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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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LOW LEVEL RADIOACTIVE WASTE

PUBLIC MEETING

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FRIDAY,

MARCH 10, 2017

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The Meeting met in Salon 8 at the Renaissance Phoenix Downtown Hotel, 50 East Adams Street, Phoenix, Arizona, at 8:30 a.m., Chris McKenney, Facilitator, presiding.

NRC STAFF PRESENT:

CHRISTEPHER A. MCKENNEY, Chief, Performance Assessment

Branch, DUWP, Facilitator

JOHN R. TAPPERT, Director, DUWP

ANDREA KOCK, Deputy Director, DUWP

GREGORY F. SUBER, Chief, Low-Level Waste Branch, DUWP

ROBERT LEE GLADNEY, MSME, Project Manager, DUWP

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RATEB (BOBY) ABU-EID, PhD, Senior Level Advisor,  
DUWP

ALSO PRESENT OR ATTENDANCE BY PHONE:

MICHAEL ALBANESE, Qal-Tek Associates

MICHAEL AULT, U.S. Ecology

MICHAEL BENJAMIN, EnergySolutions

LARRY BERAN, Texas A&M AgriLife Research

LARRY CAMPER, Advoco Professional Services

DIANE D'ARRIGO, Nuclear Information and Resource  
Service

LISA EDWARDS, Electric Power Research Institute

MICHAEL FORD, Waste Control Specialists

KAPIL GOYAL, Los Alamos National Laboratories

THOMAS KALINOWSKI, DW James Consulting

SCOTT KIRK, BWXT

MARK KIRSHE, ReNuke Services, Inc.

MARK LEWIS, EnergySolutions

DARRELL LILES, U.S. Army Corps of Engineers

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MARTY WALDINGE, Ontario Power Generation

BARBARA WARREN, Citizens Environmental Coalition

JOE WEISMANN, U.S. Ecology

MING ZHU, DOE-HQ

JOHN ZIMMERMAN, DOE-Idaho

ATTENDANCE VIA WEBINAR:

SARAH ACHTEN, NRC

MAURICE HEATH, NRC

KIM KAREN, EPRI

MICHAEL KLEBE

DON LOWMAN, NRC

RUSTY LUNDBERG, STATE OF UTAH

LISA MATIS, TETRATECH

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ALISHA STALLARD, TCEQ

BARB WARREN

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

9:00 a.m.

MR. MCKENNEY: Welcome to the public meeting on NRC topics. Today 'I'm the facilitator for this meeting. And so for those in the room in Phoenix, for the little bit of housekeeping, of course, there are fire exits at both directions from outside this room, and the restrooms are out and to the left.

We will be taking a break about halfway through. The other things is that we will be taking questions. At the end of each presentation, we'll open it up for questions. We'll open for questions both in the room and on the phones, which I'll have 'Carolyn queue up the questions on the phone to facilitate. This will be -- and also we'll also look for questions on the webinar to address any questions that have been posted through the webinar texting to address those.

Debbie is providing a transcript of our proceedings, so we'd like to, I'll be walking around for people in the room to be able to speak in the

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mikes so we can get the transcript for later. And with that, I'd like to pass it over to starting with John Tappert to provide the official NRC welcome.

MR. TAPPERT: So good morning. My name is John Tappert. I'm the Director of the Division of Decommissioning Uranium Recovery Waste Programs with the U.S. Nuclear Regulatory Commission, and I'd just like to take a moment to welcome you and thank you for coming to this meeting. We wanted to take advantage of the fact that there were a number of stakeholders in Phoenix this week for the Waste Management Symposia to have a public meeting where the NRC staff can share some information about some of the projects that we're working on and to have a fuller discussion on those. Many of those topics were discussed earlier this week if you had a chance to go to the conference, but I think this one will give us a chance to perhaps go into a little bit more depth and have a richer dialogue on these issues, which we value going forward.

The NRC takes its responsibility as being an independent regulator very seriously, but independent does not imply isolation. So we greatly value these opportunities to engage with

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stakeholders to share the status of projects that we're working on, to answer any questions that you have, and give you an opportunity to share your perspectives as well.

So I just want to thank the people here in the room and also the people who are dialing into the webinar around the country. So 'I'm looking forward to a robust discussion. Please, please be sure to engage, and, hopefully, we'll have a productive day.

So that's really all I wanted to say to kick this off. Our first discussion today will be on the programmatic assessment, and Andrea Kock will give us some details on that. Andrea?

MS. KOCK: Morning. Everybody hear me okay? As John mentioned, my name is Andrea Kock. I'm John's deputy in the Division of Decommissioning Uranium Recovery and Waste Programs. I thought we'd start off today with an overview of our programmatic assessment, which we thought was appropriate because what the programmatic assessment really does is look at what is the landscape of low-level waste issues in the United States and how should we, at the NRC, adjust our program to address the issues that are

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pressing before us. And so it's a good way to start off the discussion today.

I did have a reflection as I was preparing to talk this morning. I think it was ten years ago I came out to the waste management conference and, although I wasn't in the low-level waste program at the time, I had to give a presentation on the 2007 programmatic assessment for a colleague of mine. And it just made me realize that, you know, we've made a lot of progress in those ten years, but there're new challenges for us to address. And the landscape is constantly changing, and so it's a good idea for us to have a discussion to make sure we're focusing on the things that are important for you all today.

So on the next slide -- let's see if I can figure this out. Lee, can you just go ahead and forward them for me? Maybe this is out of batteries. Thanks.

So I'm going to talk a little bit about the 2016 programmatic assessment. I touched on a little bit already about why the programmatic assessment is important. And really we see our program at the NRC as establishing a national

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framework for low-level waste, and we feel that it's important for us to proactively look at what the issues are out in the nation and make sure that our program is addressing those. And that's really what the 2016 assessment was about.

On the next slide, I'm going to give you a little bit of background on the programmatic assessment. I already gave you a little bit of history about the 2007 assessment.

If you go way back into the 90s, the Commission had made a decision at that time that the low-level waste program should be lowered to maintenance mode, and that was because we didn't see any new disposal facilities coming on the horizon. But that all changed around the 2005 time frame, so a couple of things happened then. First of all, DOE decided to start sending some of their waste to commercial facilities. And then, as many of you are familiar with, the issue of depleted uranium came up and what we were going to do about disposing of that waste. And then, finally, in about the 2008 time frame, Barnwell announced that they were going to close to out-of-compact waste.

And so given these challenges, the

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director of our division at the time, who happens to be sitting in the room, did direct the staff to look at what are the activities we have before us. Because the program was small and we needed to prioritize what we focused on, and that was really the idea behind the original programmatic assessment.

So on the next slide, in response to this direction, staff, like we did recently, went out and engaged with you all, our stakeholders, and then looked internally to our own experiences to identify what the issues are that we should focus on at that time. And they identified 20 topics at that time that we thought were pertinent for us to address. And while we did feel like the low-level waste program and our regulations were sufficient to protect safety, we recognized that there were areas where we could enhance the program.

So we took those 20 activities and we prioritized them into low, medium, and high activities. And then at the time, there were seven that we identified were high priority. And on the next slide, we'll show you what those seven were.

So of the 20, this slide shows the seven

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high priority tasks from the 2007 assessment. And what I'd really like to communicate on this slide is that we have made progress since 2007. Since 2007, we've completed six tasks of the 20. Four of them were high-priority tasks that have checkmarks up on this slide, and we completed two medium-priority tasks.

And just some examples of the things that we've accomplished since 2007, in 2008 and 2011 we prepared a regulatory issues summary clarifying and updating our position on extended storage of low-level waste. And then in 2009, we developed a draft interim staff guidance to describe the process for reviewing and approving 20.2002 alternative disposal requests, and we're currently in the process of updating that guidance.

We did complete analysis of the disposal of depleted uranium to see if it was appropriate to dispose of some of that waste in a near-surface disposal facility. And as many of you are familiar with, we've included that it could be disposed of in a near-surface disposal facility and that a site-specific performance assessment would be appropriate in order to evaluate that waste, and that's

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currently before the Commission.

And then, more recently in 2015, we issued the updated Concentration Averaging and Encapsulation Branch technical position. And the last two activities on this slide, we did have a slight delay in completing those just because we were focused on other priorities. But we did complete those in 2016, and that was developing procedures for the import and export of waste and performing a scoping study for the need to revise or expand the byproduct material financial assurance requirements. Those were both completed in 2016, and Greg is going to talk about the financial assurance issues.

As far as the other 20 activities that were in the 2007 assessment, I'll just give you a quick summary. I mentioned that two medium activities were complete. There was a task to identify new waste streams, and we sort of rolled that into the Part 61 rule with the idea being that the site-specific performance assessment would evaluate any new waste streams that may come along. And then we developed an information notice on waste minimization.

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There were three tasks from the 2000 assessment that we ended up just deleting because they weren't pertinent given what's going on with the low-level waste program in the United States right now. And some of the other tasks we kind of combined and rolled into the 2016 assessment, and there were several tasks that we carried forward into the 2016 assessment.

I think this is kind of self-explanatory based on what I've already said, but as I mentioned, some tasks have been deleted from the 2017 assessment because they're no longer pertinent given the current circumstances in the country. We have made progress on some of the tasks. And because some of the assumptions that were on the 2007 assessment are no longer valid, we thought it was time to re-look at what's going on with the national program and re-focus our activities.

So on the next slide, back in 2014 we started gathering newer input for where we should focus. Three years ago this month, we conducted a public meeting, just like we're doing today here in Phoenix, to get your input on what the important issues were. And then we had some additional

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outreach efforts. We issued a *Federal Register* notice to solicit your comments and we conducted two webinars to get your comments on where we should focus.

As far as the comments that we got to update the programmatic assessment, we did receive a lot of comments. I'm not going to go into all of them. I'll just touch on a few of them. There's a lot of comments on the waste classification tables. People are kind of on all sides of that issue. Some people think they need to be updated, some people suggest they be deleted, other people think we shouldn't revise them at all. So we need to work through that.

There was a lot of comments on making sure that we maintain sufficient disposal capacity for low-level waste through processes, such as the 20.2002 alternative disposal process. How we do that and what the options are for assuring that waste disposal capacity is another issue that we'd like to talk about today.

And then there were a lot of comments on financial assurance resources and how we can encourage disposal of sources and make sure that

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those who use sources are financially responsible for their disposal. And that's another topic that Greg is going to talk about shortly.

And the next slide is kind of just a carryover from the slide before. Again, there were a lot of comments. There were some conflicting comments. I already mentioned low-activity waste. And then there were some comments that were out of scope.

On the next slide, similar to what we did in 2007, we separated the tasks into tasks that we thought were short-term high-priority tasks and medium-priority tasks, and those that were longer term or low priority. We looked at the costs and the benefits of the various options that were put forward. And then the comments that were out of scope of the assessment were not addressed because they were out of scope, obviously.

The next slide. We had some additional stakeholder input. We started with a list of 14 tasks for the more recent assessment. I mentioned we issued a *Federal Register* notice. The comment period for that *Federal Register* notice expired a couple of years ago in April. We evaluated all the

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comments that we received, and we sent an information paper to the Commission just last year with our conclusions on the assessment.

So the next slide is the one you've been waiting for. These are the high-priority tasks that we identified for the more recent assessment. There are six of them. They include completing and implementing the site-specific analysis rulemaking that's currently before the Commission. We're going to talk about that today. Address and update the 10 CFR 61 waste classification tables, we had a task to look at those tables after the Commission completes their vote on the Part 61 rulemaking. Implement the updated Concentration Averaging and Encapsulation BTP. Of course, the BTP was issued, but now we're in the implementation phase. The fourth one is to prepare a regulatory basis for GTCC in transuranic waste disposal. We've had a lot of discussion about that this week at the conference.

And then another task we had is to finalize our internal procedures for 20.2002 review and approvals. We did update that back in the 2000 range, and, based on comments and our experience, we're currently updating that guidance. And then

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the last one listed there is updating the NUREG on the instructions for completing the NRC's uniform low-level waste radioactive waste manifest.

So those are the six high-priority tasks that we've identified in the more current assessment. I did want to mention there's two medium tasks that we've started to think about. One is to perform a very low-level waste scoping study, so the idea is, there's some subset of Class A waste that's at the lower level of Class A waste. How should we address that? Is the 20.2002 process the appropriate process for that? Do we need to tweak the process, or is there something else we should do with regard to the issue of very low-level waste? We'd like to have a very robust discussion and get your feedback on that today.

