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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING ON DRAFT

POTENTIAL CHANGES TO COMMERCIAL

LLW REGULATION: 10 CFR PART 61

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Tuesday, May 15, 2012

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Berkeley Room

Cooper Hotel Conference Center

12230 Preston Rd.

Dallas, Texas

The above-entitled hearing was conducted at 8:30 a.m.

BEFORE: BRET LESLIE, Facilitator

A G E N D A

P R O C E E D I N G S

DR. LESLIE: Let's go ahead and get started so the phone operator could bridge people in.

THE OPERATOR: Certainly. I'll transfer you now. There will be music until I begin with a brief introduction.

(Pause.)

THE OPERATOR: Welcome and thank you for standing by. At this time all participants are in a listen-only mode. During the question-and-answer sessions, if you'd like to ask a question, please press *1.

Today's conference is being recorded, and if you have any objections, you may disconnect at this time, and I would now like to turn the meeting over to Dr. Bret Leslie.

Sir, you may begin.

DR. LESLIE: Thank you very much, and I'd like to welcome everyone here, and hopefully we have more people calling in remotely. We're working a little bit on the sound right now so we don't have as much feedback, so I'm just wasting time while he fixes the sound.

Anyway, I am Bret Leslie; I am going to be the facilitator for this meeting today on -- public meeting to discuss 10 CFR Part 61, low-level radioactive waste regulatory management issues.

For some people there are some new faces; for

others there I've seen before. Before we get started, I want to go through some logistics, some important ones.

We do have an agenda, and I'll walk through that a little bit more, and people should have been able to pick up agendas, copies of the slides, a meeting feedback form, little yellow comment cards if you think you're going to comment.

And the reason why those comment cards are important is because the meeting is being transcribed today by Penny, and I want to make sure we get a clean record, because the staff is using the information you're providing today to help them develop the regulatory basis for proposed changes to Part 61.

This meeting -- for those of you on the phone, we're here in Dallas. We have people on a telephone bridge line. We also have a webinar. And so as we do comments today, I'm going to approach and deal with -- and take questions here first; then I'll go to the phone lines, and the operator will assist me. And then we'll also be checking the webinar.

Couple other things: When we do break for lunch -- and we'll check in on the agenda when we do break for lunch, but there is opportunity to have lunch right here. There's a $12 lunch if you want to buy it here; you can go just up the stairs and there's a nice menu here that we have.

Couple other things: We will probably take a

break in the morning before lunch, just to let everyone refresh. We're going to have many opportunities for people to ask questions. We're going to have questions during the presentations, and it will be very obvious; there will be certain points where we're going to break and then we'll have questions. And then we'll have also in the afternoon a period for more additional questions and public feedback.

So one of the things I want to do is go through some ground rules and make sure everyone's on board with those. Because the meeting is being transcribed, I would suggest people mute their cell phones right now. I know I have an alarm that goes off at 10:30 every morning; I made sure it was muted this morning.

Again, because we're on the record, no side conversations, and speak one at a time. Also, because we're trying to get this on the record for Penny, please identify yourself each time you speak; that will help her get a clean record. And if you could provide your name and your affiliation; if you have no affiliation, just say "self" or "I'm representing myself."

One of the things that has been a hallmark of the discussions that we've had so far is people respect each other, so you might hear things that you might strongly disagree, but just think: You want to have the same opportunity to be heard as the other person who may be

presenting a differing view.

And I don't need the last ones because we've got an operator, so the phones are muted so we won't have feedback.

A couple of other things: The exits out of the building are straight out and to the left, and the restrooms are down the hall and to the right; the women's right outside and the men's further down the hall to the right.

One of the things that Drew -- in fact, let me do that right now. I'm going to go down the line to -- if the people at the front table could introduce themselves really quickly and say who you are and what your role is here today, and then I'll get ready to turn it over to Drew.

Dave, you want to start?

DR. ESH: Sure. This is David Esh. I'm a senior systems performance analyst in the Division of Waste Management and Environmental Protection. I work on low-level waste, complex decommissioning sites, waste incidental to reprocessing, which is kind of a consultative process that we do with the Department of Energy [DOE].

And I'll be one of the authors of the technical basis document for this rulemaking, and one of the members of the working group to draft the regulatory language.

MR. SUBER: My name is Gregory Suber. I am the chief of the Low Level Waste Branch, and most of my duties are associated with the activities around Part 61.

MR. PERSINKO: My name is Drew Persinko, and I'm the deputy director in the Division of Waste Management and Environmental Protection at NRC. The low-level waste activities are all being done in my directorate.

DR. LESLIE: Okay. A couple more things, and although I work for the NRC, I don't work for these guys. Well, I don't work directly for these guys, but I actually support them.

And one of the things that they're struggling with as they look back at the transcript from the last meeting is there were a lot of -- people had strong opinions, but what the staff needs is the technical basis. Why is this a good position to go forth? And so I may be like a two-year-old today. If I hear your comment and I don't hear a why, I may paraphrase and say … "Well, Lisa, what did you mean by that? What kind of information can you give to support that position?"

I'm only picking in Lisa because I've known her for quite some time, and she's fine with me picking on her.

So that, again -- and I'm going to actually rely on -- we have people back in D.C. also listening in on the phone call, so in terms of the webinar, after each session I'm going to ask someone like Chris Grossman or Mike Lee to say, Well, did you hear the whys?

So before we really progress forward, I'm going

to actually push it back onto the staff to say, Well, that was a good discussion, but I need some information here.

So it's definitely a two-way discussion that we'll have one more final opportunity in D.C. to talk about this, but this time, again, I'm going to really try to focus on the whys for the positions.

And I guess with that, I'll turn it over to Drew Persinko.

MR. PERSINKO: Okay. Thanks, Bret.

Well, you already know who I am, so let's move on the next slide. My name is Drew Persinko. I want to welcome everybody here today to our public meeting on the revision of Part 61.

Today we're going to be seeking feedback from you, the public, on three different areas. We're going to ask for feedback on the recent Commission direction that was in the SRM [Staff Requirements Memorandum] in January of this year. We'll also going to seek input you may have on emerging and policy technical issues, which Mr. Suber is going to talk.

And also we are also going to seek any input you have on the comprehensive Part 61 revision that was described in SECY Paper 10-0165, which is the comprehensive Part 61 revision that's down the road a ways, but we want to take advantage of this meeting for any input you may have on that.

Today's meeting is the second of three public

meetings we plan to have on these matters. What you see -- the four speakers for today's presentations: I will speak on the overview and background. Dave Esh will talk about more of the details of the Part 61 rulemaking, and Greg Suber will talk about the emerging issues, as well as the comprehensive Part 61 revision.

So this is an overview of what I intend to talk about this morning in my beginning presentation. I'm going to talk about -- give you an overall low-level waste perspective, talk about the direction we received from the Commission, what we and the staff are doing, a timeline, and then lead into Dave's talk with some low-level waste background.

So from an overall perspective of low-level waste activities in my directorate, here's a timeline of the activities: What you see is at the very top, the top bar you see is the Volume Reduction Policy Statement. We have been working on that for a while. We recently issued that as a final document in April.

The second bar down is the Concentrating Averaging Branch Technical Position. That's -- it's very, very close to being issued for a draft -- as a draft for comment. We expect to send it to publishing by the end of May, and then it will be available for you to view in early June sometime.

The third line down is our Site Specific Analysis rulemaking, which is a large part of our discussion this morning.

And then the bottom bar you see is the SECY-10-0165 Part 61 comprehensive revision. And so these are how the various activities fit together in a timeline.

As far as stakeholder input, starting back in the beginning of 2011, you can see there's a number of documents we've published. There were a number of meetings we've held. The items you see with an asterisk on it are the opportunities for public input.

And so since the beginning of 2011, there have been quite a few documents published, and there have been a number of opportunities for the public to provide input on the various documents that we are working on.

So let's talk about the direction we've received from the Commission. The initial Commission direction we received, we received this in SECY -- in an SRM back in March of 2009.

This -- the direction we received was in response to a SECY we had prepared, the staff had prepared, SECY-08-0147, in which we talked about the near-surface disposal of large quantities of depleted uranium [DU].

The SRM that came back to our SECY gave us the direction you see on this slide here. It told us to develop

a site-specific analysis to demonstrate compliance with performance objectives and also to prepare a technical requirements document to go along with the proposed rule and also develop a guidance document; a third bullet, develop a guidance document to go with the proposed rule.

So there was the requirement to prepare a rulemaking; there was a requirement to develop technical requirements to support the rulemaking, and also to develop guidance. And that began what we refer to as the site-specific analysis rulemaking.

So most recently, in January of this year, January 19, the Commission provided another Staff Requirements Memorandum to us, an SRM, in which it talked about the following four items that you see here: Had process elements; it had policy elements; it included a timeline, and talked about public outreach.

With respect to the policy matters, it talked about -- it directed us to expand the current site-specific analysis rulemaking. It said that the Commission reserves judgment on the final rule text.

It told the staff that if we come across any immediate health and safety concerns, we should immediately notify the staff -- notify the Commission, rather, and that we should balance information we receive from various sources concerning the period of performance.

It also told us to continue to engage stakeholders regarding the comprehensive Part 61 rulemaking that was described in SECY-10-0165.

So it told us to keep going forward on the long-term SECY-10-0165 rulemaking, but it did tell us to not make a recommendation to the Commission on the long-term revision until we've completed the current rulemaking, the site-specific analysis rulemaking that we're currently engaged in.

And the other three bullets you see there, the policy, the timeline, the public outreach I'll cover in slides here in just a minute.

So the direction -- the policy direction we received in that SRM, the January SRM, contained four bullets. It directed us to incorporate flexibility, to use the current ICRP [International Commission on Radiation Protection] dose methodologies. It supported the two-tier period of performance that we have in our site-specific analysis rulemaking, but it told us to develop what -- a reasonably foreseeable compliance period and then a longer period of performance, which is not a set a priori.

It also told us -- directed the staff to incorporate the flexibility, to incorporate -- to establish the site-specific waste acceptance criteria in the rule, and it also directed us to balance the federal and state alignment

and flexibility.

As I said, another direction we received from the Commission in SECY-10-0165 had to do with the longer-term comprehensive risk-informed revision of Part 61, which we prepared in response to the direction we received from the Commission.

And in that SECY we proposed five alternatives as possibilities for a longer-term revision of the Part -- a longer-term, more comprehensive revision of the Part 61. And you can see the five alternatives, the five options we put in that paper. I don't need to go through them, but those were the five options that were in our SECY paper, SECY-10-0165.

What you see here is we tried to show the relationship of the various directions we've received from the Commission. What you see on the left are -- all four boxes here are basically directions we've received from the Commission.

On the upper left is the SRM to SECY-08-0147, which we received back in '08, and it directed us to budget for risk-informing the waste classification tables using the latest ICRP methodology, and to classify depleted uranium.

And that was -- we weren't told to do that; we were told to budget for that in a future budget. We were directed to begin the site-specific analysis rulemaking, so that came out of that SRM-SECY-08-0147.

The middle SRM on the left-hand side is the current SRM that we received in January of this year, and below that you can see the direction we received that I just described.

And then on the bottom on the left-hand side is an SRM we received as a result of a Commission meeting. In that Commission meeting we were directed to provide an approach to initiating a risk-informed, performance-based comprehensive revision of Part 61.

And what the slide is trying to show is the interrelationship between the various directions. So as a result of the direction at the Blending Commission meeting to develop a comprehensive revision, we developed SECY-10-0165, which you see on the right-hand side here.

I said earlier that there were various options included underneath -- included within SECY-10-0165, but you can see two of those options really were coming from elsewhere in previous SRMs.

In other words, the first option really came from SRM-SECY-08-0147. The third option, which was included in SECY-10-0165 was to incorporate a waste acceptance criteria. Well, we were directed now to incorporate that as a result of the January SRM.

So what we're trying to show is how -- the relationship between the various directions that we've

received from the Commission and how they fit together.

With respect to emerging issues, during the course of the meetings we've had over the last several years, in addition to talking about Part 61, we've received a number of recommendations in the public meetings.

Some related to Part 61, some did not. And I've listed here some of the ones that we've received over the last few years. These are a sample of the questions and comments we've received. I'm not going to go over them now.

Mr. Greg Suber will be discussing the emerging issues later in the presentation in more detail, but I just wanted to set the stage right now that in addition to the current direction that we want to talk about today, we also want to hear any comments, any input you have concerning the emerging issues. And we did hear some at the March 2 meeting that we had in Phoenix, the first public meeting we had on Part 61.

So let me get into the staff's approach a bit here. So what we're trying to do -- what we're doing is we have a number of meetings completed and planned yet.

As I said, the first public meeting we held in Phoenix back in March, last March, March 2, 2012. Since that time -- and let me add that we received -- we had a lot of turnout at that meeting; we received a lot of good input at that meeting. We had a number of recommendations to include

certain items that went, say -- that were included in Part 61 but were not included in the site-specific analysis rulemaking, which we will talk about today as well.

But since the March 2 meeting we've reached out to the Low-Level Waste Forum and largely the Agreement States at that Forum; we spoke at the Forum and received feedback from the Forum.

We've also met with the Organization of Agreement States during the CRCPD [Conference of Radiation Control Program Directors] meeting that was recently held in Orlando, Florida. It was about a week ago.

We talked to the Agreement States at that meeting as well, and currently we're in our second of the three public meetings we intend to have on Part 61.

We still plan to continue our dialogue with the Agreement States. We have an internet meeting and a phone call set up with the Agreement States for later this month. We plan to meet -- we were invited to speak at the EPRI [Electric Power Research Institute] Annual low-level waste meeting, which we intend to speak at.

And also we plan to have the third public meeting in July of this year, in Rockville, Maryland.

So let's just briefly go over some of the information we received at the March 2 public meeting. What we heard there was there was a need for a rulemaking crosswalk;

in other words, there -- it may be a little difficult to tell where we are right now, because we had the site-specific analysis rulemaking well along, and then we received the other direction from the Commission in January superimposed on that.

So it was a little difficult to tell, well, where are we right now? So we prepared a crosswalk, we call it, to show the changes that have occurred from the current rule to the site-specific analysis rulemaking to how the current direction affected that rulemaking, and that information is currently on our website, and there was a handout out in the lobby with the crosswalk. So we've completed that action.

The other recommendation at the March 2 meeting was to expand the coordination with the Agreement States, because there wasn't -- was very little, if any, participation by the Agreement States at the March 2 meeting.

We've done that, too, and we will continue to do that. Like I said, we met with the Agreement States at the low-level waste forum, and we also met with the Agreement States during the CRCPD meeting last week. But we will continue to have a dialogue with the Agreement States.

At the March 2 meeting we were also -- other suggestions were made to include in the current rulemaking; recommendations were made to update the classification tables are part of this rulemaking, to extend the duration of

institutional controls from 100 to 300 years.

A recommendation was also to revisit the Part 20 Appendix G manifest reporting requirements, because in Appendix G there are four isotopes that are believed to be over-reported because of their being below minimum detectable levels, but they are reported at the minimum detect level. And so the request was made that we include that as part of this rulemaking.

There was also a recommendation in the March meeting to -- let's not forget about greater-than-Class C, that there's -- the rule may need to be revised for that as well, and we're also -- there was also a comment at that meeting -- I think it was from EPRI -- that there should be a category for low-activity waste.

So we received a number of recommendations at that meeting for other actions that should be included in the current rulemaking.

We're also -- there was discussion about the long-term comprehensive revision on March 2, and I think what we heard was, don't pursue SECY -- the long-term revisions proposed in SECY-10-0165 at this time.

You know, there was some belief on the -- by the audience that that rule may not happen, so let's talk about the present rule and incorporate actions into the current rule and not pursue that one at this time.

We the staff still -- as we said at that meeting and as I've said at this meeting, we still have an action to do that; it's on our plate. The January SRM that came down to us specifically said to continue to engage stakeholders on SECY-10-0165, so we intend to do that. It's not up to the staff to determine that we don't need to follow the Commission's direction; that's not a good thing to do.

So we intend to follow the Commission's direction, and we think this is a good opportunity, even though the SECY-10-0165 long-term recommendations are down the road a ways. We were hoping to capitalize on these meetings to get any input you have on the long-term revision as well.

And if you don't have any comments at this time, that's fine, too. But we think this -- we want to capitalize on our -- on these meetings to get any input on the long-term revision.

This is the crosswalk that I referred to, and they tell me this is going to work. Let's see if this works.

(Pause.)

DR. LESLIE: Drew, you probably don't need to do it since people already have the handouts, and we also have it up here visually for you guys to see as well.

MR. PERSINKO: Okay. Well, on the right-hand side you have the artist's conception of what the -- of the

crosswalk. The artist's conception's on the wall on the right over there.

But on our website is the actual crosswalk, and also you have a handout that we had out front. The way I had it, I was going to discuss it, but let me just say, if you walk from left to right on that crosswalk -- that's the way I look at it: If you start off on the left-hand side, it will say what the current Part 61 has, then you move to the next column, and it will talk about what's changed in the site-specific analysis rulemaking.

And then you go over one more column and it will say what's changed as a result of the January 2012 SRM. So if you go from left to right on that crosswalk, you're able to see the changes that have occurred and how that -- and where we are today.

(Pause.)

MR. PERSINKO: I guess we've had another high-tech snafu here. Let me just close this.

Okay. If you look at it on our website and if you look at it on the handout, I think if you walk from left to right, you can see the change that has occurred -- the changes that have occurred, and on the far right column you can see where we are today.

In a nutshell, the work we did on the site-specific analysis rulemaking will still apply, except

for the areas that have been superseded by the January 2012 SRM from the Commission, and that was largely in the area of the compliance period and the period of performance.

In our site-specific analysis rulemaking that we were close to completing, we had included a 20,000-year period of performance; the Commission has told us to find a reasonably foreseeable future, and that's one of the inputs we're seeking today.

Okay. As far as the Agreement States, I told you met with the Agreement States several times and will continue to meet with the Agreement States. We had phone conversations with the four -- with four Agreement States, and we also -- South Carolina, Utah, Washington, Texas; we also spoke with Pennsylvania and Tennessee.

We met with the Agreement States during the CRCPD meeting, and we plan to have a webinar, as I said.

In general, on this high level, what we heard from the Agreement States was as far as -- regarding the Commission direction and some of the additional suggestions at the March 2 meeting was as far as the ICRP dose methodology is concerned -- flexibility, there was general support among the Agreement States for that.

As far as what is a foreseeable time frame, what's a foreseeable future, there was general support for something less than 20,000 years.

There was some support for 10,000 years, and there was also -- it was also expressed that some of the states wanted to think about it some more, and they wanted to have further consideration on that.

As far as the waste acceptance flexibility is concerned, there was -- I think there was general support, but some concerns and reservations were expressed, and that being that it may add -- it may compound the ability of the states to assure that what's being shipped to the disposal site is actually what is in the manifest, I guess; what's supposed to be there, and whether it meets the waste acceptance criteria.

So there were some reservations expressed on that, and I think there may be some folks on the phone today that might be able to express that concern a little better.

As far as compatibility designations, I think we heard -- as far as time of compliance we heard some expressed a [preference for a] compatibility "C" designation, and we also heard that that's another area we want to think about some more from the states' perspective. We want to think about compatibility some more.

We also heard the states saying that they don't want to be forced to take large quantities of DU. As far as the Appendix G manifest reporting matter that was raised at the March 2 meeting, the Agreement States want to think about that some more before they weigh-in on that.

