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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON THE PROPOSED

LOW-LEVEL RADIOACTIVE WASTE

DISPOSAL RULEMAKING

+ + + + +

Tuesday, May 12, 2015

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Courtyard by Marriott

300 East 4th Street

Austin, Texas

6:00 p.m.

BEFORE:

CHIP CAMERON, Moderator

A G E N D A

P R O C E E D I N G S

MR. CAMERON: Good evening, everyone. This is the call leader; my name's Chip Cameron, and I'm also going to serve as your facilitator for the meeting tonight.

Our topic for the meeting is the NRC, Nuclear Regulatory Commission, proposed rulemaking on the disposal of low-level radioactive waste. And as your facilitator, I'm going to try to help all of you to have a productive meeting tonight, and we're going to try to avoid acronyms, but one that you will hear is NRC, for Nuclear Regulatory Commission.

And I'd just like to go over some meeting process issues with you, so that you know what to expect, and I'd like to talk about the objectives for the meeting, format for the meeting, the ground rules for the meeting, and then to introduce the NRC staff who are up at the table, who will be talking to you and answering questions.

And objectives: First objective is to present clear information to you on what is in the proposed rule, the structure of the proposed rule but also the rulemaking process and, in line with that, to try to give good answers to any questions that you might have.

Second objective is to listen to your comments, your concerns, your recommendations on anything that's in the proposed rule.

And the NRC is also taking written comments, and Steve Dembek, from the NRC staff, will tell you about that in a few minutes. But anything that you say tonight, any comments that you offer, will be considered formal comments. They will be on the record.

We have Penny with us tonight who's our court reporter and stenographer. She's taking a transcript, and that will be your record of the meeting. It will be NRC's record of the meeting, and it will be publicly available.

And any comments that you give tonight carry the same weight as a written comment, and you're free to amplify on what you say tonight by submitting a written comment to the agency.

And just a note on this is that a lot of times when the NRC does formal comment meetings, the question part of the meeting is separate from the comment part, and usually all the NRC presentations are given at the beginning.

We're going to do it a little bit differently tonight. We're going to segment that, and we'll go out

to you after each part of the agenda, to see if you have questions or comments, and when Dave Esh does his presentation, you'll see from his slides that he's going to break up his presentation into segments, and we'll be going out to you for comments and questions.

If you do have a comment, the NRC is not going to be engaging in a dialog with you on the comment. They'll be listening carefully to the comment, and they will evaluate those comments when they prepare the final rule.

But of course, with questions there will be answers to those questions, and I'll be bringing the mic to you who have questions or comments, and you can use this to make your comments and ask your questions.

Ground rules: Very simple; signal me when we get to a question, comment, discussion period, and just please introduce yourself for Penny's benefit, so she'll know who's talking.

And we will be going -- we have people on by phone, otherwise we wouldn't need a call leader, but we do have a call leader tonight, so we will be going to the people on the phone.

And also there's people on the webinar who may submit questions, so we'll go to the audience, we'll try the phones, we'll go to the webinar, and for those

of you who are on the phones, I'll ask you to introduce yourself also.

I'm not going to set a time limit to time you on how long you're going to be talking, because I think we have enough time. But I will be watching it so that we can make sure that we get to everybody here and on the phones who might have a question or a comment, and so I may have to ask you to summarize and be brief.

So I would ask you to be brief, and that also applies to the NRC staff, too, to try to be concise in their comments. And with that, let me introduce the speakers.

We're going to start with Larry Camper, and Larry is the director of the Division of Decommissioning, Uranium Recovery, and Waste Programs at the NRC in our Office of Nuclear Material Safety and Safeguards.

We're then going to go to Steve Dembek, who is in Larry's division, and he's going to talk to you about the rulemaking process, and we'll have time for questions after Larry, time for questions after Steve.

Then we're going to go and get into the substance, the heart of the proposed rule. We're going to go to Dave Esh, and Dave will go through some slides, and that will be broken into segments, and we'll go on

to you.

And we also have Chris McKenney. Everybody works for Larry, although they're in different branches, I think, and Chris is here to help answer questions, I believe, on that.

And what, Larry, are you ready? And I just thank you all for being here to help with this project.

MR. CAMPER: Thank you, Call Leader.

Welcome, everyone. It's a pleasure to see all of you here tonight. Thanks for coming out and taking time to be with us during this important process.

This is our third meeting about this particular rulemaking. We actually had one in Phoenix following the Waste Management Symposia Conference, and then we had one on the 28th of April, I think it was, back at headquarters, so this is our third.

We wanted to come to Texas because of the WCS site, obviously, and we will be going and having meetings in each of the four states where the commercial operating facilities are currently in existence.

There are a set of slides for my talk. I do encourage you, if you haven't it, to please pick one up, because there's an extensive amount of background in there that I covered in some detail during the meeting at headquarters on the 28th of April. I'm not

going to go through all that tonight, in the interest of our timeframe.

But you can always go back and look at that transcript, because I made it a point, because we had a panel, to try to give the panel and everyone listening the complete story, if you will. And there's been a tremendous amount of Commission interaction around this rulemaking. So do pick that up and take a look at it.

Next slide. Well, in terms of the objective, it's to give the opportunity for us to discuss the proposed revisions to the Commission's low-level radioactive waste rules that are set forth in 10 CFR Part 61. These are our disposal regulations, and we do encourage stakeholders such as yourselves and those listening in to submit comments using the very methods that Steve will describe during his presentation, because he will follow me and discuss with you the process that may be used for providing comments.

As Chip said, you're on the record tonight. Staff will review the discussion tonight, but we also encourage you to submit those written comments so they may be binned and categorized and reacted to thoroughly.

Dr. Dave Esh of our staff will present the proposed Part 61 rulemaking, and he'll go through in some detail the various technical aspects that are being changed in the regulation and then afford an opportunity, following each of the segments, for you to ask questions and provide comments and so forth.

And Dr. Esh, along with others, has been actively involved in this process since we started, and Chris McKenney, the branch chief of Performance Assessment Branch ever since we started this, way back in 2006, following Commission direction, so we've been at it quite a while.

Next slide: So why are we doing the rulemaking? Well, first, let me say it's important to get on the record for everyone -- some of you follow this more than others, but for members of the public in general, I think it's important that you understand we believe the existing Part 61 is in fact adequate to protect public health and safety.

And in addition to that assurance that the regulation provides, over the years the operational realities of what the current operators have done on a day-to-day basis go far beyond the requirements of Part 61.

So we're quite confident that Part 61 today

is adequate to protect public health and safety; however, things have changed, and there's a need to revisit the part in current terms, and we want to make sure that applicants and active licensees ensure that low-level waste streams that are significantly different from those waste streams that were analyzed when Part 61 was created, way back in the 1979 and 1982 timeframe, are in fact addressed. And I'll cover a couple of those in more detail.

Next slide. All right. When you get a chance to look at that package of background slides, you may have some questions, and you may certainly feel free to contact us if you do.

But I wanted to do in this slide was try to sum up all of that with some context. And again I know that many of you have followed this more than others, and many of you have actually taken part in public meetings. Some of you are seeing this for the first time, so a little context is important.

This rulemaking actually grew out of an adjudicatory proceeding that took place regarding the Louisiana Energy Services license application back in 2005.

The Commission, following that adjudicatory process, gave the staff a staff requirements

memorandum, an SRM, and directed the staff that, outside of that adjudicatory process, to examine whether the regulations in Part 61 warranted modification to address the disposal of large quantities of depleted uranium that would come from or were forecast to come from enrichment activities.

So the staff undertook an analysis. So in the beginning it was all about depleted uranium, but as you shall see, it morphed a bit over time. So the staff undertook an analysis at that time. And what I asked the staff was to conduct an analysis to determine whether or not we believe that large quantities of depleted uranium were in fact suitable for near-surface disposal.

We took that as our starting point because one of the contentions that was filed during the LES proceeding was that depleted uranium was not suitable for near-surface disposal.

However, we knew that in 2000 -- the year 2000, the Department of Energy had undertaken a rather extensive programmatic Environmental Impact Statement. It evaluated the disposal of four forms of depleted uranium in a near-surface capacity and determined that it was suitable for near-surface disposal.

Our analysis showed us that it was as well, albeit under certain conditions. For example: deeper, other mitigating ways of addressing the particular waste category, more robust radon barrier, and so forth.

But along the way, when we were doing that analysis, we also recognized that there were other issues that emerged over time that we needed to address, and so we wanted to make sure we took an approach in this rulemaking that would try to address those other issues and, for that matter, try to address any other waste streams that might come along, rather than continuously revising this regulation.

There was considerable Commission direction. The staff put out its version of the draft language, I think at least twice, if not three times. We had several public meetings. We got several rounds of Commission direction, and all the direction is in the background slides.

So it's certainly fair to say that there has been substantial Commission direction, and if you look at that background, rather specific direction, in many cases, which the staff has worked to capture within this proposed rulemaking.

We do have the proposed rulemaking; we got

that published back in March. And we have a 120-day comment period, and then we'll work with the Commission to go back with a final rule and any changes that the Commission directs us to make over the next year or so.

Compatibility is a fairly significant issue in this rulemaking. Most of you know, I believe, that compatibility has to do with the relationship that exists between the Nuclear Regulatory Commission and its agreement states.

And various levels of compatibility are assigned, which is a matter of how precisely the Commission wants the language in a given rule to be replicated by the agreement states.

Now, there's a Category B, and in this particular rulemaking, the Commission directed that all significant components of this rulemaking would be Category B, which means it has to be essentially the same.

That's very important to the agreement states, and we've already heard some comments from some of the agreement states that are operating these sites, and we'll hear more throughout the process.

So compatibility is a fairly significant component of this rulemaking, and I do encourage you, when you look through the draft rule, there's a table

in there, in the FRN that we put out, that shows what the compatibility level was and what it is now in the proposed rule, so it's important to take a look at that.

Agreement state applicability: I'll have a slide or two in a moment that will take this issue on squarely. The approach that's being used in this rulemaking is a little bit different in terms of applicability to the agreement states, as was the case in 1982, and there are some very specific reasons for that, and I'll share those with you in a moment in a slide.

And last but not least, there's an outstanding issue. The Commission along the way -- when we were given the direction coming out of our SECY-08-0147 and the subsequent staff requirements memorandum, the Commission agreed with the staff's recommendation that we would proceed with a site-specific rulemaking to look at this question of the disposal of large quantities of depleted uranium and other unanalyzed waste streams.

But the Commission also, at that time, charged the staff with looking at modernizing and risk-informing the waste classification tables, including determining what class of waste depleted uranium is.

Now, that assignment is still out that, although it's been modified by the Commission during several SRMs that you have in your packet, but that issue is still out there, and at some point, as we work our way through this, we're going to circle back to that issue, but the Commission's been very clear: It wants this rulemaking finished before the staff does that, and you can see their specific words in the slides.

So we're going -- we have interest in getting comments about whether or not there's a sense that there's another rulemaking needed to address the specific classification of depleted uranium, given that an overarching approach is embodied within this regulation that would address depleted uranium or any other waste stream, based upon the site-specific performance assessment conditions of a given site.

Next slide: This particular slide contains language that is set forth in the current regulation of 61.1(a). I would draw your attention to about halfway or so down the paragraphs, starting with the words "Applicability of the requirements in this part to Commission licensees for waste disposal facilities in effect on the effective date of this rule will be determined on a case-by-case basis and implemented through terms and conditions of the license or by orders

issued by the Commission."

The reason the Commission chose to do that way back in 1982 is because there were already sites that were existing, had been sited, and many of the siting criteria had already been satisfied before this rule became effective.

And so the Commission recognized that, so it wanted to set up some flexibility for addressing the states that had the operating sites -- South Carolina comes to mind, for example; Washington -- that would allow some flexibility how that would be implemented.

Turns out that all of the agreement states that had the operating sites at that time adopted the Part 61 regulations pretty much in whole cloth by 1988 and satisfied the compatibility associated with it.

Next slide, please. That's different this time, because in the FRN we point out that the proposed rule would affect existing and future low-level radioactive disposal facilities that are regulated by the NRC or an agreement state.

In other words, this rule affects those operating facilities in those agreement states upon its implementation as subsequently implemented following the time line allowed for agreement states to implement the regulation, which is three years.

So that's a different -- that has caused some concern, in one of the states in particular. We heard some comments about that during the public meeting back in April, and I'm sure we'll see some written comments on it as well, but I do draw your attention to that difference and the basis for that difference.

Next slide. So I mentioned in my context slide that we started off looking at large quantities of depleted uranium, and along the way we had a realization that there were other things that needed to be addressed.

What you see here on this slide are the things that the staff looked at and said we really do need to address in this rulemaking:

Obviously depleted uranium, especially from enrichment facilities. When we did our analysis for depleted uranium, we knew that there was somewhere on the order of 700,000 metric tons of depleted uranium on the pad in cylinders at Portsmouth and Paducah.

We knew that there would be additional DU generated over the life of operational enrichment facilities that had been or would be licensed. In our analysis we considered in excess of 1 million metric tons. There was a lot of depleted uranium to be addressed.

Now, will it become waste, when it becomes waste, that's always the question that's driven, to a large degree, by the price of uranium. If you go overseas, if you go to Europe, for example, and you talk to them about depleted uranium as waste, they'll look at you and say, What waste? It's an asset.

So there's a recognition that that's a variable, but the point is there's a lot of it, so we knew that, and so we had to address it per Commission direction.

There's far more low-level waste from DOE operations than was envisioned when Part 61 was created back between 1979 and 1982. There's waste forms and volumes that were not anticipated or analyzed at the time that Part 61 was created.

Blended waste has come along in the last few years. Blended waste is waste whereby Class A, Class B, Class C are blended down to concentrations that are Class A that may be disposed of as Class A, and so this rule does address that issue.

And then there might be new technologies that will emerge that we wanted to make sure we tried to address in a blanket approach in this rulemaking; for example, waste streams coming from fuel reprocessing, as an example; and others to be determined.

We didn't want to keep going back and having to do a rule every time, so the staff thought that utilizing a site-specific approach would thoroughly analyze whatever waste stream is supposed to go in a particular disposal facility.

Next slide. My last slide, this just shows you the meetings that we have had or will be having. We did have a meeting, as I said, in Phoenix, Arizona, following the WM Symposia. We had one in Rockville on the 28th of April; of course, tonight here in Austin. We're going to have a webinar on May 20; a meeting in Columbia, South Carolina, on June 2; in Richland, Washington, on June 9; in Salt Lake City on June 10, and then there will be some post-rulemaking actions specifically to address this question of should there be another rulemaking.