The other medium-priority task we're working on is updating and consolidating low-level waste guidance just from an efficiency perspective. And then there're two low-priority tasks. That's examine the need for guidance on defining when radioactive material becomes low-level waste. We haven't yet started that because that's a low-priority task. And the second one is to develop and

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implement a national waste-tracking system that came out of the GAO report.

So today, out of all those things that I mentioned, we're going to touch on a high-priority task, which is 10 CFR 61 rulemaking and getting that completed. We're going to talk about one of the medium tasks, which was the looking at very low-level waste and what the appropriate follow-up activities for that should be. And then, as I mentioned, Greg is going to talk about a task that was completed from the 2007 assessment, and that's to complete the financial assurance scoping study.

As far as our next steps, just like we did in 2007, we're going to focus on high-priority tasks. We do have limited resources, so we're going to focus on the six tasks that I had listed on the slide before.

We do want to make sure we remain flexible, so, as things change, please give us your feedback if we need to re-focus on a task that maybe was medium priority that is becoming high priority. We'd like to hear that so we can adjust. And then, accordingly, engaging with you as we move forward on all of these tasks.

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And with that, I'll open it up for questions.

CAROLYN: Thank you. This is for everybody to begin the question and answer session. If you would like to ask a question, please press \* followed by 1 and record your name clearly. Again, that was \* followed by 1 to ask a question. And one moment, please, for our first question.

MR. MCKENNEY: Are there any questions from here in the audience?

MS. KOCK: Our strategy was to have no coffee in the back, I guess.

CAROLYN: We do have a question on the phone line. One moment, please.

MR. MCKENNEY: We have one here.

CAROLYN: We do have a question from Diane D'Arrigo. Your line is open. Go ahead with your question.

MS. D'ARRIGO: Hi, I'm with Nuclear Information and Resource Service. I wanted to find out if there are going to be reaching to this meeting elsewhere and specifically on the very low-level waste issue. Could you let us know what opportunities there will be for the public to

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provide input on that?

And as an aside from that, is it possible to raise the volume for the people on the phone? It's a little bit hard to hear.

MS. KOCK: So, Diane, I'll start to answer your question, and we'll try and work on the volume issue, as well. So really what today's meeting is I think is just the beginning to kind of roll out our programmatic assessment and start to get feedback. What I would anticipate is, as we dig into some of these issues, like very low-level waste or GTCC, that we will have public meetings.

Where they'll be is yet to be determined. Exactly when is yet to be determined. But as you know, we always make our public meetings, we post those publicly so that you'll know when they are. But I would expect that, as we move forward, yes, we'll, of course, have additional meetings, and they'll be on a specific topic so that we can engage you as we move forward. This is really just the beginning of the discussion.

I'll also ask Greg if he has anything else to add.

MR. SUBER: Yes, Diane. In fact, we are

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in the process of updating the NRC public website under low-level waste disposal, and we will have a very low-level waste web page posted sometime next week that will have the presentation that Mr. Gladney is going to give later on today. And we are still in the planning phases to have public meetings in the area this summer.

MS. D'ARRIGO: Okay, thank you. And I guess I just wanted to remind, I think most people at the NRC are aware that there's huge public opposition to allowing radioactive waste to be considered not radioactive and that we will continue to oppose setting a clearance level releasing this into unregulated recycling and into solid waste facilities.

And I also had one more thing. If this is happening on a license-by-license basis, if that is something that the NRC is doing, rather than an across-the-board determination?

MR. SUBER: Okay. Right now it's a scoping study, so those are questions that we're actually going to be asking. But we're going to have, we're going to have a presentation on that a little later on this afternoon, and so we can get

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into that at a later time.

MS. D'ARRIGO: So you're scoping, other than the byproduct material financial assurance, what is being scoped right now?

MR. SUBER: The very low-level waste, we're performing a very low-level waste scoping study, and Mr. Lee Gladney has a presentation that he'll give us today at around 10:00.

MS. KOCK: And, Diane, this is Andrea Kock. I'd just add one other thing to what Greg said with regard to the website and the public meetings. Another way we might solicit feedback is through things like a *Federal Register* notice, which will be posted on the website. So be looking for that, too, and we'll be looking for your feedback.

CAROLYN: We do have a question from [Coleman] Miller. Your line is open. Go ahead with your question.

MR. MILLER: Yes, good morning. My question is I did not see NUREG-1608 on the list of perhaps medium-priority items. I believe revisions to that are needed as we discussed in the recent NRC IEA rules. I believe that changed that rule. There are some impediments in the shipment of waste for

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disposal and the issue on the requirements. You're reporting to ship more material in casks than is actually needed or warranted by the activity level of the waste.

MS. KOCK: This is Andrea Kock. NUREG-1608 is not on the list, although it is something that the Agency is looking at. Because that relates more to transportation, I know it seems a little bureaucratic, but it relates more to transportation, so it wasn't considered as part of a low-level waste programmatic assessment. However, I do recognize that there's some feedback that it needs to be updated, and we're working with our spent fuel and transportation division on that and providing your feedback to them to consider revision.

MR. MILLER: Just to follow-up, I'd offer that, you know, however it gets done, you know, the hard work that was done on the Branch Tech Position on Concentration Averaging and Encapsulation, some of those benefits cannot be realized as long as there's this impediment with what I agree is over-restrictive requirements.

MS. KOCK: I think we heard that feedback, and I thank you for providing that. We do

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recognize that, and I think Greg was going to take that back to have further discussion with the industry about that to see what the issues are and how we could address them.

MR. MILLER: Thank you.

CAROLYN: Thanks. The queue shows no further questions.

MR. GOYAL: Good morning. My name is Kapil Goyal from Los Alamos National Lab. I have long tenure on the Transatlantic side around low-level waste. One of the slides I noticed said concentration averaging. Could you elaborate on that, please?

MS. KOCK: So it was a task in -- and I'm looking to Greg to correct me if I say something wrong, but there's a task in the 2007 programmatic assessment to update the concentration averaging BTP, which relates to how you can average the concentration of the activity of the waste over a package. We've always had a BTP. I think it went back to the 90s. We updated it in 2015 and issued that. And what's in the new programmatic assessment is to implement that.

So the revised BTP is out there. We did

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some training and helped people understand how it can be implemented, and now we're in the implementation phase.

Did you want to add anything, Greg?

MR. SUBER: Just add that the BTP is also up on the website, so you can access it through the low-level waste page of the website and get more information on what we did with concentration averaging. And we also did work collaboratively with EPRI, and EPRI also has guidance on concentration averaging.

MR. TAPPERT: And people probably know, but BTP stands for Branch Technical Position. That basically is a guidance document that the staff has on acceptable waste that you can blend waste streams for disposal in residents particularly but different things, as well.

MS. EDWARDS: Just as a follow-up to that, the BTP implementation guide that EPRI published -- oh, I'm sorry. Lisa Edwards from EPRI. That guidance is available, publicly available, so you can go into the epri.com website and download it, as well.

I was just going to circle back to

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something that Clint mentioned about NUREG-1608. Should your partners and you decide to take that issue up, there is an EPRI report that provides the technical basis for the constraints that, in particular, are impacting the selection of the tasks, and its purpose is there for you to review and have that help inform your discussions.

MS. KOCK: Lisa, if you could send that to Greg and I and we can take a look at it. Any other questions in the room? Are we checking on questions on the phone or --

CAROLYN: There are no questions on the phone line.

MS. KOCK: Okay, great. With that, I'll turn the presentation over to Greg Suber. He's going to talk about the completed action we had on the financial assurance scoping.

MR. SUBER: All right. Thanks, Andrea. My name is Gregory Suber, and I'd like to thank everyone who tacked on an extra day to their trip to Phoenix to sit here to go over with us with this public meeting. As we mentioned earlier, the meeting is being transcribed. So the comments that you're giving us today, we'll be able to take back

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with us to the NRC and consider them as we are moving forward with all the initiatives that we're undertaking.

Okay. So today, the purpose of my presentation is to give a status and an update on the byproduct material financial assurance effort.

Next slide, please. Okay. So I'm going to give a brief background on the financial assurance effort. I'm also going to summarize the results of the 2016 scoping study that the staff completed and highlight the next steps for this particular effort.

Next slide. So the NRC requirements in 10 CFR 30.35 provide a threshold above which decommissioning or end-of-life assurance is required for Cat 1 and Cat 2 sealed sources. Currently, the threshold is very high and the vast majority of Cat 1 and Cat 2 sources fall below this threshold level. Thought the licensee is still responsible for end-of-life management and decommissioning of resources, there is no explicit requirement to fund the disposal of these sources, and that has resulted in a lot of long-term storage and some issues around safety and security.

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Next slide. The NRC staff raised some concerns about the lack of financial assurance during a Commission briefing that we had in 2014. In fact, it was Larry Camper who brought up the subject, and he was talking about two reports that had been issued. One report was the Low-Level Waste Disused Source Working Group had issued a report, and also the Radiation Source Protection and Security Task Force issued reports and basically highlighted the fact that there were some serious disposal issues related to Cat 1 and Cat 2 sources and that these disposal issues raised both safety and security concerns.

As a result of that briefing, the Commission did direct the staff to perform a scoping study to determine the scope of the problem and to provide recommendations to the Commission on how to best address the problem.

Next slide. The main purpose of the study was to determine if financial assurance requirements should be expanded to include all Cat 1 and Cat 2 sources. The staff developed and executed a robust outreach effort to maximize the input from a wide cross-section of stakeholders. The staff

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issued an FRN with specific questions regarding financial assurance and held a public meeting webinar to make sure that the maximum public engagement was maximized.

Next slide. In producing this scoping study, the staff, number one, evaluated current NRC regulations and guidance documents. Then we examined domestic and international byproduct management activities and efforts, which included efforts by CRCPD, efforts by the Department of Energy, the National Nuclear Security Administration. And we incorporated those into the scoping report in addition to the numerous and I must say diverse comments that we received from the public as a result of our FRN.

Next slide. The results of the scoping study, the staff recommended a rulemaking to information that financial assurance be expanded to all Cat 1 and Cat 2 sources tracked in the National Source Tracking System. The staff's recommendation was based on a couple of factors. Number one, the likelihood that many licensees would be unprepared for end-of-life decommissioning costs. That was something that had been observed and something that

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was noted in the other reports, especially related to abandoned sources.

And the staff also noted that the requirement may actually result in an increase disposal of sources that are disused and that that would be consistent with the Commission's philosophy that disposal was preferred over storage and that the full cost of sources would be considered before licensees would actually procure a source, so they would understand what the life-cycle cost would be associated with the use of sealed sources.

After completing the scoping study, staff developed a rulemaking plan to recommend that the NRC requirements be changed. The rulemaking plan was a new Commission requirement, and it contained an evaluation of the resources required to develop a new rule.

Next slide. This slide details the contents of a rulemaking plan. Note that the rulemaking plan includes a proposed schedule, a cost-benefit analysis, and a resource estimate. This is pretty important in times of austerity because it's important for the Commission to understand when they embark upon a rulemaking what

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types of resources would be required. And I think the estimates for completing this rule was over a two-year period. It would require approximately four full-time equivalents and a cost of approximately \$100,000 for the contractor staff support.

Next slide. The staff suggested that the proposed rulemaking was the most effective way to make sure of safe disposal of Cat 1 and Cat 2 sources. The financial assurance requirement would improve the effectiveness of NRC's regulatory framework and address the issues highlighted in the two reports that I discussed previously. Finally, the staff believes that safety and security issues addressed by the proposed rule would make this rulemaking a high priority with the Commission.

Next slide. So presently the rulemaking plan is before the Commission and the Commission is currently delivering on that effort, and the staff is awaiting permission and direction to determine what the next steps will be.

Next slide. Okay. So that concludes my presentation. Are there any questions?

CAROLYN: If you'd like to ask a

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question, just press \* followed by 1. And one moment, please. At this time, I'm showing no questions on the phone line.

MR. SUBER: Okay. So either that was a very clear and concise presentation, or everyone is waiting, as we are waiting, to see what the Commission is actually going to do with the byproduct financial assurance rulemaking. Okay. Clear and concise. Thank you. I appreciate that.

All right. Back to Mr. McKenney.

MR. MCKENNEY: At this point in the schedule, we have a break, but we can keep going at this point to keep up because we're ahead of schedule. So at this point, it would be Robert Gladney with the section on very low-level waste.

MR. GLADNEY: Yes, if we can get that running, that would be good.