As far as institutional controls extending from 100 to 300 years, I think we had a mixed input from the Agreement States. Some states felt 100 years is a good number, we like it, we want to stay with it. And we heard others say 300 years seems reasonable. So I think we had a mixed reception on that one.

Timeline: Where are we? We're in the most left-hand box right now; we're in the "developing the technical basis stage." You can see in the top bar up there on the -- the top bar is the rulemaking part; the bottom bar is the guidance -- the associated guidance.

So right now we're in the far left up there; we're in the "developing the technical basis stage," and the information we're receiving during this meeting will -- we will address, and it will be factored in one form or another into the technical basis.

The technical basis document is -- must be completed by September, so we're on -- even though July next year looks pretty far away, we're on a pretty tight timeline right now.

So we owe the technical basis document to the folks at the NRC who actually put pen to paper and come up with the rulemaking process. There's a whole process for developing a rulemaking, and the technical basis is the first stage of that rulemaking.

But in September we engaged the folks who do rulemaking, such as our project manager, Mr. Carrera, in the back, who is here today, sitting in the back. But that's where the actual pen to paper begins. And then there's a process for that.

But we are directed by the Commission to complete the proposed rule by July of 2013, as you can see, and then it will go to the Commission; the Commission will review and decide whether to publish it, but assuming they say go forward with it, we anticipate -- this is only anticipate -- that about a year to go from draft to final, from proposed to final rule.

And then you can see on the bottom, the bottom bar is the timeline for the associated guidance document.

So like I said, I think the overall message is, you know, July 2013 looks pretty far away; it looks like we got plenty of time to provide comments to NRC and develop it, but we really don't.

We want to get the comments received and analyzed to help us develop the technical basis document, which we must complete by September.

Okay. Now, as a little lead-in to Dave Esh's presentation, I'm just going to give an introduction on the low-level background. 10 CFR Part 61 are the NRC's requirements for land disposal of low-level waste.

In it are contained performance objectives to ensure safe disposal, and the performance objectives are protection of the general public, protection of inadvertent intruders, protection of individuals during operations, and then to ensure stability after site closure. The demonstration is performed a technical analysis and via the waste classification tables.

Some recent developments are that the waste classification limits were based on the 1980s understanding of what the waste streams would be, and most recently some of those waste streams that were envisioned back in 1982 are changing; they're not -- they're different now.

And also the near-surface disposal may be appropriate for some of these waste streams, but not under all conditions, and we've said that in the citations you see at the bottom of the slide.

So we were directed by the Commission to develop a rule to address the near-surface disposal of large quantities of depleted uranium. And that's where we are; that's the site-specific analysis rulemaking.

So with that, that completes my presentation. Dr. Esh is next.

DR. LESLIE: Thank you, Drew.

Are there any questions for Drew before David gets started?

And we do have a question here, and then we'll check with the phones. Could you make sure you go to the microphone.

MS. EDWARDS: Thanks, Drew. This is Lisa Edwards with EPRI.

I was just going to ask if you envision any kind of public meetings or interfaces taking place during the development of the proposed guidance, which, you know, is showing from September of this year until July of next year.

MR. PERSINKO: Right now I don't think so. I think we're hoping to have those meetings ahead of time in order to start developing the rule, because, like I said --

MS. EDWARDS: You want the guidance.

MR. PERSINKO: Oh, the guidance. Excuse me.

MS. EDWARDS: Yeah.

MR. PERSINKO: I think we would have it. We would prepare it, we would issue it for comment on the guidance. Excuse me; I thought you were referring to the rule.

MS. EDWARDS: That's fine.

DR. ESH: But not prior to the rule.

MR. PERSINKO: Yeah. This would not go out before the rule.

MS. EDWARDS: Yeah, the guidance --

MR. PERSINKO: It would be issued concurrently

with the rule, but the guidance would go public, but the rule would not; it would be sent to the Commission.

MS. EDWARDS: Right. So on slide 22 you have developing the proposed rule from September of this year till July of next year, and you have developing the proposed guidance during the same time period. And I didn't know if there were any planned interactions for development of the proposed guidance, or do we just wait until the publishing of the proposed guidance?

DR. ESH: I think the correct answer is the proposed guidance goes out when the draft rule goes out. They go out together for public comment, and then we receive comment on it.

But it's a good question. That's the way our process normally works, I believe. Should it work that way? I don't know, because we developed the guidance document to go along with the -- our initial regulation which didn't get issued in the draft form yet.

And that guidance document talked about a whole lot things, in a whole lot of detail, and it probably would have been of benefit for the stakeholders to see that. That's just not the way our process works. We tend to issue them at the same time and get comments on both.

MS. EDWARDS: If you're open to feedback, if there is any way to do a draft of the proposal and let people

see it, that's an awful lot -- that comment period between July 2013 and July 2014, it looks like it's really only going to be about six months for comment, so that's a lot for folks to review in six months, two different documents, and provide, you know, any substantive comments on; takes a little research time to do that.

MR. PERSINKO: Okay. Thank you. The reason I hesitated a bit was in the last -- when we were doing the site-specific analysis rulemaking, we were pretty much out of process, really. We were -- in the spirit of openness; we were having public meetings even before a proposed rule was issued.

And that's not normally the way the rulemaking progresses. Normally we have -- we follow the process we're doing now for both the rule and the guidance document.

And because of the time constraint that's been put on us by the Commission, it would not be possible to follow that same model that we did in the site-specific analysis rulemaking.

So that's why I was hesitating a bit about probably not having the public meetings.

DR. LESLIE: Thanks, Drew.

Are there any questions on the phone line?

THE OPERATOR: If you would like to ask a question from the phone lines, please press *1. Please be

sure to record your first and last name when prompted.

One moment, please.

(Pause.)

THE OPERATOR: We do have a question from Linda Suttora [representing the US Department of Energy - DOE].

DR. LESLIE: Go ahead, Linda.

MS. SUTTORA: Hi, can you guys hear me?

DR. LESLIE: Yes.

MS. SUTTORA: Okay. I was just curious where I can find the presentation material on line.

DR. LESLIE: Linda, if you would join the webinar, you can find those slides, and let me tell you what the address is to.

MS. SUTTORA: Well, I'm on the webinar, but -- and I can see the slides that you're able to show, but I was just curious if there was a way I could just pull them up on my computer also. Do you have an ML number or anything, an accession number?

MR. SUBER: Linda, this is Gregory Suber. The slides for this particular presentation are not on line yet, but they are very similar to the presentation that we gave at the March 2 meeting, so if you just wanted to see the presentation, you can go on line on the low-level waste site and -- under "Unique Waste Streams," and you can pull up the -- get a copy of the presentation that we did on March 2.

These slides will be on line, but they will be on line at the conclusion of the meeting. We'll put the slides on line, and we'll also put the transcript on line, but they aren't on line in advance of the meeting.

MS. SUTTORA: Okay. Because the crosswalk, I had to find that, but because you had accession number up there, I was able to pull it up, but the other stuff is not. Okay. Great. Thank you.

THE OPERATOR: Our next question is from Mike Lee.

DR. LEE: Yeah, hi. This is Mike Lee. All the presentation materials are on the web as we speak today. They were posted on Friday, so if John Greeves is listening and Linda Suttora is listening, just go the low-level waste website, where we have posted our other materials previously, and you can pull them up right now.

DR. LESLIE: Thank you, Mike.

Any other questions on the phone?

THE OPERATOR: Not at this time.

DR. LESLIE: Thank you very much. And thank you, Drew, for getting prepared for Dave to start to go into some of the details.

Before Dave gets started, he's got a pretty long presentation. There are going to be several places where he's going to lay out a certain framework, and we'll start to really

get into the questions and comments and technical basis.

So it's really -- we'll take a break probably somewhere in the middle of his presentation, because I have a feeling people are going to have a lot of stuff to say, and I think he's got something like close to 40 slides or something like that.

But anyway, Dave, go ahead.

DR. ESH: And it's pretty brutal to ask people to listen to me for that long. And we should give Mike credit for being more on top of things than we anticipated, of having those slides up, too.

So I'm going to talk about the site-specific analysis rulemaking for -- sorry; just a second.

(Pause.)

Thanks, Bret.

We'll talk about kind of an overview of what it's about, some of the issues that have been identified, and then what we're looking for a path forward.

So the site-specific analyses, for those of you that may not be aware, here's an overview of performance assessment that we like to use. Performance assessment in the center is a learning process, and it's iterative, but it's not meant to be never ending.

So it is a process where you evaluate your problem and learn about it and then hopefully the analysis

helps you made decisions about what you need to do to mitigate risk and how you're going to mitigate risk.

Over all the process you evaluate what is assessed, so what can happen, how likely is it, what can result if it happens? It's conducted through multiple steps: You collect data, develop models, usually develop computer codes of some sort, and analyze the results.

Why is it used? We use it for complex systems, and it's a systematic way to evaluate data. Its' generally internationally accepted. And at the bottom we have some high-level bullets of what do we generally require of a performance assessment.

So in this rulemaking, the performance assessment technical staff doesn't really consider that it's anything new. Part 61 required technical analyses; it just used different terminology.

The performance assessment that's done today, they may have different software and different capabilities that can be explored in the analysis, but the technical analysis is not measurably different; it just has different terminology.

And performance assessment has developed over the years, over the past 30 years in particular, that some aspects of it are much more formalized, so how you develop scenarios and look at features, events, and processes, the

consideration of uncertainties, some of those things were somewhat hampered by both technical understanding and by maybe computational limitations 30 years ago that we don't necessarily have today.

In addition to the performance assessment which is used to evaluate Section 61.41 in Part 61, we also are looking at an intruder assessment to demonstrate protection of the inadvertent intruder.

Now, the current regulation -- if you think of the crosswalk, the leftmost column, it doesn't have a requirement to do an intruder analysis because Part 61 developed waste classification tables, generally from an intruder analysis.

It also -- Part 61 identifies design and control measures that you use to preclude intrusion and to limit radiological impacts. It's similar to a performance assessment, except you're looking at somebody disturbing the disposal facility or taking some sort of action on the disposal facility at a future time.

It's not anticipated -- we have controls in place, both active controls, for up to 100 years, which is a point of discussion; but then passive controls that we expect to last longer than that.

But the Commission viewed and generated in Part 61 that they expected the -- we can't preclude the possibility

of intrusion sometime in the future after those controls end, because remember, controls, whether they're active or passive, they're going to rely on things that we do today, especially the active ones.

You may have fences and guards and those sorts of things that have to be funded, so you have to have financial assurance for how long you need to have your active controls.

If you want to extend the active control period, say, from 100 to 300 years, then that's going to influence your financial assurance calculations and what you need to establish to reach that 300 years.

But then the passive controls are going to rely on things like zoning laws and other things; who owns the property, how the property may be used in the future. Those things are hopefully robust, but we don't have a lot of experience, particularly in the U.S., because our country's only 250 years old or so, how those things may work in the very distant future, preventing somebody from using the land.

And the other component that we had in the site-specific analysis to get at some of the longer-lived isotopes' effects is the long-term assessment. And our idea was that that would estimate the potential performance beyond some compliance period and use it to identify the features that you may use to reduce the long-term impacts.

And we recognize that there's a lot of

uncertainly at the very long times, and that's why we didn't initially propose any sorts of limits associated with that period. We thought it would be more of a transparency issue, so you do the best you can if you're trying to develop a site, and you generate what you think the -- just as I was back on the performance assessment slide -- what can happen, how likely is it, and what are the results.

And that's information that we felt stakeholders would want to see: Well, what do you think can happen? How likely is it? What are the results? Even if there's a lot of uncertainly associated with it, you've done the best to inform your stakeholders, and they can make an informed decision.

So new direction; where are we doing now? One of the first things that was identified by the Commission was the ICRP methodology, and one of things they directed us to do is to consider allowing licensees the flexibility to use ICRP dose methodologies in the site-specific performance assessment.

If you had the opportunity to see the guidance document that we had drafted, we had already gone this direction, so -- and we feel it's -- as identified on the next slide, slide 9, the SRM-SECY-01-0148, that's already kind of Commission policy, is to allow people to use the best science.

So we want you to use the best science, but we

also -- our guidance has said, "Don't cherry pick." So you can't pick the ICRP methodology that minimizes your doses across your different radionuclides; you have to choose one methodology and use that methodology.

And it would be a good idea to look at the uncertainty or variability associated maybe with the different methodologies, because they continually change. They go both up and down, and you would want to know, if you're a disposal facility operator or generator, how sensitive you may be to changes in the ICRP methodology.

But that we don't have any strong reservations with implementing in the rulemaking as we're going forward.

So this would be a point where we can stop and talk about ICRP, if you'd like. We're seeking your feedback on the flexibility to use the ICRP dose methodologies in the site-specific performance assessment.

I wasn't at the previous meeting, so -- and there may be new people in the webinar that weren't at the previous meeting, so if you have something that you'd like to talk about with ICRP at this point, I'd say give a brief introduction to what you talked about at the previous meeting so that people are on the same page, but the transcripts are available that people can review if they want more detail about what you said.

Do we have any discussion or -- oh, you want me

to go to the next slide? Oh, okay. I'm sorry. One more slide, slide 11. We did have in the March 2 meeting support for allowing flexibility to use the ICRP dose methodologies.

So do we have comments or discussion that we want to have at this point before we move into the next area?

THE OPERATOR: If anyone on the phone would like to ask a question, please press *, then 1.

DR. ESH: I think we have one here in the room. First Lisa Edwards from EPRI.

MS. EDWARDS: Well, thank you for the presentation thus far, David.

EPRI comments are more specifically directed at the use of the ICRP dose methodology for updating the tables.

But I guess a general comment would be we would always support the use of the latest science related to does impacts or limits that are provided. Given that the whole body is almost a nomenclature we don't hear anymore in plants themselves or in health physics circles, it would be appropriate to -- from a science standpoint to use this latest technology, dose conversion factors in particular, from the ICRP recommendations.

DR. ESH: Okay. That's a good comment, because there's two aspects to it. One, you can consider the ICRP dose methodologies the more modern methods than, say, Section 61.41 or 61.42 types of analyses.

Updating the tables for the new numbers is a different story. We did propose to the Commission in our SECY paper 08-147 -- when we were dealing with depleted uranium and what do you want to do with depleted uranium, one of the options was to revise the waste classification tables to add uranium.

And that was not an option that the Commission selected, and so what we're kind of left with is -- and what the stakeholders need to understand is Part 61 works very well, but a number of the components are hardwired into other pieces of the regulation.

So if you want to change one part, it affects other parts. You have secondary and tertiary effects of different components as you want to change your regulation.

Some things may look simple, but they're not at all simple at all, so, say, for instance, the institutional control period for the intruders, which we're going to talk about in a little while here.

The waste classification -- or the concentrations in the waste classification tables, some of them are derived from assuming 100-year institutional control period. So if you changed that to 300 years, that would lead me to say, well, you need to change the numbers in the table to be consistent with the new approach that you're doing for the institutional control period, if you changed the

institutional control period and it wasn't an "or" flexibility type thing; then you could leave the table the same and people would have the flexibility to look at, I want to say, specific phases of the impact for their new period.

But I would just add that overall that this issue of changing the tables is a more difficult and tricky issue that we did present that as an alternative to the Commission initially, and they said, Take this approach of just allowing people to do the analysis instead of changing the tables.

And that is one of the main issues that's in front of -- part of SECY-10-0165, which is to risk-inform or modernize the waste classification part of the regulation.

So our ability to do it is somewhat limited, we feel, in the site-specific analysis, but it is something we -- it's a good comment. We consider it, and we'll look at it in more detail if we go forward in pursuing modifications under the SECY-10-0165 paper.

DR. LESLIE: Lisa, is this a follow-up?

MS. EDWARDS: It is a follow-up.

DR. LESLIE: And then we'll go to Dan after the follow-up.

MS. EDWARDS: Dan, can I have your spot for a second? Thanks, man.

This is Lisa Edwards with EPRI again. Thank you for that response. I had intended to save most of my comments

related to the classification tables for when Gregory presents. Do you want them now? Because on the --

DR. ESH: I think you can do that, because we should try to focus on ICRP here and not get off. I may have gotten us off track. If I have, I apologize, but we should try to stop at each topic, talk about that topic, and then move on to the next one.

If there are things that you think are really parallel and a thought popped into your mind that you need to just talk about now, feel free to talk about it now. I think we'll have plenty of time today to cover all the material we need to.

MS. EDWARDS: Okay. So I'm not clear. Do you want me to save those comments until Gregory presents give them to you now?

DR. ESH: I'd say the threshold would be -- I'd prefer that we save them so we can have a contextual discussion of those topics. But if you have something that you just really need to say right now because I said something you want to respond to, I'd say go ahead and respond to it right now.

MS. EDWARDS: I just would have one comment, then. The modification of the tables to change the nuclides that are contained within the tables or to add, say, you know, items for the depleted uranium, that's different than what's being proposed in terms of just updating the methodology by

which the algorithm is used to derive the concentration limits themselves.

DR. ESH: Yes. Thanks.

Dan?

MR. SHRUM: Dan Shrum with Energy Solutions.

Dave, you started this discussion by saying that performance assessments are not supposed to be never ending. We're running -- I don't have an answer to the comment that I'm going to make, but we're supportive of using the most recent dose methodologies. However -- and that's a Tom Magette issue, is the "however" -- when do they end?

Let me give you an example. You've prepared a performance assessment; you've submitted it to you regulator for review, and then a new methodology comes out.

So I don't know how you're going to address that, but it's happened to us recently on a completely different issue, not on this issue, but we are in the throes of preparing the new performance assessment using the updated methodologies, which we're supportive of, but how do you handle it when, you know, it takes a year and a half to review it, and there's two revisions during that period of time?

DR. ESH: Yeah.

MR. SHRUM: Which doesn't always happen, but it can.

DR. ESH: That's a good comment/question. And

what I would say is that usually what's done for these types of performance assessments that we can consider in this process is the generator of the performance assessment or the disposal facility operator has some sort of threshold when new information comes in, whether it's new ICRP values or whether it's new technical data regarding, say, distribution coefficients at your facility or rate of erosion or whatever.

Some sort of input into the calculation changes; they have to have something in place to look at on a periodic basis, whatever that may be: once every five years or once every ten years. What's the impact of that new information on my facility? Does it impact the limits of the material that I'm taking?

So when you move to a waste acceptance criteria approach, you get into that sort of thing. You know, there's no free lunches in this business, and you can ask for more flexibility, but you may learn that that flexibility you asked for was not something that you're going to look at favorably sometime in the future.

So -- but that is what's done. It's usually an update process on some basis -- some periodic basis, and then as part of our rulemaking effort, prior to this that we didn't get to the draft stage on, we had in there that, at a minimum, you would update at closure.

So when you're closing the facility, you do kind

of a final PA [performance assessment], ensure that everything is in line with what you had expected.

And the update process, I think that would be a good thing to be established with our stakeholders and by the Agreement States, because primarily right now the Agreement States would be the ones that have to be doing those reviews and evaluation; it would be their resources that they would be using.

So they would want to ensure that the frequency was appropriate based on the technical issues that come up and based on the resources they would have available to look at the changes that may occur.

DR. LESLIE: Dave, that was good.

Dan, let me try to paraphrase this.

Flexibility in using dose methodologies may be different than requiring continuing to update the methodologies, and I guess maybe that might be what you were trying to get at.

And so I think that Dan was trying to talk -- and I'm sure he's going to correct me now, but I think that's what I heard, and I wanted to make sure the staff understood that kind of -- you know, it's great to talk about flexibility, but to require them to continually update might be what his concern is about.

