, vertical in the above ground system and the guide ring in the below ground system. These are embedding, as the NRC has stated in meetings this embeds galvanic corrosion on the stainless steel.

I haven't seen that issue addressed so I am wondering if that has been addressed or being addressed and where I can find that information and if there is anything being done about the fact that this is happening to all these canisters.

I don't know if this applies to the NAC.

I don't know what their downloading system -- I know it might occasionally happen with the horizontals, but they at least run on a channel.

The other thing is that we have two chief

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nuclear officers at San Onofre that basically admitted they cannot meet Condition 8 of their license to be able to unload the canisters back in the pool, which is in their current license, and I don't see that addressed.

And I don't see the issue, the NRC continued storage decision says that they eventually are going to need a hot cell to replace canisters yet there are none in the country designed and large enough to do this right now and I don't see any plans that deal with that issue.

And then regarding the comment by NEI about having almost 30 years with no problems, we still cannot inspect the microscopic cracks on the outside or any degradation on the inside, so we're working blind, and the only thing I've seen the NRC do on this issue is to eliminate the requirement to report radiation levels coming out of the outward air vents in the NUHOMS canisters.

So that to me just it's like an attempt to just not tell us what the radiation levels are. So I would like feedback on those items. Thank you.

MR. MCKIRGAN: So, Ms. Gilmore, thank you, I appreciate that. I think you asked a number of questions there and forgive me if I don't capture them

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all correctly.

Going back to your first comment, I think you talked about wear marks and the potential for galvanic corrosion.

I can't speak specifically to the issues that you are referring to, but I will say that I know the NRC has performed inspections of the issues at SONGS.

I think those inspection reports are publicly available and I think we can certainly make those available to you. I will also say --

MS. GILMORE: But it's not in those reports. It's not in the final, they didn't address it --

(Simultaneous speaking.)

MR. MCKIRGAN: Yes, and that's exactly where I was going next is I don't recall if those reports specifically spoke to the galvanic issue there.

I do know that it is part of our requirements that galvanic corrosion potential be considered and those are generally evaluated during the licensing phase of new casks, and so that is something that we can look at.

I would ask you to go back and look at the original licensing basis for those casks. I think in

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that case you were referring to the UMAX.

MS. GILMORE: Yes. I looked at the above ground ones and there is also a similar issue, a different kind of guide, but you're going to have scraping, yes, and I don't see that addressed anywhere.

MR. MCKIRGAN: Sure, yes. Thank you. Thank you. And so then I would also offer a generic comment about the requirements to consider galvanic corrosion mechanisms applies to all of our designs, and that would include the NAC canisters that are also in place there at San Onofre.

That would go back to the licensing basis for those canisters. As you heard from John Wise's discussion as we go into renewal certainly those aging management mechanisms are also revisited and that is part of the renewal process.

And so there is another opportunity if there were time limited analyses that were associated with those corrosion mechanisms that they would be revisited there.

And you'll have to, I'll ask your forgiveness, I think you had at least one or two other questions in there that I have now forgotten. If you could hit me with one and then maybe I'll --

MS. GILMORE: Yes. The Condition 8 where

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they can't unload the canisters back in the pool. They are loading them too hot. They'll end up with steam flashes.

You know, 200 to 300 degrees Celsius trying to go back into pool water they don't have any way to do that, and they admitted that numerous times.

MR. MCKIRGAN: So thank you for that, Ms. Gilmore. I think this is a question that we received.

I think we do have an answer for this and we'll get that to you and we'll get that on our public webpage.

But if I could just ask one clarification of you, when you speak of Condition 8 are you talking specifically of the UMAX Amendment 2 certificate or what condition is it that you are referring to?

MS. GILMORE: Well, okay, it basically -- Well Condition 8 of a CoC, I think it applies to numerous licenses, not just to UMAX. It's the condition where they are required to be able to unload the canister, put fuel back into the pool after, you know, after dry storage.

So they have a way to back out if they need to.

MR. MCKIRGAN: Okay. So thank you for that clarity. I think we've got an answer for that.

We'll get that back to you. I don't have it in front

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of me.