MR. MCKENNEY: Luckily we had some extra time. Sorry for the technical difficulties.

MR. GLADNEY: Sorry about that. Okay. So as Chris McKenney mentioned, my name is Robert Lee Gladney. I am an NRC project manager within the Division of Decommissioning, Uranium Recovery, and Waste Programs, or DUWP, and this is within the

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Office of Nuclear Materials Safety and Safeguards, NMSS. Today, I will be discussing very low-level waste.

Next slide, please. So as you can see, the low-level waste program at the NRC has been very active. During this week at the waste management conference, as well as today, we've discussed Part 61, we've discussed the programmatic assessment, and we've discussed financial assurance, and this presentation focuses on very low-level waste. In particular, I will discuss the very low-level waste scoping study, which has direct ties to the programmatic assessment, as Andrea presented earlier in her presentation.

One thing I will note today is that in previous documents, as well as throughout the week, you may have heard the term low-activity waste. For purposes of this presentation and documentation, very low-level waste is synonymous with low-activity waste.

Next slide. So the low-level waste programmatic assessment is key. In 2007, the NRC, in order to address the changing landscape of low-level waste and to address regulatory concerns and

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other issues, did an assessment of the low-level waste program, which it called the strategic assessment, in 2007. Of the 20 tasks, three were directly associated with low-activity waste. Those activities were: coordinate with other agencies on consistency in regulating low-activity waste disposal, which was given a medium priority; develop guidance that summarizes disposition options for low-end materials and waste, which was given a medium priority, as well; and also promulgate a rule for disposal of low-activity waste, which was a low priority at that time.

So after that, the NRC, based upon the constantly-evolving landscape of low-level waste, decided in 2016 to then do another assessment, which it called a programmatic assessment. Within this assessment, it had two primary activities associated with low-activity waste. Those activities included performing a low-activity waste scoping study, which it provided a medium priority for, and I'll explain a little bit more about that later, and also the 2002 guidance document revision to improve the alternate disposal process.

Just for your awareness, the perform

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low-activity waste scoping study [task], which we call a very low-level waste scoping study at this time, is a combination of the three tasks associated with the strategic assessment listed above.

Next slide. So, why perform a very low-level waste scoping study? As I mentioned in the previous slide, we originally designated it as a medium priority in the programmatic assessment since there was no significant safety issue driving very low-level waste disposal. During this scoping study, the NRC will evaluate the separate tasks combined in the programmatic assessment, which on the previous slide we noted as rulemaking, low-end materials and waste, and also coordination with other agencies.

The NRC has recognized the potential opportunity to improve regulatory efficiency and effectiveness. In addition, the NRC would consider alignment with international standards and practices. This last bullet is key because the NRC has recognized changes in assumptions regarding decommissioning waste volumes and timing. Recently, it's been considered that there will be 20 reactors entering into decommissioning in the near future,

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which, since that number continues to increase, it also results in acceleration of decommissioning waste volumes and timing and their acceleration. So based upon that, we are considering the very low-level waste scoping study as a higher priority than it was originally designated within the programmatic assessment.

Next slide. Another consideration that is key for us going forward when looking at the very low-level waste scoping study and the program overall is the EPA Advanced Notice of Proposed Rulemaking from November 2003. This was not a proposed rule but presents broad concepts and questions. In particular, when you review the ANPR, one question was associated with the NRC as far as how we'll regulate low-activity waste, or very low-level waste, in the future. This included licensing and RCRA [Resource Conservation and Recovery Act] facilities as two considerations. In addition to that, it introduced the concept of low-activity waste.

EPA received numerous comments, about 1500, and they were divergent comments ranging from different topics, and EPA, as a result, did not

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pursue a rulemaking, also considering the number of comments and also really consideration of the fact that there was no need for additional regulation at that time. So, therefore, the state and federal agencies, for instance, would work within the existing system.

Another consideration going forward, and you may have heard some things this week regarding it, are EPRI very low-level waste reports. Two in particular were done, one in 2012 and one in 2013, and during those reports, it was recommended that there be a very low-level waste disposal classification. The reports stated this was technically possible in the United States and would have positive effects, one being potential cost savings for the industry. Another effect would be a pre-approved disposal pathway for very low-level waste, which comes into play also with regard to severe accidents.

And then, also, EPRI stated a large portion of Class A waste would be reclassified as very low-level waste, and then it gave international examples that have been successful within very low-level waste management. Two examples in particular

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that were noted within the report were France and Spain.

Next slide. Considerations of lessons learned. So the NRC, in considering this, is not necessarily proposing that these be done. The NRC is proposing that we gain insights in lessons learned from these activities, and also this is not an all-inclusive list, but it is a list of some of the key things that the NRC will review. These include the below regulatory concern policy statements of 1986 and 1990; the Commission's decision not to publish the disposition of solid materials proposed rule; also learnings, lessons learned, and insights from other government agencies, including those that are international; and then other regulatory options for very low-level waste disposal. These would include facilities and landfills.

Other considerations. Current disposal practices. We always are continuing to improve our regulatory effectiveness and efficiency. Also, divergent stakeholder comments. Andrea mentioned some of those earlier, and I'll have some later in the presentation, but depending on the different

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stakeholders, some have indicated that, potentially, we should have a very low-level waste classification. Some stakeholders may have mentioned that we may need to have all the low-level waste go through licensed low-level waste facilities. And then some stakeholders have indicated that we don't need to take any additional action going forward and that the regulations may be acceptable as-is, so we will take those different comments into account. Also, the NRC will benchmark very low-level waste disposal in other countries.

Continuing with that theme, the need for an enhanced and more consistent approach for regulating very low-level waste disposal. I mentioned some of this in the previous slide, but the NRC is continuing to look to determine what are the best approaches going forward. Also, coordination with other agencies. In particular, we mentioned severe accidents and RDDs, looking to see how we can work with other agencies as our partners to look to see how we can regulate low activity waste, or very low-level waste. That would be important for us.

In particular, with EPA for instance,

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last year, we had a joint EPA and NRC meeting to discuss low-activity waste (very low-level waste). We wanted to discuss the ANPR that EPA performed in 2003 in order to get insights and lessons learned gained for what considerations they took into account in doing the ANPR, and what were received as far as comments. Also, long-term very low-level waste disposal actions will be considered.

This is just a list of some of the comments and stakeholder concerns that we have received, but these include items such as, is 10 CFR 20.2002 the most efficient process for very low-level waste disposal? Also, should there be more consistency between federal and state agencies? Should we align with the IAEA approach? Should we change our regulations to have more compatibility with those?

Also, unintended consequences. Are we introducing new consequences with any of the particular items that we are considering? Also, do we need to further define very low-level waste?

Possible outcomes for the scoping study include: additional rulemaking or additional guidance documents, or it could include more

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coordination with other agencies, or it could include a combination of the three, or it could result in no action going forward.

So, stakeholder outreach. Our meeting today is part of the outreach that we're considering. We are reaching out to the public to get comments and also to indicate that we are going to keep them informed and aware of our activities going forward, and of activities that we have completed, as well.

Going forward, we also have very low-level waste information available on the NRC website, and we also will have a web page in the future for very low-level waste. Also, we anticipate having a public meeting in summer 2017 to obtain comments, suggestions, and feedback from the public on the very low-level waste scoping study, and also the 20.2002 guidance document.

At this time, we will open the meeting up for questions.

CAROLYN: Okay. So, again, if you'd like to ask a question, just press \* followed by 1. And one moment, please.

MR. CAMPER: Thank you for your

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presentation. Larry Camper, NRC, retired. A couple of comments in terms of feedback, and I begin with the question that you asked. Rulemaking? Yes. The most effective way to address this issue is through rulemaking. And, yes, very low-level waste should be defined finally, and it affords the opportunity, of course, for the public to see this with all the different rulemakings, and so, therefore, they know the process.

I also commend you for moving toward the term very low-level waste because it aligns with the waste classification in the IAEA document GSG-1, waste classification. And I think there's value, therefore, in looking at this from an international perspective because that category of low-level waste has been in use by the IAEA for many years. So I think it adds credibility to your effort.

Regarding 20.2002, it works. It does work, and we have disposed successfully of low-activity waste via that process. But it does include an exemption. It has to be read to the self-operator for disposal of what would otherwise be commercial low-level waste. There are folks who are concerned about things that it allows. The

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20.2002 is an authorization, not an exemption, but it does include an exemption. And my point is, from time to time, the agency draws criticism because of the exemption. So it's another way to address the problem, and the stakeholders, I suspect, would appreciate to understand this a bit better.

So I think it's a terribly important effort that you're taking on. And by all means, in your efforts, do define it because if you ask people in this room what is low-activity waste, you'll get different views.

MR. GLADNEY: Thank you, Larry. Very good comments.

MR. TAPPERT: John Tappert, NRC. I appreciate those comments, Larry. I just want it to be perfectly clear that the agency is nowhere near making a determination that rulemaking is going to be the path forward. Really, at this point, there's been a lot of, people have raised issues surrounding very low-level waste over the last several years, and what we're seeking to do with the scoping study is to validate the current regulatory framework is sufficient, is appropriate and sufficient, or if, in fact, we do need to make changes. So I just want to

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make that distinction very clear at this point.

MR. SHRUM: Dan Shrum, with EnergySolutions. Thank you for your presentation. Very informative. Earlier, you had a slide that showed the tasks for the 2007 assessment. In this slide, I noticed while you were presenting it that you didn't have the high priority of develop and implement the guidance on 10 CFR 20.2002, alternate disposal requests. So I thought, well, maybe you're going to keep those two separate, the 20.2002 request and very low-level waste. And then if you go to the last slide, if you don't mind -- actually, one more. One more down. The last slide. One more. This one. Now, here it looks like they're together.

So my question is, and Gregory is going to answer with his head, but are these two going to be considered in tandem? Are they part of the same process? Is the 20.2002 exemption going to identify and define what very low-level waste is? Are there two studies here? Is there one study? How is that going to look?

MR. GLADNEY: So I'll tell you -- Gregory will probably add input, I think, too. One

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thing I'll say is that, if you look at the programmatic assessment, they are listed as two separate activities. Now, we have an ongoing initiative to go ahead and revise the 20.2002 guidance this year, and I want to make that point that we are revising it this year. But in addition to that, we look at the low-activity waste, or the very low-level waste, scoping study as an ongoing effort to go ahead and make sure that we are taking care of the very low-level waste issue as well.

So I think as far as that, they're related as far as being very low-level waste issues, but I think, at the same time, they're two different issues.

MR. SUBER: So the 20.2002 guidance is well on its way. We've already had an internal round of comments from the agreement states and from our regions, and we are in the process of finalizing the document so that they are two separate sets.

MS. KOCK: This is Andrea Kock at the NRC. I just wanted to build on that a little bit. As both Lee and Greg pointed out, they're two separate tasks listed in the programmatic assessment, but where it gets a little bit confusing

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is they're related, right? So when we ask you the question what is the best way to move forward with very low-level waste, one potential outcome is revision of guidance. That could be completely new guidance, or it could be a revision to the 20.2002 guidance to more clearly indicate how to handle very low-level waste.

When you talk about rulemaking, that rulemaking could look several different ways. It could be a completely new section of the regulations that address very low-level waste. It could be a new classification of waste, or it could be a revision to the 20.2002 rule that already exists to better define what's acceptable.

So they're separate but related, and part of what we're trying to do is get your feedback on how to move forward with those separate but related tasks.

MR. SUBER: And I was just reminded that the scope of the material covered by 20.2002 is much broader than materials covered under very low-level waste. For instance, recycling can occur in 20.2002 and a number of other issues with the disposition of the material, as opposed to disposal of waste. And

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I think that that's a point that we need to make a little more clearer. Thank you for your question because that did bring it up. So there's a difference between material being released through the 20.2002 mechanism and waste being disposed of a new waste category called very low-level waste.

You look confused.

MR. SHRUM: I forgot to finish my comment. This is Dan Shrum again with EnergySolutions. I would have proposed that you just kept them together. I understand now better why you would want to keep them separate. I'm not aware of 20.2002 being used in recycling, but you must have instances where that's occurred. We recycle material all the time, and we do not use the 20.2002 exemption. We have a license, and we're able to manage through the license.

These are very intertwined. I accept that, I understand that. Let's just make sure that, as this comes out, we're able to be able to comment properly on the right thing and that you are considering them somewhat together, but they may have separate outcomes.

MS. EDWARDS: Lisa Edwards with EPRI.