MR. SHRUM: Yeah. We're fine with updating and

all that, but we're talking that during the actual process of doing a PA, when these things change.

So you are also tasked with developing guidance, and maybe consideration on this topic is not just with the dose methodology but when the PA is submitted for review, maybe you could have some sort of guidance that would specifically state those are the criteria that will be reviewed at this point in time.

Now, if something in the world of science changes so dramatically that it would require somebody to go back and reevaluate everything -- but what we find is they're very minor tweaks that still require us to go back and reevaluate everything, when in reality the world hasn't changed that much as we know it, but we have a new significant figure on one of the calculations.

DR. ESH: I would agree with that, Dan. It's -- it depends how much margin you build into your calculations and maybe how much bias you may have. So if you're really optimistic on a lot of the things you do in your calculations and then you collect information going forward, well, some of that information may come back to bite you.

But if you build in sufficient margin and you're reasonably conservative in how you do your initial assessment, then you should have yourself in a position where any new information comes in doesn't challenge your previous

decisions and assessments.

DR. LESLIE: So are there any questions on the phone?

THE OPERATOR: Yes, sir. We have one question. That question comes from Linda Suttora.

MS. SUTTORA: Yeah, hi. This is Linda. So I was listening to the conversation, and it occurred to me that it might be helpful to hear how DOE does performance assessment, and one of the things that we do is we do an annual review, an annual update, it's called, and we test whether something significant has changed.

And if the -- if it has changed -- if something has changed enough that it would -- it could impact your performance objectives, then we -- you know, meeting the performance objectives, we do a new PA.

And in answer to your question, Dan, the way we -- when we're doing a performance assessment, we hit what we call a stop point, and from that point on, we try not to make changes.

However, if something totally new were to come up, like all new ICRP calculations, we would do kind of a back-of-the-envelope quick look, would this impact anything? If it doesn't, we say, the next PA will get it, because our PAs are revised on a regular basis.

Also, as Dave mentioned, we -- it's

approximately every five years, but that's approximately when things change enough. If it hasn't changed after five years, we don't just automatically do a whole new PA, but if -- because we're looking at it on an annual basis, it's pretty easy to tell when it's time to do a new PA.

Thank you.

DR. ESH: Thank you, Linda. That was a good comment.

DR. LESLIE: Any other comments on the phone?

THE OPERATOR: We do have one from Sonny Goldston.

MR. GOLDSTON: Hi. This is Sonny Goldston with Energy Solutions, and the EFCOG [or the Energy Facility Contractors Group of DOE] waste management working group.

I buzzed-in when Linda did, and I was going to say some of the things that Linda said, so it's kind of like playing Jeopardy here on the phone.

But I wanted to add to what she said, that the DOE program that is going to be strengthened in the Order 435.1 update has very specific review criteria for when you would conduct an unreviewed disposal question evaluation or a resulting special analysis.

So when you trip that criteria, if you have a proposed action or you have new information -- the new information may be the ICRP change -- you would do a special

analysis, and then if you trip your criteria for regulatory review, then you'd have to go to your regulatory body for a review of that information.

If you don't, then you've done the analysis and you've taken a look at it, and you know where you stand. And in addition to that, you do the annual reviews that Linda mentioned and assess whether you need to do a performance assessment revision every five years.

So it's a process you may want to look at that really does tell you what you have to do in order to revise any new information that you might get in addition to ICRP.

Thank you.

DR. ESH: Thanks, Sonny.

DR. LESLIE: Yeah, thanks, Sonny.

Are there any more on the phone?

THE OPERATOR: Not at this time.

DR. LESLIE: Thank you very much.

Dave, ready to move on?

DR. ESH: All right. The next area that we're going to discuss is the 800-pound gorilla concerning period of performance.

First we'll talk about direction. What's the direction? Right now there's a nice kind of bar figure at the top of this that's separated into different components of institutional control period, then a compliance period with

some uncertain boundary, and then a long-term performance period, also with some uncertain boundary, starting from closure and progressing forward.

And the direction that we got was to consider a two-tiered period of performance for the analyses. Tier 1, the compliance period covers the reasonably foreseeable future, and Tier 2, the longer period, is based on things like site characteristics and peak dose to a designated receptor.

The context for period of performance is that Part 61 does not currently specify a period of performance, and since most of our -- all our current facilities are in Agreement States, then they're free to set the period of performance as they see appropriate for their state and stakeholders.

And they do; the values that have been used have ranged from 500 years up to peak dose or 50,000 years in Texas, and the State of Washington I believe went out to 100,000 years in their EIS evaluations.

In response to the initial direction -- now, when we're saying initial direction here, this is not the new direction that we're talking about; that's why we have this crosswalk. It's the Rube Goldberg rulemaking, is the way we refer to it.

In response to the initial direction, we did a technical analysis of what factors we should consider in

setting a period of performance, and we recommended a two-tiered approach.

So we're in alignment with the Commission in terms of the two-tiered approach. The specifics of that approach are what we'd like to get feedback on from the stakeholders on how you would set that.

In addition, as we've moved forward, I'm going to talk about both a summary of what's done domestically and internationally and then some ideas of maybe approaches to handle this problem that you don't have to rely completely on setting a period of performance; you can do other things to manage the risk.

So the compliance period, what we did is we looked at a variety of factors: technical, societal, equity. Societal is human activities; technical, the hazards and site characteristics; and then equity, inter- and intra-generational equity.

And possible approaches, we looked at fixed -- so NRC specifies numbers and everybody uses them, depending on the compatibility designation; maybe a site-specific approach where you develop what period of performance is appropriate for a particular site; then a combo.

And we discussed all of these in great detail, the pros and cons associated with them. The challenge is

adding in the reasonably foreseeable future language. What does that mean?

So I would argue that if we're going to consider all sources of uncertainty, especially the societal component, then the reasonably foreseeable future is relatively short; maybe on the order of a few hundred years type of thing in the United States.

And the example I would give would be Las Vegas. You know, 300 years ago Las Vegas looked a lot different than Las Vegas looks today. That's sort of -- if you think -- many of your scientists and engineers, I'm sure, if you think in terms of derivatives, the rate of change is very large.

And I think that applies for a lot of locations and a lot of sites, is the derivative is large; the rate of change is large whenever we consider the societal component.

The question becomes, if you interpret the societal component that way, how do you balance that with the equity -- some sort of equity consideration? What's our responsibility today to future generations?

And, you know, the United States is part of the Joint Convention on Spent Fuel Management, and it has some statements that we subscribe to regarding protection of future generations. Now, the wording is a little soft, so you could look at it and interpret it differently. You could probably apply a very short compliance period and still argue

that we're consistent with those bullets in the Joint Convention.

But you could -- other people could take a different opinion and argue that we're not consistent with those things in the Joint Convention. So we have to be careful what we do balances all factors and considers the various elements of the problem.

The second tier, as I talked about earlier, was -- may be more of a transparency and information type of requirement. In direction from the Commission, they said consider these characteristics of waste package, waste form, disposal technology, cover technology, and hydrogeology.

Sections 61.50 and 61.55 specify safe suitability and design requirements, and we also wanted people to consider the uncertainty in the characteristics over time.

The problem becomes, especially for the listed characteristics here, the first four of them -- waste package, waste form, disposal technology, and cover technology -- they all get technically challenged very strongly when you start talking about long time scales.

And then there's an expense associated with developing the technical basis for those things over long time scales. So how much should we weigh those things in developing the second tier compared to, say, the natural site

characteristics, which is more what generally people rely upon when they're looking at long-term isolation.

So that's something that we want your feedback on from stakeholders, how we should balance these various identified characteristics.

And then they also had language in there to have a designated receptor, so that -- for us we talk about receptor characteristics: metabolic, behavioral, physical.

And then what does that mean in the context of this rulemaking? Should NRC fix it? Should it be done on a site-specific basis? Should you allow a combination of the two? And should it be limited to the current biosphere?

So what we know about people today, we shouldn't try to speculate about what people are going to be like in the future, in terms of their physical, metabolic, and behavioral characteristics.

Generally that's what's been done in the past, is the regulator says, Hey, I'm going to eliminate this source of uncertainty. We're going to chose what we think is a reasonably conservative representation of a person in the future, biasing it by what the person looks like today, and we're going to eliminate that source of uncertainty for our licensees and our stakeholders.

That doesn't mean it has to be done that way, but, as I said earlier, be careful what you ask for, especially

in an area like this, where there can be very varied opinions and different interpretations of how you should consider uncertainty and the people component part of the problem.

And then performance metrics, especially for Tier 2, what should we consider for the metrics of the second tier? Should it be a quantitative dose or risk type of criteria? Should it be qualitative?

The approach we took in our other attempt before we got the new direction was that it was qualitative, primarily; it was an information-for-stakeholders type of criteria, and the stakeholders at a particular location who would be impacted or maybe their progeny or future generations would be impacted, they could decide, based on that evaluation of what can happen, what likely is it, what are the projected consequences, whether those are things that you should consider changing the waste that you accept or the design of the facility or other things to mitigate those hazards.

So if we look at the domestic compliance period comparisons, we have a table here [Slide 18], and what I would caution people on is if you try to distill this issue down to a number, say a value in years of how to represent a particular problem, it can be somewhat misleading sometimes, because in many cases there are other requirements in place that are being used to mitigate the problem, not just an analysis and a time frame.

And you have to take the whole context of the problem to understand how the risks are being mitigated. Nonetheless, on this table we have an evaluation of the domestic compliance periods, and they range from EPA's RCRA [Resource Conservation and Recovery Act] regulations - 30 years plus a reevaluation, reassessment type of thing; uranium mill tailings - 200 years; Part 20 and DOE Order 435.1, as it's on the books now - 1000 years.

The low-level waste disposal is in quotes, 10,000 years, because it's not in the regulation, obviously, but it was in our NUREG-1573 that was developed by our Performance Assessment Working Group.

And, you know, there may be some desire to present that as well. It's a NUREG; it's a guidance document. How should it be considered? But it was developed by staff that probably had at least 300 years of experience in doing performance assessments, so it's not to be taken lightly.

They developed it over a number of years, and they were very experienced people. That's not a random number pulled out of the air.

And then there are other numbers here that we've shown for waste determinations: DOE siting guidelines, high-level waste and, for WIPP [or the Waste Isolation Pilot Plant] under TRU, and then high-level waste spent nuclear fuel. So they kind of cover a whole spectrum.

Now, for international approaches [Slide 19], what we've done since the previous meeting is we've done some data mining, basically, and tried to find all we can on what's done internationally in this area.

And the one generalization we would make at this point is it appears that almost all countries and organizations set some sort of limits for the disposal of long-lived waste in the near surface, but they do that by different mechanisms.

So many of them will set concentration or quantity limits, and that may be expressed as a general number, so, you know, a certain amount of Becquerel's per kilogram of long-lived alpha is the way it will be expressed. Doesn't specify particular isotopes, just one hard number, and that applies for any disposal in that quantity or under that organization.

Some will place limits by disposal concept, so they'll just say, "No near-surface disposal at all of any type of radioactive waste in our country." Or they will say, "No near-surface disposal for waste above a certain concentration. All of that goes to deep geologic disposal."

Some countries will do it via analyses, which is what we were attempting in the previous draft rulemaking: specify some sort of long analyses that would allow you to capture the impacts from the long-lived waste.

Still others do flux or other types of limits, and some do depth requirements, so they just say you have to dispose of long-lived waste below a certain depth.

So if we look at that in terms of figure -- and this may be a little hard to read; the font's pretty small to fit it on the slide. What we did is we took the information we could get, and we kind of put it into a flow chart in Slide 20.

And we started at the top with a question, "Do they place some sort of regulatory limits on long-lived waste in the near surface?" And what we generally find is that, yes, almost all will specify explicit limits on long-lived waste in the near surface.

And the way this problem was cast was to look at, well, what would pass through the analysis and where it would end up. So on the left-hand side of the figure, IAEA [or the International Atomic Energy Agency] and current Part 61, OECD [or the Organization for Economic Cooperation and Development – usually a reference to the Nuclear Energy Agency], and pretty much all the countries, they put some sort of limit on the disposal.

And then the various countries in their approaches are kind of further bifurcated as you go down the figure. So what you see is that in terms of depth requirements, current Part 61 has depth requirements for

long-lived waste.

So in Section 61.55 it says for the long-lived isotopes, if they're less than 0.1, then they're Class-A; that has a depth requirement associated with it -- depth or intruder barrier. If it's more than 0.1, then it's Class-C. That has a different depth requirement or intruder barrier associated with it.

So that's what current Part 61 does; it does consider distributing long-lived waste and, based on its concentration, differently throughout the disposal or analysis concept.

Now, I should note that something like Japan here has a question mark, because I do not speak Japanese, and most of the reports I could find are in Japanese. So we did the best we could. We have talked about whether we want to send a letter out to all the countries through OECD or some other mechanism and see -- give them explicit questions; you know, can you answer this, this, and this, and get their answers back so we didn't misinterpret anything. But this reflects kind of a work in progress, where we are right now in our interpretation.

The vast majority of countries that we looked at specify some sort of concentration or quantity limits, and as I said, those may be isotope specific or they may be just a general number: 'X' Becquerel's per kilogram of long-lived

alpha.

A number of countries, especially the European ones, will limit the disposal based on the geologic concept, some of those in like policy or regulation, but then some of them in maybe more practice.

Like Norway's regulations don't, I think, prohibit you from disposing of long-lived waste in the near surface, but their disposal facility is 50 or 100 meters below the surface in bedrock, basically, and it's a mined facility.

So in practice they -- I don't know if they -- if somebody proposed disposing of long-lived waste in the near surface, whether they would regulate it or not; the regulation doesn't specify, but their practice puts it pretty deep.

We also added the Agreement States on here, and the difference between, say, long and short, we were kind of saying a few thousand years, we're calling that short; of course, this is a very relative term. Most people would consider a few thousand years a very long number. And long was on the order of 10,000 or more.

Some of the facilities -- some of the countries go out well past 10,000 years, or they say you go to peak, no matter where that is, and that's for compliance. And they consider things like glaciation and all the other physical processes, the "ologies" and "isms" that are very complex and probably expensive to deal with.

But in terms of our Agreement States, we've put Texas, Washington, and Utah under their new regulations in this long analyses bin; South Carolina, as we understand it, looks at 2000 years; we'll put them on the other side.

Something like the United Kingdom is a good example, so they basically say, "Well, you analyze for as long as the calculations provide you some sort of reliable information to make decision making." So that's kind of in line with, I'd say, the reasonably foreseeable; you're trying to say when is a number meaningful that I can do something with it, and when is it not meaningful anymore.

But then in practice, the regulators have asked for very long analyses, out past 100,000 years, looking at coastal erosion and all sort of processes like that, so the regulation doesn't break down to a number, and that's why I said if you're trying to take these and assign a number, you have to be very careful about it.

So something like Korea, I believe they have -- might be a few thousand years they specify in their regulation, and so you'd say, "Well, they should be on the right-hand side of the diagram." But they specify concentration or quantity limits before you do that analysis.

So they've passed the waste that they generate into a filter, and if it passes through the filter, then you're doing a few-thousand-year analysis. If it doesn't pass

through the filter, it's not even available to analyze using that, say, few thousand years.

And then there's some countries like Finland fell out on this flux or other limits, which was very interesting. They basically set for longer term flux limits, based on consideration of natural rates of exposure to those materials.

So they said, "Well, we want to be smart about this. We don't want to limit people to some very low number if nature's going to expose them to very much higher numbers. Let's make sure that our disposal facility is in line with what nature is doing." And I thought that was a pretty interesting approach.

A number of countries are, I would say, smarter than the US in how they've gone about this problem, so they developed limits or requirements to try to avoid getting into arguing about the uncertainty associated with the long-term analyses; they say, Let's put other things in place to provide protection without getting into arguing what the numbers mean or how you do the analysis or what you need to consider.

They also have, I would say, a smarter waste classification system, so they separate their waste into short-lived and long-lived classes, and then they can set regulatory requirements appropriate for the short-term classes different from the long-lived classes, and they can

dedicate facilities for the long-lived waste that are designed different and have different regulatory requirements than the short-lived radioactive waste.

In the US we tend to just put it all together, and then we're faced with trying to develop regulatory requirements that apply to all, and you don't want a facility that's taking cesium-137 to be analyzed in the same way for one that may be taking large quantities of uranium. They should be looked at differently in some way.

So what we'll try to do going forward as developing the technical basis is work in the international approaches and the summary of it and what do we think that means for our rulemaking.

So the feedback that we got at the previous -- from the Commission was, "… define a reasonably foreseeable compliance period and define a longer period that is not a priori but is developed based on the site characteristics and the peak dose to the receptor...."

And we want your feedback on that direction from the Commission, so how should we interpret reasonably foreseeable? What should we consider and why? The same thing with the a priori; what site characteristics should we consider? What is reasonable and smart to do? And then what -- how should we define this designated receptor? How much flexibility should we afford, and what sort of metrics

should we apply for that second tier?

We also want your feedback on some things that I just talked about in alignment with the international approaches, do should we consider something like a simplified screening process with an option for the detailed analysis, which is kind of in line with the current Part 61, a Section 61.55 and 61.58 analogy?

What that would look like is say you have long-lived waste that you want to dispose of. We, the NRC, could specify an analysis approach, which would be site-specific, but it would be somewhat constrained, which would be very similar to what we do in decommissioning.

So in decommissioning, we have kind of screening levels, that if you have a site you need to decommission and you have concentrations of waste in the environment, you can compare them to the screening levels, and if you meet the screening level, then the process is very simple. You don't have to do any detailed calculations or what-not.

If you don't meet the screening levels, then you move to the next step, where you can use RESRAD [a computer code] and do an analysis of your site. If you can't use RESRAD because your site is complex, then you do a true site-specific analysis with your own developed codes and the QA associated with that and all the problems that come with it.

But what we were thinking was we could consider

something like that here. It would be in alignment with our current Part 61, because this is essentially how Part 61 works.

NRC did the screening process essentially which resulted in the Section 61.55 tables. Then we said, Okay, if you don't want to live with Section 61.55, you can use Section 61.58 and come in and ask for an exemption and do your own approach.

The same thing could apply here. We could specify in regulations the screening process that you use, and then if you don't want to use the screening process -- the screening process should be easier and less painful for both a disposal facility operator and for an Agreement State regulator to implement -- then the next step, which would be a complex analysis, site specific, do all your own thing -- I would think that would afford a lot of flexibility, and hopefully it would address the needs of our regulated community, both the disposal facility operators and our Agreement States.

And we could do things like disposal depth or flux requirements; you know, the existing regulation has disposal depth requirements. We could specify disposal depth requirements for long-lived waste or other things, as I discussed.

So the feedback that we got in the March 2

meeting, as Drew had indicated previously, is some support for 1000 years, some support for 10,000 years, and some support for intermediate numbers between 1000 and 10,000 years.

And as I indicated, this is one way to skin the cat; maybe there's some other ways that we can consider that might be smarter than just trying to get consensus on a number that a lot of people have some very differing views on and it's hard to achieve consensus on.

And then we also can consider what are the performance metrics for the second tier.

DR. LESLIE: Dave, thanks for laying out quite a bit of new information on the period of performance, and I'd like to open it up here in Dallas for any questions or comments on this period of performance, if you don't mind just lining up by the --

MS. EDWARDS: I just have a quick question. What's long-lived?