MS. GILMORE: And they ---

(Simultaneous speaking.)

MR. MCKIRGAN: But if I could, I'm sorry, I'm going to ask our facilitator, we're going to try to go back and get some more questions and if there is time we'll come back to you, Ms. Gilmore.

MS. GILMORE: Okay.

MS. ROQUE-CRUZ: Yes. And can we, just before I forget, can we see if we have any in the Skype.

MALE VOICE: No.

MS. ROQUE-CRUZ: No, okay. Any other questions in the -- Here, we have one.

MR. WALDROP: Keith Waldrop with EPRI. So my question is for Chris. Chris, you discussed about looking about higher enrichment, higher burnup and you alluded to going and doing some additional verification of high burnup source term and isotopics for criticality.

Could you expand on that? I am guessing maybe that is related to data you are hoping to gather from the North Anna sister rods perhaps?

MR. ALLEN: Excuse me. Actually when in developing that slide it was more we were, the thought process was more that industry would need to find that

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information is not as readily available and, therefore, industry may have trouble finding such, you know, finding such data. That was more the thought process.

So it wasn't necessarily that the NRC was planning on looking for more information, it was more that this is a technical issue that would have to be surmounted and there is not as much information available.

That was more the process, the thought, as opposed to the NRC is going to get it.

MR. WALDROP: All right.

MS. WILSON: Hey, Chris, this is Veronica Wilson with the NRC. I am just going to quickly answer and say yes, we are looking into the data from the sister rod program for high burnup.

MR. MCKIRGAN: And John McKirgan also for the NRC. I will add on to Veronica's comments in that so these items are associated with the industry's effort for accident-tolerant fuels and extended burnups.

And so as we move into those new areas there is some additional data that the staff is looking for that would potentially create an efficiency rod in those reviews, right.

So if we get that data up front and get it all established and agreed upon then when those

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licensing actions come in we can do those reviews.

Essentially what Chris was referring to in transportation package CoC reviews to get higher burnup or higher enriched fuels and get those licensing actions done expeditiously.

(Off microphone comment.)

FEMALE VOICE: Yes.

MR. MCKIRGAN: I beg your pardon? Higher than -- So above 5 percent. I am going to let I think my colleague Zhian Li might have some thoughts to offer on that.

MR. LI: Yes. This is Zhian Li from NRC.

Just to follow up with the question, actually there is an active working group on that issue, the higher burnup accident tolerant fuel and the use of -- uranium, so this kind of thing.

We have a working group and there is a constant, you know, kind of meetings, so try to find what we know, what we do not know, and what additional information we need to gather. So if that answered a question.

MR. MCKIRGAN: And I'll put in a plug, I think there is a talk, Marilyn Diaz I think is going to talk further on that. The Agency is also developing a plan on ATF.

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I am confident industry also has plans and a program in place to further explore those.

MS. ROQUE-CRUZ: Before -- Can we please, I just want to remind you to please speak clearly, get close to the microphone so that we can really get and hear your question and for those answering the same.

We want to get that transcript so we want to be as clear as possible. Go ahead here in the room.

MR. PHEIL: My name is Ed Pheil from Elysium Industries. This a question for Rod. Do we have a ranking of what the requirements and rules are for cost and relative risk benefit that we can make judgements that are more beneficial or more important from either a safety or a cost basis to the nuclear industry?

And then the flip side of that is do we compare safety to the other alternative forms of energy which are much more dangerous than nuclear to use that a basis for increasing net public safety rather than driving nuclear safety very high and yet then increasing net public risk by maintaining other power systems?

MR. MCCULLUM: That's an excellent question, and let me get to the second part first. I think absolutely that one of the themes of my presentation, the reason the sharks were there, is that

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we do need to think that the ultimate safety consequence we really have here is climate change and climate change is affected by the energy choices we make.

Every time I read a report on climate change I find one word in it and that word is "surprise," as in the experts were surprised that something happened faster than the previous report had said it would happen.

So we do have to realize that nuclear power has an important safety benefit to the overall population. We have to realize that we do work very hard to make it safe and we do need to use our resources.