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Thank you very much for the presentation. I agree with a lot of the comments that have been made. I'm glad that you're looking at this sort of holistically and considering both topics together. But I agree with them being separate topics, but they certainly impact each other.

So you had a slide on the EPRI report, and I just wanted to -- it's not really a question, Lee. It's more maybe just a comment for you to consider. We recently published, well, we haven't published it. We're going to publish it this year. We expected it to be out first quarter, but it will probably be second quarter. But this week, we've been presenting highlights from a report that will soon be published relating to a comparison on how different countries characterize their waste. There's a lot of interesting information. It's in-depth. But one of interest in particular is each of the other countries that we looked at all have a very low-level waste category. They define that category very similarly. They're all under the IAEA classification system, which has many nuances in how it is implemented. But in regard to very low-level waste, it's quite consistent from country to

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country.

The two reports that you have here investigated that concept sort of, in general. Very low-level waste is certainly practiced conceptually in the United States through the 20.2002 exemption process and also through other agreement state processes that are licensed by them.

The thing is, when you go in and you look at an exemption process, I think that it conveys a different message to the public than maybe what is necessarily intended. I think exemption always sounds like you're making an exception to what should be the rule, and there is a certain amount of baggage that comes along with that interpretation. In fact, very low-level waste worldwide is recognized as having a separate set of characteristics and that those characteristics in combination represent a distinct hazard that is different than the hazard that we typically associated with the remaining portion of what we call Class A waste. And that is why it's defined differently and separately in other countries and why different disposal requirements are imposed upon it. And I would suggest that our report

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investigates that to compare the 20.2002 exemption process and other agreement state processes that we looked at to say, what we wanted to do is say, well, when we implement those processes, how does it compare to those other countries outside the United States that also implement very low-level waste? And the disposal requirements that are being imposed by these different processes in the U.S., how do they compare to the disposal requirements that other countries impose on this category waste? And we found it compared very favorably. So in those cases where folks are using the exemption process and typically go to a RCRA disposal site, that compares very favorably to how Spain or France or some of the other countries dispose of their very low-level waste.

I think when you leave it in a separate sort of buried in this exemption or authorization process, it does convey something you don't really want to and it is subject to a lot of interpretation and perhaps misunderstanding. Particularly, if they say, well, I looked how this guy did it over here, and it's different how that guy did it over there. And I believe that making a rulemaking will make the

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process more transparent.

I think you'll get lots and lots of opinions on what the best way to proceed is and how best to prioritize, you know, the benefit of doing the boldest rulemaking versus improving perhaps 20.2002 guidance.

And then the last thing I would maybe reiterate is that decommissioning volumes are coming in the future. They're not here today, and, even if these 15 or 20 plants go into decommissioning soon, it will still be a while before those extremely large waste volumes are ready for disposal. So we have time to carefully consider this topic now before we're in the heat of the moment, and I think that's always a better time to consider it, when there's not pressures on you that could be interpreted as driving or inappropriately influencing the decision-making process. I think that's good for us.

Also, this waste category I think could be important to the country in some scenarios that we hope we never see. For instance, a radiological bomb or a dirty bomb, whatever the term is that people use for that. If we had any kind of nuclear

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accident scenario that took place where you had large volumes of low-level contaminated waste, having a structure in place that's carefully considered outside of the presence of the particular situation I think always carries more credibility, and that's where we are today. We don't have one of those situations, and we have time to carefully consider it.

MR. GLADNEY: Thank you for your comment, and I think one thing that you mentioned that I really would like to mention as well is that the scoping study is a proactive approach that we're taking to make sure that we're not being reactive; to go forward and to consider the landscape going forward.

And so, as you mentioned, decommissioning volumes aren't going to show up tomorrow, but the point is that we don't want to wait until tomorrow; we want to go forward. So that's a good point, and I appreciate you mentioning that.

MR. MCKENNEY: Carolyn, do we have anybody on the phones?

CAROLYN: Yes, we do have a couple of

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questions from the phones. Our first question or comment is from Diane D'Arrigo. Your line is open.

MS. D'ARRIGO: I wanted to get an understanding of the distinction between 20.2002, which is a case-by-case situation where waste could be alternatively managed, disposed, whatever, and the very low-level waste category that, if I understand you correctly, that would be a generic description across the board where the determination would be made, say by the generator, that this is what this category of waste is, and it could be a generic re-definition, rather than having an analysis done through 20.2002. Is that right?

MR. GLADNEY: I think that is a good point there. One thing I would say is that, as part of the scoping study, we are looking to define what very low-level waste would be. I think that's one of the options and considerations that we would have going forward.

So I think, as far as clarifying what the definition is, that would be a key point, and then also the NRC's regulatory authority. We would still review applications, as necessary. We still review for the benefit of the public. It wouldn't

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necessarily -- I think the terms and conditions under which we allow exemption would still be something that we would consider. We wouldn't want to introduce unintended consequences that we mentioned earlier in the slide, as well.

So, these are some of the reasons why we wanted to consider that. We want to just make sure that the public, as well as who we regulate, it wouldn't be -- clearance is a different topic than waste classification.

MS. D'ARRIGO: Say that last sentence again.

MR. GLADNEY: Clearance. Clearance is a different topic, automatically exempting materials is a different process than allowing for disposal at RCRA facilities, for instance, or having a very low-level waste category.

MS. D'ARRIGO: So what you're saying is one of the options of the very low-level waste category would be it would, well, it's good to get into the details of it, but it would go to a specific place if it meets that criteria, a specific kind of facility? That it wouldn't just go to, it wouldn't stop being regulated, it would continue to

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be managed as solid or hazardous waste?

MR. GLADNEY: It might be an option. One thing to keep in mind about the 20.2002 process is that it allows for disposal to occur at sites other than licensed low-level waste facilities. It does not take that material and then change its regulatory authority over it.

MR. SUBER: This is Gregory Suber. And that's how we're doing the study. So we want to develop, we're contemplating whether we're going to institute a new class of waste called very low-level waste and we're trying to engage the public to see that if we're going on that path, you know, what kind of constraints we should put around them. You know, should we say we're developing this class of waste and it can only go to a RCRA facility? Are we developing this class of waste and it can go to a RCRA C facility, or it could go to a municipal landfill? That's why we're having this study. That's why we're engaging the public. None of those things have been decided, and that's all going to be part of this conversation.

MS. D'ARRIGO: But the distinction is that, if you were to make a category, a very low-

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level waste category or classification, that waste that fell into that category then would be, would be treated, as long as, however that class of material is allowed to be managed, that there would not be a case-by-case deal anymore. The distinction is 20.2002 requires an analysis and that a decision on the specific load of waste or category of material from a decommissioning or whatever, so that's something that every time you've got to do an analysis and the NRC has to analyze it. So by doing a very low-level class of material or category of material that that would sort of be like a generic category that wouldn't require that case-by-case thing. You would do whatever analysis for all of that waste, and then it would -- I'm trying to see the distinction between the two. I mean, if you're saying it's not a clearance, but it's something that's going to potentially require more, some type of controls, you would apply that to the entire class of waste, so that they all go to a RCRA facility. But as long as it met the criteria then that decision would be made by the rulemaking, not by the case-by-case decisions.

MR. SUBER: That's correct. If we

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create a class of waste and we say that that class of waste is acceptable to go to a RCRA facility, then it would not be a case-by-case, disposal-by-disposal review of that disposal action or an issuance of any type of exemption.

MS. D'ARRIGO: And, of course, you know that we want to have continued control over radioactive materials for their radioactivity, and so it would not support such a category if it was going to release it from radioactive controls. I'm putting that on the record.

MR. TAPPERT: Right. And this is John Tappert again. So we appreciate those comments. That's sort of what we formally want through the scoping study. That's the sort of feedback that we'll be looking for, you know, to look at the status quo framework that we have in the 20.2002 process and see is that the best model or are there other alternatives that provide sufficient controls consistent with the hazard of this material?

So we have --

MS. D'ARRIGO: How will you be announcing the kickoff of that process? Was that going to be a *Federal Register* thing or will you

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notify people that you know are interested stakeholders?

MR. TAPPERT: Both those. So there will be a *Federal Register* notice and, you know, we typically have a list of questions that we're specifically soliciting feedback on, and we usually accompany those with meetings and webinars to solicit in-person comments, as well.

So what we're hoping to do later this year, I think the time for this is good. We do have plants shutting down now, but we also have 99 operating nuclear power plants, and the one thing we do know about those is that they will all be decommissioning at some point. And the best time to look at your roof and repair it, if necessary, is when the sun is shining. So I think now is a good time to do this and kind of watch this conversation.

MS. D'ARRIGO: I ask to be on the list to be notified when these things are happening, please.

MR. TAPPERT: Yes, thank you. We'll let you know.

MS. D'ARRIGO: Thank you.

CAROLYN: And we do have a couple more

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questions from the phones. Are you ready for those?

MR. MCKENNEY: We'll take a few more.

CAROLYN: All right.

MR. MCKENNEY: We'll take the second, Carolyn, we'll take the second one from those.

CAROLYN: All right. Our next question or comment from the phones is from Charles Maguire. Your line is open.

MR. MAGUIRE: Hi, folks. I just wanted to let you all know I made it back from Phoenix. Sorry I couldn't be there. I think this is an important meeting. I do want to, I did want to comment. I think it's important what Lisa said. I want to emphasize that I always agree with Lisa.

The cubic feet involves some determination of very low-level radioactive waste, and then satisfactory disposal of that I think will be vitally important. I think there's a reason to look at different disposal scenarios based on the risk-informed approach, which I think you could do with the process you're talking about. And so I think it's a very important process for you to engage, and I hope you are moving forward with it.

One of the things that I would suggest

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that, as we talk about this and as we start to engage the public with this, we need to make it clear that the regulatory paradigms that the waste would pass from and into. You know, the word exemption always troubles, I think, a good solid understanding, even among people who know way more about all of this than I will ever know. But when we use the word exemption, then we start to get different notions about just exactly what that means.

And so I think if we can make an attempt at least to always be clear about what sort of regulatory controls or paradigms the waste might pass from and then what sort of regulatory controls and paradigms it might pass under as it is, quote/unquote, being exempt. Even clearance passes just through a different regulatory paradigm. It never leaves the world of regulation.

So, anyway, that's my suggestion relative to the topic. Thank you for the opportunity to comment.

MR. MCKENNEY: Thank you, Charles. I've got three questions, four questions here before we go back to the third one. Roger?

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MR. SEITZ: Thank you, Chris. My name is Roger Seitz from the Savannah River National Laboratory. I just wanted to also echo along the lines of what Lisa was saying, that very low-level waste is not something new anymore. Internationally, developed countries are recognizing the value of such an approach.

And I'd also like to add that the Department of Energy doesn't necessarily call it very low-level waste, but at clean-up sites it's become well accepted to use these double-liner and leachate collection, essentially a RCRA type disposal facility, to manage decommissioning waste and clean-up waste at those sites. So this is something that's been done with agreements from the states or EPA, depending on who regulates it, and in a public process. So it's well accepted.

MR. CAMPER: Larry Camper, NRC, retired. I was going to, I was going to make an observation to Diane, and her comments just replayed the very point that I was going to make. In her first comment, she married very low-level waste and below regulatory concern clearance. And in one of the slides, you cited that that was a document that you

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were going to review, which makes sense, of course.

And my question and observation was I assume, in the course of the public meeting and so forth, you would be drawing a clear distinction between the two, very low-level waste and clearance.

Now, an observation. That would be compounded by the fact that clearance in NRC regulatory space is not a dead issue. It's an issue that was tabled by the Commission in 2005 - 2006 because of then higher-priority rulemaking associated with security issues. So I think it will be of great value to the staff to be prepared to address, A, the difference; and, B, the fact that that matter is still out there because I'm not the only one that knows that.

MR. GLADNEY: Very good comment, very good comment. And to your point, that's one of the reasons why we had it on the slide, and I think you hit the nail on the head, as far as us going to look and revisit lessons learned and insights from those specific activities.

MR. WEISMANN: Yes, Lee. Thank you very much for the presentation and for the NRC to -- I'm Joe Weismann from U.S. Ecology. So thank you, Lee

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and to the NRC, for hosting this meeting and for talking about this very important topic. My company has been well involved in the 20.2002 process over the years, and we've garnered a lot of experience in what goes well with it and, frankly, what doesn't.

I would not say it's the most efficient process, but it does work, as already mentioned. And it has provided alternatives to licensees to save a substantial amount of money, and it changed the whole paradigm of low-activity waste in the country. The industry has kind of figured out how to do this. It's not, like I said, it takes a long time, but it does work.