DR. LESLIE: Lisa Edwards asked what is long-lived radioactive waste?

DR. ESH: In our draft regulation we defined long-lived consistent with the current regulation, so in the current regulation, if you look at the tables of isotopes, what are considered long- and short-lived, we had carbon-14 as one of the long-lived isotopes, and how we defined long-lived in our draft was if you had, I believe, 10 percent

of the activity remaining at 20,000 years, that would be considered long-lived, which is consistent with carbon-14, which you have like eight point something percent remaining at 20,000 years.

That is an area of discussion that we could get feedback on from our stakeholders. Many programs will define long-lived as greater than 30 years, so that opens up the analysis to a lot more isotopes than maybe we had anticipated or NRC has in the past with defining something long-lived.

Some define it even shorter than 30 years, where the demarcation is between short- and long-lived. So in our analyses we haven't changed from what we did in the draft regulation; we didn't get any -- yeah, the draft that we had worked on, we didn't get any feedback from the Commission otherwise in that area.

But it is -- you have to kind of define the boundary between what is short- and long-lived. That's how we did it. We could consider more feedback on that and a different alternative.

The problem is that you have to be careful. Using a hard number may not make complete sense, depending on your problems and your other regulatory requirements. So if you specify 30 years, for instance, that may -- at one site 30 years may be an appropriate boundary for short- and long-lived, whereas at another site it may not.

In our view, the long-lived should have two considerations. It should have the half-life and the K characteristics of the material but then also the full suite of inventory that you've going to evaluate. How much long-lived waste do you have and what are the characteristics of it?

Dan, do you have a question?

DR. LESLIE: Go ahead, Dan.

MR. SHRUM: Dan Shrum with Energy Solutions. We realize that this will be a considerable challenge, defining what is reasonably foreseeable; we accept that. We accept that there are 20 people in this room with 30 different opinions on what the numbers should be.

If you're going to go with a number -- which it sounds like you're making cases on both sides: A number would be good; not having a number would be good. I understand all of that.

But if you look at the United States as a whole, most of the disposal of low-level radioactive waste occurs at the Department of Energy sites. So if you want to have a consistent number and if you feel that you have to have a number, then let's make it consistent with what the Department of Energy does.

I can think of two sites where, if you don't come up with the same consistent number the DOE has, there'll be

one criterion here, and on the other side of the fence there'll be a different criterion, and that's not good policy.

So we promote the thousand years; we also promote looking much longer than that and looking at all the other extenuating circumstances that may affect disposal of a certain waste type. But for a number that needs to go in a model to help with the decision-making process, 1000 years is a great number. Thanks.

DR. ESH: So would -- Dan, one follow-up. Would you specify any other requirements or restrictions or only the thousand-year analysis.

MR. SHRUM: I think the -- all those other criteria are going to fall out at the specific sites so I think that's a natural outcome of -- again, I wouldn't specify anything other than that thousand-year criteria.

DR. ESH: All right.

MR. SHRUM: Actually, I did have one other I forgot to look --

DR. LESLIE: Go ahead, Dan.

MR. SHRUM: If you don't mind. I'm sorry. Every time the Section 61.58 provision is brought up, I get to bring up the fact that not all states adopted 61.58 -- hi, Greg.

So that's kind of an issue too. That gets to down the road when we start talking about compatibility, on

what the compatibility of this rule's going to be but, you know, state of Utah did not adopt NRC's Section 61.58. That's not an option right now. Maybe we could change the compatibility of Section 61.58. Thanks.

MS. EDWARDS: Lisa Edwards with EPRI. I'd like to just introduce a concept for how you pick a period of performance, at least for your Tier I, but I have to take an exception to depleted uranium, so it's kind of a monkey-in-the-wrench because it has different characteristics than any of the other low-level radioactive waste that we typically try to dispose of.

So if you think of everything except for DU, the hazard is, by and large, decreasing consistently over time based upon the half-lives. If you develop a profile of your various nuclides and the projected inventories in any given disposal site or hypothetical disposal site from one of the new regulations, you can pretty easily plot out where -- what nuclides are the nuclides of concern at any given time period.

And pretty much, in our work, after about 500 years or so, you're basically to carbon-14 and TRU. The contributions from your other nuclides are more or less minuscule, relative to the hazard that's presented by carbon-14 or the transuranics. So I would suggest that one approach you could take is you map out that profile and you say twice that period, so 500 years basically you're into

carbon-14 and you could make it, you know, a million years long and you'd still be at carbon-14. Right?

So at twice 500 years, you're at 1000 years which suggests some harmony with DOE, and since our disposal sites are housing both DOE waste and commercial waste, there's a certain attractiveness in that compatibility, and there's a technical basis relative to the half-life of the hazard of greatest interest.

Now, that doesn't cover DU and I understand that. To me, DU's a little bit different animal and rather than try to create a regulation that subjects all low-level waste to the requirements that may be necessary for depleted uranium, perhaps we should have a set of rules that fits, you know, the bulk of the low-level waste and acknowledge that DU may have a subset or special requirements similar to discrete items that is covered in the branch technical position, that kind of approach.

DR. ESH: One thing that we should discuss is that the -- there's a difference between hazard and risk so, you know, the hazard that we see in the isotopic profile, the waste that goes into a disposal facility, is -- and this is a good thing. Most facilities mitigate the hazard from most of the isotopes completely. That's what they're designed to do is to keep the material in while it decays and not get out.

The performance assessment though is then

focused on the fraction of those isotopes that don't meet that description, the ones that the facility has -- the facility in combination with the site is challenged to try to contain, and what are the impacts associated with those?

And those are, as you indicated, carbon- 14 and the transuranics, but then also iodine-129; technetium-99; chlorine-36; in some cases, selenium- 79 -- there's a whole suite of isotopes that are in the more mobile class, long-lived, generally low specific activity, but they're the ones that can challenge groundwater pathways in particular.

So when the NRC's Performance Assessment Working Group looked at the problem, they ran computational models of projected inventories and looked at the risk that they got out, and they basically said, well, we think we need about 10,000 years to capture those other ones that I just mentioned which, in some circumstances, can cause risk or significant risk.

And you can see that -- I should have had the reference -- I don't have it; I can send it to people if you email me. There was a report I saw -- it was a Department of Energy report for one of the Hanford facilities. I think it was the ERDA [Energy Research and Development Agency] facility or the intermediate -- the waste-disposal facility being generated there.

And they had a performance assessment of it, and

they had some interesting numbers regarding uranium risk, in particular, wherein in 1000 years the health risk from uranium was something like nine orders of magnitude less than the value that they got then within 10,000 years.

And that's what you're dealing with in these problems is that the delay in the hydrogeology and in the engineered features of your waste disposal facility, it may act to have very low risk in 1000-year time frame but then don't remain low after the thousand-year time frame.

And the issue is, well, then, what's our obligation -- stakeholders, government, NRC -- for having some sort of requirements associated with that aspect of the problem. And that's what -- I understand the feedback on the thousand years' analysis and we definitely agree with you about that there's some materials that are different from others.

And, as I said, our waste classification system is not as eloquent as maybe some in some other countries that allow them to specify requirements for particular types of waste or -- but that's a comment that you made and it's something we've considered as, hey, can we be smarter about this and maybe develop some requirements that are more tailored to the risk posed by certain materials compared to others.

MS. EDWARDS: I would have two comments back to

that. I think it's a very complex problem and you've clearly given a lot of good thought. On a couple of the nuclides that you mentioned, with the iodine-129 and techectium-99, simply are not present in the disposal environment in the quantities that are currently reported.

So I think before -- or included within any analysis that you do, you need to try to get a sense of what the actual inventory of techectium-99 and iodine-129 is versus what was manifested because of what we brought up with the Phantom Four and the manifesting requirements. They're grossly overestimated, maybe --

What was it, Tom, in some cases, by a factor of 1000 or more?

(No response.)

MS. EDWARDS: So pretty significant overestimation of the inventory there. The other thing is, and this is maybe not so science-based. It's just a comment. When we talk about the inter- versus intra-generalization obligations, there's a part of my mind that always flips to, well, if you preclude disposal, the presence of those nuclides has not gone away.

They're still being generated in whatever quantity they're being generated in, and you have to decide, from one generation to the next, what makes the most sense in terms of obligation. Do you leave it in the local yards and

not disposed of and think that that's a better, safer ultimate disposition for it than in a disposal facility where perhaps you institute monitoring requirements to look for those long-term performance issues.

And I guess, in my heart of hearts, I feel, consistent with our Volume Reduction Policy Statement, et cetera, the preferred disposition is disposal. And when I balance the intra- versus inter-generational my preference would be to have it in the ground, in a controlled facility, rather than a storage setting.

DR. ESH: And I think our preference would be to have it safely disposed of so, you know --

MS. EDWARDS: Oh, absolutely.

DR. ESH: If they can meet the requirements, then by all means -- and as we kind of beat around the bush, the question is, well, what are the appropriate requirements to set that policy, you know, if you set the requirements too strict, then basically you're going to eliminate or make the disposal very expensive; and if you set them too loose, then you could have a health and safety issue associated with it. So where's the balance in between.

And I think there are ways to do this. We certainly can do it with a -- setting a period of performance, for instance. We can also do it with some other requirements that I think would achieve the same goal because in existing

Part 61, it has both concentration limits, depth requirements, as a way to mitigate the risk from long-lived waste.

When NRC developed Part 61, it wasn't that we have no obligation to some long-term risk; it was, let's put some easy -- or some simple requirements in place that's going to facilitate this process that's going to provide protection. So when we talk about it today and we talk about period of performance, we can't forget that the original drafters of Part 61 and the Commission in its policy of adopting it had that philosophy in mind.

So if we are going to move away from that philosophy, we need to really explain why we're moving away from it and have a good answer for it.

MS. EDWARDS: Uh-huh.

DR. ESH: And I think if we went with just a short period of performance it would be a challenge to explain what's the reason for that, unless we had an analysis that supported that case. I think if we have some other requirements that go along with it, that's something that we could argue as in alignment with the original Part 61, affords flexibility and provides protection. So --

MS. EDWARDS: Okay.

DR. LESLIE: We've got another comment here.

Rod, you can go ahead.

MR. BALTZER: Rod Baltzer, Waste Control Specialists [WCS]. WCS I think, is the only company that's gone from green fill to actually disposing of waste under these Part 61 requirements. I mean, we did it through Texas, an Agreement State. I do like the idea of a two-tiered system, being able to have a performance period and then, you know, measure out to peak dose, or whatever that it.

I think the performance period needs to be sufficiently long to give you enough public confidence. One of the things that helped us tremendously was the confidence we had from our local community as well as the state of Texas, and part of that was just the rigor involved in this process.

So if you made that a very narrow window, I think some of them get a little uneasy with that. And even though, you know, it's a technical requirement, there's a lot of other factors at stake with the disposal of low-level waste.

Most of the public don't understand the technical aspects of this at all; it's hard to boil this stuff down into 30-second sound bites, and if it's longer than that, they don't want to pay attention to it. They just want to say, no. So I would encourage a longer 10,000-year period, for example, for that.

As Lisa mentioned, do you and some of the other waste streams -- they do provide special items that you need to consider for longer periods as well. But I think that's

important; just don't forget the public process in this as well.

DR. LESLIE: Okay, Rod. Dave, I'm going to challenge you a little bit and then probably it's going to bounce back to Lisa, but could you go back to your Slide 15. I mean both Lisa and Rod said something about depleted uranium -- you know, certain characteristics where the risks increase with time.

And on this slide you kind of talked about, well, there's kind of things that don't last forever and then longer, and so in terms of the site-specific, how do you envision that you -- you know, you have a responsibility to allow safe disposal of all the waste streams. I mean, again, we don't want to have an orphaned waste.

Can you talk about a little bit more about trying to address the two and see if that resonates with both of you because, Rod, I did hear that thing that it's important from a long time frame from the public as well so --

DR. ESH: Yeah, well, on this slide what we had listed was the characteristics that the Commission identified. When we did our evaluation we also considered the waste characteristics which I think both of you commented on.

The Commission didn't list the waste characteristics but we kind of feel that when you look at what's done, even domestically, and especially

internationally, that's one of the primary things they look at. It's the first thing off the boat that they're looking at is the waste characteristics. So we should probably at least mention that we think waste characteristics are important to consider and that could influence the requirements that you need to specify.

When we did our draft we thought we were smart enough when we said peaking you'll dose within 20,000 years because we felt if you have short-lived waste and your peak occurs earlier than, then you'd be able to demonstrate that you've captured the peak from your risk and you don't have to concern yourself with what's happening out to 10- or 20,000 years in terms of the technical analysis.

But I guess that wasn't flexible enough or at least we'll talk about it in the technical basis and going forward whether we still think that's the right approach or whether we need to consider one of these other alternatives.

But, as Bret indicated, some things, especially the waste package, waste form disposal technology -- cover technology, they have a much different role when you're talking about short-lived than long-lived waste for most of current, near-surface type of designs.

When you go to deep geologic disposal, and especially disposal of high-level-waste-type-of materials, then the engineer components can play a much stronger role

because they're putting in a lot more science, expense and engineering to developing those components.

So we are not opposed to low-level facilities putting more engineering into their facilities, and crediting that engineering, if they can. It just is -- it's expensive to do that and they have to decide whether that's the right business decision for them, to mitigate their risk by using engineering or not.

In general, the low-level radioactive waste disposal philosophy has been to limit the types of materials you take and choose a good site and ensure that your site and the material you're taking are compatible with each other. So I don't know if that helped any but it was something that seemed to be separated and I wanted to bring it back together.

Dan?

MR. SHRUM: Let me just ask a question for Rod first.

Rod, did you say you supported 10,000 years or did you say longer than 10,000 years. I just want to hear what you said.

MR. BALTZER: I'd support a 10,000 performance period and then a second tier further out than that for peak dose.

DR. LESLIE: Okay. Dan?

MR. SHRUM: Dan Shrum with Energy Solutions

again. The issue that we find with whatever period of performance that -- you're talking about a compliance period and 1000 years is a compliance period. Built into proving or demonstrating that you meet the compliance period is demonstrating that your facility, and all of its components, are stable and solid for that period of time also.

So if you go much beyond the thousand years, or reasonably foreseeable -- or I could use any vague term that you want -- then you start getting into an engineering analysis of how do you demonstrate that a liner lasts that long, or a piece of concrete lasts that long, or a container lasts that long.

So it's easy -- actually, it's relatively easy -- you know this -- to run the model. Running the model is -- running it out to a million years takes a fraction of a second longer than running it out for 1000 years. That's not what we're talking about.

It's the supporting justification for the components of what make that facility operable. That's the challenge. And if you go much beyond -- I agree with what -- what Rod said is we have to have public confidence in what we do also, but if I go to the public and say, I know that this is going to last for a million years, that's a tough sell also.

So somewhere there's that balance and those

things have to be put into the calculation, into the consideration when -- if a number ultimately is achieved.

DR. ESH: And that's a good comment. 61.41 has a requirement under Section 61.44 for stability and the stability requirement talks about stability of the waste itself in addition to stability of the site, which you're supposed to pick a site that's stable, consistent with the material that your taking.

In the concepts section of Part 61, it says stability is a cornerstone of disposal. That was the NRC concept of, we're going to concentrate, contain and prevent, or prevent to the best we can, release of, not disperse and dilute, which also mitigates risk. And we allow credit for dispersion and dilution from your facility but the concept is based on concentrate and contain.

So Section 61.44 does not have a time frame associated with it. I don't know what's done in the state regulations but in NRC regulations -- and if you look at the site -- the selection of a site and that part of the regulation, it basically says you need to pick your site to contain your waste based on the characteristics of the waste that you're accepting.

So that's another area we haven't really gotten into but you have to recognize that the regulation has a philosophy associated with it and when NRC did the whole

approach of developing Section 61.55 and setting the concentration limits, that limited the amount of long-lived waste that you're going to take in a facility which therefore made that stability part of the problem somewhat easier because you don't have to worry about demonstrating stability at very long times.

If you were going to take large quantities of concentrated waste -- that's part of this rulemaking process, what's appropriate to demonstrate stability for that time frame. It's evaluation of the stability and where's the limits of the current generation's responsibility for ensuring that. That's kind of an open question.

DR. LESLIE: Are there other comments here, or let's check with the phone.

THE OPERATOR: Yes, we have a question from Sonny Goldston.

DR. LESLIE: Go ahead, Sonny.

THE OPERATOR: That may have been from earlier. I'll move to the next question with --

MR. GOLDSTON: I'm here. I'm sorry. I was on mute. I apologize.

This is Sonny Goldston with EFCOG again and the EFCOG has recommended to the Department of Energy and is now, since you asked us the question, recommending to NRC that you use 1000 years for your compliance period. But captured with

that is the site-specific performance assessment, taking into account waste form and engineered barriers and engineered controls, if you have them, and you can use them, which results in a waste acceptance criteria for your site based on the site itself, not on a generic site.

And then you have a waste acceptance criteria on an isotope-by-isotope basis for your specific disposal units that you have, depending on how you design them. You can apply this same approach to depleted uranium.

Then, the second tier number that -- we do support that concept as well and we've recommended to DOE, and now to NRC, a qualitative analysis to at least 10,000 or peak. To inform the analyst -- and you can use your same performance objectives to assess your -- how you take that information into account if you have something that makes you scratch your head and say, "Gee, I wonder why this number is so close to this, or it continues to increase, and what should I do about that, and what's reasonable to do."

I wanted to make a comment too about the screening process, Dave, that you mentioned as a possibility for setting limits and then asking for an exemption, if you prefer to do that, and then doing a detailed analysis.

I don't think anybody will ask for the exemption and do a performance assessment. I think that's a non-starter. I've never seen in my career anybody ask for an

exemption. You know, it's just like, no, we're not going to do that.

In fact, you'd have to get the Agreement States to put that process in place as well. I don't think it would happen. So since the -- those are my comments. Thank you.

DR. LESLIE: Sonny, this is Bret Leslie, the facilitator, and I'm going to ask -- I think I heard the "why" for the first part of the performance period but you talked about a qualitative for the second tier and I don't think I heard the technical basis or reasoning for why it should be qualitative.

So do you have -- since you've recommended that to DOE, did you lay out some basis for why a second tier of a qualitative approach would be appropriate?

MR. GOLDSTON: There's actually -- it's in draft and I'm not sure we could release it right now, but there is a technical basis for both of those recommendations. And in general, we've heard it from, I think, some of our speakers already that it's very difficult to go a long period of time and have any confidence in an analysis.

But when you look at the analysis for a long period of time, you can get numbers that tell you that you're close to some performance criteria. Say, your all-pathways analysis is showing that you're going to be below groundwater concentration limits that you want to set, or say there are

drinking water limits at your point of compliance, and you're close to them but you're still below them.

And so when you do your analysis, you look beyond that period of time that -- your compliance period, and you find that you're slightly above them, or -- and you may want to say for particular isotopes so you might want to say, gee, you know, I ought to do something about that. There can be criteria if you wanted to set numerical criteria for how close you would be.

I think what we've talked to DOE about is if you go above a certain standard in your qualitative analysis and you take a look at it and you say, gee, I really need to think about putting an additional barrier in place for that particular isotope, and DOE looks at it as a regulator and says, gee, you know, that's reasonable that you do that; we encourage you to do that. So --

DR. LESLIE: Thank you, Sonny, for amplifying on that. I think that was helpful.