We recognize that people -- we're asking for comments during the course of this rulemaking, but we also recognize that people will want to see the final rule to be able to fully comment upon that thoroughly, so there will be some additional action the staff will take following this rulemaking to address that outstanding charge from the Commission.

So, Call Leader, I'll stop there, and are there any questions?

MR. CAMERON: Thank you, Larry.

Are there any overarching questions for Larry? We are going to get into a lot of the details of what he talked about, but any overarching questions before we go on to Steve for the process?

(No response.)

MR. CAMERON: Okay. None here.

Okay, Joe, just to test the system out here, can you see if anybody on the phone has any questions for Mr. Camper?

OPERATOR: If you'd like to ask a question, dial *1 on your phone and record your name clearly at the prompt.

(No response.)

MR. CAMERON: Okay. Thanks, Joe.

OPERATOR: There's one come in. This question is from Diane.

MR. CAMERON: And, Diane, could you just introduce yourself, full name, to us, please.

MS. D'ARRIGO: Diane D'Arrigo, Nuclear Information and Resource Service.

MR. CAMERON: Go ahead, Diane.

MS. D'ARRIGO: Well, first of all, the voices on the phone are fading in and out. I don't know if other people on the phone are having that problem, but

I've been trying to be able to hear, and it's really difficult. So if there's some way to fix that, that would be good.

And then my other question is -- well, I guess the other question's going to be more technical, so I'll wait until after the technical presentation.

MR. CAMERON: Okay. Thanks, Diane, for both of those. And we'll see if we can fix that; we will fix it. And if people are still having problems hearing, please tell us.

We're going to go to Steve Dembek now.

MS. D'ARRIGO: How do we tell you?

MR. CAMERON: I'll go back out on the phones during Steve's presentation and check in with you again to see if it's better. Okay?

MS. D'ARRIGO: Okay.

MR. CAMERON: And you can also -- if anybody is on the webinar, you can notify us through the webinar, saying that, We still can't hear you out here.

MS. D'ARRIGO: I don't think anyone's monitoring that, because I did it four times, and I didn't get any response.

MR. CAMERON: Okay. Well, we do have someone here, but let's go to Steve, and we'll stop halfway through Steve's to see if there's still a

problem. Okay, Diane?

MS. D'ARRIGO: Uh-huh.

MR. CAMERON: All right.

And Steve Dembek's going to talk about the rulemaking process and comment submittal.

And I think what we're going to have to do, to make sure that people hear who are on the phones, is just to really speak closely into the microphone when you have it. Okay.

MR. DEMBEK: Yes. Hi. Steve Dembek, project manager in Office of Nuclear Materials Safety and Safeguards.

Next slide. Today I'm going to be going over the key aspects of the rulemaking process for the Part 61 proposed rule, and later on Dave Esh, as mentioned by a couple of others, will provide specifics on the technical content of the proposed rule itself.

I plan to explain why we do rulemakings, the status and time line for this particular rulemaking, and how you can submit comments on the proposed rule, and the draft guidance document that has also been issued for public comment.

MR. CAMERON: Steve, I apologize for this, but I want to check with Diane, and I think that people who come up here to speak are probably going to have to

be closer to this microphone.

Joe, can you put Diane on to see if the problem has been cleared up.

OPERATOR: I kept her on the line for you.

MS. D'ARRIGO: Steve's loud and clear.

MR. CAMERON: Great. Okay. Thanks, Diane.

MS. D'ARRIGO: Thank you.

MR. CAMERON: Okay, Steve.

MR. DEMBEK: Okay. Good. So why rulemaking? Rulemaking is one way in which the Commission's policy is implemented. Long term, it is the Commission's policy to regulate through the development of rules and not to regulate by orders or license conditions or other means.

Rulemaking makes requirements generally applicable to everyone, whereas an order or a license condition only apply to the entity that receives the order or the license condition. So the preferred way to make changes in policy is through rulemaking.

Rulemaking is also a public process. It provides for stakeholder involvement by providing a defined period for public comment, which is what we're in right now, and as it is a public process, please remember any comment you make is going to be publicly available to everyone else. It'll be eventually posted

on our website, and it will be posted on regulations.gov. I'll get into a little bit more of that in a minute.

What do we do when we develop these rules? Larry talked about some of the specifics for this particular rule. I'm going to just talk about more in general.

In developing a proposed rule, we consider recent research, lessons learned from implementation of the current regulations, issues we identify through inspection of existing licensed facilities, recommendation from advisory bodies, information included in any petitions for rulemaking. And we also consider stakeholder input that we receive during development of the rule, and any input received on preliminary rule language is also considered.

All of these aspects are considered in the development of a proposed rule, and these aspects will also be considered when we develop the final rule, so that's where you come in. We're soliciting public comments now so we can consider that before we make our final rule.

Next slide. Regarding the time line for this particular rulemaking, the proposed rule was published in the *Federal Register* March 26, 2015, and we are

requesting public comments on the proposed rule language.

The public comment period will last 120 days, so that 120-day end date is July 24. The final rule is then expected to be sent to the Commission for their review and approval approximately 12 months after the comment period closes, but the exact timing will be based upon the number and the complexity of the comments we receive.

This is where you come in: The more clearly you can state your concern and any supporting information you can provide in any comment you give us will make your comments more effective and will make the whole process more efficient.

Now, presuming the process stays on schedule, we would expect the final rule to be sent to the Commission in July of 2016, and the final rule would likely be published in the *Federal Register* a few months after that, perhaps late summer or fall timeframe of 2016.

The final rule will then be effective one year after its publication and any licensee or applicant in a nonagreement state would need to begin meeting the requirements at that time.

For those facilities licensed by agreement

states, the agreement states will have three years to develop compatible regulations.

Next slide, please. This slide provides the various methods for submitting comments on the proposed rule. These are specific to the proposed rule.

I'm not going to go through all the methods in detail here, because they are listed in the *Federal Register* notice, and they are listed in the handouts, but I do want to highlight a few key points.

First, the docket number is very important. The docket number has to be mentioned on your comment: NRC-2011-0012. And then I'll just briefly go into the four methods you can submit comments.

You can go to the rulemaking website; this is the federal government-wide rulemaking website: www.regulations.gov. And search for documents filed under that docket ID; once again, NRC-2011-0012.

You can mail comments. There's a specific address there. You can email comments; again, a specific address. You can hand-deliver comments to the NRC building, or you can fax comments; once again, the specific fax number.

Again, if you choose to provide comments, it is more helpful if you explain why a provision is a problem, rather than just noting that you are opposed

to something in the regulation. A good rationale behind your comment will be very helpful to us.

You are encouraged to submit formal comments for the record using the methods described in the slide. As mentioned previously, though, we are going to go through the transcript here and look for comments that are brought up by people here and people on the phone.

And as a reminder, since the rulemaking is a public process, all the comments we receive will be made publicly available. All the transcripts we have are going to be made publicly available.

If you've been looking at our website, you'll see we've already added some transcripts, and we'll continue to do that throughout the process.

Next slide. Now I'm going to shift to the guidance document. This is the Part 61 guidance document. It's called Draft NUREG 2175; the title's there: Guidance for Conducting Technical Analyses for 10 CFR Part 61.

And the *Federal Register* notice requesting comments on the guidance document was also issued on March 26, 2015, and what the guidance document does is it provides detailed information on the rule's provisions. It'll help those implementing the rule to implement the rule in appropriate fashion.

The guidance document also has a 120-day comment period, so comments on the guidance document are, again, due July 24, 2015. I encourage you to also look at the guidance document and provide comments on it and not just on the proposed rule.

We expect to finalize the guidance document and publish it when the final rule is published.

Next slide, please. And I mentioned earlier that the comment submittal process for the guidance document is different than the comment submittal process for the proposed rule, so please note some of the differences here.

First of all, it has a different docket number; this is NRC-2015-0003, and put that in the subject line, and here there's only two methods for submitting comments. One is the regulations.gov website, but remember to use the correct docket number. And the second one is to mail them to the NRC, but there's a different mailing address.

Comments on the guidance are very important to us; it tells us where we need to provide additional information or where we can clarify the information that we have provided.

Comments on the guidance can also result in changes to the actual rule language. If we interpret

the guidance to say something that we think the rule says and we find out people are not understanding it correctly, we might have to clarify the rule language itself.

Again, I encourage you to submit written comments using either one of the two methods shown on this slide.

Next slide, last slide? Okay. This concludes my presentation. I'll be happy to try to answer a few questions. If you have questions later, please feel free to visit our website that's shown on the slide here, or contact me -- my contact information is provided -- or Gary Comfort, the Rulemaking Branch's project manager for this rulemaking.

And you can contact either one of us later on, but right now I'm going to stop and take any questions you might have for me.

MR. CAMERON: Okay. Thank you very much, Steve.

Let's go here in the audience in Austin. And Dan, please introduce yourself.

MR. SHRUM: Dan Shrum with EnergySolutions. You put up a May 20 webinar on the guidance document.

MR. DEMBEK: Yes.

MR. SHRUM: Could you give us an idea, a scope

of what that's going to look like, how long you think you'll be talking. What's that going to look like?

MR. DEMBEK: Chris, did you want to add to that, or I can talk a little on it.

The webinar -- I believe it's going to be planned for two hours. It's already noticed on the NRC's website. It's going to be concentrating on the guidance document, focusing on the guidance document, and there's going to be no physical meeting; it's just going to be all webinar.

And, Dave, or, Chris, if you have anything to add to that -- Chris Grossman is organizing that meeting; I'm not organizing that one, so I don't know all the specifics of it, but it has already been announced on the NRC's public website for May 20, and so you can go see the agenda there on the website.

MR. CAMERON: Chris, anything that you want to add?

MR. McKENNEY: Yeah. It's mainly going to be -- this is Chris McKenney, NRC. We are going to be going over the various sections in the guidance document and entertaining any clarifying questions that people have who have had some chance to look at it.

It's meant to just have an informational service that since most of these meetings here are

looking at the rule more than the guidance document, so we wanted to have an outlet to have a short place to answer any questions that people have got before they provide their comments.

MR. CAMERON: Okay. And just to clarify, the comments -- any comments that are submitted on the webinar, will they be considered formal comments, or will people have to submit those formally?

MR. McKENNEY: We will be, again, tracking -- picking out those comments for the guidance document again, just like any that would be submitted tonight.

MR. CAMERON: Okay. So that if -- so that your comments will be considered formally as comment.

Anybody else here in Austin on the process?

(No response.)

MR. CAMERON: Joe, do you have anybody on the phone who has a question about the rulemaking process?

THE OPERATOR: We have one leftover question from earlier from Gregory.

MR. CAMERON: Gregory -- are you going to put Gregory on?

THE OPERATOR: Your line is open, sir.

MR. SUBER: Oh, yeah. Chip, can you hear me?

MR. CAMERON: Yeah, we can, and just

introduce yourself to us, please.

MR. SUBER: Oh, yes. My name is Gregory Suber, and my comments are that the line was fading in and out earlier. I wanted to alert you guys. I think [inaudible].

MR. CAMERON: Did anybody hear that?

THE OPERATOR: Gregory, are you on a speakerphone?

MR. SUBER: Yeah, I am.

THE OPERATOR: Can you pick up your handset, please, for your question.

MR. CAMERON: Thanks, Joe.

(Pause.)

MR. CAMERON: And, Greg, are you going to pose the --

THE OPERATOR: I think he might have hung up.

MR. CAMERON: Okay. Chris, did you hear that, and would you repeat it for Penny and everybody else?

MR. McKENNEY: I think he was responding to the fading in and out by fading in and out himself, but I don't know what his point was, but I think that was the intent of his comment.

MR. CAMERON: Okay. Well, we'll assume that that's taken care of, and, Joe, we're going to go back

to our presentations here. Okay?

THE OPERATOR: Understood.

MR. CAMERON: Okay. This is David Esh, and he has a number of topics that he's going to cover, and you'll see in your slides that there's a slide that says Comments and questions, and then that's where we'll go out to you.

But I'll turn it over to Dave to introduce his presentation.

DR. ESH: Okay. Thank you, Chip.

And do you want to check right at the beginning here, make sure people can hear me okay since I'm going to be talking a while, on and off at least.

MR. CAMERON: Okay. Joe, we just wanted to do a sound check with people who might be on the phones, to make sure that they are hearing David.

THE OPERATOR: I can do that sound check for you, or I can attempt to open multiple lines, but --

MR. CAMERON: Well, why don't we see if anybody -- if anybody on the phone has a problem, they can notify you, and then you notify us.

DR. ESH: All right. Somebody said they could hear me fine, so hopefully at least a few can.

MR. CAMERON: Cool. All right.

DR. ESH: So I'm going to go over the more

significant technical requirements of both the regulation and the guidance today, hopefully to give you some color and additional information that will allow you to formulate better comments or to ask clarifying questions of us here today that will help you in developing your comments.

We really are interested in getting your feedback, all types, constructive and negative comments; they're especially helpful.

We try to go through a very deliberative process in doing this sort thing and try to come up with the best-quality product we can, but sometimes you get a little lost in the forest, because we spend so much time and there's a lot of components to it. So it helps to get some external views of it and get your insights.

Next slide, please. I'm going to go over a little bit of overview. For this meeting and the other public meetings that we're going to have coming up, we go into a little bit more background, in case we have some members of the public that have decided to join us that haven't been involved in the rulemaking process to this point and need a little bit more background.

Then I'll go through the rule topics that are listed here. These are, I'd say, the more significant components of the changes in this rulemaking.

There is a bullet down at the end there that says "Other," so that means if certainly I don't cover something that's important to you and that you want to ask a question on or you want to make a comment on, you'll have the opportunity to do that after we go through each of these topics.

And I only have one slide on the guidance document, just to say what it is and to give you a little bit of information about the purpose of that document, the size, and what you might be looking at if you decide to review it and give us some comments.

Next slide, please. So this is radiation doses and limits. It's from the NRC public website. We thought this was important to give some context to what we're talking about.

There are some NRC-licensed dose limits on there; for instance, the worker dose limit is the largest one there at 5,000 millirem. And then there's the annual public dose limit of 100 in the center there.

Not listed on here, shown, are what's in this proposed rulemaking, such as the public dose limit under 61.41, which will be 25 millirem per year. And then we also have an intruder dose limit of 500 millirem per year.

So you can kind of put them in context of some

of these other limits and other natural or manmade sources of radiation that people might be exposed to.

Next slide, please. So what is in this proposed rule? The NRC is proposing to amend its regulations that govern low-level radioactive waste disposal facilities to require the four bullets in the center here.