A couple of recommendations I would make to NRC, as far as, if you wanted to, you could pursue a rulemaking. Defining very low-level waste is a great idea, but publishing classification tables with nuclides and concentrations does not really fit how the industry has already kind of solved this problem because one-size-fits-all does not work for very low-level waste. You know, it should be performance based. It should be based on what, you know, specific sites are capable of, and all of the disposal operators in this room have

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moved to a site-specific performance assessment model because their sites do much more than just what a flat concentration table would otherwise indicate. DOE is the same way.

So if there is a way to define it, because why a definition is needed is because it's for licensing. It's possession of the material, it's not for the disposal of material. And there's no floor to what's licensed. Every item and material they own is licensed. So in order for my facility to receive one picocurie per gram, I need an exemption to possess that material because that material is otherwise licensed.

So I don't see the stigma to the exemptions that Lisa mentions. They've never really been an issue. In fact, with our state regulator, it actually loses credibility that I have a piece of paper that says materials exempt from licensing because it's written into our state law and to our permit. So it helps us that an exemption is granted for that. The regulation still exists, but we're still regulating on a state level.

So I kind of come at it from a different perspective. I don't see the exemptions being the

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issue.

I just would like to, in closing, I'd just like to say that addressing this in a more global way and making it more transparent would be a good thing. Just keep the performance-based aspect to it because that allows our site to, you know, compete and to continue to look at this in the future and hopefully continue to serve licensees the way we have. Thank you.

MR. GLADNEY: Is there a comment?

MS. KOCK: Joe, thanks for your comment. I have one follow-up question for you. Since one of the potential outcomes that Lee listed on his slide was revising the current 20.2002, either the regulation or the guidance, you mentioned that the process works but it's not as efficient as it could be, so I'd be interested in any feedback you have on how we can make it more efficient since that's one of the options that may come out of this.

MR. WEISMANN: Well, Andrea, one thing that pops into my head immediately is the arbitrary less than two millirems attached to the 2002. It's a dose standard that doesn't apply anywhere else in our industry. It's a factor of five lower than what

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the commissioning license termination rule is. It's a factor of 20 lower than a member of the public is allowed. And it does limit the amount of activity that can go for alternate disposal, whereas, if the material isn't licensed, the risk associated with less than two millirem, you know, in what we now understand to be dosimetry, that can be raised, and that would allow much greater access to alternate disposal overnight because it scales the volume, it would scale the concentration. That would be one.

I was told the reason why it exists is that you can do multiple alternate disposals and still be within 100 millirem. But given the time and complexity of these applications, you're not going to do one or two a year. So that's, you know, we were told less than two millirem, here's it's ten, or five, I'm sorry. So that's ten millirem that we're being held to, and I just think it's, for a lack of a better term, arbitrary. If you want to increase that process quickly without doing a whole lot, look at that one item alone and that would have a great, great benefit.

MR. ABU-EID: Thank you, Chris. This is Bobby Abu-Eid. I'd like to clarify the difference

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between clearance and one side is open. Clearance is very clear. What we have, we have 1.86 for clearance, and it works, and also in NUREG-1757 we have a dose case for a clearance, which is in the range of one to five millirem in NUREG-1757.

So, therefore, for the clearance, it's very clear that it is for unrestricted release. It's being used for any kind of other purposes. That's one thing.

The other thing for very low-activity waste, it's very good information, as indicated in GSG-1, which is category of low, very low-level waste. That's number one.

Number two, IAEA is currently dealing with this issue for this very low-activity waste. And it has other restrictions, maybe not what we're waiting for, the international guidance of how to deal with very low-activity waste. And other than for them to try to interact with IAEA and try to review this, which is coming soon, it is actually DPP currently and soon it will be issuance of guidance by IAEA about very low-activity waste. Thank you.

MR. GLADNEY: Thank you, Bobby.

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MR. MCKENNEY: Carolyn, can we see the third on line for questions?

CAROLYN: Yes. And we did have another one queue up after that. The next question or comment is Rusty Lundberg. Your line is open.

MR. LUNDBERG: Thank you. Good morning. I appreciate the opportunity to participate by phone. I think that the topics of this meeting are very important and obviously are very contemporary as far as all the discussions related to low level.

I just wanted to add in the other concept of the value of looking at this scoping study for very low-level waste in that we all understand the fact that low level right now is defined by what it is not, and I think to the extent that you can always move forward and bound something or give it a little more certainty or rigor to it I think would really help everyone as we look at the value of management of low-level waste, not only now but in the future, as has been mentioned with a lot of decommissioning waste and volumes that will come from that effort.

The other part that I wanted to mention, as you look at this, is the fact that something that

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Charles kind of mentioned, too, is that you can add, as you have this discussion and as you move forward to develop something, you can always underscore the value of the regulatory construct and the rigor of that construct is not going to be lost by simply looking at bounding something that's undefined, so to speak, and adding some more rigor or structure to that regulatory basis. And I think that the public and others, as we deal with this, will see a greater confidence in what is being done, not something that we're just trying to open up the floor and let it fall out. We're trying to add some structure and some real certainty to that floor.

And, again, I just appreciate the opportunity that everyone will be looking at this collectively and the value of the stakeholder input that will follow this. So I appreciate this opportunity. Thank you.

MR. GLADNEY: So the first question sounds like it was focused on decommissioning waste volumes and timing; is that correct?

MR. LUNDBERG: Yes. I was just eluding to the fact that we have issues now, but we also have issues in the future. And, again, as you look

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at the fact that we are working from the standpoint of low-level being defined by what it is not, I think that by looking at some kind of floor or bounding, that view, will be something that will be helpful for everyone.

MR. GLADNEY: Thank you for the comment, and I think another commenter also mentioned that there will be some value in having a definition for very low-level waste and, for that matter, I think low-level waste, so we take the comment.

MR. MCKENNEY: Okay, Carolyn. Could we have the other person online?

CAROLYN: Thank you. Our next question or comment is from Diane D'Arrigo. Your line is open.

MS. D'ARRIGO: Hi. So it was mentioned by one of the previous speakers that the two millirems a year, it sounded like he was saying it's not enough, that it's too low of a level. And I would point out that there is no limit on the number of exposures that a person could get to deregulated or to cleared materials in this two millirems per year, and so he's saying that they're only releasing maybe two per year, but that doesn't mean that a

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person doesn't continue to be exposed from something that was released in another year. Part of the problem with the whole concept here is that we're talking about long-lasting materials, and it's not like the original Texas provision that they had a long time ago. I'm not sure if it's still in effect. It was just short-acting material that was cleared. And in these situations, we're talking about every kind of isotope and very long-lasting materials that can be released. And so multiple exposures is completely feasible. It's not a far-fetched possibility to where a person lives and what the uses of the materials are once they're released.

MR. GLADNEY: Thank you.

MR. MCKENNEY: Thank you, Diane.

MR. KIRK: Scott Kirk, BWXT. I'm going to echo a lot of what Joe had to say. I think that the issue about two millirems a year, that's a little bit arbitrary. People don't know what that really means, but I would encourage you to develop a dose standard, whether it's one millirem, five, whichever it is, just pick a number, because that's what you measure to protect against or that's how you protect public health and safety is against

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dose, not concentration. And I would urge you also not to regulate it based on the concentration itself but to let those concentrations be developed based on the dose from multiple different sites because each site is different, from the geology, from the characteristics that it has. And they perform differently. And if you have a single dose, you're still protecting public health and safety to a specified limit, but you're also optimizing disposal facilities to develop their own waste acceptance criteria.

And I would also urge you to look at the Part 20.2002 process because I think there's a lot of inefficiencies, and there could be some efficiencies gained if you look at how it's been done across the country.

MR. GLADNEY: Thank you.

MR. SHRUM: Dan Shrum again with EnergySolutions. Just to be clear in the comments because this has gone on probably, just in this discussion, has probably gone on longer than others. But I would, we're looking for clarity, simple clarity. What is the standard going to be? What is that going to look like?

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And I'm going to propose a thought to you. If you were to land on this planet from another place and you were to say I'm going to live in the United States and I want to go into the business of disposing of low-level radioactive waste, where would I go to? Where would you go to? Part 61. So you would go to Part 61. Part 61 is a wonderful document. It's very, very long. It's getting longer. That's okay. But a lot of things were thought through. There are surety requirements. There's 100-year inadvertent intruder. All these different things were considered. But if you want to do this, you go to Part 20.2002 authorization, as Larry pointed out to us, and it's just this long in the rule. There's not that much there.

So a little bit of clarity. I'm not saying we could ever level the playing field. That's not what we're asking but just some clarity on how you do this type of thing, what's accepted.

Joe mentioned five millirem. Our standard for our facility is four millirem for a low-level type. So, you know, just a little bit of, you know, what are the rules and we'll decide what

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we want to do from there. Thank you.

MR. GLADNEY: Thank you. I appreciate that.

MR. CAMPER: Larry Camper, NRC, retired. Just a point of clarification around whether or not the dose criteria is arbitrary for 20.2002. I don't disagree that one could look at the number of millirems and say it's arbitrary, but it's not arbitrary without having had policy consideration.

Let me explain. Several years ago, back about 1999, 2000, 2001, that time frame, the Office of General Counsel approached the staff about this issue because there is no dose standard specified in Part 20.2002. And so the staff had moved toward a few more millirem, and the operational reality of where it came from was that, remember that 20.2002 is an authorization for disposal by somebody other than that authorized in Part 20. And back before 20.2002 became what it is today, there was on-site disposal. And the two millirem came from the notion that, in 1997, the license termination rule came into effect, and there was a dose standard of 25 millirem. If you did a disposal on-site of more than a few millirem, you ran the risk of ultimately

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contributing to make a compromise in satisfying the dose standard.

So that's where it came from. The staff communicated with the Commission and, because there was concern there was no dose standard, the staff took the view that you didn't need to do a rulemaking because there's not a lot of these, and, therefore, it's difficult just by the cost of the rulemaking. And the Commission said, okay, you can use a few millirem, but if it reaches 25 millirem the Commission must be informed.

So, yes, it's arbitrary, but not without a complex regulatory history and consideration by the Commission, for that matter.

MR. MCKENNEY: Lisa?

MS. EDWARDS: Thank you. Lisa Edwards with EPRI. In our second report that you had up on the screen, I think it was published in 2014, we actually investigated a way you might consider establishing limits. And the point was not for it to be presented as this is how we definitely think it should be done. It was simply a way to explore the various alternatives and start a conversation.

I really like what you had to say,

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Scott. And, obviously, you know, ultimately what you are doing is protecting people from dose. And in that I think is a good measure in terms of a general definition of a waste category of very low-level waste. I could envision a NUREG that explored certain concentration limits because not only do you have the dose protection in the immediate future, but you have to consider how long the radionuclides are, both gamma emitters and beta emitters, in order to really have a well thought out and defensible, I think, definition of this lower-level of control.

So we explored that a little bit in this report. We offered scenarios, exposure scenarios, from the bulldozer driver, who actually was the maximally-exposed individual in our consideration, to members of the public, etcetera.

So there's doses there, and we find this outside the United States, as well. There are also considerations for which particular radionuclides are present because there's concern about long-lived radionuclides.

MR. GLADNEY: And also I'll mention, Lisa, you mentioned that there was another report that EPRI was getting ready to publish, and we'd be

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interested in seeing that as well.

MR. WEISMANN: This is Joe Weismann, U.S. Ecology. I just wanted a quick follow-up based on a couple of comments after I initially spoke. The less than a few millirem calculation applies to the occupational workers at the landfill and the transportation, as well as the post-closure after. So the comments about, you know, long-lived nuclides is well taken, but that is rarely, if ever, limiting when we do these evaluations.

What limits us is the landfill dozer operator in a year or a transportation worker if it's going by truck, these are all, these are all doses that could be easily mitigated or avoided completely if the person is operating under a license and has an approved radiation protection program. Then they can get five rem a year.

So the idea about the less than a few millirem, if it's based on disposal only, then that would be something that I think even us, we would support because our landfill is very protected and we don't have a groundwater pathway. It's very difficult to get five millirem a year. It's the occupational side of these that are always limiting.

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We put everybody at our landfills in dosimetry anyway, but we don't have a license so we don't get to take credit for it.

So that is the part of the process that I think, if you want to improve it, look at the occupational side of those evaluations as much or more than on the disposal side. Thank you.