DR. ESH: Yeah, because with the second tier and having a -- well, qualitative, or no limit to it, we're left with that issue, not both the ones that you described, Sonny, in terms of -- if they're, say, much below later, or close to it, or a little bit over, but what happens if they're a lot over in the second tier?

We don't have any enforceability to make

somebody do something about that if we don't have a limit associated with it where I think our enforceability is limited. I would have to defer to our legal people but we've talked about this in our working group as to, well, what does it mean for that second tier if we don't provide a limit and somebody generates a bad outcome; well, then, what can we do about it? I don't know.

Lisa, do you have anything to add on that?

MS. LONDON: I think our --

DR. ESH: Sorry to make you get up.

MS. LONDON: No, I think what we said was our enforceability would be predicated on whether there's a health and safety risk.

DR. ESH: Yeah.

MS. LONDON: And so, you know, there may not be a number associated with it but if we feel we have established evidence to sort of determine there's a health and safety risk that needs to be dealt with, that would be our enforceability angle.

DR. ESH: Yeah. So that would be -- I guess that would be our angle we could take but it would be more ambiguous as when you hit that threshold or not. So -- and generally, people seem to like less ambiguity and more complete and understandable regulations and directions than --

DR. LESLIE: That was Lisa London from the NRC staff that asked that question.

MR. GOLDSTON: And this is Sonny again. I agree with Dave and Lisa. That may require some additional thought as to how to put some enforceable criteria associated with that analysis that --

But to just say off the top of your head that you know what that is, you know, how the 15,000 years -- you look at a number and you say I know what that is, and I've got to stop that from happening. And I think it needs -- it takes some more thought than we've put into it so far.

DR. ESH: One thing that I don't think we did a great job as to date talking about was exactly what do these analyses represent and how should they be interpreted.

So the technical analyses and performance assessment are not an exact prediction of the future; they are an assessment to evaluate "what can happen, how likely is it, what are the consequences to inform the decision-making process," especially the regulatory decision-making process.

And so we understand, then -- certainly associated with it, you have to understand that whether it's regulating radiation risk or design of something more concrete like a building or a bridge, there's ways that are used to inform the decision makers and help make those decisions and that's what this process is about. It's to

generate information. Of course, you want it to be as reliable information and hopefully a good estimate as possible, but there -- uncertainty associated with it in many aspects cannot be totally eliminated, that we have a lot of epistemic uncertainty -- epistemic and aleatory uncertainty. And what the process is about is trying to understand those uncertainties and make a decision. So this idea about the assessment and how well you need to know it and therefore what period of performance you should set -- the approach that had been taken in the past at NRC was, you know, this was a regulatory analysis, a tool to inform the decision-making process.

It's not a prediction of the future. We understand the uncertainties. We may constrain it and define it in certain ways to allow the process to work but that is -- should not be necessarily -- the uncertainty associated with the calculations should not be the determining factor in how you develop the regulatory approach. It should be a consideration but not the determining factor.

DR. LESLIE: Are there other comments on the phone, or questions?

THE OPERATOR: Yes, we have one from Linda Suttora.

MS. SUTTORA: Yeah. Hi. So what Sonny mentioned regarding DOE Order 435.1 is partially true. What

is true is that we do all that now. In the revision of DOE Order 435.1, we have just reiterated -- you do a 1000-year period of compliance, a calculation on quantitative assessment, and you do a qualitative assessment to peak.

And we have said, you know, do a little bit more of a serious consideration within the first 10,000 years, but really the issue is peak. And the issue is, as Lisa mentioned, risk. And I'm a little bit concerned that, Dave, that you've been characterizing DOE as just looking at 1000 and then you quit because that's really not what we do.

We know we have longer-lived radionuclides and we look at the risk of those out to the future. Now, if we were going to do an analysis and we find that the peak dose is at 1500 years or 2000 years and is above 25 millirems, we are very, very conscious of making changes to the disposal. We might do a little bit deeper; we might have a more engineering facility.

If it's a peak dose at 12,000 years and it's plus or minus 100 millirems, we have to look at the risk. Where was our society 10,000 years ago, and where are we looking out in 10,000 years, and plus or minus a hundred or two hundred millirem is not a significant as significant, though, to a member, a distant member of the future.

And based on the assumptions you put into the model, it can significantly change whether or not

that -- those could be possibly realized. And so I think by characterizing DOE as up to 1000 years -- and that's it is a mischaracterization and grossly mischaracterized, and I'm a little bit concerned about NRC going out in the public realm and saying that about us.

That is not what we do. If we were to do an analysis and find a 5000-millirem dose at 10,000 years, we would make changes to our facility or what waste we put in there. If we were to find a hundred millirem at 10,000 years, we might say, gee, you know, where's the risk; it's not a risk; we're fine. We need to worry about the next thousand or so years really seriously with a quantitative assessment.

So, you know, let's move forward, but I just want to make sure that the public does not believe that 1000 years we cut it off and if we've got a peak dose over 25 millirem in 1000 and one year that DOE wouldn't do something. We take that very, very seriously.

DR. ESH: Thanks for the clarification, Linda. And I apologize if it came across as I mischaracterized your approach. I think I would characterize it, and correct me if I'm wrong, that for -- you have requirements for 1000 years; you do not have requirements for after 1000 years. Is that right?

MS. SUTTORA: We -- yeah, we have a requirement that the analysis be performed and that changes be made to a

disposal facility if there was any chance at all of exceeding those performance assessments in what we consider a risk period of time. No, we wouldn't make changes if we had a hundred millirems at 10,000 years; you're right. We would probably say, "Boy, based on the assumptions we put in, there's a lot of uncertainty in there."

But if we were to come up with, as I said, a very high dose at 10,000 years, we would make changes. We'd probably put more engineer barriers. We might -- one of the things that we do at DOE is we will put groundwater barriers so that the flow can't access the disposed waste so we would put in a barrier wall in the groundwater prior to it accessing the facility so it has to go around the disposal.

We do all kinds of things, not just build a bigger concrete structure or put a little bit more rebar in there. We do a variety. Or as the state of South Carolina puts it, there's tools in the tool box to achieve lower groundwater access to the waste.

DR. ESH: What I was trying to distinguish, and maybe I'm wrong, is I wasn't aware of what your requirements were for after the thousand-year period. Because my experience on both being a reviewer on Saltstone and for the F-Tank Farm facility is both of those facilities were projected to be above 25 millirem after the 10,000-year period, and I didn't see what -- I wasn't able to see what DOE

has done to try to mitigate those risks.

MS. SUTTORA: Well, actually, based on our assumptions and analyses, we didn't get a peak dose until after 10,000 years, and our peak dose, again, was so low that when you look at the risk and you look at things like the NAPA [or the National Academy of Public Administration] Report, how we should behave toward that risk at beyond 10,000 years -- we didn't actually make any changes; however, the --

DOE's a little bit different than an NRC **licensee in that all of our facilities also come under CERCLA [Comprehensive Environmental Response, Compensation, and Liability Act] and so we have a regulator and we have -- the regulators are EPA** [or the US Environmental Protection Agency]**and the state, depending upon whether it's RCRA or CERCLA or whatever. And these will be under institutional controls under those state regulatory regimes and so the state -- we talk to our state and our public.**

And there was another question about -- and I think it was WCS -- about the public and communication with the public, and we go out and we teach a PA 101 class to the public. We have a very long, very detailed course that we teach so that members of the public that are interested can learn what PAs are, what they do, what uncertainties are built in and all that.

So, yeah, we may not have made a change if (a)

our peak dose was way beyond ten thousand years and it was not a huge dose, and we look at the risk.

DR. LESLIE: Linda and Dave, thanks for coming. Don't go away.

Lisa London?

MS. LONDON: Yes. This is Lisa London with the Office of General Counsel for the NRC.

Linda, I'd like to just sort of interject a little bit because I think we went a little far afield when we sort of got into the Saltstone/F-Tank Farm discussion. It's probably not necessarily on point.

I think more importantly the question that Dave asked, which I'm not sure that I heard the answer to, and it's probably the answer I'm most interested in, and I think we can simplify it because I don't know, and you're in the best position to inform all of us, is what DOE does require after 10,000 years.

It's not a matter of what you do and what you don't do because I understand DOE's self-regulating. You take a look at what the situation is and you sort of establish where your parameters are and what your activity's going to be. But I'm wondering does DOE require upon itself past that 1000-year period anything sort of change -- whether your regulatory status, whether your Order 435.1, after 1000 years, actually requires you to do anything.

DR. ESH: Yeah. I think that's what I -- the distinction --

DR. LESLIE: Let her answer; let her answer.

DR. ESH: Linda?

MS. SUTTORA: Yes. The answer is that we require the site to continue the model all the way out to peak dose and then, depending upon the risk, a decision is made. If the peak dose is very, very far out in the future and not a high-risk dose and, again, that's how we get into this qualitative business where we do an analysis that we keep the same model and keep running it.

Just like everyone said, you can run a model forever. So we take that answer and we say, what is the risk? If it's considered a risk, meaning a high dose, and it's with 10,000 or so years, and again we don't have a cutoff, then we, say, make modifications to the disposal facility.

We have an internal regulatory body that reviews the performance assessments. If the peak dose -- I've seen facilities change the design of the facility and/or the depth where the waste is disposed based on a peak dose beyond 1000 years.

MS. LONDON: Okay. This is Lisa London from NRC Office of General Counsel again. That's very helpful, Linda. I really appreciate it because it really does sort of put us into a perspective.

I think what I'm hearing from you is that post-1000 years, dependent on your risk and the site-specific characteristics, you guys have to make a decision, and you may go to a body that you've got internally, but there is no hardwired number in your DOE Order 435.1 that triggers an action, that you cannot actually vary from.

You have that authority and discretion within the agency to take back what you've learned, establish what you want to go do, you know, in the future, and what action you're going to take as a result of the information you've received, but it's more of a discretionary body that makes that decision, not so much the regulation that hard wires something and you're triggering it and you're done.

MS. SUTTORA: Right.

MS. LONDON: I think that's different -- 1000 years' difference between the two agencies, and it may be a nature of who we're actually regulating --

MS. SUTTORA: It's possible that NRC should consider looking at risk rather than just absolute numbers because other agencies such as EPA with their CERCLA regulations, they look at risk and risk is a primary factor of why we're all here.

If something is a hundred millirem at 10,000 years, do we really want to make major changes to a facility and incur millions or possibly billions of dollars to incur

those -- to decrease a quasi-negligible risk? I mean, a hundred millirem at 10,000 years is negligible. And is NRC saying that they cannot possibly find a way to look at risk and can only look at absolute values? Then, I think the regulatory structure might need to be reviewed again.

DR. ESH: Thank you, Linda. Whether you choose a dose number or risk number, they're pretty much directly analogous. It's just a matter of what the number is. So a hundred millirem can be converted into a "one E to the minus whatever lifetime cancer fatality risk" just as well as 25 can.

But I think I would summarize this -- as Linda says, DOE is smart about it when they do this sort of process and they try to put things in place to take some action when they need to. And where we were coming from is, well, what sort of requirement is associated with that process because this has to be done by our Agreement States and do we want the process to be just open to them to make those determinations, whereas right now DOE does it consistently, I believe, for all their facilities.

It's one entity making the same decision on different facilities over and over again. So where we're coming from is "what do we need to put in place to ensure that we would get a similar outcome?"

And it would be helpful, Linda, if you could put

together some examples of facilities where you've had the issues that you've talked about, of the longer term impacts and how the facilities have been changed because that would be something we would want to consider if we adopted an approach similar to that.

MS. SUTTORA: Sure. I have two off the top of my head, Paducah and Nevada. So both of those facilities have changed their design based on a higher peak dose beyond 1000 years.

DR. ESH: Okay.

DR. LESLIE: We'll probably follow up with you after the meeting so you can direct us to the exact resources so that the NRC staff can look at those in more detail.

Thank you, Linda. I'm going to go to Lisa, but before I do I want to say we're going to take a bathroom break right after we finish this discussion so -- and if it's going to continue, we can break it up and come back.

So, Lisa, if it's a comment relative to this recent discussion, let's do that; otherwise, let me finish with the phone. Is --

MS. EDWARDS: I can wait until you finish with the phone.

DR. LESLIE: Is there anyone else on the phone that has questions or comments at this time?

THE OPERATOR: Yes. I have a question from

Roger Seitz.

MR. SEITZ: Hello, Dave. But -- just wanted to say I appreciate all the extended discussion on the time period of performance. I had a few points I wanted to make and you can have a chance to respond if you want to, but you mentioned NUREG-1573 and I think it is true that there was a lot of work that went into that and NRC staff recommended 10,000 years, but that was also very controversial at that time as well. So -- and many of the same discussions went on.

So I just wanted to make sure that's clear, that there was a position out there but it was controversial at that time.

DR. ESH: Agreed.

MR. SEITZ: And can we go to Slide 20?

DR. LESLIE: We're pulling it up right now, Roger.

MR. SEITZ: I just wanted to ask on that right-hand side where you have DOE and South Carolina, would you put -- if you are disposing of -- or you're granting permission to dispose of waste under Part 20, would you put Part 20 on that right side as well with the thousand years?

DR. ESH: I would consider it, definitely. But part of the issue is that the material disposed under Part 20 has the in-growth of the daughter products already reflected in the requirements that are set for it, so as you're -- as

DOE does to, but as Part 20 has the flux requirement, for instance, through the cover of the material.

So it would probably end up on that branch of the diagram, though, if I was trying to put the domestic programs on this. And I guess -- let me go back one more slide, or a couple of slides.

DR. LESLIE: You're on Slide 18?

DR. ESH: Yeah. Slide 18 -- Part 20, the decommissioning criteria, I think, could possibly also be on that side of the diagram, the difference being -- and as we explained previously with respect to decommissioning is -- in the decommissioning analysis the radioactivity is in the environment and the assessment is usually done with a fairly conservative receptor, resident farmer-type of receptor, and they're basically exposed to direct exposure to the concentrations that are in the environment in that calculation.

So the likelihood that you have migration and cause of, say, a large impact through a groundwater pathway type of thing, or some delayed impact is greatly reduced in decommissioning because of the fact that the radioactivity is already in the environment and the receptors that are evaluated are looking at that radioactivity in the environment, the difference being in the disposal-type action where you put the material underground is you may have a

significant delay between when the material reaches a receptor in the environment.

And that's what makes this problem a little different and a little more challenging.

MR. SEITZ: Yeah. And I think in the context of this comment it's focusing on things under Part 20 that would be the disposal action under Part 20, or where you grant permission for disposal under Part 20.

But I would also -- I think that how you interpret Part 20 for some of those exemptions or permission for disposal might be a good analogy for the previous discussion where, how does the NRC approach a case where there may be a higher dose after 1000 years under Part 20?

DR. ESH: Yeah. It's been a while since I've looked at that but I've definitely dealt with it on a couple of projects I worked on in the past. So I can pull that information forward and definitely commit to re-look at it.

I know we had some public comments that asked that associated with West Valley and also I think with development of the LTR [License Termination Rule]. And we had responses to those public comments. And they were along the lines of the answer that I gave previously which was, in most cases, because of the way the analysis is done you've captured -- usually the risk is highest early on in the analysis and it drops off, not that you have some sort of delay

with very little or zero risk and then the risk builds in over time.

And then you're well aware of that that the responses that you get for different problems in different systems can be quite a bit different temporally.

MR. SEITZ: Right. And -- well, I know there's cases where there's been permission for DU-contaminated materials, so that would be something where the risk can potentially increase over time.

DR. ESH: Yeah. I would have to check but I believe those concentrations and quantities in most respects were fairly limited and that comes into play.

MR. SEITZ: Right. Now, I think -- that may be an interesting comparison, though, how you would deal with the question of what happens after 1000 years under Part 20 as a point of reference.

DR. ESH: Sure.

MR. SEITZ: Okay. You brought up some good examples from internationally and I wanted to mention one thing just to keep in mind, and I think you're aware of this, when we look at comparisons with approaches internationally -- and I appreciate you didn't put in specific time frames.

And you have to be very careful when you do that because having a time frame is one thing but there's a lot of

other factors that go into it and different countries allow different things in terms of institutional controls, in terms of allowing probabilities, consideration of probabilities, so that's just a general comment.

DR. ESH: That's a good comment and that's exactly why I didn't try to make an international table of numbers similar to the domestic one because they -- it was amazing when you analyzed all the different countries and what they do how some small, subtle differences could be very important.

And there are things, like the things you mentioned, and some of the previous things I mentioned, that there are very careful choices of words and other requirements that are put in place that -- they're all trying to solve a similar problem but they solve it in much different ways.

MR. SEITZ: And one thing -- when you talk about how they distinguish between long-lived, I think it's important to point out that when you say, Long-lived waste needs to be, for example, disposed in a deep repository in a different country, that doesn't mean they don't allow some quantities of long-lived radionuclides in near-surface disposal facilities.

DR. ESH: Yeah. And that -- I agree with you and that's a good comment, Roger, that many times they'll allow some limited concentration but those concentrations,

I'd say, varied over maybe three orders of magnitude in terms of like long-lived alpha concentrations. They were pretty variable over -- from country to country, what they would effectively allow in near-surface disposal.

MR. SEITZ: Okay. And a specific example that I think is interesting and caveated with the previous discussion, the way they interpret it isn't the same way we would interpret necessarily, but Sweden -- in their rules, they actually specify a time frame of 1000 years when you look at dose and risk as quantitative values.

Then they specify the longer time frame after that where you look at dose, risk and any other number of factors to make decisions beyond that time frame. And they specifically mentioned something to the effect of fluxes or flows of contaminants in the natural environment.

DR. ESH: Yeah. Maybe I put them in the wrong box but I thought that was Finland.

MR. SEITZ: They actually -- it's very specific in their regulation how they describe it.

DR. ESH: Yeah. I think it was both Sweden and Finland that had elements of that approach, probably because they're closely associated with each other geographically too, but they also had, as we'd talked about, concentration limits or quantity and concentration limits, where they made that demarcation between whether you can even analyze the

problem to begin with or not.

MR. SEITZ: Right.

DR. ESH: If you didn't meet that first screening criteria, basically, then you were pushed into deeper disposal.

MR. SEITZ: Yeah. And I'm not trying to say that that's a justification for 1000 years because there's a lot of other factors involved but in terms of the thousand years itself, I -- from my personal perspective I tend to look at recommendations from the ICRP, the IAEA, and the ICRP is pretty clear where they say dose and risk, as measures of health detriment, cannot be forecast with any certainty beyond several hundred years.

In my mind maybe that's something you can use as a comparison with reasonably foreseeable in terms of reasonably foreseeable impacts on human health -- so that, if you think several hundred years, that pushes you more towards that thousand-year reasonably foreseeable time frame.

DR. ESH: Yeah. That's a good comment. Also, I think, looking at the IAEA -- it's in an appendix of one report -- it might be report DS-354. You probably know better than I but they have that chart of the different waste classes and how they -- one example of how you could classify the waste.

And if you look at the boundary between what they

call low-level waste and intermediate-level waste, that boundary, I think, was like 400 Becquerel's per gram or kilogram --

MR. SEITZ: It's conveniently close to true.

DR. ESH: There was a boundary there where basically if you looked at something like depleted uranium it would be well into the intermediate-level waste class rather than the low-level waste class. And the IAEA, as I'm aware, says intermediate-level waste should generally be deeper disposal not near-surface disposal.

MR. SEITZ: But I think they also have a separate category of naturally occurring radioactive materials, and that one, it's very gray how that should be disposed of.