So we have new and revised site-specific technical analyses to demonstrate that the performance objectives are met. I'll talk about those in detail, and that's kind of where the rubber hits the road.

In the past you may have heard people say that the performance objectives are essential to Part 61. Well, basically you're relying on technical analyses to demonstrate that those performance objectives are met.

So this rulemaking is about ensuring that the proper technical analyses will be done to show that those performance objectives will be met.

To permit the development of site-specific criteria for low-level waste acceptance based on the results of these analyses. So this is new -- this is maybe new in NRC space, but certainly not new in some other international programs or within the Department of Energy in the US.

But the idea is basically that you can do your

own site-specific technical analysis and use that analysis to determine what waste is acceptable at your site and that it can be disposed of safely and that it's appropriate.

So in the existing regulation, under 61.42, the safety is demonstrated by the NRC's waste classification table. So basically NRC did the technical analyses, and all licensees are obligated to meet those concentration values that are found in the tables in the NRC's regulation.

But the conditions at your site, both environmental or potentially your receptor scenarios, those things that relate to the dose calculations, they may be different at your particular site.

And the waste that you want to receive might be significantly different from one site to the next, so the site-specific analysis allows you to better reflect all those unique features of your particular problem.

The third bullet: To facilitate implementation and to better align the requirements with the current health and safety standards. And then the fourth bullet: To ensure licensing decisions are based on defense-in-depth protections.

So that's also new. That's been a drive

within the NRC for quite some time, but it's shown up more strongly after the Fukushima event in Japan. The Commission has looked towards better enhancing the defense-in-depth throughout all NRC's regulative programs.

So our proposed rule, as Larry mentioned in his presentation, would affect low-level radioactive waste disposal licensees or license applicants that are regulated by the NRC or agreement states.

Next slide, please. So right now in the United States we have four active sites. Those licensees are all in agreement states. So NRC doesn't do any of the technical review associated with these or the licensing; it's all agreement states.

Of course, we're here in Texas today. That's where the Waste Control Specialists facility is. And those facilities can accept different types of waste, and some only within their compacts, some within their compacts and outside of their compacts.

That's the current operating system within the US. We may have future sites, though, in other states, so -- you know, Waste Control Specialists is the newest member that's reflected here.

Next slide, please. And this is a slide from a high-level standpoint, just the types of questions

that you may be asked to consider in this new regulation. So if you're a licensee, these are the types of things -- you might say, How am I going to do these things?

If you're an agreement state regulator, these are the types of questions you would be saying: Okay, licensee, how do you do these things? The regulatory requirements address -- provide what you need to do, what are the requirements for these.

The questions relate more, I'd say, to the guidance document, to say what are approaches that NRC would find acceptable to address these questions, or how would I go about addressing these questions.

So I'll talk about that at the end of this presentation, the guidance document, at a high level, and then, as indicated, we have the webinar on May 20 to go into that document in much more detail. That's a pretty big document, so you may need some time to look at it.

Next slide, please. This figure I thought was useful to me, and I hope it's useful to you. It was developed by Chris Grossman to kind of communicate how these things fit together. There are a variety of parts or pieces to this regulation, and we think they fit together neatly, but that's part of this process in

getting your feedback, is whether you feel they fit together neatly or whether the components -- there's a piece missing or something is there that doesn't need to be there. All that sort of information is what we're looking for in this process.

At the top we have the assessment context and scenario development. That's kind of getting the scope of your analyses right. That applies to the three performance objectives listed there.

On the right-hand side of the figure, defense-in-depth, that also applies to all the performance objectives, so you have these two overlapping components to the analysis that apply to the whole regulation.

On the left-hand side it shows the three different timeframes, so I'm going to talk about that in a minute. One of the key considerations for this process is how long do you analyze for? What's appropriate to evaluate? How long to do your calculations for?

We use what's called a three-tiered approach, listed by the compliance period, the protective assurance period, and the performance period. That's what's in the proposed regulation, and that's I'm going to present to you today.

So those apply -- those overlie the performance objectives that are coming down the center. Ultimately all the stuff at the top feeds to the bottom, that you demonstrate that the subpart C performance objectives are met.

But when you're looking at the regulation and the rule text itself, the FRN or the guidance document, you know, if this is useful to you, pull this figure aside so you can kind of keep the context of how -- what all the information is and how it's fitting together. It might be helpful to you.

Next slide, please. Okay. So the rule topics I'm going to go through, and we'll stop after each one and get your comments or questions. The first one that we're going to start off with is the analyses timeframes.

Next slide, please. So the analyses timeframes is a very complex issue. It doesn't seem like it should be, but it is. Everybody has an opinion, and all the opinions seem to be different.

So we felt we got extensive stakeholder input on this topic. We had a variety of meetings and interactions. On the third bullet down here, we did a white paper that we came up for initial recommendation. The ADAMS ML number is there. If any of you in the

public have difficulty using ADAMS, don't feel bad; we do, too.

So after we went through that, though, the Commission then directed some changes to us in this document here, SRM-SECY-13-0075. That's the way that the Commission communicates with the staff. The staff communicates with the Commission in a variety of ways, but one of the main ways is to issue what's called a SECY paper, where we send information up to the Commission.

That SECY paper may be for information or it may for a vote, so the Commission may look at that and they'll vote on it and then send some direction back to us.

So they gave some directed changes back to us, indicated there on the fourth bullet, and what we're looking for from you is stakeholder input, especially on the compatibility designation.

So as Larry mentioned, one of the elements of the Commission direction that we got, not just on the analysis timeframes but on the whole regulation, was that the significant provisions of the new regulation should be compatibility B, which means that all the agreement states would need to essentially do as NRC has proposed in the regulation here.

If you're doing something different now, you

would need to do what is being proposed in the regulation, and so that's a key point of consideration. Myself personally, I'm a big believer in flexibility to the agreement states, and that was indicated in the Commission's direction.

The technical components that we came up with in the rule we wanted to try to still preserve that flexibility for the agreement states, but when the provisions are proposed as compatibility B, then that means you're going to adopt them, so we want to hear from you whether you feel like your flexibility has been preserved or if your flexibility's going to be limited by what is proposed and how it's been proposed.

So next slide, please. So some of the considerations that went into analyses timeframes, the three figures on here are small; they're in the backup of this slide package so you can look at them. I don't expect that you all have eyes that can see that; I know I don't.

The things we considered, though, were waste characteristics; that's important, especially for the depleted uranium problem, because it is so long-lived, and it is somewhat different than traditional low-level waste.

Traditional low-level waste generally has a

lot of short-lived activity that decays very rapidly, so as the darker blue line on that figure in the top corner shows, it drops off, whereas by year 1000 it might be less than 1 percent of what you started with.

The depleted uranium stays very flat, dominated by the uranium isotopes, and then the progeny start experiencing some ingrowth as you go out in time, where the activity at very long times ends up higher than what you initially start with.

We should also note that depleted uranium isn't necessarily pure, and it isn't necessarily just all uranium. Some depleted uranium, depending on the source, has other isotopes in it, so depleted uranium that comes from the Department of Energy, on the order of 4 to 5 percent of it, has a variety of other isotopes mixed in with it.

We considered uncertainties. That's a key consideration. The uncertainties generally increase with time. They increase in time for some aspects of the problem more than others, one of those being kind of the socioeconomic considerations or especially future land use. That's the green line in the middle there.

On the scale of hundreds to thousands of years, we think that uncertainty probably increases

quite dramatically.

We did consider domestic experience; that's the table at the bottom there. And we considered international experience, what we could find. That information wasn't necessarily easy to come by. And then past policy considerations by the NRC.

So all that put together is discussed in the white paper that I mentioned on the previous slide. Take a look at that if you have comments in this area; it might help you formulate your comments.

Next slide, please. So what are we proposing in this regulation? In the previous public meeting we had kind of what went to the Commission and then what came back or what we ended up with.

Here we're just showing you what we're proposing. We thought that was cleaner. It doesn't matter how we got to this point; this is the point we're at. This is the point we want your comments on.

What we're proposing now is a three-tiered approach that's a compliance period from the site closure time out to a thousand years after closure. That has a 25-millirem dose limit for 61.41 and also as low as reasonably achievable component to that, ALARA.

For the intruder it has a 500-millirem dose limit for the compliance period. After the compliance

period is what's termed the protective assurance period; that goes from a thousand years to 10,000 years.

And the way that part of the analysis is structured right now is an optimization process, where your goal is to minimize the impacts to the extent practical.

So that I'm going to talk about in more detail after this -- this is kind of high-level analysis timeframes, what's the structure to it? I'll talk about each of the second pieces and you'll have an opportunity to comment on those.

After the protective assurance period -- the first two tiers apply to all facilities, always. Okay? The last tier, the performance period, only applies if you have significant amounts of long-lived waste, and we have developed a table that provides concentrations; that's kind of the trigger point to determine whether you need to that third tier of the analysis or not.

We thought that was useful because some sites might have only very limited amounts of long-lived waste, so why would you want them spending resources on that long-term analysis? That doesn't seem very reasonable.

So that -- overall this is the structure of the approach that we came up with for the analysis

timeframes.

Next slide, please. These are some definitions associated with it. The first one is long-lived waste definition. It's a bunch of words there. What we're attempting to do is capture both -- capture radionuclides that are both long-lived and have long-lived progeny or have ingrowth phenomena that produce potentially long-lived impacts or long-lived risk.

So when you compare that definition to, say, the existing tables in Part 61, it matches pretty well, so something like carbon-14 would be considered long-lived, and it's on the long-lived table within Part 61, whereas other isotopes like, say, cesium-137, they would not meet this long-lived waste definition; they're on the short-lived table.

Okay. And then the compliance period, protective assurance period, and performance period I already discussed, and I'm not going to read those there.

Next slide, please. So now what we're seeking your feedback on is this overall approach, kind of the three-tiered approach. You think it works? Is it going to give you flexibility? Is it too complicated? You know, whatever your comments and

feedback might be.'

If you have questions about it, I'll try to answer them. The idea that the compatibility is going to be B for this area, so all agreement state licensees are going to use a structure like this.

And then this long-lived waste definition, is it going to achieve the goal that we're trying to achieve?

So we'll break and take comments and questions here, and then we'll move on to the next topic.

MR. CAMERON: Okay. Thank you very much, Dave.

Here in Austin, let's go out here to Karen. And, Karen, if you could just introduce yourself for us, please.

MS. HADDEN: Hi, I'm Karen Hadden with SEED Coalition. I would like to ask a question about slide 10.

Okay. Could you repeat and/or explain a little further about what is being considered here? Is this all low-level waste?

And this is incredibly hard to see and read. It's go several very small charts on it. Is it available larger as well?

DR. ESH: Right. To answer your second

question first, the -- each of these figures are in the backup of your slide package there, so you should have a bigger version that you can see.

There are also -- at least the middle one is in the white paper that I referenced that the ML number is given in the slide package here. The table I believe is from the regulatory basis document, but you have a big version in this slide package to look at, too.

And I'm not sure -- the top figure. I believe it's in one of those documents also; we've used it a number of times in the past.

And then your first question was: Are all of these things being -- is this being applied to all low-level waste? That was your question. Right?

Yes, this approach to analysis timeframes would apply to all low-level waste analyses.

MR. CAMERON: Anything else at this time, Karen, on that?

(No audible response.)

MR. CAMERON: Okay. Let's go to this gentleman. Yes, sir.

MR. BURNAM: I'm Lon Burnam; I'm with Public Citizen, and I have three questions, all concerning the uncertainties.

I live in the Barnett Shale, and we thought

that for about 10,000 years the ground would be stable, but we're learning over the last two or three years, due to various industrial activities -- fracking and injection wells -- the ground is no longer stable.

I'm wondering to what degree you're incorporating this massive change in technology as an unpredictable and uncertain reality.

DR. ESH: Right. So it's a very good question, and I agree with you. The technology uncertainty or kind of the human aspect of the uncertainty is large.

What we recommend, both through this analysis approach of looking at long timeframes and in how you do your evaluation, is to proceed cautiously with respect to the uncertainties and not be, I'd say, close-minded as to the potential magnitude of those uncertainties.

Include them within the scope of your analysis; maybe not, I'd say, the development of fracking, for instance, is I think partly what you may have been alluding to, but the approach to the analysis to develop the scope -- if you have a chance to look at our guidance document, we have a whole chapter in there now, or a big part of a chapter, Chapter 2, which is about features, events, and processes.

And I'm going to talk to that when we go over performance assessment here in a second, but it's basically how do you develop the scope for your analysis to come up with a credible analysis for your problem? That would include uncertainties of various types.

It's supposed to be a somewhat deliberative process to come up with how do you feel you've done a proper analysis for your problem. There might be some uncertainties that are intractable. There's different ways to manage those.

You can do that through, say, site design or engineering for some cases. One very straightforward way to limit the impact of some uncertainties for a waste disposal problem is to develop waste concentration limits that limit the types of materials that are suitable to be disposed of.

That's a very direct way to manage an uncertainty for disposal. If you're talking remediation, it's much more difficult. So site cleanup, the stuff is in the environment and you don't have that flexibility, but for disposal you have a variety of ways you can kind of attack the uncertainties.

So we go into uncertainties a lot in the document, and the three-tiered approach that we got from

the Commission in their direction, one of their key considerations was uncertainty.

So whether you agree with it or not, I'd say look at both our white paper and then look at the direction from the Commission, and it kind of gives you a flavor of how uncertainties were considered in the process.

MR. CAMERON: Follow-up?

MR. BURNAM: I'm not sure I got an answer to my question. I heard the answer, but we're dealing with a new phenomenon. We've had several scores of earthquakes, small earthquakes, but one exceeded 4 on the Richter scale within the last two weeks.

This is all apparently manmade, created. Is this going to affect future sitings?

DR. ESH: Right. Well, whether the source of the seismic effect is from, say, a manmade phenomenon or a natural phenomenon, the low-level waste siting -- site characteristic requirements and the analysis, you have to evaluate seismic effects in the problem.

So you can look at the site characteristics under 61.50; it talks about not just seismic but geomorphology, erosion, subsidence, all the different phenomena are supposed to be part of the technical

analysis when you select a site and then also when you analyze it.

So whether it's anthropogenic effect that's causing a seismic effect or whether it's nature, those sorts of things are supposed to be considered in the technical analysis.

MR. CAMERON: And, Dave, when you go through some of your other topics, if you see a chance to use this example that this gentleman posed to illustrate that, could you please do that.