MR. MCKENNEY: We'll go to John Tappert's response, and then we're going to go to a question on the webinar.

MR. TAPPERT: John Tappert, NRC. I'm glad we finally found a topic that we get some energy on. So I just wanted to acknowledge receipt of some of those comments there about the looking for clarity and the dose criterion, and Larry gave us some good context on the history of it. But I think Diane's comment, I took it to mean that we need to be sensitive to the cumulative impacts of these disposals, as well.

So I think those are all important considerations, and I appreciate the discussion.

MR. GLADNEY: That's very good. Very good comment.

MR. SUBER: Okay. We have a question on

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the webinar from Barb Loren. It says, AI would like a further explanation of the brief reference to changes in decommissioning waste volumes and timing. What were the changes, and how do they affect NRC?

MR. GLADNEY: Okay. I'll take that one. What I would say is that it wasn't that long ago that we, in the United States, mentioned that we had about 106 operating reactors in the United States. As John Tappert mentioned, we're down to about the high 90s [operating] right now, and our count has increased to 20 reactors in decommissioning or that are expected to be in decommissioning in the next few years.

So based upon that, looking at evaluations -- for instance, the studies that we mentioned earlier as far as EPRI looking at decommissioning timings and also the number of reactors -- that has increased. So because of that, the announced potential decommissionings has increased the waste we expect to see in the next few years, and as a result, that will result in us having to consider those additional waste volumes and the acceleration of those waste volumes.

MR. SUBER: If I could add to the timing

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question, I think that there is pressure on decommissioning plants to actively go into decommissioning and that many plants that we thought were going to be in SAFSTOR are now actively decommissioning, as opposed to waiting for a longer period of time. And I know that there are efforts, like EnergySolutions signing project and other initiatives within the industry, to actually accelerate the timing mechanism, in addition to the fact that more plants are planning to go into decommissioning.

MR. GLADNEY: Yes.

MR. MCKENNEY: Carolyn, do we have any more questions on the phone?

CAROLYN: Yes, we did have another question queue up from Diane D'Arrigo. Your line is open.

MS. D'ARRIGO: Yes. I just wanted to respond to one of those previous speakers who advocated that the limits be, that the limits be in terms of dose. And, of course, we don't want there to be a clearance level, but if you're going to proceed, it needs to be enforceable, and so it needs to be, in terms of concentration becquerels or

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counts, because the dose numbers can be skewed by some assumptions and you don't know how the exposures will necessarily happen.

MR. GLADNEY: Great comment, Diane.

MR. MCKENNEY: Anymore questions here in the room? Okay. I think we've had a nice lively discussion there. I think we're going to take a 15-minute break then. Thank you all for the discussion. Yes, come back at 11.

(Whereupon, the foregoing matter went off the record at 10:43 a.m. and went back on the record at 11:02 a.m.)

MR. MCKENNEY: Carolyn, are you ready on the line?

CAROLYN: Yes, the lines are open at this time. Yes, you are live.

MR. SUBER: So are we ready to start? All right. Welcome back, everyone. Once again, I am going to give a presentation on Part 61. I've spent half of my NRC career doing presentations on Part 61, and I don't know what I'm going to do when this is all over.

Okay. So the overview. I'm going to give the status of the current rulemaking, talk

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about our proposed implementation strategy, which is not something that we have talked about at length, and talk about the next steps following the rule, which include evaluating whether we should update the waste classification tables and dealing with greater-than Class C and transuranic waste.

Okay. As many of you have been following the rule know, the Commission approved the (draft) rule. We modified the rule and put it out for public comment, received a lot of comments on the rule, and gave an updated version of the rule package, the final proposed rule, to the Commission in September of 2016. And the Commission is now evaluating that rule and the staff is waiting on the decision of the Commission.

Next slide. Okay. And we'll go over this in a little more detail later, but, after the Commission votes, if they vote to approve the rule, the staff will have four months to get the rule to OMB for OMB review. Then we'll have a year to publish the rule, and the agreement states will have three years to make the rule final.

Okay. So as many of you know, we've published a rule, but none of the low-level waste

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Part 61 facilities are in non-agreement states, and all of the Part 61 licensees are in our agreement states. So after we finally publish the rule, it will be four years before the rule truly becomes effective.

Next slide. So we are currently considering the best way to implement the changes in the rule, and we just recently went through a process of revising the Branch Technical Position on Concentration Averaging, also known as a Concentration Averaging BTP. And we tried to do a good deal of outreach and coordination with both our agreement state partners, our inspectors in the various NRC regions, and we even collaborated with EPRI as they created their own guidance on implementing the BTP. So we're looking at that currently to see what areas in the proposed rule would be ripe for the NRC to do additional outreach.

Next slide, please. So right now we're contemplating how we're going to use the BTP because, in that process, we got a good deal of positive feedback as the staff went out and as the staff focused first on regional inspectors and secondly on our agreement state partners. So since

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that process and that approach seemed to have been successful, we're going to try to look at that as maybe a model in moving forward with the Part 61 implementation.

Next slide. The other portion of the Part 61 implementation that will be very important is, after the agreement states have gone through their process and have put the rule in place and are working with the rule, we are going to use our Integrated Materials Performance Evaluation Program to go and evaluate the implementation of Part 61.

It's important to know in all the things that we're talking about that the NRC sees itself in partnership with the agreement states. And I think, and Charles Maguire and Rusty Lundberg could probably attest to this, we work very hard and very collaboratively in all the aspects of formulating the rule and assuring that we are seriously considering all the input from the agreement state regulators who actually have to implement the rule, and we are going to take that partnership and carry it into the phase of implementing the rule so that we can implement the rule fairly and consistently across the country.

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Next slide, please. All right. So after the NRC implements the rule, we have to send a Commissioners Assistants Note on the potential changes for the second effort following Part 61 and this has been talked about briefly. We talked about it when we were talking about the programmatic assessment and that is to look at the waste classification tables.

Initially, staff had proposed, I believe in 2010, to do a comprehensive revision of Part 61, which would have included things like explicitly classifying depleted uranium and revising the waste classification tables. So what the Commission did is told us instead that, after we complete Part 61 and we know what shape that rulemaking, and maybe Larry can help me out, which was the depleted uranium rulemaking which turned into the waste streams rulemaking which turned into the limited Part 61 rulemaking and is now just the Part 61 rulemaking, through all of its iterations, the Commission just instructed the staff to come back after you see the final phase, the final state of the rule and send a Commissioners' Assistant note to the Commission to inform them of what we think about

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the waste classification tables and whether they should be revised.

So right now we are in the process of crafting a *Federal Register* notice, which is going to, after the rule has been completed, which is going to ask several questions. And we're going to have, once again, public meetings and receive your input so that we can give the Commission our best advice as to what to do with the waste classification tables.

Next slide. The other effort that the Commission directed the staff to do was to prepare a regulatory basis for disposal of greater-than Class C waste six months after the completion of the Part 61 rulemaking. If any of you were here during the week and saw our presentations, you know that the staff has already begun that work; that we weren't just sitting around waiting for the rule to be completed before we started looking at the technical basis. We have started doing some outreach with the Department of Energy based on their GTCC final EIS. In addition to that, the staff has evaluated various materials, and we've actually completed two papers, one of which was presented at the waste management

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forum in 2015 and another that was presented last year at IAEA where we looked at the whole universe of greater-than Class C waste and tried to determine what kind of disposal attributes we had to examine when considering whether GTCC was going to be suitable for disposal in the near surface.

Next slide. Okay. So that completes my presentation on the implementation of Part 61. Right now, like I said before, we are still awaiting final word from the Commission as to how we're going to move forward and what the final form of the rule looks like. And as soon as we do that, we will embark on our implementation strategy. Okay.

MR. MCKENNEY: Carolyn, for the questions online, and we have some questions here in the room.

MR. SHRUM: Thank you, Gregory, for your presentation. Would you go to slide eight, please? You presented this just ever so slightly differently than I heard it before. And I want to make sure that I'm understanding it.

During the last public comment on the final Part 61 rule, you asked for input on the need to look at the table and specifically the need to

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look at depleted uranium. And we provided comment to that, and then, actually, I'm going to mess up what you call it, the thing that you send to the Commission --

MR. SUBER: A CA note, the Commissions Assistants note, right.

MR. SHRUM: You made comment about that, because of the requirement for a performance assessment that is in the final proposed rule, that that might not need to be done and you're going to let that make the determination. But I thought I just heard you say that it's going to go back out again for public comment and another round of whether or not we're going to reclassify depleted uranium and re-do the table. Is that what you said?

MR. SUBER: Okay. I'm not sure I said what you said that I said, so let me say what I thought I said again. Okay. So we will finally have a Part 61 rule, right? And we are going to ask a question that, hey, we have this Part 61 rule --

MR. SHRUM: Who? You're going to ask the question --

MR. SUBER: To the public, to everybody. To you, to everyone in this room, to anyone who

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wishes to respond. We're going to ask a question. We're going to issue a *Federal Register* notice. We're going to ask a question, a series of questions, and one of those questions is going to be, and I'm paraphrasing, is, hey, we've done a Part 61 rule, okay. This rule has a requirement for a site-specific analysis, right? So if we're using a site-specific analysis to determine what waste could go into a particular site, do we even need to look at updating the waste classification tables to explicitly classify anything, including depleted uranium?

MR. SHRUM: And I believe that you asked that same question when it was out for comment before.

MR. SUBER: We did.

MR. SHRUM: And you're going to ask for it again?

MR. SUBER: Yes, we are.

MR. MCKENNEY: How about I change the rules right here? The point is that the previous rule was a draft rule, and now we have, we will have the final rule just to clarify the actual state of the final rule because varying changes that might be

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a variant that applies to that possible rule.

MS. EDWARDS: Lisa Edwards with EPRI, very brief. So I need to think a little bit about how much stamina I have left for a second Part 61 rulemaking. But I will tell you if a second rulemaking is pursued, I think there's some room for consideration in terms of alignment with international standards. A very low-level waste category would certainly fit within a rulemaking. I think we have a report that you have access to. It's publicly available. I think it has been transmitted, but, if not, we can relate it to the waste classification tables, and I've given several presentations on that.

So, clearly, the values that are at the table are based upon ICRP-2, the concentration limits. It's old, it's outdated, it points at the wrong things to go after in terms of protection.

We hear comments across the board on whether they should be updated or deleted, and I guess where EPRI is right now is they should either be updated or deleted, right? But what's in the rule right now is wrong. I mean, there's not sort of a nicer way to put that.

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So I will tell you, from some of the plant personnel that I interact with, what they tell me is we are in this golden age of a lot of disposal being available to pretty much all plants in the United States. That has not always been the case, and there is certainly no guarantee that that will continue to be the case. The absence of the waste classification tables causes them a little consternation when they consider storage scenarios. Those classification tables provide information that the impact containment selection, how they package waste, etcetera, in a storage scenario when there are no waste disposal sites with their specific waste exception criteria available.

So I hear that. There's a reasonable concern there. It's not an active concern because the disposal sites are available, but I would urge you to consider that in terms of updating the classification tables. I do not know if there is a way to update them without a rulemaking, but, if you could, you know, I think that's an important aspect.

Other things to consider in a comprehensive rulemaking would include the institutional control period. This is a subject

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that EPRI tried to bring quite a bit of information forward on early in the Part 61 limited, unique --

MR. SUBER: Waste stream and --

MS. EDWARDS: Yes, soon to become unlimited. So the institutional control period, there's a lot of information out there related to a technical justification for considering an alternate control period. And recently this week I've heard Paul Black put some information out that really seemed to resonate with almost everyone in the room regarding is there a possibility of a paradigm shift that says, you know, we're trying to control things out to two million years. Well, think about what homo sapiens were doing two million years ago. Think about what we were doing 200 years ago. Problems that were insurmountable 200 years ago are now very well within our capabilities. And so for us to presume that we need to spend untold effort on protecting that far out, maybe there's room to challenge that. Perhaps the right paradigm is we assure protected period for a certain period of time, perhaps 300 years, and that would give us some international alignment. It would certainly align with some of the IAEA guidance on can you even do a

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projection beyond that time frame? And it would, I think, make some of the burden that is on disposal site operators a lot easier to bear.

In terms of greater-than Class C, while you were presenting that, one thing that crossed my mind is, is WCS really a near-surface disposal facility?

MR. FORD: No.

MS. EDWARDS: It's really, it's deeper than that, isn't it?