DR. ESH: Yeah. Overall, I think there philosophy is one that you need to develop your waste classification system and your associated requirements consistent with the waste characteristics, as we've heard from some of our stakeholders here.

And I think that's smart to do if we can work it out where we can achieve something that works and has a reasonable consensus to it.

DR. LESLIE: Are there any other comments, Roger, or can I move on to the next person?

MR. SEITZ: No, those are my comments.

DR. LESLIE: Thank you. Anyone else on the phone?

THE OPERATOR: Yes, we have one from John Greeves.

MR. GREEVES: All right. Can you hear me now?

DR. LESLIE: Yes.

MR. GREEVES: Okay. I'll try and be succinct. I've got three comments that are related to what Dave presented. I think it's agreed that people have bought into a two-tiered concept. If you buy into a two-tiered concept, I think you have to define those two tiers.

So to help do that, the first comment I would make is the highest risk to society occurs [phone cuts out], so I don't think there's a debate about that. So there's something nice about defining that compliance period as 1000 years. It covers cesium and the great majority of the radionuclides are disposed of at [phone cuts out].

Second point. The second tier -- Dave raised the question how do you characterize that? I think you characterize it as a dose criterion. I think you really do need a criterion. It keeps some uniformity and a number 100 millirem, 500 millirem … something like that would help define what the metric is for that. Also, I think you have to define that you're looking at a critical group concept in terms of the receptor.

The third point, Dave talked about methods about -- in terms of screening under Section 61.55 and a more general approach under Section 61.58. My comment is you need an approach in the regulation that allows a weighted acceptance criterion to be developed and that's not an exemption.

The NRC currently uses Section 61.58 as an exemption. I think earlier speakers have noted [phone cuts out] exemption, but the rule needs to have a provision built into it that allows us to invoke these risk-informed procedures that we have developed and use that as the acceptance criteria and it's clearly -- it's not an exemption approach.

So I'll stop with those three points. Thank you.

DR. LESLIE: John, thanks for your comments. For the record, are you representing yourself or are you representing --

MR. GREEVES: Myself.

DR. LESLIE: Okay. We're going to need to take a break. There are so many people dancing in the back of the room at this point so I think, John, we're going to come back and address your issue and make sure -- I've jotted the things down. But we'll get back to you. We're going to take a 15-minute break and we'll come back and wrap up the period of

performance. But sorry about that, John. I -- literally, everyone is walking out -- running out the door as we speak.

MR. GREEVES: That's fine. I appreciate being able to make the points.

DR. LESLIE: All right. So everyone on the phone line, we'll stop right back up at around 11:15. Thank you for your patience.

(Whereupon, a short break was held.)

DR. LESLIE: A little bit about the logistics before we get back into the technical meeting. I probably went a little too long before our break but not we're going to talk a little bit about lunch. Rather than waiting till one o'clock, we're going to break at 12:30 so if Dave's still blabbing his mouth, we're going to make him break at 12:30.

And we want to encourage as much discussion as possible but they are serving lunch upstairs if you want to and the menu's out there; it's $12. There's also a little café down this hall that you can pick up something lighter as well. And we're currently planning only a one-hour break for lunch.

But before you move on to waste acceptance -- I know you want to move on to waste acceptance -- why don't I get the people back on the phone.

And, John Greeves, I know you had a bunch of points, or three points that you made, and I appreciate your willingness to allow us to go on to break. Was there a

particular thing that you wanted Dave to respond to? What I heard were a couple -- three points with positions and, I think, bases. But was there any additional follow-up that you were seeking, John?

(No response.)

DR. LESLIE: Is the phone line on?

THE OPERATOR: Yes, we're here.

DR. LESLIE: Yeah, I'm trying to find out if John Greeves is still -- has any additional comments.

THE OPERATOR: Okay. Let me open his line real quick here. One moment.

John Greeves, your line is open.

MR. GREEVES: Okay. Thank you. Thanks for those comments, and I've provided my comments for the record. I tried to be clear on what the three points are, and the only feedback I would enjoy is Dave saying he agrees with me, but he doesn't really need to do that.

I think the point is to get input and I'm satisfied with the clarity of my input. I'd respond if Dave or others have questions on what's behind my statements.

DR. ESH: Okay. I heard his comments and I understood them. They're good. Yeah, I don't have any follow-up questions.

DR. LESLIE: Right. Well, was there anyone else on the phone that still wanted to talk about the period

of performance?

THE OPERATOR: We do have a question from Arjun.

DR. LESLIE: Okay. Go ahead.

DR. MAKHIJANI: Hi. Thank you very much for taking my question. During the --

DR. LESLIE: Can you identify yourself and --

DR. MAKHIJANI: Yeah. This is Arjun Makhijani from the Institute for Energy and Environmental Research [or IEER]. During the depleted uranium sort of public consultation, I thought the NRC staff person, Dr. Esh, as well as the NRC invited experts agreed that it wasn't even sensible to do performance assessments for shallow-land burial for 10,000 years.

And yet I find that it is still on the table. You know, 10,000 years ago we had the Ice Ages. And the oceans were over Utah 12,000 years ago. And so I don't understand why these ideas are still on the table for shallow-land burial at site-specific. It doesn't make any scientific sense.

We should limit shallow-land burial to less than 1000 years. The ICRP has said you can't even sensibly calculate those end risks so I'd like some comment on why we're talking about things that are not even scientifically sensible for shallow-land burial.

DR. LESLIE: Thank you, Arjun.

DR. ESH: Thanks for the comment, Arjun. What

I would add is that I don't think that I necessarily stated the opinion that the analysis of near-surface disposal is non-sensible or not practical, but I do acknowledge that as you go out to longer times it becomes very challenging, a high amount of complexity, and therefore you would probably expect a great amount of expense associated with doing credible, technical analysis.

So this process is about trying to define where we think that boundary is and what requirements need to be put in place to mitigate the risk. And as you indicated, and I don't necessarily disagree with, one approach to do that is to limit the amount of material that you take in the near surface and ensure that where you place the material in the waste management system is consistent with its hazard. And I think, hopefully, in this rulemaking process, we can do that.

DR. MAKHIJANI: Well, no, this didn't answer my question, really.

You know, Dr. Esh, it is on the record, in the transcript, that 10,000-year near-surface assessments were -- I believe I'm remembering the correct word -- "silliness." And then we agreed that we wouldn't use silliness in a regulatory context, but it is silliness.

DR. ESH: Okay.

DR. MAKHIJANI: You know, if the peak dose is

beyond 1000 years, it should just bump it into deep disposal.

DR. ESH: Yes, I think you're --

DR. MAKHIJANI: I don't think --

DR. ESH: I think you're mischaracterizing that discussion.

DR. MAKHIJANI: It's in the record. We can visit it.

DR. ESH: Yes, that's fine. And what I'll say is that the discussion was we were talking about the analysis that the staff had done to look at the effects of climate conditions on different sites. And what we had done in that analysis is we had taken the uncertainty and represented it as pure, aleatory uncertainty across the United States.

What that does is it has the effect of increasing the variance associated with the output that you generate because what you're basically saying is dry conditions are going to persist forever or wet conditions are going to persist forever. So when it was characterized as silly, it was that persistence of the conditions. The persistence of the conditions is conservative, though, in respect to real world conditions because real world conditions vary from wet to dry, et cetera.

So when you're looking at, say, radon doses or groundwater doses they are more towards the central tendency when you do a more realistic representation of the

uncertainty. That's the context that was done, not that performance assessment and a long-term performance assessment is silly; that's a mischaracterization.

DR. MAKHIJANI: Oh, for shallow-land burial. I will pick it up and look at it again. You might be right. You know, my memory of it is that we were talking about things like zero erosion over a million years because that was part of the basis on which the performance assessments were done, and so, you know, the way you're characterizing it with wet and dry alternate, I think it will go toward more the central tendencies.

Certainly, that's not going to be compatible with zero erosion. And the calculation that was done was certainly not a conservative calculation at all.

DR. ESH: Well, the zero erosion aspect is different and I agree with you that the analysis did assume that the facility would be designed to meet the 61.44 stability requirements which is where erosion comes into play, basically that we wouldn't license a facility that couldn't meet the requirements. So --

DR. MAKHIJANI: And that you could predict erosion for a million years?

DR. ESH: Well --

DR. MAKHIJANI: Is that sensible?

DR. ESH: I don't think you can predict erosion

for a million years but you can certainly bound erosion and you can certainly put in --

DR. MAKHIJANI: For a million years?

DR. ESH: You can certainly evaluate -- I mean performance assessment is not about ensuring with a 100 percent certainty --

DR. MAKHIJANI: I understand.

DR. ESH: -- that you will have zero erosion. It's about associating what the -- or generating what you think the release rates may be if you have that scenario. So, you know, the performance assessment will look at ranges of erosion rates consistent with modern-day estimates and projected future climate states. That's how the performance assessment should work.

Those erosion rates may be large and may have high uncertainly associated with them but that doesn't mean you can't do an assessment of what you think the projected erosion rates may be with a range of uncertainty associated with them.

DR. MAKHIJANI: Okay. I won't take more of your time. I'll just say two things: One is I think you should talk to some climate scientists who are struggling to project for 500 years and finding they're repeatedly wrong; and, secondly, I would just put forward my own opinion that if, in shallow-land burial, peak doses are beyond 1000 years,

shallow-land burial should be abandoned.

DR. LESLIE: Thank you, Arjun.

DR. MAKHIJANI: Sure. You're welcome, Bret.

DR. LESLIE: Are there any other comments or questions on the phone line?

THE OPERATOR: Not at this time.

DR. LESLIE: Okay. I'll give one last chance, since everyone's refreshed here in the room, to ask some additional questions, and I see Lisa Edwards making her way to the mike.

MS. EDWARDS: Lisa Edwards with EPRI. I just want to go on the record with, what is sacred about 25 millirem? And the context of this statement is that when we say if the calculated dose is less than 25 millirem, we're saying it's safe, which implies that at 26 millirem, it would not be safe. And I understand, no matter what number you pick, you can make that argument.

But with the most recent UNSCEAR [United Nation Scientific Committee on the Effects of Atomic Radiation] numbers, putting population dose -- average population dose, at 600 millirem if you include medical treatments, background -- you know, in the 2- to 300 millirem kind-of-range in the United States, it makes the 25 millirem sound different today than it did 30 years ago when there weren't very many medical procedures or people didn't understand what

kind of dose they were receiving from those types of procedures.

So if you consider the total argument of risk avoidance, the risk avoidance to me is better in a disposal environment than in a non-disposal environment and the 25 millirem obviously captures what we consider safe disposal because I don't think anyone in this room wants anything other than safe disposal. So revisiting the 25 millirem could change the picture dramatically.

DR. ESH: Yeah. This is Dave. I wouldn't disagree that it could change the picture. Within the scope of this rulemaking -- it was a limited-scope rulemaking where if we feel we have a challenge getting agreement about the framework associated with the analysis and the analysis period and the appropriateness of it, I think if we started also looking at dose limits, it would amplify that certainly.

Those sorts of things we, I think, would be part of a future, more comprehensive evaluation of the rule if, in fact, we did that -- resources available. So there are lots of things like that you could consider within the limited scope. Ideally we should have been well on our way to being done at this point so -- but, you know, we aren't, and we're continuing to work at it, continuing to get feedback.

And so our ability to consider some things that we think are somewhat limited within the scope of this

rulemaking activity. We had our initial direction from the Commission. We got revised direction from the Commission. We're going to try to stay within that scope as much as we can and not deviate from it.

DR. LESLIE: Okay. Seeing no further questions in the room, I'll let Dave -- oh, just in time for the screen to go blank. Move on to the waste acceptance portion of his talk. And for those of you listening in on the phone, we're starting on Slide 24.

DR. ESH: All right. So now we'll move on to waste acceptance criteria, starting off with the direction. Basically, the Commission directed the staff to consider flexibility in establishing the site-specific waste acceptance criteria based on the results of the various analyses that you perform.

And the -- well, let's go back here. The primary direction, my interpretation of it, is that they -- in our initial rulemaking, our draft, what we were going to do was maintain the waste classification tables as directed by the Commission, then require a performance assessment for Section 61.44 and then an intruder assessment for Section 61.42.

In the direction the Commission gave us, what we're talking about now, they basically said to change that to an "or" approach so you can choose to use the tables or do

a site-specific -- develop site-specific waste acceptance criteria. Or at least that's what we'd like to discuss with the stakeholders. Should it be an "or?" Should it be an "and?" Do you have other perspectives?

But the way this works is the context -- there is a general WAC specified in Sections 61.58 through 57 and 61.58 currently allows the request for alternative waste classification and we've talked some about that, about using exemptions and the likelihood of that occurring.

It is compatibility, health and safety which means that state adoption is not required and as Dan Shrum pointed out, for instance, in Utah's case, they don't have an equivalent Section 61.58. So in this rulemaking effort, though, our questions would be should we do a general WAC only, which would be analogous to kind of what we have now; should it be a general or site-specific so that people can choose which approach they want to use; should it be a site-specific only; or maybe is there something else that we haven't thought of -- and the pros and cons associated with those different approaches.

Now, what I would add with respect to waste acceptance criteria is I believe they're going to be some technical challenges associated with adopting that approach which may not have been talked about in these meetings yet and stakeholders would want to put some thought into.

So what requirements should NRC specify associated with waste acceptance criteria? Here's some that we thought of -- one, consistency with the technical analyses that are specified in Section 61.13, which gives the technical requirements associated with the analyses.

We have waste characteristics in our regulation right now. There's minimum characteristics specified in Section 61.56(a). There are stability requirements. That's specified in Section 61.56(b). The idea would be what requirements should be open to evaluation by analyses and development on the WAC and what requirements should not be open to evaluation and analyses.

Basically, say you had -- I'll give you an example. Say, we'll talk about chelating agents. So should you be able to assess the effect of chelating agents within your performance assessment, or should NRC have, as they do now, just say you can't put chelating agents in a disposal facility. It causes problems. You're not going to have the science and technology to adequately assess it.

We'll just put it in there as a general waste acceptance criterion, and then your specific waste acceptance criteria, in terms of concentrations of waste that you can take or waste forms, those sorts of things, you develop with your analyses. We also have operational requirements right now, segregation requirements in Section 61.52(a) and

intruder protection requirements in Section 61.52(b).

Others such as criticality, labeling, those sort of things. You know, the waste acceptance criteria, you can make it pretty open and therefore you're kind of evaluating everything or the regulator can provide things that you need to meet first and then you do your analyses to develop the specific concentrations of all the isotopes you take.

So we're interested in talking about pros and cons associated with that. And then, also with waste acceptance criteria we have some existing guidance documents that may be relevant. And what guidance would we need to develop or revise, and why? We have the technical position on waste classification, the waste form technical position, the technical position on concentration averaging and encapsulation, and any new guidance -- so what acceptable approaches for analyses.

We can envision that, if we're going to the site-specific WAC [waste acceptance criteria] approach we probably are going to need quite a bit of guidance as to what the staff thinks of a way of doing it -- and that's our initial thoughts or that's probably appropriate in guidance and not in regulation because we're probably not the smartest guys in the room and there may be people in the Agreement States that actually have to do this work that have better ideas about how

they should do it in their specific applications. But we're envisioning that we'd need to develop some new guidance associated with development of a site-specific waste acceptance criteria.

So the feedback we're seeking is on adding the flexibility to establish these site-specific waste acceptance criteria, based on the analyses for the performance assessment and intruder assessment. We did get some support from stakeholders for this at the March 2 public meeting. Okay. That's the end of that.

So I guess we'll stop -- break at this point and talk about waste acceptance criteria, what thoughts stakeholders may have on it -- what you think should be part of that approach; at the high level what form should it take -- how much of it should be open to the site-specific part? Should there be things that should be constrained by the regulator as in the example I gave, say, with respect to chelating agents?

And then, specifically, what sort of guidance do you think you would need? What aspects of the process or approach would you need guidance one or would benefit from having guidance on?

And we did, I should indicate, have a discussion with DOE because they use a site-specific waste acceptance criteria approach for their facilities and it was very

helpful. They had a lot of insights about how they do the process, a lot of good ideas, and they've been doing it for some time. So their approach is pretty refined as they've tweaked it over the years to get it right basically, so -- and we can talk about that some too in this discussion.

DR. LESLIE: Dave, thanks for teeing up the topic. I want to thank you for laying things out. I'm not sure how many people have questions or comments but one of the things that Andrew Carrera reminded me is, make sure you ask why.

So if you want to provide some feedback to Dave on a particular approach, try to remember to explain why that's an appropriate approach or the disadvantages of a different approach. That helps the staff to kind of formulate the framework for -- for instance, one of the things Dave talked about it, you know, maybe this is best placed in guidance.

Well, maybe someone thinks it's best placed in regulations. So, again, to con -- when he says pros and cons, what he's really asking for is the input that allows him to flesh out the topic.

So are there any questions, comments, here on the site-specific WAC? I'll be really annoying. What if NRC just adopted exactly what DOE was doing? Would that be acceptable to folks?

DR. ESH: Well, let me tell you a couple of things that DOE does and then maybe you'd know whether -- a couple of things they do -- so, one, the disposal site operator generates the WAC and then the generators have to meet. And the WAC that the disposal site operator generates considers a very big list of radionuclides as to what could potentially go into their facility and they generate the concentrations of those isotopes that could into their facility.

Then, the generator has to demonstrate that they meet the WAC. Well, that's kind of where the rubber hits the road of how do they demonstrate that they've met the WAC, especially for a lot of isotopes that they may not measure routinely that if they were at certain concentrations could cause risk from their facility.

The way it's done now, as we understood, and maybe DOE can chime-in later in this discussion, if they're still on, is basically the disposal site operator sets quality assurance requirements in place that is how they demonstrate the material that they're going to accept is going to meet the criteria. Then the waste generators have to demonstrate how they meet those quality assurance requirements for the waste going to the disposal facility.

Then there are audits done for the disposal site operator to verify that the generators are, in fact, meeting

the quality assurance requirements. So in this case, if we put it into our world, the commercial world, say Dan Shrum or Rod [Baltzer] and WCS, they would generate the quality assurance requirements associated with their WAC for people that want to send them waste, and they would do auditing of those generators to see that they are in fact, meeting the requirements associated with that WAC.

Now, you can imagine that what you put in those quality assurance requirements in terms of meeting waste acceptance criteria could be very burdensome or not so burdensome. There could be a big impact or a little impact. So that's something for you, as stakeholders, to think about as you move to this "more flexible approach." There may be more heavy lifting that comes with that for the disposal site operators, the generators, or the Agreement States who are going to maybe be doing an independent check of both parties, whether they're meeting their obligations. So that's a minute discussion of kind of how their process works and some of the things you might want to think about.

DR. LESLIE: I've not seen --

(Pause.)

DR. LESLIE: I turned myself off. Well, and in that period of time I've got someone who actually wants to make a comment.

MR. SHRUM: I'll be very quick. This is Dan

Shrum with Energy Solutions. You cautioned us on your slide -- I believe it's Slide 26 what requirements, if any, should NRC specify, and if you would want to contemplate a waste acceptance criteria for in the future I think any assumption that was used in the development of the tables in Section 61.55, Tables 1 and 2, is something that, if you wanted to go with a WAC, you could challenge those assumptions on how you developed those tables.

I think that's just a fair, broad brush because there are a series of assumptions that were put in when that was done and I think any disposal operator should be able to challenge those assumptions and change and develop a WAC based off of challenging and proving that those assumptions are not valid for this specific site. Okay?