DR. ESH: Right. And the favorable thing for waste disposal systems is in general, because it's a passive safety system, they aren't as susceptible to influences from seismic events, especially smaller seismic events.

A large seismic event, sure; a large seismic event is going to disrupt almost any engineered system or natural system. But for the repetitive smaller seismic effects, these systems aren't as susceptible to that as maybe some active safety systems in other types of projects or problems.

MR. CAMERON: Okay. We're going to go to Scott.

MR. KIRK: Thank you. Scott Kirk, Waste Control Specialists. First of all, Larry and staff,

this is a huge milestone -- congratulations -- coming to this part, or at least where we are today in the rulemaking.

My comment is about compatibility. What used to be the period of performance now is three tiers. When the rule was coming out, for the last couple of years, as it was discussed, the thought was, at least with agreement states, that perhaps agreement states that would have more stringent requirements than what the NRC might be proposing would be able to retain those -- that compatibility or their own state regulations.

And the thought was it would be a compatibility level C. To my understanding, the Commission directed the staff to put a compatibility level B. They wanted uniformity in the standards, but they also recognized the sensitivity of the agreement states and that they directed the staff to circle back with the agreement states to collect additional information.

Now, my thought is in Texas the period of performance is a thousand years, or peak dose, whichever's longer. It's much more stringent than what the NRC is proposing.

In Andrews County we have tremendous

community support, and it's very difficult to site new low-level waste disposal facilities.

And what I would encourage you to do is go back to the Commission, share some of these viewpoints, because the thought is if the federal government can make an agreement state impose less stringent standards, it could erode community support and make siting new facilities much more difficult.

That's my comment.

MR. CAMERON: Good. Thank you, Scott.

And, Larry, do you want to comment?

MR. CAMPER: Thank you, Scott. That's an excellent comment. And I will tell you firsthand, having discussed this very issue with the Commissioners -- actually, I think every one of them, there was an awareness that, by imposing compatibility B, we would be imposing a compliance period that's less than what's currently used by the states.

And I think the Commission was driven, to a large degree, by consistency and reasonably foreseeable future. Even a thousand years is very challenging to predict what will be the situation societally. And one of Dave's slides pointed that out very well.

So there was an interest in reasonably foreseeable future and consistency. However, the

Commission -- and you're right, Scott -- specifically requested that the staff explore this issue, which is why I pointed it out in my comments.

And in our conversations with the four states that operate the facilities, we are discussing this in some detail, and there are some fairly strong views by the four states that operate, and we expect that. And, yes, we will go back to the Commission and share with them what we heard during the course of the meetings and discussions with the agreement states that operate the four sites.

MR. CAMERON: Okay. Let's try the phones here.

Joe, is there anybody who wants to ask a question or make a comment?

THE OPERATOR: We do have a question coming from Diane.

Your line is open.

MS. D'ARRIGO: Hi. I wanted to know when a member of the public becomes an intruder, when their dose can shift from 25 millirems to 500 millirems? And I also thought that I read in there that you're also planning to change millirems to be millirems-effective-dose-equivalent, although it wasn't really clear in the red-lined version.

So if you do that, then there'll be more radioactivity per millirem.

DR. ESH: Right.

MR. CAMERON: Go ahead, David.

DR. ESH: Yeah. Okay. So your first question: It can be a bit confusing to understand this conceptually. We had this comment during our previous meeting at headquarters or at --

MS. D'ARRIGO: Yeah, and I'm interested in that. Did you deliberately not tell members of the public about that meeting?

DR. ESH: The previous meeting?

MS. D'ARRIGO: Yeah.

DR. ESH: No. I believe it was noticed in the *Federal Register* with the required 10-day period.

MS. D'ARRIGO: Huh.

MR. CAMERON: Okay. And if we need to -- we'll address that a little bit later on, Diane, to make sure that it's clear how that was noticed.

DR. ESH: Right. The intruder is defined as somebody that inadvertently uses the site after the institutional control period, so the institutional control period can be up to a hundred years in NRC's regulations.

So the intruder is somebody that actually

comes on to the physical site boundary after that period in time. It's intended that there will be controls in place, active controls during the institutional control period and passive controls after that, such as deed restrictions and federal or state ownership of the land.

MS. D'ARRIGO: Well, why can they get 500 millirems. I thought we were trying to protect people at 25.

DR. ESH: Right. So --

MS. D'ARRIGO: So depleted uranium can be there?

DR. ESH: No. The member of the public is outside of the facility boundary, and their dose limit is 25 millirems for all the periods of time we talked about, and it remains at 25 millirems.

The intruder dose limit is 500 millirems for somebody that inadvertently uses the site after the institutional control period, because that is believed to be an unlikely scenario.

So that higher dose value reflects the fact that the Commission believes that's not expected --

MS. D'ARRIGO: Who decided it was unlikely?

DR. ESH: The Commission believes that it's unlikely that that scenario will occur, due to the passive controls that are going to be in place for the

facility.

The 500-millirem dose limit that you see in 61.41 -- or 61.42 right now that's being proposed is what the waste classification tables were developed, based upon in the existing regulation.

So those concentration values that you see in table 1 and table 2 are based on an intruder analysis using a 500-millirem dose limit.

MR. CAMERON: And before we get to the TEDE question, I think that Chris McKenney -- did you want to say anything?

(No audible response.)

MR. CAMERON: Okay. David, do you want to talk to Diane's second point about TEDE?

DR. ESH: Right. Your second point is correct that the dose values are total effective dose equivalent now. So that's -- I think that's what you asked.

MR. CAMERON: Okay. And --

MS. D'ARRIGO: So then the allowable radioactivity that a person could be exposed to is higher; you just have a calculation that it's less?

DR. ESH: Right. I think in some cases the radiation goes up; in other cases it goes down. It depends on the particular isotopes, and it's based on

the revision or modernization of the dose conversion factors, basically.

MR. CAMERON: And can you expand on -- what's the rationale for going to the new --

DR. ESH: Right. So going to the new methodology is something that the Commission has directed us to do in previous analyses, for waste incidental to reprocessing, for instance. It basically represents --

MS. D'ARRIGO: Where they make high-level waste into low-level waste. Uh-huh.

DR. ESH: Right. Where the proper classification of radioactive materials is evaluated, so -- and then that modernization of the dose methodology, they -- we are doing in this regulation.

MR. CAMERON: And, Larry, do you want to talk --

MS. D'ARRIGO: Well, my comment is that I oppose it. I opposed when you adopted it in 10 CFR 20, and so I oppose that, because that means more radioactivity.

MR. CAMERON: Okay. Diane, we have -- Larry Camper wants to address your concerns.

Larry?

MR. CAMPER: Thanks for being there, by the

way, Diane.

There's an extensive discussion in the FRN for this rule that addresses the issue that you're raising. The current ICRP is based upon -- the current Part 61 is based upon ICRP 2, which was created in 1957. Organ weighting factors were not known then.

Since that time there have been several variations and updates of the ICRP methodology, with the latest being 103, that considers weighting factors for organs and the summation of that dose that leads to total effective dose equivalent.

So what we're trying to do is bring to bear state-of-the-art health physics as described by the ICRP today, because we're going to let in this regulation licensees or operators use the most recent, current ICRP possible, which is far better science than ICRP 2, dating back to 1957.

MS. D'ARRIGO: But it leads to higher amounts of radioactivity.

MR. CAMERON: Okay. And, Diane, your comment is on the record here, and we'll look forward to more of your comments as we proceed tonight.

And, Joe, is there anybody else on the phone on this issue?

THE OPERATOR: There are no other questions

on the phone line at this time.

MR. CAMERON: And that doesn't sound like Joe.

THE OPERATOR: It's not.

MR. CAMERON: Who are you?

THE OPERATOR: My name is Amber.

MR. CAMERON: Amber. Okay. Thanks, Amber, for helping us out.

And we'll going to go to, I believe, the second topic, and then we'll be back to the audience and then back out to you, Amber, and the people on the phone.

DR. ESH: Thank you, Chip.

The second topic is performance assessment, and that's the name of the analysis that's used to demonstrate compliance with 61.41. So this is a figure just saying in general terms what it is.

And you start in the upper left-hand corner; you have some real system that then you're going to attempt to develop a mathematical model or maybe a simplified mathematical model, a term we use here, abstraction, to describe that real system in order to estimate future performance. So it's an estimation of future performance.

Some might call this a model, and all models -- in traditional modeling, you're going to do

both model verification and model validation. So model validation is when you can actually observe effects and see how your model compares to those effects. You did well with your modeling.

In performance assessment you can't do model validation in the traditional sense, because the estimated future performance or the future effects occur in the very distant future.

So we generally encourage people to do robust model support for these types of calculations, and I'll show you that on the next slide.

So the model support that we talk about is using information from the past, present, and future conditions to kind of justify the results that you've estimated with your model.

The real world, as one gentleman mentioned in one of his comments, it can be highly dynamic. There's lots of uncertainties, so the best way to try to justify that your calculations are appropriate is to combine different sources of information for the various components of your model and show that it's doing what you expect.

So we advocate using past, present, and future information; past being analogs and historical data from the site and the environment around the site;

present information, where you can do lab and field experiments of the key things that you're trying to understand with respect to your site and your disposal facility; and then in the future, what can help address some of the uncertainties is use the long-term monitoring data that you may collect prior to closing your facility, or during the institutional control period, or even if you can design some long-term experiments if there's some key issues or uncertainties that you want to understand better going into the future. So all those components work together to support your models for the performance demonstration.

Next slide, please. The performance assessment, in our mind, is not a new topic; it's really just renaming technical analyses. So in the existing regulation, 61.13 has technical analyses. Performance assessment falls under that; it's a type of technical analysis.

All we're doing is modernizing those technical analyses requirements. There are some new requirements in 61.13 -- they're shown here on the slide -- with respect to the scope, features, events, and processes; with respect to uncertainty and variability, or needing to evaluate it as a requirement; and also needing to support your calculations.

Those new requirements we feel any modern performance assessment should be doing or should have done, so they shouldn't be burdensome on even existing licensees or new licensees, because they're part of the performance assessment process.

As indicated on the right here, we're taking some things that are implicit in the existing regulation and making them explicit.

In addition to the items I just noted, there's a requirement to update the performance assessment at closure, and then we also modified the siting characteristics consistent with the disposal of long-lived waste.

So there are siting requirements under 61.50; they're exclusionary. If you look at the modifications to the text there, there are things like you can't put a facility in a 100-year floodplain, or you're not to dispose of waste in the zone of water table fluctuation. There's a variety of other ones.

Basically if you're doing those things now, today, what are your chances of getting the risk right in the future? The argument being put forth is your chances of doing that are low. Therefore, if you have those characteristics today, you haven't selected a good site.

But then there are other characteristics that are more performance based. Those you have to evaluate to see, okay, do these things have the potential to cause me to not achieve my performance objectives?

So that modification to 61.50 was just to bifurcate those requirements and make it clear which ones are truly exclusionary for the first 500-year timeframe and then which other ones apply or can be evaluated more performance based after that.

Next slide, please. This is kind of a different version of what I've already just talked about. You have performance assessment process in the center; it's about collecting data, developing models, numerical models; combining the effects, and then iterating, if necessary.

The new requirements that we have in this regulation are shown around the outside. You have a number of 61.13 requirements -- those are with respect to the analysis itself -- and then some other ancillary or knock-off requirements I would call that are related to the performance assessment are also shown on this diagram.

So that's updating the performance assessment at closure, using the results of the performance assessment to develop your waste acceptance

criteria under 61.58. I already noted the change to 61.50, and I think that's it in this slide.

Next slide, please. So in words, performance assessment is an analysis that identifies the features, events, and processes that might affect the disposal system; examines the effects of these features, events, and processes on the performance of the system; and then estimates the annual dose to any member of the public caused by all significant features, events, and processes.

So you evaluate the scope of your problem, you determine which ones are significant, and then do your analysis to see what dose results from including all those significant features, events, and processes.

Next slide, please. This is an example from the guidance document. We developed a number of what we call hazard maps, so these are to try to help with the FEP process or the siting process, or both. This one -- this example is for areas of potential flooding.

And I should caveat this. This is a very detailed GIS analysis that gives some very beautiful maps, especially when you overlay all of them on one map and look at all the hazard potential of just different phenomena.

But it is at a scale of resolution that you

can't look at this map and place your site on it and say, Oh, this has a problem of flooding. You need to look at it at higher resolution to see that, and it's only a guideline to say when you might need to look at a process in more detail.

So don't use the hazard maps to say, based on this hazard map, this site shouldn't be licensed or should be there. It means if you're in an area -- say, in this example -- where it's dark, you want to ask questions -- if you're the licensee, you want to provide a more robust argument why flooding isn't important.

If you're a regulator, you want to ask the licensee, hey, why isn't flooding important at your site? That's the way it's supposed to be used. It's a risk-informing tool for the analysis.

Next slide, please. So in this area what we're seeking feedback on, at the highest level, should you even be using technical analysis to evaluate to the disposal of long-lived waste? It is pretty much what is done domestically and internationally, with some caveats.

Different programs take different approaches to this problem. Some programs will set a waste concentration level -- say, so many nanocuries per gram of long-lived alpha; that's a strict limit that sets

what you can evaluate with the technical analysis and what needs to be managed with some other process; say, disposal as in a deep geologic repository.

So that's one approach. We believe that the technical analysis approach can lead you to a more risk-informed answer for the problem, so that's what we've proposed in this regulation.

We also want your feedback on the new technical analysis requirements under 61.13, so that's especially the three areas I highlighted: getting the scope right, including uncertainty and variability in the analysis, and providing support for your models.

And then as I noted, the modifications to the siting characteristics requirements under 61.50, and the requirement to update the performance assessment at closure.

MR. CAMERON: Thanks, David. Do we have any discussion, comments here in Austin?

Yes, we do.

Karen.

MS. HADDEN: David, thank you. Could you please repeat and explain -- you were talking about siting requirements, like you can't put it in a 100-year flood zone. And I believe you said something about, or where the water table fluctuates. Would you repeat and

explain that, please.

DR. ESH: Right. There's siting characteristics under 61.50 about a zone of water table fluctuation. So basically you want to put the material above the zone of water table fluctuation, because it can pulse releases out of the system, or it can make modeling or analysis difficult for the system if you are in the zone where the water fluctuates.

MR. HADDEN: Is there a requirement that the amount of fracking near a site be disclosed? There seems to be so much additional fracking --

DR. ESH: Right.

MS. HADDEN: -- that didn't used to be present in the past.