MR. SUBER: Okay. So let the record show that Mr. Ford said no, so it's not a near-surface disposal facility. Okay. So, Lisa, thank you. And I appreciate those comments, and I just want to remind everyone that we are transcribing this meeting, so we will memorialize your comments and consider them as we move forward in this effort. And probably, you know, you mentioned, I don't know if you want to say frustration but additional changes to Part 61, and I think I may have highlighted the fact that the Commission did tell us to do a, it might be a GTCC revision to Part 61 in the future, in addition to the transuranic waste definition that they explicitly told us to do,

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whether we do anything else or not. That was just one thing they've already said to address transuranic waste.

So if you're suffering from Part 61 fatigue, I do not have a remedy for you today.

MR. MCKENNEY: We're going to go to Larry, and then we're going to see if there's someone on the phone.

MR. CAMPER: Thank you, Gregory, for your presentation. Larry Camper, NRC, retired. First, I want to make a couple of comments, and then I'll finish with a question. I really want to commend the NRC staff for the work that was done on Part 61. Over roughly a ten-year period, the staff went through extraordinary measures to get input from the public, the industry, above and beyond what the process called for. But the staff did that because it knew this was very complicated and controversial, and I think it's commendable. And, of course, along the way, the Commission directed the staff to a number of changes. So the staff's work was commendable and remains commendable.

I also would compliment you on using the BTP process. It was an effective and successful

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process, and there will be lots of implementation questions, and I'll come back to my question about that.

But, Lisa, I think you need to get your sneakers on. I don't see how another Part 61, I don't see how another Part 61 rulemaking, I mean, the staff has two pieces of direction already. One says that you will conduct an analysis of GTCC waste inventory and, if any of it is found suitable for near-surface disposal, you will receive a rulemaking plan, etcetera. Well, a lot of it is suitable for near-surface disposal, and I would draw your attention to the slides that Tom Kalinowski used the other day in his presentation which were spot-on and graphic.

I think the big question is how comprehensive could or should that be? And I shudder to say those words because I recall way back in 2007 when we were having meetings with the staff and realized we had to do a rulemaking. I loathed the thought because I knew what it was going to be like, and it became even more complicated than we imagined. And so will be another rulemaking. But that's the process. It is what it is, and I'm sure

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you'll get the job done very effectively.

Now, having said all that, the question that I had is, I think that the implementation of the rule and its impact on the agreement states is a terribly important critical issue. I recall during the meetings where there was great concern expressed by the agreement states and in particular one agreement state with regards to grandfathering to the public. And, of course, grandfathering did not take place with this rulemaking, and the language that was put in the original was removed, which we should have done when we first published it.

But there are issues with the agreement states that I think they'll need to have specifics in the guidance. For an example, while the compatibility category was modified so that their period of compliance was not compromised. If Utah or Texas or Washington or South Carolina was to use something different than the NRC, then that's good. Now, there's some constraints about the types of waste that are disposed that may drive them to compatibility, but it is what it is. Physics and science is what it is.

But the issue really is beyond

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compatibility and under the umbrella of grandfathering, and that is these sites had disposed of depleted uranium. It is part of their source term. There always has been and there is now a closure analysis that's required. And now that closure analysis has been enhanced with some additional things as a result of this rulemaking.

So I think that, for the agreement states, when you work your way through that, working with them and getting their views and guidance to how they will conduct their closure analysis, given the source term reality, will be critically important to this. Just keep that, you know, in mind.

MR. MCKENNEY: Carolyn, do we have questions on the phone?

CAROLYN: Yes. I apologize. Earlier, I didn't have anybody. As a reminder, it's \*1 and record your name, and we have a question or comment coming from Clint Miller. Clint, your line is open. Please go ahead with your question or comment.

MR. MILLER: Yes, my comment is in support of what Lisa Edwards stated about waste generators and the need for a waste classification

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table. Even if disposal sites are open, that does not mean that waste generators necessarily have access to those sites. The Richland, Washington site has been open for many years. Our power plant shipped with them in the 80s, and then through compact rules we're not allowed to ship with them. We then shipped to Barnwell. Barnwell closed in the 90s, and we could not ship to them. Of course, it closed, it's open but we don't have access to it. We currently have access to Texas, but that's, you know, at the prerogative of the Texas compact.

So we do need guidance in those periods. For an extensive period of time, we do not have access so that we can package waste properly for storage. Thank you.

MR. MCKENNEY: Thank you, Clint.

MR. SUBER: Thank you, Clint.

MR. BENJAMIN: Mike Benjamin, EnergySolutions, Barnwell, South Carolina. And Larry kind of stole some of my thought, but I beg the Commission to remember the agreement states and the disposal sites, like Barnwell, that have been open have been in compliance with all our rules, for 47 years in Barnwell's situation. And I've been

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trying to think of a different term rather than grandfathering. Maybe it's an authorization from the Commission to allow us not to spend an enormous amount of money looking out two million years from today, to be as subjective as possible. Thank you.

MR. SEITZ: Roger Seitz from Savannah River National Laboratory. I think this is actually going to tie in to what Lisa was saying. We've all expressed concern, well, these predictions out over a long time and how long they're meaningful. There's one specific point kind of linked to Paul Black's points this week, and I'm going to read a part in the rule and this is specific to intruders. It says, an intruder assessment shall, one, assume that an inadvertent intruder occupies a site and engages in normal activities: drilling, construction, agriculture, and drilling for water, etcetera.

In the guidance it says, because there is no scientific basis for quantitatively predicting the probability of a future disruptive human activity over long time frames and the inadvertent intruder assessment does not consider the probability of an inadvertent intrusion occurring,

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this leads to this thought that we're being forced to kind of, worst case is too strong, but we're being pushed to make these assumptions that kind of the worst thing is going to happen.

But one thing, in reading, as I was reviewing things, I found a letter from Camper and Maguire from August 5th, 2015 that, I'll give you the number, it is 15209A311. And there's a recommendation in that letter that ensures that credit is not taken for the probability of intrusion, but, if it is, then use the probability of intrusion in combination with the 25 millirem dose limit.

So I guess my question is which one is it? Can you consider probability, or can you not?

MR. SUBER: Okay. As the rule is currently constructed, we do not consider probability, which is why we have a 500 millirem dose standard for inadvertent intrusion.

MR. TAUXE: John Tauxe with Neptune & Company. I'm just clarifying, and correct me if I'm wrong, that's true for the intruder assessment technical analysis --

MR. SUBER: Correct.

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MR. TAUXE: -- but the performance assessment technical analysis, the probability of something like that happening is certainly to be considered, right?

MR. SUBER: Okay. The probability of --

MR. TAUXE: The probability of some member of a public getting involved in a site that might otherwise be defined in the intruder assessment as intrusion, there are members of the public who would do things on the site that aren't, they're not drilling, they're not putting up a dwelling. There's other things that can happen, and there are probabilities there, or even if somebody does come along and drill, in our view, that would be part of the performance assessment and one for a particular site the probability of that event occurring, that's in the realm of performance assessment, and the intruder assessment is a simpler analysis with the exception that we're setting the probability of intrusion to one to study that particular case. But it's a separate technical analysis.

MR. SUBER: Right. It's a separate technical analysis, and, Chris, you're going to have

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to help me with this. So for the performance assessment, we're looking at the general population and we're looking at a person at a particular point from the disposal facility.

For the intruder assessment, we're looking at someone who has intruded onto the, into the disposal facility and has, in some way, come into contact with the waste, right?

MR. TAUXE: And so in the performance assessment, how do you account for somebody who gains access to the site as a member of the public? I mean, in a controlled area, it would still be an intruder, just if they, like, a recreational use scenario again or the interior scenario on top of the site.

Now, if you're looking at what would be the off-site impact of a drilling scenario on top of the site, if that one is to be what you want to evaluate for the off-site member of the public, then that would be the initiating event to damage the facility for an off-site event, that would be part of the performance assessment, but that wouldn't be for somebody walking onto the site. That would be the inadvertent intruder side because doing it on

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the site or the controlled area.

MS. EDWARDS: Lisa Edwards with EPRI. So I'm not trying to be tiresome here, but, strictly from a technical viewpoint, I understand we have a deterministic model. And in the deterministic model, we set to one that an intrusion is going to happen, but we don't stop there. We say not only does the intrusion happen, it happens on the very first day after the cessation of institutional controls, the first possible moment.

The probability of an inadvertent intruder is certainly impacted by the length of time since the cessation of institutional controls, and it is not highest on day one after the fence disappears. You can remain in a deterministic model by saying the intrusion does happen but still inform it to some extent by considering the probability of when it's most likely for an intruder, for that occurrence to occur. And it's not day one. That's just another layer of conservatism on top of the deterministic model.

But we don't stop there either. We say not only does it occur and it occurs on day one, they're going to hit the worst possible thing.

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They're going to go out to the 14,000 acres at WCS. They're going to randomly intrude and pick the very worst thing that they can on the thousand acres at Barnwell, and they're going to find that one drilling crappy package, right? The one that has the highest risk.

I would say to you that you can keep a deterministic model, but you could give consideration of the relative volumes at different concentration levels even if barriers fail. You can consider the mixing of soil with the activity contained in packages, etcetera, in those intruder scenarios more fully than what is accounted for now.

But by a volume basis, since we don't have very low-level waste, if we do have an intruder and they do make contact with the waste, the probability of way sky-high they're going to hit DAW, not a resin container or a filter container. And there's no consideration given for that. All the limits, all the precautions that we're taking, they go down through that.

When you listen to it, it just sounds ridiculous. And we may think we're doing the public a service somewhere out in the future. I'm not

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convinced that that's true, but I do know who's paying for that, and it isn't the people in this room. It's the public that's paying for that, and I think that needs to re-enter our thinking process if we do a comprehensive revision to Part 61.

MR. SEITZ: So I didn't get a chance to follow-up. So what you're saying is, per the rule, probability is not permitted.

MR. SUBER: Correct.

MR. SEITZ: For intruders.

MR. SUBER: Right. For intruders, right.

MR. SEITZ: For other scenarios, you would be willing to look at what type of exposure might occur, where it might occur, could there be probabilities associated with that, or is it always going to be the time and point of highest concentration where that --

MR. SUBER: Okay. I'm not sure I understand -- for other assessments?

MR. SEITZ: For all pathways. Let's say 25 millirem performance objective. If you're doing that scenario, I'm just trying to be clear -- right now, the impression is we have to go to the point

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and time of highest concentration to do that assessment. Is it possible to look at the probability that it may not occur at the point in time of highest concentration?

MR. SUBER: So introduce probability into the performance assessment; is that what you're --

MR. SEITZ: Yes.

MR. SUBER: Okay. I thought that it was already incorporated.

MR. MCKENNEY: It thought of including probability of scenario into this system, which, theoretically, could be done if you can defend the probabilities of scenarios, which, with their uncertainties, could be quite difficult. No, we're not predicting dose. We're using it as a metric.

MR. BENJAMIN: Mike Benjamin, EnergySolutions. Why do we need to consider, have to consider intruder? The current Part 61 requires that Class B and C waste, the longer-lived isotopes, be buried five meters below the surface or have an intruder barrier in place. So we're thinking that sometime in the future, homo sapiens will be so stupid that they'll drill a hole, hit concrete,

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continue to drill a hole on something that's not soil-like and pull it out and spread it on the ground and plant a garden on top of resins or filters. We've got to give our race a little bit better credit than that.

MR. ABU-EID: Bobby Abu-Eid, NRC. Just to give you briefly what we currently have in the guidance, the previous guidance of course, regarding the intruder exemption typical scenarios. There are two types, dormant activities during construction and drilling well water. We need to select actually one kind of scenarios in particular. So there are different scenarios. If the drilling scenario is actually more likely for that to happen, so you use that. You do not need to consider all kinds of scenarios, but you need to think about those scenarios.

There are other ones that we say in the guidance for activities when we do the scenario, which means it should be consistent with the activities in the vicinity of the solid waste assessment. So it will be more realistic and look what kind of activities at this time, and that's what the guidance provided.

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Now, to assign a scenario, for that and other, they agree that it's very difficult to assign probability. It's very, very difficult to assign a probability for a certain scenario to take place or not. It's based on site-specific condition you may select the scenario for intruder to make that assessment. Thank you.

MR. MCKENNEY: So one more, and then we'll jump up to the phone.