DR. LESLIE: Okay. Dan, I'm not sure I understand. Is it a flexibility issue or -- I'm not seeing the nexus between the tables and --

MR. SHRUM: The tables were developed and have a bounding effect on what the different facilities can take.

DR. LESLIE: Right.

MR. SHRUM: But the tables were developed based off of a series of assumptions that were put into the development of those tables. For example, I may be wrong on this but I think they were developed for a humid, eastern coast disposal site which, you know -- ought we be able to challenge

that assumption on what that -- you know, what the table say if you're not a humid east coast disposal site and you have different characteristics of your own site that would allow flexibility in the tables. Okay?

DR. ESH: Yeah, the question becomes how much -- what -- you gave a good example about, say, the climatic conditions but it also may be things like the scenario or receptor characteristics whether those should be open to site-specific analysis. I think certainly things like, say, consumption rates and ingestion rates and those sorts of things should be consistent with regional practices for your disposal facility.

But, then, when you get to the high level of, well, assumptions about disturbance or activities, when does that become something that the regulator should contain that they think they've fixed a reasonably conservative scenario for everybody to consider and when do you allow that open to interpretation?

That's something that we'd like feedback on in this process, whether -- how much flexibility should you afford? Are there things that should not be afforded flexibility, and why, as Bret will hopefully remind you.

DR. LESLIE: Okay. We've got at least one more comment here.

MS. EDWARDS: This is Lisa Edwards with EPRI.

David, you'd have to go back into the transcripts but I think that was discussed to some extent in the February meeting. I don't know if it was 2010 or 2011 now, but whatever that February meeting was with the panel discussion, and I think what was suggested, at least by one party at that meeting, was that there could be multiple disturbances that were envisioned or potential intrusion scenarios. And that they with that defined set of potential intrusion scenarios, the states would determine which of those applied to their site because in some cases they might all apply; in other cases, only a subset of them would apply. It would be based upon a regional decision making or site-specific decision making.

DR. ESH: Yeah. And I would note that if development and the waste acceptance criteria are tied to, say, an intruder assessment, some international programs allow consideration of probability in that development, whereas others do not, so some will specify a scenario, essentially what NRC did in the original Part 61, whereas other will afford flexibility to consider probabilities in generating those scenarios.

The slippery slope you get on, and I think it was touched on by Arjun to some degree, is that some types of uncertainties are not readily quantifiable, or in some opinions are not readily quantifiable. And certainly the future societal uncertainty is one that is very highly

uncertain and, by some people's arguments, not readily quantifiable. So --

DR. LESLIE: Okay. I'm going to turn to the phone to see if there are any comments.

THE OPERATOR: Yes, our first one is from John Greeves.

MR. GREEVES: Okay. Can you hear me?

DR. LESLIE: Yes, we can.

MR. GREEVES: Okay. I see Slide 26 and I wanted to talk to Slide 26 and 27. Your first question was what characteristics should be considered. You mentioned the one that's on the slide.

All of these characteristics were based on the way work was done back in the '80s. They're very specific. They're not risk-informed. And my comment is that if you go to a waste acceptance criterion you wouldn't be setting aside minimum waste characteristics or segregation requirements. That would all be overwritten by the performance assessment, the risk-informed performance assessment, and waste acceptance criteria.

If you'll turn to Slide 27, you raise the question of what guidance is needed. You list four things here and I would reject the first three. They're all based on a straining approach which is not what a waste acceptance criteria approach is. The third one says, new guidance, which

I would subscribe to, and I would say the starting point, a good starting point, would be NUREG-1854, the NRC staff guidance on activities related to the Department of Energy waste determination.

Both the staff and DOE have a body of experience in that particular area that I think goes a long way towards the development of the type of guidance that would be needed for waste acceptance criteria. So I'll stop with that.

DR. ESH: John, what I interpret your part on Slide 26 about the need for no minimum characteristics that everything is technically analyzable -- is that basically what you're saying? Because I think the reason for specifying minimum characteristics is if you think there are some things that should be avoided and shouldn't be part of the assessment, whether it's that the technology isn't there or it would be a burden on both a disposal facility operator and an Agreement State regulator to try to evaluate some of those technical things.

You can manage them through a requirement, a minimum characteristic, or you can try to evaluate them through analyses. Are you saying that everything should be able to be evaluated through analyses?

MR. GREEVES: I'm finding this difficult to do over the telephone, Dave. And I -- the point I'm trying to make is these original parts of Part 61 were basically a

self-suspenders approach and if you go to a waste acceptance criteria, you shouldn't be locked into some of the specificity that was in the original Part 61. I think it would only --

DR. LESLIE: Okay, John.

Are there other comments on the phone?

THE OPERATOR: Yes. The next is from Sonny Goldston.

MR. GOLDSTON: Okay. This is Sonny Goldston with the EFCOG again. John Greeves took the words right out of my mouth. I agree with John -- everything John said.

If you're doing your performance assessment correctly, you pick the parameters that you're going to use and you justify them and the reviewers have to agree with your justification, and once you're done, you end up with limits on your individual radionuclides and that's the basis for them.

You may have assumptions in the PA that you have to protect in the field. For example, you may have assumed in one case where you have a concrete slab that's three inches thick, or something of that nature, over a particular area, and you have to protect that assumption. You may have a certain depth of groundwater you have to protect and, you know, maybe you would have some criteria you'd set ahead of time but it would be performance-based.

It would say you need to demonstrate stability;

you need to demonstrate whatever you decide is important. And you may say something like no explosives, you know -- no water above a certain percentage can go into the waste forms that go into the facility, those kinds of criteria.

But as Dave said earlier, DOE's been doing this a long time and there's a -- you know, a large body of information that you could use to develop this. And then based on what Dan Shrum was saying -- I believe I understood it correctly -- you wouldn't need those tables anymore that are currently in Section 61.55. They are no longer necessary.

DR. LESLIE: Let me see if I can try to pull together the why. And I think it's in there. But in general, if you go down the site-specific WAC you're going to be doing a performance assessment. So you're going to be doing it from a risk-informed performance-based approach.

And therefore, you're -- by doing that approach you're basically saying whatever -- when you take on that responsibility of up-taking that approach, you're going to have to defend those things in there. And so the previous things that were on slide 26 were developed prior to having to defend a performance assessment.

If there are additional types of things you want it again, to be performance based because it's consistent with this philosophy or risk-informed performance base. Is that why you were suggesting those things?

MR. GOLDSTON: Yes. That's a good way to describe it.

DR. LESLIE: Anything else you want?

DR. ESH: No. I mean, my only follow-up would be if we go back to Slide 26 I think a good example would be criticality. So, you know, the reason why criticality is handled the way it is now in our regulations is because the Agreement States that in context of an operation of a disposal facility we don't have the resources or maybe in some cases capabilities to deal with that issue. We're going to leave that under NRC's purview, for instance.

So -- and -- so that's an analogy to -- or like the example I gave with chelating agents or it could be free liquids or whatever -- some of the minimum requirements that you have now, are they things that you want to have part of the evaluation of not? Because what I may think is appropriate for somebody to evaluate the impact of chelating agents may be much different than what another regulator may expect with respect to chelating agents. So this is a good area for you to think about.

If you don't have feedback today, that's fine, especially as anything that we propose comes out, we would welcome feedback on, as how much flexibility should we afford to all of these different basically, technical topics associated with waste form.

Because if you don't specify them in the regulation -- then you may look at two things: needing to analyze them in your evaluation and secondly, needing to characterize or demonstrate what you have associated with that aspect.

So like, say, you -- right now do you know the presence -- if you allowed chelating agents to be part of your evaluation are the chelating -- do you characterize all the waste -- do the generators characterize all the waste as to how much chelating agents they have in it when they send it to a disposal facility. I don't know the answer to that. Maybe Dan or somebody else does.

But I think that sort of thing -- you can create a burden, both in terms of up front in the analysis when you do your licensing or periodic reviews and for the generators, in terms of characterization whenever they're sending material to the disposal site.

DR. LESLIE: Are there other comments on the phone?

VOICE: Yes.

Roger Seitz, your line is open.

DR. LESLIE: Roger, could you identify your affiliation, please?

MR. SEITZ: I was going to do that. I realized I forgot last time.

This is Roger Seitz from Savannah River National Laboratory. And just a quick comment this time. I just wanted to put in a point that when we start thinking about intrusion scenarios and guidance related to intrusion scenarios, I would like to express my opinion that we need to keep in mind international guidance and historical practices in the U.S., where it's really been a stylized scenario.

It's kind of an illustrative case. We look at someone who may drill into the facility or near the facility and we look at something like a basement construction. I think if we start in a generic sense looking much beyond that it opens up to become this very broad analysis that we could end up making decisions based on obscure scenarios that are very unlikely to occur but we're assuming have a probability of one.

So in general, the comment is I think I would emphasize some very stylized scenarios that meet the intent of what we're trying to accomplish.

DR. LESLIE: Okay. Thank you, Roger.

Dave, can you envision -- and again, where you're juxtaposed what Sonny said about risk-informed performance-based approach for the performance assessment then you have a stylized for intruder. How does that -- how -- can you address that in -- without up-front laying out a bunch of stuff in the regulation? Or would that

all be in the guidance?

DR. ESH: Well, I mean, that's the issue I tried to talk to earlier. Maybe I didn't do it so well. But basically, are there elements of the problem and evaluation that you should constrain and then other elements that you afford flexibility for. And as Roger indicated, maybe in the area of the intruder scenario that's not an area where you want to afford an infinite amount of flexibility. You want to constrain it like was done in the past that say, "This is conservative."

And, you know, I would just add as an aside, NRC has been working on trying to look at what our -- what may be the probabilities of intrusion using GIS [geographic information systems] and land-use maps and how they've changed over time. And we're getting some numbers on that. We'll be able to share them with the stakeholders in the future.

So we're trying to do our homework on it to see, Okay, is it reasonable to consider that, what may be the probabilities, you know, are we in the right ballpark or not. But that sort of thing …

But, yes, Bret, you know, you have two competing forces: one to be quote, unquote, more risk-informed, and the other one to avoid speculation. Well, when you're dealing with uncertainty, uncertainty is a fact risk. And there may

be some types of uncertainties where the regulator thinks it's prudent to limit them in some form or another and others to allow people to explore the impacts of those uncertainties on their specific sites.

DR. LESLIE: Okay.

Other comments, questions, on the phone?

THE OPERATOR: Once again, *1 for any questions or comments.

(No response.)

THE OPERATOR: There are none at this time.

DR. LESLIE: Okay.

One last chance for the people in the room.

MR. PERSINKO: Bret, let me add something.

DR. LESLIE: Sure.

MR. PERSINKO: This is Drew Persinko. In my opening remarks I gave a quick summary of the Agreement State perspective on the WAC. And I said I felt -- they felt it was generally -- they were generally supportive of it. But they had some reservations. And the reservations had to do with what Dave was talking about earlier, where he mentioned that the disposal sites generate the QA [quality assurance] requirements and they would audit the generators and be sure that the WAC is met. And the generators must show that they meet the QA requirements.

Well, this was the issue that I think the point

of reservation that was made by the Agreement States was that that would be -- that would require more resources of them to make sure that the QA was met. And I was wondering if either Texas or Utah was on the line and would like to expand on that.

(No response.)

MR. PERSINKO: Guess not.

DR. LESLIE: So is the State of Utah or the State of Texas on the phone line this morning with us?

(No response.)

THE OPERATOR: I do have a Rusty Lundberg that has come into the queue.

DR. LESLIE: Okay. Thank you.

Go ahead, Rusty.

MR. LUNDBERG: Thank you very much for the opportunity, Drew, to add to that a little bit. What we were talking about is as you look at the opportunity to afford waste acceptance criteria as perhaps the primary basis for movement of waste from a generator to the disposal facility, it does add to the host state or the regulators in the host state in terms of the resources to monitor that. And so we were simply raising the -- or at least offer a comment that for consideration that there is a resource -- an added resource burden from our perspective to shift to a waste acceptance criteria.

Not that in and of itself it is a negative

aspect. We're just wanting to make sure that we thought that the opportunity of commenting that there is to us an added resource burden to open that opportunity up.

DR. LESLIE: Thank you, Rusty.

A comment here.

MR. BALTZER: Rod Baltzer, Waste Control Specialists. Just to clarify, the State of Texas has actually required waste acceptance criteria, incorporated those into our license. So we, as the generator, were not able to develop waste acceptance criteria. That was the state's burden for Texas, anyway. Just to note that as a little different than usual.

DR. LESLIE: Any final comments?

DR. ESH: So the next area we're going to talk about -- and I believe the last area for me is compatibility. The direction that we got is the category for the site-specific analysis and site-specific waste requirements that ensures alignment between the states and the federal government on safety fundamentals provides states with the flexibility to determine how to implement these requirements.

I felt like when we saw this part of the direction from the Commission this was, "Yes," we already hopefully are doing this. In our initial proposal and in our final proposal this was like, already stating the way that this part of the program is supposed to work. So we're

supposed to ensure that everybody is consistent on the key things and we afford some flexibility on some of the other pieces of the process.

Just some context for compatibility. Most of our states are Agreement States generated from Section 274 of the Atomic Energy Act. It was a process to promote orderly regulatory pattern and discontinuation of certain NRC authorities. Essentially identical categories were -- you know, as you move into compatibility you start getting very much in the weeds.

Essential identical categories are "A" and "B." "A" being the basic standards and related definitions. "B" -- it's direct trans-boundary implications. And then essential objective categories, which are "C," you're required to avoid conflicts, duplications or gaps; "H&S," which is Health and Safety, particular health and safety significance. And states can be more restrictive. And then there's other categories. "D," not required for compatibility or NRC cannot be relinquished for states.

But it's basically how much of a regulation NRC develops as required to be reflected in the state's representation, either identically or they have some flexibility or they don't have to have it at all. That's the layman's description of compatibility.

So we're seeking feedback on the compatibility

category for the elements of the revised rule. Now, what you had was an early representation of the rule with some proposed compatibility criteria. You obviously do not have a new draft rule with proposed compatibility criteria.

So I realize it's going to be hard for some of you to comment on these specific things. But -- because you don't know the form that the rule is going to take. But you can probably guess at some of the key issues that we've talked about here and maybe what aspects of them, if you have used on compatibility, what compatibility classes you think they should be. But basically, we want to ensure alignment between the states and the federal government on the safety fundamentals and provide flexibility where we can.

The stakeholders support was mixed. I guess that's partly due to the differing opinions about what elements of the regulation should be what category. And there was concern expressed that the compatibility designation should be neutral and not create opportunities for unfair competitive advantages, which we've heard many times in the past.

So that's kind of our 50,000-foot view of compatibility. Maybe you have some specific areas of the regulation where you think compatibility should be different classes or different categories. And we can discuss that now.

DR. LESLIE: Thanks, Dave.

Are there any comments or questions here in the room? It looks like at least one person's going to have a comment.

MR. BALTZER: Rod Baltzer, Waste Control Specialists. We do think that compatibility is important. It is kind of interesting how diverse some of the Agreement States are from what NRC has proposed. It is important for the states to have some flexibility. I mean, do they want to host site or not. But as far as going through the licensing process it would be nice to have a pretty consistent message for the public on what kind of safety standards are in place and the technical requirements that you have to meet and able to host a disposal facility.

DR. LESLIE: Thank you.

Any others?

(No response.)

DR. LESLIE: I'll turn to the phone. And especially if any of the Agreement States are on, certainly this would be a great time to provide us additional insights. But I also don't want to put you on the spot. So -- are there any comments on the phone?

THE OPERATOR: *1 to ask a question or make a comment.

(No response.)

THE OPERATOR: I'm currently -- oh. One

question just populated.

Diane D'Arrigho, your line is open.

MS. D'ARRIGHO: Thanks.

I wanted to assert that the authority of states to be more protective than the federal government is something that should be retained. There are certain things that some states have had in their removal of waste criteria; their removal waste rules/regulations were hard fought. And it would be a real shame and -- it would just be a shame if the NRC were to have strict compatibility and not allow those things to be prevailing.

DR. ESH: Thank you, Diane.

THE OPERATOR: Once again, *1.

(No response.)

THE OPERATOR: Currently no questions.

DR. LESLIE: Do we have any questions on the webinar?

VOICE: The expansion.

DR. LESLIE: Oh.

VOICE: I don't think so.

DR. LESLIE: Okay. I guess -- any other comments from the NRC staff at this time?

We're a little bit early. But I neglected to say --

VOICE: They're ready for us.

DR. LESLIE: Oh, they're ready for us?

VOICE: Yes, they are.

DR. LESLIE: Oh, okay. All right. Then I will get back to the parking lot, which I had a few things -- and I'll just give Drew and Greg a heads up.

In terms of the process, you had talked a little bit about, you know, we're out of process, what we did before. Kind of questions that I heard from Lisa, which is, "What is that process?" Maybe an explanation when you get to the end and wrap up. How -- what is a regulatory basis? Is that an internal document that is the basis for how the staff are to start to write? Or is there something else that the public's going to see before they see a draft rule. And make -- just jot that down for now and we'll come back to it.

THE OPERATOR: Excuse me, sir. There is another question.

DR. LESLIE: Okay. Well, we're happy to take that question.

John Greeves, your line is open.

MR. GREEVES: Yes, I'm here. I was hoping someone else would ask this question. But I'm a little concerned about Category "C." Is it your interpretation that could be used to not even allow a waste acceptance criteria? And I'd be concerned if that was the issue.

DR. LESLIE: You have a pensive look here.

DR. ESH: Yes.

I'm thinking, John. I don't know if I have an answer for that at this time.

MR. GREEVES: You understand the question. Literally, if it's Category "C" it could be more restrictive by just not even allowing it. So I would have a problem with that. Short of that --

DR. ESH: Well, I guess the concern would be if you had, for instance, isotopes, which are not reflected in Section 61.55 going into your -- potentially going into your disposal facility it wouldn't be more restrictive to not allow the WAC. It would possibly be less restrictive because maybe that WAC would identify limits for those isotopes that aren't in the tables. So that's why I didn't really have and I don't have an easy, quick answer for you. I think it could go either way. Whether that would be -- whether you would interpret that as being more restrictive or less restrictive.

And I think we have a process for -- I don't know if I want to put Andrew on the spot but I guess I will. We have a process for how they go about evaluating and assigning these various compatibility designations when Agreement States go to developing their regulations after we've proposed our regulations.

That's correct. Right?

MR. GREEVES: Let me just --

DR. ESH: We'll get some amplification and get back to you.

MR. CARRERA: It's Andy Carrera from NRC. Yes, we do have a process for that. The rulemaking team would propose a certain category for the amended sections we have. Then we would take it to the compatibility panel that's composed of NRC staff, as well as the Agreement States' representatives. And they will go line-by-line through each of those to [determine the] compatibility. And that gets a vote on it. The Agreement States get to vote on it, whether they agree with that or they propose new compatibility level.

Once we receive the feedback from that panel the NRC staff goes back to the writing and either decide to adopt it or reject the recommendation from the panel. If we were to reject a recommendation from the panel we have to justify why we doing that to the Commission. And the Commission will have the final word in saying what they want it to be.

DR. ESH: But then when the Agreement States develop their requirements there's something done in the process to evaluate whether that requirement is consistent with the compatibility class that it was supposed to be. Right? So to answer John's question there's a step in the process where that evaluation is done.

MR. CARRERA: I'm not familiar with that.

DR. ESH: Okay.

MR. CARRERA: I'm sorry.