DR. ESH: There is a siting requirement about consideration of the natural resources in the area and how they may be exploited. And generally you don't want to locate a site in an area of active resource exploration because of potential effects from that exploration that could impact your disposal facility.

So you can look at 61.50. There's a requirement on where you site your facility with respect to resource exploration.

MR. CAMERON: Okay. And, yes, sir. And please introduce yourself again.

MR. BURNAM: I'm Lon Burnam with Public Citizen, and I guess the follow-up question to Ms. Hadden's is concerning the water table.

If you find that maybe a mistake has been made and the water table is such that water's regularly standing in facilities, such as the WCS facility, what is your method to reassess that situation?

DR. ESH: Right. I'll answer that from a general standpoint first, and then maybe if you want to follow on with a more specific -- I understand your comment, first of all.

Performance assessment and technical analyses is not unanticipated that sometimes things may be different than what you expected. That's why, on that diagram, that arrow kind of goes around. It's made to be iterative.

So you're going to do an assessment when you apply for a license and you develop your facility, but then you're going to continually update that analysis as you're operating.

And as more information comes in, that analysis should be updated. Hopefully if you're smart about it and your regulators were tough on you and everybody evaluated everything properly, that you won't have something that comes up unforeseen that causes a

performance issue, but it is a possibility, because, as you noted, the world is complex; sometimes things aren't as they were initially understood.

So that -- there always is an avenue at the -- in the licensing process or even at the end of the operation process that, if there is a public health and safety concern, that you can go in and do some sort of remediation or action to try to mitigate that concern.

MR. BURNAM: Well, as a follow-up question, if a citizen asks on several occasions for a clarification and an explanation as to why there's water standing there and we can't seem to get a resolution, how can we go to the NRC and ask the same question and see if we can have a better enforcement mechanism than we have here in the state of Texas?

DR. ESH: Right. The primary mechanism you have is you can always raise a safety concern to NRC, and then we evaluate those concerns. If it applies to either an NRC-licensed action or to an agreement state program, you can raise a safety concern to NRC, like this one with respect to standing water. I'm not familiar with the issue, so I can't really comment more on it at this point.

MR. CAMERON: And the process where people

can raise issues like this for the NRC in terms of NRC licensees or agreement state licensees, I think you can use 10 CFR 2.206 process?

AUDIENCE MEMBER: Repeat the number, please.

MR. CAMERON: It's 10 CFR 2.206.

Anybody else in Austin before we go to Amber and the people on the phone?

(No response.)

MR. CAMERON: Okay. Amber, does anybody have a question or a comment on the last presentation?

THE OPERATOR: There are no questions on the phone line at this time.

MR. CAMERON: Okay.

David, what's next?

DR. ESH: Next is intruder assessment, so the first figure we have here on slide 23 is just a conceptual picture of what the intruder assessment is.

So in the existing regulation, under 61.42, you don't have a requirement to do an intruder dose assessment. The evaluation that you're meeting the requirements under 61.42 are determined by the waste classification tables and some other requirements related to intruder barriers and that sort of thing, but you don't have to do an intruder dose assessment in the existing regulation.

In the proposed regulation that we're coming forth with now, you will have to do an intruder dose assessment, and the reason for that is when the tables under 61.55 were developed, they had to use a certain source term to do that evaluation -- they being NRC; I'm sorry.

NRC had to use a certain source term to do that evaluation, so they did their best effort at developing what they thought were the types of waste and the concentrations that were going to go into low-level waste facilities, and they did what we call an inverse analysis.

So they set a dose limit and then they determined what concentrations would give them that dose. Those are the concentrations, after some modifications and changes, that are shown in the waste classification tables in 61.55.

At that time, when the analysis was done, the NRC didn't anticipate large quantities of depleted uranium, for instance, going in low-level waste disposal facilities or some of the other things that have been talked about, like blended waste that Larry mentioned on his slide.

Potential changes to the nuclear fuel cycle that changes isotopic distributions or the quantities

of certain waste, all those changes right now, in the existing regulation, would fall under 61.55(a)(6), which means if it's not in the table, it's Class A -- basically Class A by default.

Well, technically we know if you take something like depleted uranium, that may be the plain reading of the regulation as it's written, but technically you would be hard pressed, unless the quantity is limited, to show that it would fall under that 61.55(a)(6).

So the better approach is to require the site-specific intruder assessment, and then the individual sites can evaluate exactly what the risk is from the intruders, instead of NRC trying to develop a calculation and apply it to everybody, when site conditions are so different from, say, Texas to South Carolina.

It doesn't make much sense to do a one-size-fits-all when we have the modern tools to do a better evaluation at different locations and different sites.

So conceptually the intruder assessment is a dose assessment for somebody that comes on the site and actively does something. In NRC's evaluation, they potentially build house, or they put a well in, or

possibly both. And the impacts to the person that built the house or installed the well were evaluated, as well as the chronic impacts of somebody that lived in the house or used the well on the disposal site.

So the inadvertent intruder is somebody that's actively on the disposal site and may directly disperse waste into the environment and be exposed by a variety of pathways.

Next slide, please. So this intruder assessment is a new analysis. The proposed modifications will require the stylized analysis instead of solely relying on the waste classification tables.

The new requirements in 61.13 are similar to what we did in 61.13 with respect to the performance assessment: how do you determine the scope of the analysis? For the intruders one of the most important things is who are they and what are they doing? -- because that can greatly change the magnitudes of the doses that result from the scenarios.

What we advocate in our guidance document is you can go ahead and do site-specific intruder analyses using your own scenarios. Do the NRC default scenarios, too, and show how they compare, so that your stakeholders understand how important is this assumed

receptor scenario that you may be using, compared to the default scenarios that were used in the past.

So we have the change to the performance objective in 61.42 to reflect this requirement for the intruder assessment, and just like the performance assessment, a requirement to update it at closure.

Next slide, please. The figure on the right, it's from the guidance document; I think it might be 4.1; I don't remember right now, but it's in the guidance document; it's a bigger figure.

We put things like flow charts in the guidance document for those of you that like to step through the process and know what you have to do, as well as more verbal and generic type of guidance that provide you some flexibility.

So the key part on here is the last two bullets. The intruder assessment is to be based on intrusion scenarios that are realistic and consistent with expected activities in and around the disposal site at the time of site closure.

And the dose limit that would be applied to the intruder assessment is 500 millirem for the compliance period.

Next slide, please. So what we're seeking feedback on are all the elements related to the intruder

assessment: the revised and new definitions for the intruder assessment found in 61.2; the revised concepts to describe what this is and why you're doing it, in 61.7.

I would just note that 61.7, the concept section, are not requirements in the sense of the word like you'll find in the other parts of the regulation; they provide the context and description for what you find in the rest of the regulation.

And then also under 61.28 the requirement to update the intruder assessment at closure, and of course the revised performance objective for the intruder assessment.

So we'll take your comments and questions you might have about the intruder assessment.

MR. CAMERON: Okay. Before we go to that, Lisa London from NRC's Office of General Counsel has some more information on how you might submit concerns to the NRC.

Lisa?

MS. LONDON: Yeah. I just wanted to address the comment raised earlier, and Chip had offered the advice of looking at 10 CFR 2.206. I would also point out that the NRC has, on its website, a backgrounder on allegations.

We've got a hotline, and you can send an email to allegation@nrc.gov. The NRC actually defines allegation fairly broadly, and so it would in fact capture concerns regarding the implementation of agreement state programs.

And so you can contact our NRC safety hotline or send an email to the allegation@nrc.gov. And go to our website and look at the backgrounder on allegations, and that should give you some helpful information.

MR. CAMERON: Okay. Thank you very much, Lisa.

Let's go for any questions or comments on --

DR. ESH: Chris Grossman noted that the figure that you couldn't read, that flow chart, is figure 4.2 in NUREG 2175, not 4.1.

MR. CAMERON: Okay. Thank you for that clarification, Chris.

Let's go to Karen Hadden here in Austin.

Karen?

MS. HADDEN: Could you do some clarification on the point that you made about the individual sites setting the policies? What portion of things do they set? What portion is still NRC?

DR. ESH: With respect to the intruder assessment, the analysis -- in the proposed regulation

right now, the individual sites would do their intruder dose assessment, which they would set all the parameters of the intruder dose assessment, and then that would be evaluated by the appropriate regulator, so right now they're all agreement state programs; the agreement state regulators would evaluate them.

If it was an NRC licensee, we would evaluate the parameters of that dose assessment, just like if it was a dose assessment under 61.41. But they would set all the parameters.

They would say, here's our receptor, here's the pathways that they're going to be exposed to, here's their consumption rates, here's the plant-to-soil transfer factors, all the things that go into that analysis, the licensee would set and then be reviewed by the regulator.

MS. HADDEN: And then could there be a challenge on behalf of the regulator, because that, as a member of the public, concerns me greatly. I do not have faith and confidence that we will see good strong parameters set.

DR. ESH: Right. Yeah. The -- number one, that sort of analysis -- all those sorts of analyses should be publicly available, so that the stakeholders are able to review them themselves.

The regulator should review all those in detail and document their review of them, that the public stakeholders could also review. And then you, during the licensing process, should be able to raise concerns about those analyses, if you have them, whatever it might be: the scenario's parameters, receptors, et cetera.

MS. HADDEN: I would like to comment that that is an incredibly difficult burden to place upon the citizens, and I feel that in this case NRC is walking away from their duty and ought to come in with a heavier hand and be more involved in setting those parameters at every site and having some kind of standardization, because otherwise I don't think the public is being protected.

DR. ESH: Right. I understand your comment.

MR. CAMERON: Thank you, Karen.

Larry?

MR. CAMPER: Yeah. I want to make a comment on this intruder protection, especially going to the young lady's comment.

We understand your comment, and it's a valid comment for regulators who review the applications to assess the scenarios that are chosen by the applicant and ensure that it's the right set of scenarios, that

it's a realistic set of scenarios that will protect public health and safety.

But it's very important to put this in context. Today, in our regulations, 61.42, there's a requirement that the intruder is protected. The intruder is protected via the current system by the waste classification tables in 61.55.

In other words, years ago, when the regulation was developed, the staff undertook an analysis for an inadvertent intruder and determined that if the concentrations of waste that are set forth in the table are maintained and disposed of at those levels, the inadvertent intruder will be protected.

The primary radionuclide driving the dose in that analysis was cesium-137, and the 500-millirem was the assumed dose limit for that analysis.

What is distinctly different now is that the dose of 500 millirem is not implied; it is explicit. It is a requirement. And in addition to relying upon the waste classification tables, the operator is required to undertake an intruder analysis.

So there will be a lot more visibility and specificity in that intruder analysis, as compared to the modeling that was done 30 years ago.

MS. HADDEN: Isn't Ce-137 one of the four

so-called phantom radionuclides that are attempted to be basically not paid attention to anymore?

DR. ESH: No, cesium-137 -- carbon-14 I believe is what you're referencing.

MS. HADDEN: Yeah, and there's several others.

DR. ESH: Right.

MS. HADDEN: Is that not one of them?

DR. ESH: Not cesium-137, no.

MS. HADDEN: All right. Thank you.

MR. CAMERON: Okay. Amber, does anybody on the phone have a question or comment.

THE OPERATOR: We do have a question from Diane.

MS. D'ARRIGO: Hello?

MR. CAMERON: Hi, Diane. Go ahead.

MS. D'ARRIGO: Hi. I am still stuck on the intruder issue, and it may have been implied that intruders could get 500 millirems before, but when siting was going on, people in communities -- the impression was given -- and I was at many, many, many of those sitings -- under the current 10 CFR 61, that the intruders would be protected to the same amount as the people during the license control period.

And I think that going to expressly and making

this be a 500-millirems dose, it's not an acceptable dose anymore. We know that radiation is more harmful than previously thought; that's what we're finding out with every new BEIR report.

And it's not okay. I mean, my comment once again is to not weaken anything, that the standards should be no weaker than before and should only bother to change it if it's going to be more protective for the public.

And with this intruder scenario, not protecting -- maybe somebody now thinks it's not very likely that someone in 100 or 300 or 500 years is going to move in somewhere, but I don't have a lot of faith in the judgment of the people who are making the decisions right now.

MR. CAMERON: Okay. Thank you, Diane.

And, Larry, did you want to say anything?

MR. CAMPER: I do.

Diane, I don't want to get into a debate with you about these health physics issues. We certainly would love to have your comments, and I would greatly appreciate seeing that.

But by the same token, it is important to put some perspective on some of the points that you're making. The notion that -- the very model, the linear

nonthreshold model that is used for conducting the regulations is an extremely conservative model that is increasing being called into question as being overly conservative by the --

MS. D'ARRIGO: By who?

MR. CAMPER: By the professional health physics community.

MS. D'ARRIGO: The people who make radioactive waste.

MR. CAMPER: They are professional health physicists, Diane.

MS. D'ARRIGO: They're the people who make the waste.

MR. CAMPER: All I'm saying --

MS. D'ARRIGO: Talking about medical people who care about the public and their health.

MR. CAMPER: All I'm saying is I think it's important to put this type of discussion into perspective; that's all I'm saying.

MS. D'ARRIGO: Uh-huh.

MR. CAMPER: And the other point I want to make -- and I was going to make it in my closing comments, but since we're having this discussion, it's a good time to bring it up.

The 500-millirem -- we had extensive

discussions with our Advisory Committee on Reactor Safety, the ACRS and really pushed the staff on the notion that essentially, by allowing 500 millirem, you're assuming that it occurs, it occurs in limited fashion.

The ACRS --

MS. D'ARRIGO: That what occurs? I'm sorry, Larry.

MR. CAMPER: An intruder occurs. The ACRS really wanted the staff -- they pushed the staff to calculate an intruder entering the waste.

We discussed with the ACRS that the probability of occurrence of that would be something on the order of 10^{-8}, 10^{-9}, very low occurrence of probability, especially when you look at all the parameters that are set forth in the assumption for the intruder that Dave just went through.

So the notion that we essentially assume that it happens and allow the dose to an individual one time is the basis for that happening, as opposed to going through a much --

MS. D'ARRIGO: What do you mean, one time? It's 500 millirems per year, with no number on the -- no limit on the number of years.

MR. CAMPER: The intruder's not going to

repeatedly invade the waste.

MS. D'ARRIGO: No, if they don't know that they're invading it --

MR. CAMPER: I just tried to put clarification --

MR. CAMERON: Okay. I think -- and, Diane, I don't want you to get the impression that -- your comment on this was heard, and it is considered as a formal comment, and also the questions that you're asking are being heard by the staff and will be addressed, so thank you for that.

And, Amber, is anybody else on the phone?