So getting to the first part of your question, NRC does have a process for doing cost benefit requirements, cost benefit studies with new requirements. The CRGR Committee, whatever that is --

MR. WATSON: Generic.

MR. MCCULLUM: Yes, the generic, the committee that does those. Yes, the Committee on Generic Requirements, thank you, Bruce. And that process has recently been reinvigorated.

But that's looking at new things coming down the pike. What I am trying to do by bringing in the cost numbers I have shared with you today, and I

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don't want to create the illusion that this is all about saving money, this is about making what we do viable by using our resources where they really need to be used is I'm trying to look backwards into something that just evolved, you know.

So there is a process that we had gotten away from. I think the CRGR had gone dormant for a number of years but we have reinvigorated that now.

NRC on the reactor side is doing a lot more in cost benefit space, so, yes, that exists. What I am asking is to look backward at this thing.

You know, remember we didn't anticipate dry storage. Part 72 follows Part 71 because we thought we were just going to ship before we store it in dry storage, but there was nowhere to ship so we came up with Part 72.

Well we started out with an over-the-road mentality and we came up with something that is inefficient inside a reactor fence, a secured and gated fence, and we've learned a lot more about how safe these systems really are.

So, you know, what I am hoping to do is to do just what you suggested and I am hoping our White Paper will get us there and we're going to make some very specific recommendations to NRC.

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We are going to ask NRC for what they think about these recommendations. You know, we're not going to wait years for an endorsement process.

MR. PHEIL: That's what I was talking about, looking backward to existing --

(Simultaneous speaking.)

MR. MCCULLUM: Yes, that's exactly what this White Paper is trying to get at. That's exactly what my thesis was.

I will say, and, you know, I use cost numbers from decommissioning licensing actions instead of the actual cost numbers because those are proprietary and if I were to ask all three of my competing vendors for their proprietary cost information I would have committed anti-trust.

I would like to stay out of jail. But I am hoping that by sharing those publicly I can get some reaction that can tell me where those sit and then we can look backwards and we can start to quantify what we are gaining, example, the pilot that takes all that overly-detailed information out.

We can start to see what we're really gaining in terms of resource savings. And it all goes back to your other point, which is the biggest safety issue of all is the clean energy issue and what not

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having clean energy does to our society.

MS. ROQUE-CRUZ: And I want to go back very quickly because we have some feedback here from the Skype.

This is regarding the question asked by Keith Waldrop and we have Ricardo Torres from the NRC and he is saying the NRC is initially looking at doing non-destructive assay on the HBUSNF, spent nuclear fuel specimens tested under the Oak Ridge CIRFT Research Program.

And in case you don't know what CIRFT is, like I did, C-I-R-F-T, it's Cyclic Integrated Reversible Fatigue Tester. So I just wanted to say that.

Okay, so any other questions here in the room? If not, any questions from other members from the public on the phone?

THE OPERATOR: Yes. We have a question from Marvin Lewis. Your line is open.

MR. LEWIS: I have to change my question slightly, but my point is very simple. My point is how are you really going to get any safety if you completely ignore the data that conflicts with your conclusions?

For instance, in San Onofre, SONGS, or

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Diablo Canyon the questions about chloride-induced stress corrosion cracking, mainly a question of moisture, humidity.

Well the NRC comes up with an answer that, oh, the humidity's too low for a problem like chloride-induced stress corrosion cracking. The problem is that there is fog there.

Fog is humidity coming out as droplets of water in the air. In order for that to happen the humidity has to be close to 100 or maybe a little supersaturated over 100.

Now again and again I see this, the data conflicts with the conclusions of the NRC. Three Mile Island Number 2, oh, it can have an accident, one in ten million, one in a hundred million per year it can have an accident. It did, March, what was it, 29th 1979?

I am pointing out again and again the data is different than the conclusions that the NRC comes to. Take a look at crane drops, crane drops when a cylinder is being loaded into an underground whatever and winds up hanging --

MR. MUSSATTI: Marvin?

MR. LEWIS: -- in the air.

MR. MUSSATTI: Marvin?