MR. KIRK: Scott Kirk, BWC. Chris, this is really a question for you. Correct me if I'm wrong, but can I just get, when the Class C limits were derived, you know, it was assumed the requirements were you even have an intruder barrier, you know, to protect against intrusion, or you dispose of the waste at a depth of at least five meters. But I think when the Class C limits or when the other Class C limits were established, the NRC did not assume that someone actually drilled through the waste but the drill, the well was drilled adjacent to the disposal facility and the water became contaminated. And the drinking water pathway is what drove the development of that Class C limit. That's my recollection, that the waste was not

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actually drilled into.

And so, first of all, is my recollection correct?

MR. MCKENNEY: The drinking water evaluation wasn't added until 1986, was revised to impacts, so that wasn't the basis of the original classification tables. The limits were, again, an analysis from a delayed, actually 500-year analysis of delay and then either a construction or a house construction or other system, not a construction. That's why they're very deep. Or a well construction without, not a water system but just a construction of a well could bring up some material.

But the water pathway itself wasn't added until the 1986 update. So the actual tables don't have that in there.

But the main reason why we are changing for most B and C waste is if you actually were running a system as designed or envisioned in 1982 and still used ICRP-2 and you failed that assumption. You wouldn't change much for those waste streams. I mean, the main reason why we're adding the dose assessment and the dose value is for these unique waste streams and for new waste streams

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that weren't envisioned and for having the large amounts of depleted uranium, to be able to take advantage of the design of this facility, to take advantage of the characteristics of the sites, rather than having generic sites, because, of course, they were looking at this basically simplified trench behavior, not really with packing of the extra intruder barriers or effectiveness of intruder barriers in these facilities.

For those types of waste, and also the table also already encompassed the fact that they would not be, they would already be mixed in with other packages at lower volumes. And so even though they're calculated at a higher volume, their values in the table were raised because they were assumed that they would be co-located with other stuff of lower value and they would not be, like for cesium and other things, but they would not be assumed that you just have everything empty. The top value that you could actually calculate by the calculation, that Class A value is whatever. It already assumes some level of natural dilution, not dilution technically but management of this natural random variation between packages.

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So that system was in the original, and this is more of to allow us to evaluate more in the future to look at any new waste streams, any new situations, and new characteristics.

So let's ask Carolyn if we have questions on the phone.

CAROLYN: I'm currently showing no questions or comments. Again, it's \*1 and record your name. And we'll standby for questions or comments.

MR. MCKENNEY: Okay. We'll go to John Tauxe while we wait on that.

MR. TAUXE: Okay. Then as long as we're on the topic of performance assessment, I hope it's okay to go on about this a little bit. But it really should be made so much simpler, and we provided comments on this before and you responded, but I would like to take advantage of having this forum here to sort of lay out the philosophy of performance assessment. I believe the National Academy has been promoting it. It should be a science-based assessment based on realistic and defensible information going into it, and let's just start with that.

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The constructs of a controlled area that exists forever, there is no technical basis for that. The constructs of inadvertent human intruder, member of the public, some distinction there, there really is a lot of gray area that fits in there.

So our approach would be to evaluate for a site what you expect people to be doing in the future without labels on are they members of the public or intruders or whatever and to have some spatial constraints based on institutional control. You'd have a controlled area for that period.

Once institutional control is lost, there is no longer control over that period. Anybody can come and go on the site, and what we should be doing, since that's the realistic approach, we know that will be happening at some point in the future, when you evaluate that and what those people will be doing, this means that some sites no one is ever going to drill into the site. So to evaluate that is really not helpful. All this is supposed to be oriented towards decision-making about waste disposal, so let's not consider fantasy scenarios. Some sites, the likelihood of drilling into this land, this should be evaluated on the face

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of it, as there are people going to be interacting with the site in different ways in the future. Let's examine that based on the information we have and move ahead. And the construct of -- and that's what we would call a risk-based performance assessment that has roots in science and risk and not artificial constructs.

And so it can really be made very simple. We don't have to argue about the details of this or that, and I would just like, again, to offer up that very simple solution towards moving ahead with this. And then it also helps distinguish one site for another on an even playing field because all the analyses would be site-specific to each of those sites. So there we are.

MR. FORD: Mike Ford, Waste Control Specialists. So I'm going to wade into this just a little bit humbly because I'm new to the Part 61 process, but I've been a long-time modeler and have used models extensively throughout my career. And this is the one area that I know of where there's not a validation process, not only because it's not possible. And so to kind of leverage on Lisa's comments there, it may give the public who are not

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experts in this some sense of or a feeling of confidence when there's really, it's a best guess, it's our best effort. But they need to understand where does our knowledge end and where our assumptions begin and what confidence is placed on that.

If you're in a Part 20 modeling, if you're doing internal dosimetry, you've got a model that you're initially going to take on. And then once you get your data back, you're going to make a model with the data. The same thing on a shielding analysis. You're going to go out and validate the actual measurements, how well you're shielding performs, and you're going to come back and let that inform your model. In this situation, that's just not possible.

So I understand the constraints and the things that we're trying to achieve here. But going forward in Part 61, the public will need to understand that most of the people here understand the limits of what we're trying to do, but the public will be able to understand this is a projection, and we should be designing these facilities from an intrusion standpoint to do our

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level-best efforts but not in such a way that we can say that we have confidence that a million years from now -- if we look at, you know, knowledge is doubling every 12 years, I think there's a comment about the level of our knowledge and our ability to solve these problems, and so I think how do you take that into account in a regulation? That would be pretty difficult. Greg, you might be working for another two decades on that problem.

But I'd just like to offer that if there's any way, if we're still going to be going down this path of a thousand years, 10,000 years, a million years, we need to be able to inform the public that these are not rock-solid projections but they're more of a possible story that we're putting out there.

MR. MCKENNEY: Thank you. Carolyn, do you have any other questions?

CAROLYN: I'm currently showing no questions or comments from the phones.

MR. MCKENNEY: And does anyone have any other questions yet from the webinar? And do we have any more questions here in the room on this topic?

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Okay. So we go to our last section, which will just be open for, does anybody have any questions for any of the speakers that spoke today? We've gone through all the talks, and you want to reach back to one of the previous discussion points? First, Larry.

MR. CAMPER: Thank you. Larry Camper, NRC, retired. Two general questions for the staff. One, recognizing that the Part 61 rulemaking has now been before the Commission for some period of time, and the current environment in Washington with regards to a moratorium of rulemaking, etcetera, etcetera, has there been any feedback at all from the Commission or have any decisions been made about the NRC's posture with regards to the moratorium of rulemaking, given that it's an independent agency and it's about protection over health and safety? So is there anything there that leads the staff to believe that that might have anything to do with the Commission's time line?

And then the second thing is, on the GTCC, I wonder if you could, Greg or others, just sort of throw in the time line a bit on the GTCC and when the public meetings might occur. I know some

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of it calls for a meeting in the state of Texas, for example. Could you just fill in the spaces a little bit on that? Thank you.

MR. SUBER: Okay. Well, we can, but, of course, it's perspective, right? So within a couple, within about a month or two of the completion of the Part 61 rule, we'll be in a position to issue a draft technical basis. And within that period, a few months after that, we'll be engaging Texas, of course, with a public meeting in Texas, and we're also planning on having a public meeting at headquarters. So there will be at least two public meetings. Of course, they'll be accessible by bridgeline and webinar.

Yes, of course a *Federal Register* notice will go out with the technical, with the draft technical basis, for people to comment on and to participate in the public meetings. In all likelihood, it will be a shorter one, though, than the six months that the Commission gave us, but I can't tell you right now how short it will be.

MR. TAPPERT: And just to comment on your first two points. So the executive orders, on their face, do not apply to independent regulatory

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agencies, which the NRC is. So we're certainly not bound by that. We do want to engage in thoughtful regulation. We don't want to issue frivolous regulations. And so I think that will continue.

And as far as the time table for the Commission, as you're well aware, you know, the Commission can take the time they need to make their decisions. And so that's why they are -- this is a pretty heavy lift, right? I mean, it's been eight years or nine years in the making. There are lots of stakeholders, you know, and I could not characterize what we came up with as a consensus. It was the staff's best technical and policy advice.

So the Commission is going to take some time to work their way through that, and I've stopped trying to put dates on that. And when they complete that work, that's when the balloon goes up for the greater-than Class C activities.

CAROLYN: And we do have two questions from the phones whenever you're ready for them.

MR. MCKENNEY: Thank you, Carolyn. Let's start with one.

CAROLYN: All right. Our next question or comment comes from Clint Miller. Your line is

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open.

MR. MILLER: Yes, thank you for the meeting today. What I heard as consent from the public, I think it would be just as stated in the presentations and apparent disposal of very low-level waste. I believe the aspect of putting, you know, large quantities of material with trace amounts of radioactivity into a hazardous toxic chemical waste site, that's really the very low-level waste bucket. Material going for disposal, not to be handled multiple times, and I think just making that clear to the public is going to be very important versus clearance with no controls.

In California, I always remember, you know, the toxic model that's going into those chemical hazard sites. They have no decay. They are doing this, you know, forever. And if their equipment evaluation is they can haul material and show that that material no longer presents a hazard, or at least no more of a hazard than the toxic chemicals and heavy metals that are there, that's a disposal pathway I think the public can get their arms around. Thank you.

MR. MCKENNEY: Thank you, Clint.

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Carolyn, could we have the next question?

CAROLYN: Thank you. Our next question or comment comes from Diane. Your line is open.

MS. D'ARRIGO: Hi. The greater-than Class C issue, I understand that part of the application that WCS is making for high-level waste in our storage includes greater-than Class C. And you were talking about holding public meetings in Texas. Is that, I'm assuming that's more for greater-than Class C for permanent disposal in a low-level radioactive waste facility.

So if you could clarify that and what those meetings will be, I'd appreciate it.

MR. SUBER: Yes, Diane, you're correct. The meetings that we are planning to have in Texas have to do with the permanent disposal of greater-than Class C at the WCS site.

MS. D'ARRIGO: Is that the only site under consideration?

MR. SUBER: No. The rulemaking that we will do will develop technical criteria for disposal, for land disposal of greater-than Class C waste and transuranic waste. This is not a WCS-specific rulemaking. It is a general rulemaking,

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and that's how we're going about developing the technical criteria.

MS. D'ARRIGO: So how is it going to relate to the application for temporary storage there, if at all?

MR. SUBER: It does not relate to that application at all.

MS. D'ARRIGO: Okay. Thank you.

MR. MCKENNEY: Thank you, Diane. Carolyn, you said there's a third?

CAROLYN: Yes, we do have a question or comment coming from Barbara Wine. Your line is open.

MS. WINE: Hello, this is Barbara Wine with Citizens Environmental Coalition. I heard very quickly about the executive orders and not applying to the NRC. Could you just explain that a little bit more for me?

MR. TAPPERT: So President Trump's executive orders, the one on the regulatory rollback that has been reported on in the past where you have to repeal two rules for every new regulation and there's a cap on burden. You can actually go to the White House website to see the text of those, and it

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explicitly says it does not apply to independent regulatory agencies.

MS. WINE: And what about previous executive orders?

MR. TAPPERT: So, I mean, it depends on what the orders are. I mean, so they may or may not apply to an independent agency. The NRC tends to want to go on with the spirit of these activities, but, as a legal matter, it's not binding.

MS. WINE: You're saying usually they're not binding. So let me mention two of them. One is the one pertaining to children's health, and the other is the environmental justice executive order.

MR. TAPPERT: So I'm not familiar with those specifically, so I'd have to work with our general counsel to see what the text of those orders were to see how they apply to the NRC.

MS. WINE: So the text of the order would specify whether it's related to -- because I don't rem that, you know, that independent agencies. I've never seen that.

MR. TAPPERT: So the one that I'm referring does say it in the text of the order.

MS. WINE: The recent one. Okay. I'll

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check. Thank you.

MR. MCKENNEY: So, Carolyn, do we have any others on the phone?

CAROLYN: I'm currently showing no further questions or comments from the phones. Again, that's \*1 and record your name for a question or a comment.

MR. MCKENNEY: Do we have any others here in the room? Okay. So as the facilitator, I'd like to thank you all for your time. John, do you want to close us out here?

MR. TAPPERT: So, again, thank you for coming out to the meeting and participating by webinar. I think we had a very good discussion today, and we have some things to think about. And as Chris or Greg mentioned, the meeting has been transcribed, so we will have those comments in writing.

So stay tuned for further developments on the Part 61 rulemaking and the very low-level waste scoping study.

Again, thanks for coming and have a pleasant rest of your day.

(Whereupon, the foregoing matter went

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off the record at 12:03 p.m.)

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