THE OPERATOR: There are no other questions on the phone line at this time.

MR. CAMERON: Okay. David, you want to go to the next topic?

DR. ESH: Sure.

MR. CAMERON: Okay.

DR. ESH: The next topic is the second tier of the analysis timeframe approach; it's called the protective assurance analyses.

As I indicated earlier, this is required for all types of low-level waste. What's being proposed is basically an optimization type process, rather than comparison to a dose limit, where the objective function

of the optimization process is to minimize the doses.

Now, what we're advocating in our guidance document is that the simplest approach to do this is just to go ahead and extend your performance assessment and intruder assessment analyses and use the results of those in this minimization process.

The approach and guidance that we're -- that I'll talk about in a little more detail is basically one where if you have high risk, then you should be looking at high effort. And if you have low risk, then you should be looking at low effort with respect to the risks in these timeframes.

And we think that makes sense; that's generally what we would want people to do. We wouldn't want you spending a lot of money if your risks are low, and conversely we wouldn't want you spending a little bit of money if your risks are high.

Next slide, please. So this is a figure from the guidance document that we tried to outline what you might be doing in this protective assurance analysis period.

And we defined some levels, where Level 0 would be a minimal amount of additional effort that you may need to do, basically a few millirem. And this is similar to the as low as reasonably achievable approach

applied under the compliance period.

Under Level 1, then that has a kind of a threshold of somewhere around 25 millirem; you do increasing effort as you go up the scale.

So the Commission gave us language about the target for the optimization process, but the one thing to understand is the 500 millirem that's in the regulation for the protective assurance analysis period is not a dose limit. The objective is to minimize your impacts.

So that's a fuzzy line in the sand, is what you're given there. But what you should be trying to do is minimize your impacts to the extent practical for this protective assurance analysis period.

Next slide, please. So what we want to hear from you about is these requirements, whether you think it makes sense to extend the performance assessment and intruder assessment or -- that's not the only approach you can use, as the guidance document talks about, but we think that's the simplest one, that -- based on the fact that you will have already invested in doing that analysis for the compliance period.

The fact that we're defining it as an optimization approach, this could have been assigned a dose limit and treated similar to the compliance period.

That's not a direction that we received from the Commission; the fact that the target is going to be minimization.

And that diagram that I talked about on the previous slide is really one of risk-based discounting, so when risk is high, effort is high; risk is low, effort is low. That's what we're talking about. So I think that's what we have.

MR. CAMERON: Okay. Questions, comments from anybody in Austin on this particular topic?

(No response.)

MR. CAMERON: Amber, we're going to go to the phones again. Does Diane or anybody else have a question or comment on this?

THE OPERATOR: There are no questions on the phone line at this time.

MR. CAMERON: Okay. Thank you very much.

We're going to go on to the next topic then.

DR. ESH: I didn't even get a chance to get a drink.

Performance period analyses is the next topic. It's applicable to times after the 10,000 years, and the important thing to note about this is it's only to be applied if sufficient waste is present.

We developed a new table, Table A, which

provides concentrations, which is the trigger point to when somebody would need to do that analysis or not.

The concentrations in Table A are the Class A waste concentrations, with two important differences: one, that the concentrations are to be based on facility average, so make it simply: Take your whole volume or mass and average your whole activity over it, because all you're trying to decide is, do I need to do this analysis or not? So we wanted to keep that as simple as possible.

The other important distinction is we modified the Table A or the Class A waste concentration values to change from long-lived transuranic radionuclides to all long-lived alpha-emitting radionuclides.

So essentially this adds uranium into the mix to consider, as well as some other isotopes, so that issue of 61.55(a) by default and things not being analyzed properly, possibly, that is remedied by this change with respect to the performance period analyses.

So all essentially long-lived waste would get evaluated during the performance period.

And the objectives of this analysis are one of -- in my mind, at the highest level it's to communicate how you think your system is going to

perform for these timeframes; what do you expect to happen; how are the design features and site characteristics going to work to reduce the risk?

You do want to minimize the impacts to the extent reasonably achievable, but this is over very long timeframes, that how much you can actually minimize those impacts may be of question.

But at a minimum you should be communicating with your stakeholders to the best of your ability what you think your impacts are. I mean, in Texas I think you do that right now with your requirements of needing to go to 1000 years or peak dose. You're trying to have your licensee communicate with your stakeholders what you think those long-term impacts are.

So this part of the regulation might not be that much different in Texas as it possibly could be in some other states.

Next slide, please. So this is the Table A values. It's a little bit modified from what's in the proposed regulation, because we did have some comments about it in the last meeting, some things that were confusing.

In the waste classification tables in the existing regulation and in the proposed regulation, there were some superscripts added to the numbers under

the concentrations, which could make it confusing as to what the number is.

So for instance, 10 had a superscript of 3 after it, so somebody could interpret that as 1000 or 10-cubed. So just for presentation purposes now, I changed that so it was clearer what -- people didn't get confused by the numbers, and that is definitely a change that I think we'll make in the final regulation, because I think that is confusing.

But anyway, this is a table that communicates those average concentrations that trigger when you might need to do this very long-term analysis.

Next slide, please. And there is a description of words as to what it is. Well, the one thing I didn't highlight yet: In the fourth line down, it says "or if necessitated by site-specific conditions."

So what that is an acknowledgment of is we don't anticipate it, but you could have specific conditions at your site where maybe the risks could be higher, even though you're below these Table A concentrations.

In the guidance document we outline what are the types of conditions where maybe that could happen, so that if you are close to, say, the Table A values and

then you look and find in the guidance document, hey, I have some of these conditions, then maybe you should do that analysis anyway, even though, you know, technically you're below the Table A values, and therefore you wouldn't necessarily have to do it.

So it is a -- it's fairly firm trigger, but there is a caveat there that there may be special circumstances that would require further evaluation.

Next slide, please. This is an example from the guidance document where we developed a table of what are long-lived isotopes, including their half-lives, what progeny they may have, and generally there's a column there, low-level waste PA inventory -- low-level waste performance assessment inventory. That's if you commonly see these sorts of isotopes or you would be expected to see them in a low-level waste performance assessment.

So that's kind of an example of a tool in the guidance document to facilitate the review of the performance period analyses.

Next slide, please. So what we're seeking feedback on is this approach overall to it. It's also the use of the Class A values as the trigger for when you need to do it; the fact that we're defining averaging in a simple way over the whole facility average basis;

and then that the requirement is just minimization to the extent reasonably achievable; there's no dose limits associated with this performance period analysis.

But in addition to that, one of the main objectives is to identify the features that contribute to limiting the long-term impacts. So what is acting in your system to help you reduce the risk over those long timeframes, if you still have risk over those timeframes.

I think that's it. Next slide. Yeah.

MR. CAMERON: Okay. Thanks, David.

Amber, why don't we go to the phones first and see if anybody has a question or a comment on performance period.

THE OPERATOR: There are no questions on the phone line at this time.

MR. CAMERON: Okay. And we'll check back with you in a minute or so, just to make sure that that's still the case.

Anybody here in Austin?

Okay. We have one question or comment back here. Scott Kirk. Scott.

MR. KIRK: Yes, thank you. Scott Kirk, Waste Control Specialists.

Larry, you've been to our site before; really pretty recently. We're really proud of our site; it's extremely robust. It has very impermeable clays; it's far removed from water tables.

When we modeled depleted uranium, we really showed the robustness of the site and not just the site characteristics but also the engineering features with it.

It's got that seven-foot liner system that you saw. You saw all the concrete and the modular concrete canisters that we use.

And as you and I had spoken, that -- you know, we looked at 1000 years, 10,000, even 20,000 years of a period of compliance. We looked at time periods much larger than that.

And what we clearly demonstrated is that a modern, new facility that's sited in an arid portion of the United States clearly has no problems meeting a period of performance of very long periods of time. That's a very good indicator for how well these facilities perform environmentally.

There was a -- at one time there was some thought that maybe the NRC would do an Environmental Impact Statement or something like that that would show -- or some sort of report that would show the

robustness -- how much the industry has matured over the past 40 years.

And I think you -- I think it would behoove all of us -- the NRC, the public, we look to you to protect us -- to maybe sort of dust sort of those concepts off. I think what might be needed or could be done to generate a report, some sort of an evaluation that sort of captures about how far we've come over the past 40 years.

That's my comment.

MR. CAMERON: Thank you, Scott. Thank you.

Larry?

MR. CAMPER: Thank you, Scott. Yes, I have been to the WCS site two or three times, as recently as January. Correct.

Let me speak broadly about your point. What Scott is pointing out is that if one goes and looks at the assumptions that were used in the Environmental Impact Statement which served as the regulatory basis for the existing Part 61, you'll find a set of assumptions and/or practices that have turned out to be quite different than was envisioned when that Environmental Impact Statement was done.

And when I say different, I mean, for example, the numbers of reactors that were assumed to have been

decommissioned by this point in time is different. The actual operations of the sites are remarkably different than was envisioned by Part 61.

And certainly at the WCS site, and others, by the way, the other operating sites as well, things are being done that are far more operationally conservative, if you will, for lack of a better term, than was envisioned in Part 61.

I certainly have had an interest for some time in the fact that the Environmental Impact Statement that exists today doesn't reflect the actual operations that occur today.

And, yes, it would be nice if we could do an updated or a new Environmental Impact Statement, actually. However, we did ask that question or explore that question with this rulemaking, in fact, and determined that there was no legal obligation to do a new Environmental Impact Statement to support this rule; rather it would be an environmental assessment.

Environmental Impact Statements cost a lot of money, and they take a lot of time. And it would be nice if we could document in an EIS the current state of affairs; we certainly would agree with that. But it's -- you really have to have a compelling reason to do that when it -- given the cost that it takes.

It would probably cost 2-1/2 to $3 million to do a new Environmental Impact Statement. But there may be other ways that things could be documented for public awareness as to the actual operational integrity that exists today, as compared to what was envisioned in Part 61 when it was developed back in 1978 and 1979 and went into effect in 1982.

MS. LONDON: I'm stealing Chip's mic to sort of tip off of something that Larry said.

The Commission always has the discretion to instruct staff to conduct an Environmental Impact Statement, and certainly this comment is going officially on record, so it's a comment that can be delivered to the Commission as a part of this rulemaking.

MR. CAMERON: Thank you, Lisa.

And, Amber, anybody on the phone on performance period? Just checking back with you.

THE OPERATOR: Yes. We do have a question or comment from Diane.

MR. CAMERON: Okay.

MS. D'ARRIGO: I'm going to wait till later.

MR. CAMERON: Okay, Diane. We'll be back to you later.

And, David, safety case next?

DR. ESH: Right.

MR. CAMERON: All right.

DR. ESH: Okay. So the next area I'm going to talk about are safety case and defense-in-depth protections. The first couple of slides are to present to you -- some of you may be familiar or may not be familiar with the safety case under the International Atomic Energy Agency.

So the IAEA approach to safety case is really comprehensive. This figure on the right of slide 38 is from the specific safety guide number SSG-23 that basically shows the components of the safety case under IAEA.

Now, in a few slides, whenever we have our -- NRC's proposed definition of safety case, I would argue that it's functionally similar to what the IAEA has here under the components of their safety case, at least in this diagram.

When you read the IAEA's document, they include a lot more within safety case; it involves, say, site acceptance at the initial site selection stage, and there's a whole variety of other things like that that are not necessarily within the NRC's low-level waste regulation.

So in some of those ways, what we have is a

little bit different, but when you look at the -- when you have a chance to read the definition and consider this figure, I would argue that they line up pretty well.

Safety assessment is an important component of this over safety case, but it's just one. In our view, under Part 61, what you may have done in the past for your licensing of a low-level waste facility is essentially your safety case.

So all the things that go into your licensing, from, say, the safety strategy, your system description, all the way down to the particular technical analyses, and then your license conditions and other limits and controls that may show up here on the box IAEA identified as G, all those things and your low-level waste licensing are your safety case.

So we feel like existing facilities have been doing a safety case; this just makes it more formal. You'll see it show up a few cases in the proposed rule text that somebody has to more clearly elucidate what their safety case is and the components of it.

So next slide, please. So this is also from the IAEA; it's their safety assessment. We focus a lot on the middle box of this, the post-closure radiological impact: scenarios, models, calculations. But it has some other components to it, too, in IAEA, under safety

assessment, that are shown here on the figure.

So now if we go to what NRC is proposing on slide 40, this is basically our approach to safety case and defense-in-depth. At the high level the proposed rule is to include discussion of the safety case and defense-in-depth protections.

The safety case for long-term safety in 10 CFR Part 61 has the two primary components here, but as I already noted in my comments, it's really the combination of all the licensing information is your safety case.

But it's technical analysis combined with the defense-in-depth components. And so your licensing information is to explain how the combination of defense-in-depth and performance assessment should be used to support the licensing decision.

Now, in this box at the bottom here, this is a definition of defense-in-depth; it's used at NRC for other NRC programs. We have adopted the same definition here in the waste arena. We discussed it in detail. We didn't come up with a good reason for why we should come up with a new definition; we also felt it might be confusing to people to have multiple definitions, so that's the waste defense-in-depth definition, which is different than this.

But the important parts to note of this is defense-in-depth conceptually is the use of multiple, independent, redundant layers of defense so that you aren't relying on a single layer.

That's important to note, so we had a question at our previous meeting about, well, does this mean I need to have, say, you know, two geomembranes or two leachate collection systems or whatever the case may be.

No. That's not the case. The defense-in-depth for your low-level waste system is the combination of all your barriers, limits, controls that contribute to reduce the risk and limit safety.

But you also will need to demonstrate that you aren't relying on just one single component of the system to meet your safety argument. So say you came up with the best alloy in the world that you thought was going to last forever, and your site was really crummy besides that. That would not satisfy this defense-in-depth as is being proposed in this regulation.

Next slide, please. So there's the words associated with it. I would say go ahead and compare that to the figure that I -- that we just had up. I think it has all the similar elements to it that we're trying to achieve with respect to the safety case.

Next slide, please. So what we're seeking feedback on is that definition -- the definition for defense-in-depth and safety case. We have concepts associated with that. As I caveated earlier, those aren't requirements similar to other requirements.

We do have requirements for a safety case. This whole area, defense-in-depth and safety case is at a very high level, so it doesn't get very specific as to what especially you need to do.

In the guidance document we describe various ways that you may demonstrate defense-in-depth, so there's different presentations of barrier analysis, for instance, that you might use to try to show how you have defense-in-depth in your system.

We have new technical analysis requirements for defense-in-depth, but it really doesn't say much more than that. It basically says provide defense-in-depth technical analyses. I don't remember the exact words.