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MR. LEWIS: Again and again. And I'll go through all them for you. How about a --

MR. MUSSATTI: Strike one.

MR. LEWIS: -- Number One a crane dropped right through the floor into a room, switchgear room, that consequently shorts out and almost keeps, except for a few very brave electricians getting in in time to get power going to reintroduce the water into spent fuel pools.

MR. MCKIRGAN: So, Mr. Lewis --

MR. LEWIS: I could go on for hours and hours. The conclusions, oh, it's safe has nothing to do with reality.

MR. MCKIRGAN: Mr. Lewis --

MR. LEWIS: When is the NRC going to wake up? If it ever does.

MR. MCKIRGAN: Yes. So thank you.

MR. LEWIS: Thank you.

MR. MCKIRGAN: Mr. Lewis, thank you for the question. I did want to come back, you spoke on a number of topics. The one that I thought you started with that was very relevant to our discussions and the presentations that we have had to do with chloride-induced stress corrosion cracking.

I am going to ask John Wise, that is a

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phenomena that is reasonably well understood. We do have programs in place to surveil that. It is something that is considered in the licensing of stainless steel packages.

John, is there anything else you could offer in response to Mr. Lewis's comment?

MR. WISE: Oh, thanks. I don't know what else to offer other than, yes, we're certainly, we have listened to the input from many of the concerned citizens in California and we understand your observations about what certainly what your weather is like next to the shore.

But at the same time we did evaluate that and we do take that into account because, you know, at the end of the day it's this interaction between what's in the air approaching the canister but it's also the temperature of the canister itself is extremely important because we're not talking about the environment and the humidity, absolute humidity of the environment out in the air up above the canister, for example, at San Onofre, but what's the environment at the canister surface itself.

And that's what is going to determine whether or not that moisture wants to be picked up by the surface, in particular the salts that are on that

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surface.

So, you know, we are always, we are never going to be done learning. We are taking into account the best data that's available. We have a lot of experience on stainless steel tanks.

Stainless steel has been around for a hundred years. It's not to say we're done learning, but the best data we have now supports the use of stainless steel canisters.

Now, having said that, it's prudent, it's prudent to inspect, and that's what the aging management programs are about and we have -- Inspections have already started and many, many more inspections are going to be beginning in the next few years, for example the NUHOMS system, the 1004 system has I want to say 17, 18, 19 general licenses used at one storage system design.

Well guess what, this is about the time where many of those licensees are due to start their aging management inspections. So you are going to see in the next few years many more people performing inspections sharing their results with the NRC and with the rest of the industry and we'll --

(Simultaneous speaking.)

MR. LEWIS: And how about sharing it with

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the public at large. You don't share the outlet temperatures on those casks with the public, which is really important, the outlet radiation which is really, really important. What's really, really important --

MR. MUSSATTI: Operator, please shut off the microphone.

MR. LEWIS: -- is ignored.

MR. WISE: Yes, I was -- I can't comment specifically on sharing particular datapoints because personally I just don't have any information on that.

MR. LEWIS: Well get it.

MR. WISE: But I think it's instructive that you brought up the cases where things happened where we didn't think they were going to happen. For example, you know, Three Mile Island, you brought that up as an example up, hey, we thought we knew everything but something happened.

But what came out of Three Mile Island? What was one of the more significant things that came out of Three Mile Island was the formation of the Institute of Nuclear Power Operations to ensure that operating experience was shared around the entire industry.

We would never find ourselves in a situation where one site experienced some sort of

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phenomena and the other sites didn't know and I think that's the --

(Simultaneous speaking.)

MR. LEWIS: The other --

MR. WISE: Excuse me.

MR. LEWIS: -- side is us and we still are kept out of the information.

MR. MCKIRGAN: So, thank you, Mr. Lewis.

I do appreciate your comment. We are going to move on to another caller. I would re-emphasize, you know, the agency is committed to a transparency in our regulatory decision making.

We do make our inspection findings publicly available to the extent that we can. We do have to protect proprietary information, but certainly the significant results of those inspections will be made publicly available through our normal processes.

MR. LEWIS: After whitewashing.