And then also, similar to the performance assessment and intruder assessment, there's a requirement to update the defense-in-depth analyses at closure. I think that's it for this.

MR. CAMERON: Okay. Anybody in Austin, questions or comments?

(No response.)

MR. CAMERON: And, Amber, does Diane or anybody else have a comment or question on the phone?

THE OPERATOR: There's not any questions on the phone line at this time.

MR. CAMERON: Okay. David, let's go to waste acceptance criteria. And I think we're going to have a number of comments in the other category, so let's finish this one off.

DR. ESH: Right. Okay.

Waste acceptance: We have new requirements for developing waste acceptance criteria using either -- this is a "or" approach -- the 61.55 waste classification system or the site-specific waste acceptance criteria.

So in one case, the 61.55 waste classification system is basically NRC's early 1980s analysis. The site-specific waste acceptance criteria would be the licensee's analysis evaluated by the regulator in, you know, today or a future timeframe.

This is found under 61.58 in the NRC's regulations. 61.58 existed before; it's as modified section now. The focus is on three areas, so the waste acceptance criteria, waste characterization, and waste certification. All those things combine together to

provide your waste acceptance for -- to determine if the waste is suitable to dispose of at your site.

Next slide, please. So waste acceptance; I'm going to read this one: "Demonstrating compliance with the performance objectives also requires a determination of criteria for the acceptance of the waste. The criteria can be determined from the results of the technical analyses that demonstrate compliance with the performance objectives for any land disposal facility or, for a near-surface disposal facility, the waste classification requirements of subpart D of this part."

So it's an "or" approach to waste acceptance or waste classification. It is to be applied -- the "or" means that basically the site-specific analyses can be used, or NRC analyses.

Next slide, please. So what we're going to seek feedback on is this "or" approach: the concepts regarding waste acceptance and the requirements for waste acceptance.

I should note that the waste acceptance process is used in other programs, and it used domestically within the Department of Energy. It's a way of providing the specific -- site-specific requirements for your waste to determine whether it's

suitable for disposal at a particular location.

NRC does have additional waste characteristic requirements under 61.56. Those are still present, so you still have the waste characteristic requirements that you have to meet for receiving and disposing of waste, but this is really focused on what are the radiological concentrations that are appropriate for my particular site, and do I use the waste classification tables, the early-1980s NRC analyses, or do I use the site-specific analyses to determine them.

So I think that's it.

MR. CAMERON: All right. Anybody here in Austin have any comments or questions on waste acceptance criteria?

(No audible response.)

MR. CAMERON: Well, let's check in with Amber -- oh, Scott Kirk. Okay. And then we'll go to Amber.

Scott?

MR. KIRK: Yes. This question's just for clarification. When I read the proposed rule, 61.58 has the provisions. You can either use classification tables or you can develop your own site-specific analysis and develop your waste acceptance criteria.

But the -- and it's a compatibility level B, which means the agreement states have to have that rule almost essentially verbatim. But it talks about the applicant. I mean, it implies that the applicant makes that decision. The applicant makes the decision whether they want to use the waste classification tables or if they want to do the site-specific analysis.

In the preamble to the rule and the language in there, it also talks about the role and the importance of the agreement states and also the importance of the compact system, because they relied on the classification system for decades now.

And so my thought is that the agreement states ultimately do have a say-so whether the classification tables are used, or whether or not a licensee can use a site-specific. The decision whether it's going to be used or not doesn't lie solely with the applicant?

And that's just a question for clarification.

MR. CAMERON: Good.

Larry?

MR. CAMPER: Yeah, Scott. Thank you for the comment.

Correct. The idea that the Commission has here is -- was to provide an "or" pathway whereby the operator, in accordance with its regulator, could

choose to rely upon the waste classification scheme or the waste acceptance criteria. The Commission is very clear; it's "or."

Now, there are a lot of operational if not political realities around that. A classic example would be the site in Utah, which is limited to Class A at this point in time.

But based upon its waste acceptance criteria, it might demonstrate that it could dispose of waste in excess of the concentrations of Class A. In fact, that site once upon a time was approved for Class A, B, and C waste but today only accepts Class A waste.

But the fact of the matter is it will ultimately be up to the regulator, in conjunction with the operator, as to which is used: classification table or WAC.

Now, the WAC, as you also pointed out, just for everyone's gratification who doesn't follow this stuff, these sites have all developed waste acceptance criteria and have so for years.

What's different is in the regulation the Commission is giving a pathway to use either the waste classification table or the WAC. But there's a lot of operational real world realities that have to be brought to bear on that point.

MR. CAMERON: Anybody else have a follow-up or question on waste acceptance?

(No response.)

MR. CAMERON: Amber, does anybody on the phone have something to way on waste acceptance criteria?

THE OPERATOR: Yes. We do have a comment or question from Diane.

MR. CAMERON: Okay.

MS. D'ARRIGO: Hi, Diane again. I wanted to express a little concern with the tone of this whole thing, which is directed to the facility operators, the waste generators, and really not to the public who's supposed to be being protected.

MR. CAMERON: Okay. And, Larry, do you want to say something about that?

MR. CAMPER: Well, I do. Actually the regulation is the regulation that the regulators in the states use to license a low-level waste disposal facility. The existing agreement states that have the sites have essentially adopted this regulation in whole cloth today, with only minor exceptions.

The new requirements that we are imposing in this regulatory rulemaking, as I mentioned in my opening comments, the expectation is that the agreement states

would utilize these new requirements for the purpose of protecting public health and safety.

So it is really the regulator in the agreement state is the primary recipient of this modification to the regulations, and then in turn the operator or the applicant, as reviewed by that specific state regulator, be it Texas or South Carolina or Washington or Utah, currently.

MR. CAMERON: Okay. And, Diane, do you have a follow-up at all? I think you're --

MS. D'ARRIGO: It's just -- it's a bit frustrating, because it's so evident. There's really not much that I can say that I feel is going to have any real meaning regarding concerns about public health protection.

And so I'm at this point -- I guess the only thing I would try to point out, maybe for future meetings, is that the comments are so specifically directed to Here's how you can have a choice between how you want to justify putting this waste in.

And I'm appalled by the fact that -- by the suggestion that it would be okay to average over the entire site, if I'm understanding that properly. I remember when NEI first brought that up, and it was appalling at that time.

And now it's now becoming part of regulations that the whole site is going to leak all together in one fell swoop.

MR. CAMERON: I think that the NRC will keep that in mind --

MS. D'ARRIGO: Oh, I'm sure.

MR. CAMERON: -- and make sure that context at least is given in the future meetings, that it's about protection of public health and safety.

DR. ESH: Well, one clarification with respect to the averaging is that it's not averaging over the -- say the -- the confusing part is existing Part 61, in my mind, defines "site" and "facility" backwards. Okay?

So when I think of site, I think of the boundary of the fence around the whole thing, and when I think of facility, I think of where you're putting the waste in the disposal units type of thing.

It's used backwards in the regulation right now, which I think can be confusing. And so when we're talking averaging, we're talking averaging over the disposal units where you're putting the waste, not over the whole boundary of the facility, which might be a lot larger than where you're actually placing the waste, so just a clarification.

MS. D'ARRIGO: Okay. So it's clarified somewhere in writing in the proposed rule that you don't mean what you said right in this thing, but that you mean over each cell, and a cell being one trench or one --

DR. ESH: Right. The language --

MS. D'ARRIGO: -- burial area?

DR. ESH: I think the language in the proposed regulation is clear, and I just wanted to clarify how those terms are defined in Part 61, and it's used to average over the area that's where the waste is disposed of, including the fill material or the boundaries between those cells. It's not the boundary of the whole large site, which may be a lot different.

MR. CAMERON: And let's hear from Chris McKenney on this.

MR. McKENNEY: Now, there are two different types of averaging still in the rule or going into the rule totally.

There is the averaging that Dave discussed earlier, which is only for Table A, which is where you are estimating whether you have enough long-lived material in the site to do the analysis past the 10,000-year period.

Use of the --

MS. D'ARRIGO: I don't know what you just

meant by that. Could you say that again?

MR. McKENNEY: There are three periods of analysis for the rule.

MS. D'ARRIGO: Uh-huh.

MR. McKENNEY: There's the one up to 1,000 year, the one to 10,000 year, and the 10,000-and-beyond analysis.

For the beyond-10,000 analysis, we've put in the proposed rule Table A, which evaluates how much long-lived waste you have in your facility. If, when you average all of your long-lived waste, you are over the --

MS. D'ARRIGO: In the whole facility --

MR. McKENNEY: Yes.

MS. D'ARRIGO: -- or in each trench?

MR. McKENNEY: Over the whole facility.

MS. D'ARRIGO: Okay.

MR. McKENNEY: And are over Table A, then you have to do the analyses. We are not changing anything about the fact that, if you use the standard Class A, B, C tables -- we are not changing that those are by package.

Those two tables that are already in the regulation are still on a per-package averaging basis. Those are not averaged over the facility; those continue

to be averaged over the package.

MR. CAMERON: Okay. Thank you.

Let's go to the other category. I think you had some things that you wanted to say. Correct?

DR. ESH: We have one slide on guidance document, and then --

MR. CAMERON: Oh, we do?

DR. ESH: Yes.

MR. CAMERON: Okay. Go ahead.

DR. ESH: So --

MR. CAMERON: Oh, on the guidance. Right.

DR. ESH: Right. And so each time I do this presentation, I acknowledge some people, and I have acknowledged different people every time, so I'll give you a couple of new people this time: Cynthia Barr worked with us on this guidance document significantly, and Hans also, and then we had a number of technical reviewers: Christian Ridge, Karen Pinkston, and Tim McCarten, among others. So I just wanted to just give some acknowledgment to some people that worked on it.

So when you start with this document, spend some time on chapter 1; that's going to give you the overview and context and then help you through the rest of the document. We tried to provide a lot of examples, tables, and figures, so it's not just all words and text.

Chapter 11 describes the use of other NRC guidance documents, so if I have this and I have something else, how do they relate or how do I use it? It is 434 pages; it has 18 pages of references.

At the last meeting we had, I said, you know, you had about 90 days left, so you have to read five pages a day. We're now at like 75 days left, so you have like six pages a day to read if you still haven't started. Eventually you'll have a day left, and then you'll be my twin brother; he hasn't done anything yet.

(General laughter.)

DR. ESH: There's a glossary in it that defines -- I'm glad I got that on the record, by the way.

There's a glossary, by the way, that defines a lot of the terms in the document, and then we have some appendices, too, that I indicate here that have these hazard maps; there's the FEP screening process is in there; there's a couple examples on site stability.

So at the last meeting we had people question, how am I going to demonstrate that my site is stable. We put a couple examples in there. There's an engineered approach using, you know, basically robust rock covers to try to achieve long-term stability, and then there's also an example of more analysis-based approach of some analyses that was done by the

Department of Energy to look at the West Valley site.

There's a caveat in there; we aren't, you know, proving or acknowledging that analysis, but the type of approach that they used and the modeling that they were doing is what you might use if you were using a modeling-based approach.

The ML number for the document is there on the bottom of the slide.

MR. CAMERON: Okay. Thanks, David.

Let's open it up here in Austin, and we'll go to the phones on -- anything on the guidance? Remember the May 20 webinar on the guidance?

DR. ESH: Right. The May 20 webinar will be done by Chris Grossman, and it will be two hours focused solely on the guidance document.

MR. CAMERON: Okay. Thank you.

Joe?

MR. MUTH: Yeah, thanks, Chip. I appreciate it. Joe Muth from URENCO. Just one observation: I note that every time that Chip speaks to Amber and Joe, he looks up to the heavens, and I'm wondering how far up the chain that might go over there.

You don't have to answer that question.

A couple remarks and a question: First one has to do with previous public meetings. Considering

the format of the public meetings prior to this, we had a panel discussion, and those panel discussions appear to be pretty useful from the standpoint of vetting out some questions and clarifying some things.

It's URENCO's opinion that at the closeout of all these public meetings that the NRC consider doing another panel discussion at the end to capture the significant thoughts and processes. So that's just a remark, please.

Another remark is URENCO doesn't think that the new burdens on licensees in host states have been adequately addressed. Previous commenters have identified the need for allowing the sites to have a completed -- complied with the existing regulations; that applying the new requirements on a case-by-case basis, consistent with Section 61.1(a).

So we would agree that the case-by-case basis application ought to be applied for those states or licensees. And that's just a comment also.

One question: The staff has an outstanding CA note from the Commission that, upon completion of the rulemaking, the staff should provide the Commission a recommendation on the need for rulemaking efforts for the waste classification tables.

And, Larry, you spoke to this earlier in your

introductory. Is it the staff's position that, upon implementation of the proposed rulemaking, that there would be no need for an additional rulemaking for the waste classification tables in 61.55?

And as a follow-on question, will the staff's position be clarified and published before the final rulemaking of 10 CFR 61?

MR. CAMPER: No. The staff has not reached a conclusion at this point as to whether or not there is an efficacy for doing a follow-on rulemaking.

We have a charge from the Commission, as you pointed out. That charge has been modified over time in different SRMs, and they're all there in my background.

We do owe a CA note to the Commission in which they specifically want the staff to -- when this rulemaking is complete, to clarify comments that were provided during the course of this rulemaking and what our impressions are of that.

We will do that as part of the proposed rulemaking package. The fundamental issue, though, that you face -- and one of the reasons why we cannot and should not reach a conclusion at this point as to whether or not there should be a second rulemaking, because although we're gathering comments about that

question and we like to hear a lot about it, and we will communicate with the Commission about what we've heard, the issue is that there are -- the members of the public will not know what the final rule looks like until it's a final rule.

And then being able to comment upon their views about the efficacy for a second rulemaking, that's when that has to be vetted. So what the staff will do is communicate with the Commission what we've heard; communicate with the Commission about what we think we should do next to fully run that issue to ground; and then have further communication with the Commission.

It is at that point when the staff will reach its conclusions as to whether or not the staff views whether or not another rulemaking is in order.

So, no, we've not yet.

MR. MUTH: But you will at that -- at the completion of the rulemaking and upon briefing with the Commission at that point?

MR. CAMPER: We will at the completion of this rulemaking, reviewing the comments that we've heard thus far, determining what else that it is we need to do to allow the opportunity for the public to fully communicate with the NRC about whether another rulemaking is needed, based upon, at least in a great

part, the conclusions in the final rulemaking that comes out of this effort.

MR. MUTH: All right. Thank you, Larry.

MR. CAMPER: Yeah. Here's a quote that's being referred to: "The CA note to the Commission should identify the specific comments that have been received on the need for a second rulemaking and clearly articulate the basis in accepting or dismissing those comments."

We will do that as part of this rulemaking; however, there's other things the staff has to do as well to communicate fully with the Commission around that question.

MR. CAMERON: Okay. Thank you, Joe.

Comments, questions?

Charles?

MR. McGUIRE: Thank you. Welcome to Texas. You know, if you can promise to make it rain every time you come, I know there's some drought prevention folks that might really love to -- that we might even buy your airplane ticket. I don't know; it's been that bad.

But I do thank you for coming. I thank you for choosing to come to the states that have disposal facilities and hold a meeting so the people can hear what you're saying, hear what you're presenting, form their

questions. I think it will really help you get some comments.

Relative to a second rulemaking, I think we would quickly say that perhaps not only after you've got your rule completed -- keep in mind that as an agreement state, the four states that will be affected by this dramatically have to pass it into their rules, and I'm not sure you will really know what your needs are for additional rulemaking until you see the outgrowth of that. And that might even take a couple -- I think we have three years; we probably won't take that long.

But the -- I think that will -- I think that part of the feedback loop maybe should pay attention to before you make the call on a second rulemaking.

The other thing -- and I said this to you before, and I participated in the panel in DC, and I was honored to get to do that.

I want to reiterate the -- I think you're doing a wonderful job of trying to build consensus around this rule. I know just how hard that could be sometimes. I appreciate how hard you're working, the way you're communicating, letting us know what you're thinking, all of that. I certainly learned a lot in the process.

And we don't really want -- in Texas we don't

really want to suggest anything in our point of view, as agreement state regulatory agency, that would break down that consensus, but we took a stance, as we began to look at how we would deal with performance analysis, to say that we felt it was very important to look at a thousand years or peak dose.

And so I think we would say to the Commission -- the Commission has an option to give it a C compatibility where an agreement state could be more stringent if they wanted to be. I think we would suggest, based on what we've come to understand, that maybe it could be compatibility B, but then for everyone it needed to be a thousand years or peak dose.

We want to be sure that we are looking at the long-term impacts, and, you know, I can say -- you know, it was a real interesting day getting to embrace my inner geek, sitting around a conference table thinking about what a million years' performance analysis might all include.

And, you know, sometimes, you know, you have to smile; sometimes you can't pass a red-face test. But for sure, whether you can accurately model it or not in terms of scenarios and what could happen geographically, climate, all of those things, you can for sure roll out the radioactivity that might be

accumulating in that hole in the ground.

That is reasonably predictable, and so the model gets a chance to look at increasing radioactivity, if you will, if that be the case. Now, if it's not the case, then peak dose probably occurs inside the thousand years.

But there would be some situations where peak dose might be well after a thousand or even 10,000, well into the future life. And we think it's important to at least get a look at what level of radioactivity would be there in terms of looking at performance.

And so, yeah, modeling something for a million years, I -- you know, that's -- we can always be criticized for even the thought that we might be able to do that. But we can certainly forecast the inventory and the radioactivity that would be there during that timeframe.

Thank you again for coming to Texas.

MR. CAMERON: Thank you, Charles.

I'm going to look up to the heavens one more time. Okay?

Amber, do we have anybody on the phone? Does Diane want to offer anything else?

THE OPERATOR: At this time we have no questions.

MR. CAMERON: Okay. And Steve Dembek, go ahead.

MR. DEMBEK: Yeah, Chip. I would like to touch on an issue that a couple of people here have touched on. Those are suggestions for how that we can improve these meetings, not improving the rule but improving the meetings.

Diane mentioned she was unaware of the April 28 public meeting, and another comment about having another panel discussion.

If you have any suggestions for improving the meetings, please don't hesitate to contact me. You can, of course, mention it here today, but if you want to just -- if it's more of an administrative thing, you can contact me about improving these meetings.

And I want to tell you we have listened to some comments we've gotten already. The public meeting we had April 28, we had four slides per page to save paper. People couldn't read the slides. So you saw today we had two slides per page.

Dave mentioned in his presentation about how some people complained about some of the diagrams we had, so we've improved those diagrams.

If you have any suggestions at all, please don't hesitate to tell me, and also I just wanted you

to be aware of why we're doing this in this fashion.

We try to get these meetings done up front so people could listen to what's happening in these meetings, read the transcripts, and then give us comments before the 120-day comment period was over.

So that was our reason for trying to load these meetings up front like we're doing. That's what I wanted to say on that.

MR. CAMERON: That's good. Thank you, Steve.

MR. DEMBEK: Oh, one more thing. Dave mentioned that the April 28 meeting was in a *Federal Register* notice. That was not in a *Federal Register* notice; it was actually the NRC's website, which is our official means for --

MR. CAMERON: It was on a public meeting notification.

MR. DEMBEK: Yeah. In the public meeting notification system. So sorry for any confusion on that.

MR. CAMERON: All right. And we always go to the NRC senior official to close the meeting out for us, and that is Larry Camper.

Larry?

MR. CAMPER: Well, thank you, everyone,

again, for being here. Thank all of those out there that have listened in tonight, and we appreciate all your comments.

It's a very important part of the process, and I can tell you candidly that the staff learns something new every time we do one of these. We hear something from a different perspective that causes us to go back and think about things more or differently. And that's good; that's part of the process.

What I like to do at the end of these things is always kind of go through and give my Aha moments or things that I take away that I will talk with staff more about, so I'll share those with you.

First, we heard a number of comments about the movement to using current ICRP methodology and some concerns about what that might imply. The ICRP, over time, has increasingly put out guidance that's designed to limit risk.

And using the most modern technology available for things such as organ-weighting factors and the like is good science; it's modern science. Now, there are different views about that, and we understand that, and we like hearing those views, and we appreciate the ones that we've heard tonight.

But I would also point out that the TEDE

approach, the total effective dose equivalent approach, does have built-in protection for deterministic dose to organs, and it's limited to 50 rem per organ.

So there is a deterministic component to that, which we didn't get into tonight, but it's very complex health physics, but using the most available science in the area of health physics is an appropriate thing to do.

But we like hearing these comments, and please do provide them in writing.

Compatibility has surfaced a couple of times. You know, it's interesting, the Commission -- if you go back and look at the specific direction they gave to the staff, there was an interest in consistency, as I pointed out, yet there's also some words in there where there's an interest in flexibility for the agreement states.

Any time we talk about any rulemaking and we talk about compatibility, there's always this challenge that exists in that, for both us and the agreement states. And so hearing the comments about the compatibility B -- Charles and others -- is extremely useful to us as we go back and communicate with the staff about what we're hearing.

Siting stability brought up a number of

comments tonight, and siting stability as it relates to a phenomenon going on now known as fracking; very good comments. It is important to be aware of phenomenon that are going in current terms and look at your regulations and ask yourself, Do the siting stability requirements seem to be state of art in addressing some of these kinds of things that are changing.

Dave I think did a very good job of discussing the current requirements in site stability in Part 61 and some of the things that are built in to addressing that, even in these rule changes that we're addressing.

The intruder dose generated a great deal of commentary. There was a lot of discussion about what we're changing on the intruder dose and some of the assumptions that go into the intruder.

I think what's very important at this point in time is the Commission specifically directed the staff to require that there be an intruder analysis performed and that realistic scenarios be used. There was a comment raised about, well, what are those scenarios? That's a very fair question, and that's a fair question that the regulators should -- will have to ask themselves when they're reviewing an application for a low-level waste disposal site or renewing a license.

They should be taking a good hard look at those scenarios and are they realistic and all that information, by the way: the application, any RAIs -- requests for additional information -- that the regulator would ask is a matter of public availability, and it should be.

We do at the NRC still rely upon the linear non-threshold model. We got into that a bit. The LNT is a conservative approach. It's okay to use a conservative approach to establish your regulatory criteria.

The LNT is increasingly being questioned by professional organizations such as the Health Physics Society because of its known conservatism, and there are other models that we know are also quite effective in protecting public health and safety.

But the LNT has been the model of choice going back to the '50s and the '40s, primarily as a result of data coming out of the Hiroshima and Nagasaki events.

Phantom four was mentioned. Just so everyone understands, phantom four are four radionuclides -- carbon-14, tech-99, I-129, and tritium -- that are long-lived isotopes, and they're very mobile. As such, they are significant dose contributors to a low-level waste site.

In one of our guidance documents in NUREG, BR-0204, as a matter of fact, we actually require that the phantom four be assessed at the minimum levels of detection. And what that does is it overestimates the amount of those radionuclides that are disposed of at sites.

And we recently developed a regulatory information summary that talks about how licensees and operators may more accurately account for those four isotopes, because they are significant dose contributors.

The role of the Environmental Impact Statement came up. Scott Kirk, WCS, raised a question about the EIS. Lisa London of our Office of General Counsel pointed out the Commission can direct the staff to do an EIS, and Environmental Impact Statement, if it chooses to do so.

I think we all understand at the NRC that the Final Environmental Impact Statement that was used to authorize the development of the current Part 61 is very much out of date. It does not represent operational reality.

If you go and look at these sites today and what they're doing, as compared to the actual operational realities, you'll see it's quite different.

It's also important to point out that when Part 61 was developed, the site that was modeled, that went into the regulations, was a humid eastern site, and that's because at the time the majority of then-existing or anticipated nuclear power plants were expected to be in the eastern part of the United States.

So if you look at operational realities that went into that assumption for an arid eastern site and you compare it, for example, to, say, a site in Texas or a site in Utah or Washington, you're going to find that the environmental conditions are remarkably different.

So if you couple that with operational differences that exist today, one does get a fairly compelling indication that it would be nice to have a current Environmental Impact Statement, but time will tell; we shall see. And we're not doing that as part of this particular rulemaking.

The defense-in-depth, Dave discussed that in his remarks quite a bit. Defense-in-depth -- the Commission in its direction to the staff, said that defense-in-depth plus performance assessment equals the safety case.

The concept of the safety case is a well known and utilized and understood concept, particularly

within the International Atomic Energy Agency and members states to the IAEA. And so the Commission is elevating the role of the safety case.

We've always been doing a safety case. Operators have always been doing a safety case. The agreement states have reviewed safety cases, but it's being specifically called out and called that now by the Commission, and it's elevating the importance of the performance assessment and defense-in-depth.

This regulation is about protecting public health and safety. Part 61 has always been about protecting public health and safety. The things we're doing today are primarily driven by, as I said in my opening remarks, making sure that the operating sites or any future sites would be fully assessing unanalyzed waste streams.

At the time Part 61 was created, no one anticipated the disposal of large quantities of depleted uranium at that time. No one anticipated the large volumes of DOE waste that's been disposed of at that time.

So it is important and appropriate that we update our regulations to ensure that we appropriately address and assess for any unanalyzed waste streams.

The panel approach was raised as a

recommendation. We did use the panel approach during the first meeting in Washington. I certainly would agree, personally, that the panel approach has a lot of merit.

We have had some discussions about that, and we may do that. We'll take that under consideration. The value of a panel discussion is that when you bring together five or six experts, they raise issues or stimulate questions that the public is able to hear, and that in turn can stimulate more questions as well, when you have operational practitioners, you know, bouncing these issues around amongst themselves with the regulators.

So that is a very worthwhile recommendation, and we'll take it under consideration.

We've spent a lot of time around this notion of the need for another rulemaking, and I think it's important to be very clear.

And, Steve, can you go pull up my backup slide, slide number 13. I do think it's important to just kind of step through this so everybody goes away with a full understanding.

This is the Commission direction that came out of the staff paper, SECY-08-0147. It was in that paper that we undertook the analysis that I cited in my

opening comments and made a recommendation to the Commission that we would specify a requirement for a site-specific analysis, technical parameters -- i.e., new definitions -- and performance period to support such analysis and develop a guidance document.

That's what the Commission told us to do; that was our recommendation option number 2 in that paper. The Commission also told us to do the second paragraph, which was essentially option 4 in that paper, but they chose not to make that their primary option but a secondary assignment, in a future budget request. We took that to mean they wanted us to do it.

The staff should propose the necessary resources for a comprehensive revision to risk-inform the Part 61 waste classification framework. What means is you would go back and look at all of your waste concentration values in your tables today and bring to bear current ICRP methodology and the organ-weighting factors and so forth and determine what the concentration values should be.

They would be different. Some would go up; some would go down. They would be different.

With conforming changes to the regulations as needed, the waste classification tables had been embodied in certain regulations in states or the

Low-Level Waste Policy Act, and so would there be any corresponding changes that would be needed?

Using updated assumptions and referencing the latest ICRP methodology, as I said, this effort should explicitly address the waste classification of depleted uranium. Okay?

That was the original assignment going back to 2009. If you go to my slide 17 -- no, that's actually the -- go to slide 18.

This is where the Commission said, After the limited rulemaking is complete -- that's this rulemaking -- the staff should provide a CA note -- that's Commissioner's Assistant note -- to the Commission on the second rulemaking effort for waste classification tables. I just read to you that assignment.

The CA note should outline the objectives and timeline for developing the regulatory basis of this second rulemaking, in consideration of the outcome of the near-term limited rulemaking that will precede it. In consideration of the outcome, outcome. You got to be final to have your outcome.

The CA note to the Commission should identify the specific comments that have been received on the need for a second rulemaking and clearly articulate the

basis in accepting or dismissing those comments.

So the staff will share with the Commission, as I said earlier, what we're hearing during the meetings that we're conducting now, and then the staff has got to do certain other things to fully address that charge from the Commission, and then go back to and communicate with the Commission.

We haven't formulated what all those things are yet, but it will be things such as conferring as the Commission about what we're hearing during these meetings. We may need to develop an FRN that would specifically ask certain questions as a result of having a final rule.

And then Charles made a very interesting point and a most important point, I would suggest, is as the agreement states go about implementing the final rule, what do those implementation processes show you, because we think we should share that with the Commission as well.

So it may take some time to fully address that charge, and we have things to do as a staff, and certainly communicating with the agreement states as they go about implementation will be a critical part of that, so there will be more to follow on that point.

So those were kind of the things that I

would -- that struck me along the way. I want to thank everyone for all their comments, and we very much like getting comments like were raised tonight, and I think Diane out there listening in had some very interesting, pointed, and challenging comments. That's okay; that's part of the process. And we will take all those things into consideration.

And thank you again for being here and taking part in the process, and thank all those who listened in for your comments and taking part.

I think with that, Call Leader, we'll close the meeting. Thank you.

(Whereupon, at 9:00 p.m., the public meeting was concluded.)