MS. ROQUE-CRUZ: We're going to spread the love and we are going to go to the room. Yes, sir, if you can go to the microphone.

MR. LORSON: Thank you. This is Ray Lorson with the NRC. This is a question for Rod. I think if we've listened to the different points of view today clearly our rulemaking as you know is a public

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process.

We are very transparent and we are very open, as I mentioned earlier. And so through that public dialogue and discourse we've kind of hammered into place rules and requirements.

One of your slides you indicated something about low-significant issues, that there should be a way to disposition those. Just for clarification were you referring to low-significant issues that are not in contrary to a particular regulatory requirement or specification or were you talking about requirements that may not be explicitly required by regulation?

MR. MCCULLUM: I guess I was talking about the former. I am not talking about rolling back any regulations. We feel that the -- Part 72 by itself, and in our White Paper we are not going to recommend wholesale changes to Part 72 or a rulemaking, you know.

It's in how the rule is applied. It is in really understanding the margin, you know, because the rule says be safe and it tells you how to be safe and you've got guidance associated with that and we've been working on the guidance over the years and a lot of that was talked about in this session.

But the idea of what is important, what information needs to be part of the transaction to meet

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the requirements of the rule. That's where my focus was and what I am saying is there was a lot in that transaction that is unnecessary and I think the pilot that you referred to is a great example of how we can streamline that so that we are focusing on what is necessary, you know.

Some of these concerns about CISCC, for example, those are things we should be focusing on and there has been EPRI reports written on that and John talked about the inspection programs that industry is as committed to as the NRC is.

But our focus should be there and it is really, it is in the transaction. It is not in the rule it is in the transactions associated with the rule and, frankly, this has all come up as a result of practices and it's been formed by guidance and, you know, we have improved the guidance over the years.

We've got some that is still awaiting endorsement, but, you know, it really is about the transaction called for by the rule, not about changing the rule.

MS. ROQUE-CRUZ: Okay. Any other questions related to licensing here or in the phones?

THE OPERATOR: We do have one question in queue on the phones from Kayleen Walker. Your line

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is open.

MS. WALKER: Thank you. Let's see, my question is about the overall game plan. So you say you've had over 3000 of these canisters loaded across the country and you claim that the 30-year record of these canisters indicates it's a mature industry, but, frankly, I am wondering what the plan is when something happens sooner than you project, like a canister failure of some sort or if a canister were to drop and the fuel would need to be inspected for damage?

So since we know that the canisters are too hot to return to the pool when will the NRC require that a hot cell be built somewhere in the United States, never mind onsite where it might be needed, because currently there is no plans that I can tell to repackaging a canister and I consider that a serious omission in the overall game plan of dry storage. Thank you.

MR. MCKIRGAN: Thank you, Ms. Walker.

MS. ROQUE-CRUZ: Thank you for that feedback. Any other --

MR. MCCULLUM: Well since NRC didn't answer I'll take that. I mean this again goes to why we have the program.

(Off microphone comment.)

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MR. MCCULLUM: Oh, Rob McCullum, NEI. This goes to why we have the programs we have. I am very confident in a lot of the studies and we are ahead of these issue.

You talk about canister failure, well long before you would have even a through a wall crack in a canister you would detect elements of corrosion. We've got the programs in place.

I have publicly argued for hot cell capability. I have made that pitch to DOE. Mobile hot cells could be brought into play, there was a design for those, but at a very minimum you have time between detection and what I would call failure, a lot of time, years.

And during that time as a minimum you could establish, re-establish confinement by putting in a transportation over-pack. The designs for those exist.

So we are committed to the inspection programs, we have been committed and are staying committed. The things John Wise talked about, the staying ahead of these issues. The good thing about a dry cask is it's an inert system, no moving parts. Nothing happens fast.

In a reactor accident things can happen

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fast. In a dry cask you have years to address degradation mechanisms and we will and we are committed to staying ahead of those degradation mechanisms and I think that we are --

MS. WALKER: Am I still on the phone? Am I still on the line?

MS. ROQUE-CRUZ: Yes. Yes, we can hear you.

MS. WALKER: Thank you. When the canister almost fell the NRC's inspection report said if the canister had fallen, which it obviously could have 18 feet, they said that the fuel would not be safe in storage or transport and that it would need to be inspected and repackaged possibly and then it just dropped it there.

The NRC did not say where or how or who or anything. This could have been an immediate problem and I don't think that, you know, I think that we don't have all that much time to solve these problems and we keep on hearing it's not a now problem.

I think that these are very much now problems. Thank you.

MR. MCCULLUM: Yes, I read the inspection report differently. I think that they found that it would be within the design basis. I think that --

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(Simultaneous speaking.)

MS. WALKER: No, no, it didn't. It said if the canister had dropped the fuel would not be safe in storage or transport.

They said it would not have been a breach or a radiation release, that's an assumption, but they said the fuel would have had to be inspected and there is no way all these -- The thin wall canister issue, these are welded shut, so it's a \$4 million per canister system.

And so if you have to open up a canister that's a total loss to the ratepayers and they have to be replaced and there is no factoring in any replacement costs for these canisters.

You'll have to throw away the canister if you have to open up one. So I consider this a serious lack of oversight or oversight, whichever way you want to look at it.

MR. MCKIRGAN: Thank you, Ms. Walker.

MS. ROQUE-CRUZ: Thank you. And, again, our job is to keep you on time and on topic, so, please, please limit your questions to licensing at this point.

Any other questions on the phone lines?

THE OPERATOR: Yes. Our next question comes from Ms. Donna Gilmore. Your line is open.

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MS. GILMORE: Yes. In response to Rod, you know, there is no over-pack or transport pack approved to take one of these hot canisters that are leaking and put them in a transport cask or any other kind of cask. Scott Morris admitted this recently that the NRC hasn't analyzed that.

You'd likely have a thermal analysis showing it would overheat because you lose the convection cooling system. So, you know, we're ignoring the elephant in the room and all of us are going to suffer because of it.

MR. MCCULLUM: I would just reiterate there is plenty of time before we get there. There is a lot of measures that can be taken, and this is why the topic that we are addressing in the White Paper is so important and --

(Simultaneous speaking.)

MS. GILMORE: And what measure?

MR. MCCULLUM: -- canisters aren't too --

MS. GILMORE: What measure can be taken?

MR. MCCULLUM: Please let me finish. The canisters aren't too hot. We have safety margin, we have overestimated the temperatures.

MS. GILMORE: 200 to 300 degrees Celsius according to the Chief Nuclear Officer for the new

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Holtec canisters. You're going to just stick that in a, sealed in a big cask?

I'd like to see the analysis from the NRC on that. When is there going to be an analysis of that solution that's been paddled around everywhere?

MR. MCCULLUM: When the data tells us that analysis is necessary.

MR. MCKIRGAN: So, Ms. Gilmore, thank you.

Thank you for the comment. I think I will take this moment to offer just generically, so we have been gathering a number of questions and answers that we have been trying to update our public webpage and I would encourage lots of folks, those in the room and those on the phone, to take a few moments the next time you are browsing and you are done with cat videos on YouTube or whatever to go back and look at the FAQ page that we have developed for spent fuel for the NRC.

We took a fairly hard scrub at it and provided a lot of very specific information on a number of these topics. I think we have a Q&A on stress corrosion and cracking and a number of these other topics and so I would encourage everybody to take a moment and look at that.

Carla, see if there are any other questions.

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MS. ROQUE-CRUZ: We have a few more minutes, maybe one, two more questions. Any questions here in the room?

(No audible response.)

MS. ROQUE-CRUZ: Speak now or forever hold your peace. Any questions on the phone?

THE OPERATOR: There are no additional questions in queue at this time.

MR. MCKIRGAN: Great. So with that we will conclude this session. Thank you all. Let me give one final round of applause for the panel.

(Applause.)

MS. ROQUE-CRUZ: And we are at -- We are a few minutes early but I think nobody will mind it is lunch time. We do want to keep moving promptly and on time so please be back by 2:15 so that we can begin the afternoon session. Have a great lunch.

(Whereupon, the above-entitled matter went off the record at 12:30 p.m.)

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