DR. ESH: All right. It was a question, not a statement. So --

DR. LESLIE: Okay.

MR. GREEVES: Yes. But just to summarize, I'd be concerned with a process that would allow Agreement States to just not implement a waste acceptance criteria. That's all.

DR. ESH: I think it would depend on the compatibility designation. If it's designated in one where they don't have to adopt it then they would have the flexibility to do that. And if it's one where they have to adopt it then it would have to be there. So --

MR. GREEVES: All right. Then I would take the position it should be "A" or "B," not "C." This is the problem with Section 61.58 right now.

DR. LESLIE: Okay. Thank you very much, John.

I guess with that, we're going to go ahead and break for lunch a little early. But it also means you get a longer lunch. We were going to break from 12:30 to 1:30. And instead, we'll break now at 12:15. We'll be -- meet back right at 1:30. That should give Greg enough time to go through his presentation and get comments and questions and potentially wrap up a little bit early. But we'll go -- we're scheduled till 4:00. And we'll go as long as 4:00.

Thanks. And we'll reconvene at 1:30 central Texas time.

(Whereupon, at 12:15 p.m., the hearing was adjourned, to reconvene this same day, May 15, 2012 at 1:30 p.m.)]

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AFTERNOON SESSION

DR. LESLIE: It's getting close to the time to start up. And most people back in the room. We'll wait a few more minutes then get started here in a second.

Is the phone operator still on? And -- want to make sure the phone line are still up.

THE OPERATOR: Yes, we are still here.

DR. LESLIE: Okay. Thank you very much.

THE OPERATOR: You're welcome.

DR. LESLIE: And we will have a presentation here in a moment. And there will be time for again, public comments during Mr. Gregory Suber's presentation, as well. So we'll get started in just one or two minutes more.

(Off the record)

DR. LESLIE: Now that we've gotten all of the audience members back here -- of the huge audience here in Dallas -- we'll go ahead and get started. I hope everyone had a chance to enjoy their lunch, wherever they are, either here, D.C. or in the states.

Kind of the -- to -- before we get into the next presentation I just kind of wanted to check in with the audience and let people know where we're at. We have one more presentation that we'll be doing today of Greg Suber. He'll have points in which we'll be seeking some feedback, as well. There will be an opportunity for some final comments. And although it's not on the agenda, I think Drew has some follow-up kind of observations ala Larry Camper, although I don't know --

MR. PERSINKO: It's a closing.

DR. LESLIE: Closing comments. But also, one of the other things we'll do is I'll get Andrew up here to kind of address a little bit where we are, go back to that process and schedule and talk a little bit about the opportunities for public involvement, other than the public meeting.

So with that, I'm going to go ahead and turn it over to Greg Suber. And that's for your attention.

MR. SUBER: All right. Good afternoon.

(No response.)

MR. SUBER: Good afternoon.

(Chorus of Good afternoon.)

MR. SUBER: Okay. You're going to have to wake up for my presentation. I'm sorry David took all morning.

VOICE: Back at you.

(General laughter.)

MR. SUBER: All right. Good. As you know, my name is Gregory Suber. I am the Chief of the Low-Level Waste Branch. And the first thing I'd like to do is give out some kudos to my staff. I mean, the reason I'm here is because I have some great people working for me.

First of all, I'll give kudos to Tarsha, who's right outside. She found this place and she arranged the whole meeting. I think she did a outstanding job.

In addition to that, I'd like to acknowledge Dr. Michael Lee and Mr. Donald Lowman, who worked on a presentation for me. And also, Chris Grossman, who's done a substantial amount of work on Part 61, as well. So I give them accolades before I start my presentation.

Okay. Here's the outline for my discussion. Actually, I think you guys have gotten enough of the background so we won't bother too much with giving you more background information. But I will -- I'll start by highlighting some of the stakeholder involvement.

Some of the emerging issues that have come to the fore as a result of some of the stakeholder involvement that we've had are summarized, some of the things that we heard from you and -- at the March 2 public meeting and talk about the path forward.

Okay. With regard to stakeholder involvement, as you know we've had a substantial amount of stakeholder

involvement. So much so that some of you are becoming more like family than stakeholders. And I just wanted to tell you that Thanksgiving is at my house this year. And I'll be frying a turkey and I'm also going to try to smoke one for the first time. So you all are welcome.

We've had a lot of stakeholder involvement. We started out actually a few years ago with the DU workshops. And we had those both in Rockville and in Utah. And those were basically revolving around what we called at the time the depleted uranium rulemaking. That --

In addition to getting your comments with respect to that rulemaking we've gotten a lot of comments as we have gone forward on other Part 61 activities. Specifically, the Volume Reduction Policy Statement and the branch technical position [BTP] on concentration averaging. We've gotten public comments in a couple of venues, including comments from the ACRS [Advisory Committee on Reactor Safeguards] on the BTP. And we've received a substantial number of comments on the -- regarding Part 61 when we put the Volume Reduction Policy Statement out for public comment.

Drew has already talked about the OAS/CRCPD interactions that we had. And I just wanted to reiterate that we have engaged Agreement States and CRCPD, which also includes non-Agreement States. And we've gotten quite a few comments from them, as well.

Okay. With respect to emerging issues, one of the ones that came to the forefront was inadvertent intruder protection. Now, the concept of -- we received comments basically saying that NRC's approach to inadvertent intruder is flawed, that -- we had a lot of people who took issue with the assumption of probability of one that intrusion would actually occur and that we were in fact, sacrificing the protection of current generations at the expense of future generations. And so those are some of the comments that we received on inadvertent intrusion. And I believe we had some of that conversation here today.

The next topic that's kind of emerging was the concept of institutional control period. We've had some conversation on this today, as well. But we received comment that the 100 years institutional control period should be revisited. We've gotten a couple recommendations. Some people say 200 years would be more appropriate. Some said that 300 years would be more appropriate. In fact, we received information that some sites even have what they consider perpetual care funds so that they will be able to maintain the sites far beyond the current 100-year duration. So the 100-year duration is too short.

Another comment that we had was on the Environmental Impact Statement associated with Part 61. The Environmental Impact Statement made a number of assumptions

that were appropriate when the rule was first promulgated. But that was 35 years ago. A lot has changed. A lot of those assumptions are no longer valid. And we received comments that we need to revisit the Environmental Impact Statement and that it's time for the NRC to update it.

And also, we've received comments regarding the engineered barrier system and that the -- we don't know the performance of some of those systems and that we need to do more research as to how they're going to perform over the long term.

We also have a couple definitions and concepts that we need input in, as far as defining them. We already talked about reasonably foreseeable future. I think someone made a reference to a number and how many opinions you have. You have ten people in a room then you'll probably have 20 definitions of what reasonably foreseeable future should be. So we encourage you to give us what you think a proper definition would be for reasonably foreseeable future.

Another concept that came to the forefront as we were having our discussions and some of that which would have been discussed today is the concept of having some kind of de minimis level for Class-A, having some type of floor for Class-A and establish a level that -- I don't want to say below regulatory concern because that's a -- that's kind of like a negative term -- but having some kind of level, some kind of

cumulus level for Class-A.

And also, what was brought up was separate disposal requirements and criteria should be established for depleted uranium. And I think we heard a little bit of that today, that depleted uranium is really different in its characteristics from all other types of low-level waste and that the disposal of depleted uranium should be addressed outside of the context of the current rulemaking.

Okay. Also, we had discussions earlier but some of the things that have come-up was the compatibility category for Section 61.58 should be changed to "B" from "D." Currently in the -- in a rule as it stands now the compatibility category for 61.58 is such that states do not have to adopt it. And some of our commenters thought that it was important to have a designation that allowed the use of Section 61.58 and they recommended that we change the category from "B" -- from -- excuse me -- from "D" to "B."

And also, there was a lot of talk about the concept of grandfathering for existing sites. Existing sites were interested in knowing how is this new rule going to impact them. You know, when the rule was promulgated, when it's put into effect what kind of a -- would there be any grandfathering, will there be any clauses in the rule that would exempt older sites from some of the new regulations.

And also, we received comments about if you're

going to replace the -- if we're going to implement a WAC, a Waste Acceptance Criteria in Part 61 then could we just do away with the waste tables in Section 61.55. So that's open for discussion, as well.

Also included in the discussion for definitions and concepts was how could we address uranium and its daughter products in the waste classification tables. Right now they don't exist in the waste classification tables because of assumptions that were made when Part 61 was promulgated 35 years ago. And we've gotten comments that, "Hey, we should explicitly address uranium and its daughter products in an update of the Section 61.55 waste classification tables."

Now, we've talked a little bit about ICRP dosimetry today. And I would just like to mention that in looking at the update to ICRP one of the -- excuse me -- I'm sorry. Okay. Oh, okay. I'm sorry. In looking at ICRP dose methodology we talked about the flexibility. The ability to use the dosimetry and what the compatibility category would be for that particular part of the rule.

We also talk about expanding the classification tables to include a more comprehensive sweep of the isotopes which is kind of similar to what I talked about before. Okay.

Okay. So now I'd like to discuss just a couple of things that we heard in the March 2 meeting. One of the things that we heard dealt with the amending of Part G of the

Part 20 low-level waste manifest [rule]. And we talked about this a little bit earlier with respect to the four isotopes that we were calling the "Phantom Four."

And the one point of reference that I did want to make or clarification was that the NRC has performed a Technical Evaluation Report on the Topical Report that was produced by Vance Associates. And in that report they had a computer code that calculated concentrations for iodine and technetium so that those computations could actually be calculated as opposed to using a minimum detection limit.

And that is possibly one way that the issue of the four isotopes in Appendix G could be addressed as opposed to using the minimum detection limits to use a program similar to one that's already available to calculate those limits. So that's one approach. And that could actually address some of the concerns without expanding the current rulemaking to the Part 20 rulemaking.

The other comment that we heard was -- had to do with the greater-than-Class C -- the Department of Energy greater-than-Class C EIS and how the greater-than-Class C EIS would -- could fit or could mesh with what we're doing with respect to Part 61.

Okay. I'd also like to talk about SECY-10-0165. Now, this was the SECY where we went out and we proposed five options for revising Part 61. And we still

have on our plate the assignment to go out and get stakeholder comment about revising Part 61 past this rulemaking. Currently, we have a charge to go ahead and complete the rulemaking that's on tap. But after we finish this rulemaking we have a charge to go out and to still receive information on a more comprehensive revision of Part 61.

Now, if you look, Option 4 on the SECY-10-0165 is actually incorporated in the SRM that the Commission has proposed. And so what we would be doing is receiving your input on what other revisions or what other changes we could make to Part 61.

Okay. And finally, the path forward. As you know, we are here today to gather comments on the current Part 61 rulemaking. Specifically, that rulemaking as it was expanded by the Commission SRM. And I'd like to pull your attention to the third line. Because I think Mike Lee would probably kill me if I didn't.

What we -- what he wanted to emphasize or the point that we wanted to get across is that this is only one opportunity for you to submit comments. This meeting is being transcribed. So, of course, all the comments that you make will be available in the transcript. However, you can submit written comments to this docket number at regulations.gov. And so if you're sitting here, you hear something, you go back and you say, Hey, I wish I would have said something about

that, it's not a problem. You can go to regulations.gov and you can submit written comments.

And so right now we are receiving those comments and we are in the midst of preparing the technical basis for the rulemaking. And we owe that technical basis to the rulemaking group by the end of September. And so we would ask that, you know, you submit your comments as soon as practicable so that they could be incorporated into the technical basis. Okay?

And with that --

DR. LESLIE: All right. Thanks, Greg.

I'll open it up for questions here or comments on what Greg has presented and anything else you've thought about since you've had an hour or so to chat with folks. But -- anyway, there's at least one person lining up, running to the microphone.

MR. SUBER: All right.

MS. EDWARDS: Hopefully, not tripping. This is Lisa Edwards with Electric Power Research Institute.

Thanks for your presentation, Greg. I felt it was a really nice summary and reflective of what I have heard in the meetings, as well. I have comments in three areas. So I can kind of give you one and then sit down and let other people take a shot or however you decide you'd rather do it.

The first one is related to what I call the

Phantom Four or we refer to as the Phantom Four. These are the Part 20 Appendix G, low-level waste manifest reporting requirements. We do think that it is important to have an accurate assessment of what the hazard and the disposal environment actually is composed of or comprised of.

This manifest reporting requirement has artificially inflated the inventories as reported for disposal sites. And it has done so for several new clients of pretty high importance relative to the long-term performance objectives related to the site.

Specifically, techectium-99 and iodine- 129, both highly-mobile in water kind of effected nuclides are grossly over-reported. And based upon some of our calculations we think maybe as much as a factor of 1000. And that change can have significant impact on what the long-term performance of the site is relative to these assumptions we make when we go out many, many years.

I like the idea of opening it up.

DR. LESLIE: Is this your second one or first?

MS. EDWARDS: No. No, this is --

DR. LESLIE: Okay. Sorry.

MS. EDWARDS: -- the same one. I like the idea of opening it up to a calculation based. The problem here is the lower limit of detection is often times reported as the actual concentration. That then is multiplied by the volume.

And that's where the inventory comes from. So if the actual concentration is lower than the lower limit of detection you can see how that will grossly inflate.

Carbon-14 is another one of the four phantom nuclides. And our concern there is principally related to it does get over-reported from scaling factors. And also, in our calculations some of the early-on assumptions in terms of its mobility is overstated based -- relative to the current models and what we have. Tritium is the other Phantom Four nuclide. And it just has a 13 year half-life. So that's probably not as significant, in terms of the long-term performance.

And I'll let someone else go.

DR. LESLIE: Yes. Lisa, good.

Does the staff understand where this fits in terms of all of the ongoing things? Would this be addressed within the site-specific rulemaking or does someone at the table want to address --

MR. PERSINKO: I think Lisa's suggesting that we add it to the current site-specific rulemaking is my understanding.

MS. EDWARDS: Yes. This is an impact from Part 20 that directly impacts the site performance assessment. So addressing it in some way to give people an alternative or to alleviate this artificial -- this artifact that's being

introduced through the reporting requirements affects the performance assessment.

DR. LESLIE: Okay.

MR. PERSINKO: Let me just -- can I just ask a question on that before you sit down, Lisa? I just -- you know, there was this TER [technical evaluation report] that was written back in '95 -- August of '95 that used a computer code. And I have not read the TER, I have to say. It's a computer code called "3R STAT," which I understand put forth a method for figuring -- for calculating how much iodine-129 and technectium-99 would be in the waste. I was wondering if you had a chance to look at that.

MS. EDWARDS: Tom, have you looked at that?

DR. LESLIE: On the record.

MR. PERSINKO: I just -- if not, that's okay. I'm just -- because I was unaware of this until --

MS. EDWARDS: I have not personally --

MR. PERSINKO: -- fairly recently. But --

MS. EDWARDS: I have not personally reviewed that.

MR. PERSINKO: But I understand that may be a method that one could use for -- although it only dealt with two nuclides it may be a method then that could be used for the other ones, as well. But it's something you may want to look into if you haven't.

MR. KALINOWSKI: This is Tom Kalinowski with D.W. James Consulting. I'm familiar with the Code. It was -- it is a calculational method. Gene Vance & Associates are the ones that wrote it. It does go back and look at production mechanisms. And before I say anymore about it I guess I need to say that my company now owns that code. So I don't want to make this a sales pitch at the moment. But we -- but the fact of the matter is there is a calculational method. It has been reviewed. There is a topical report on it. And it does work.

MR. PERSINKO: Or -- it was just a thought that it might be one method of -- since we wrote a TER about it back in '95 it may be a method of addressing the concern short of including it in rulemaking.

DR. LESLIE: Okay, then.

DR. ESH: Bret, I have a follow-up.

DR. LESLIE: Sure.

DR. ESH: The factor of thousand, you said, was based on your calculations. Has there been any verification by measurement what the actual concentrations are in disposed waste?

MS. EDWARDS: I mean, I have to refer to Tom again. He was our principal investigator on that report. Not sure if there was independent validation.

MR. KALINOWSKI: Tom Kalinowski again. Could

you repeat the question?

DR. ESH: Yes. My -- Lisa, in her comments, said that the -- you estimated up to a factor of a thousand based on your calculations, I think is how she described it. And my question was has the values of these isotopes been measured in the actual disposed-of waste streams or is it just based on calculation that you're asserting that the concentrations are much lower than reported?

MR. KALINOWSKI: Well, there were a couple of things that we did as part of our research. One, we looked at the EPRI database, which contained disposal information from most of the reactors over a period of about four years. We looked at what was reported. We also had access to a number of the sites' sample records. And we were able to pick out which samples had actual values and which ones were based on LLDs [lower limits of detection]. And we also used some of the methodology from the aforementioned code to do a calculation based on production mechanisms as to what the true inventory should be.

DR. ESH: Okay.

DR. LESLIE: Thanks for that clarification.

Lisa, before you go on to your next one I'll -- there's someone else who wants a -- just to break it up here.

MR. BALTZER: Rod Baltzer, Waste Control

Specialists. Same topic. And I'm going to jump on the bandwagon with Lisa on this. We agree that there needs to be some guidance on manifest reporting of these items, particularly the iodines and the Phantom Four, I guess is what she called it.

We have -- at our site we have received MDAs[minimum detectable activities] that are on a order of five magnitude difference just depending on the lab and the customer who sends it and what their criteria are. If it isn't addressed in the disposal criteria and these rules at least maybe some guidance from the waste audits that are done for nuclear power plants by the NRC could be put out to make that more consistent across the board. Because we're getting a variety of different MDA values that are sent to us.

And since it is an important isotope, particularly us -- we've got limits in our license that are restricted by iodine, carbon and others -- it would be nice to have a consistent kind of approach that's realistic that you could achieve that is lower than what's being done right now.

DR. LESLIE: Thanks. Thank you, Rod.

Lisa, you want to move on to your second?

MS. EDWARDS: Okay. This is Lisa Edwards with EPRI again. The second item I wanted to comment on was the institutional control period. We have in previous meetings

put forth a concept of expanding the institutional control period from 100 years to 300 years. So kind of related to Bret's request for the why to be provided, EPRI will provide a written comment that will maybe do this a little more fully than I can verbally.

But kind of in a nutshell for this record, it's from the short-term perspective. The increase in the institutional control period from 100 years to 300 years dramatically impacts the intrusion scenario results. Particularly because cesium-137 has a little over 30 year half-life. You get to that ten half-life mark and you have substantially less in your inventory. Definitely impacts your intrusion scenario dose. So if you're looking to maintain your dose below the performance objectives that's important.

We could not find a strong technical basis for the 100 years, other than it seemed like a reasonable burden for society to be -- take care of this race for 100 years but not longer than that. But that's more of an opinion, I think, rather than a technical basis. And we think with the digital revolution and the improvement of record keeping and accessibility of records a technical basis would exist to go back and revisit that.

If this short-term impact in terms of the intrusion scenario was considered in light of a site-specific performance assessment the impact in terms of the

concentrations limits allowed in a particular trench could be dramatically affected by that which could potentially mean less orphan waste if the site does not have access to the higher activity disposal.

Long-term, the concept behind the 300 years kind of takes the first step of laying a foundation to consider a broader revision that would perhaps consider more international harmonization of the regulations. So when you go to 300 years you're adding an institutional control period that actually in the short term expands the controls placed on the waste and the disposal. The benefit is for a site-specific performance assessment to benefit from the short-term intruder scenario.

But in the long term that 300 years more or less encompasses or envelopes the Class-B waste. And in our work with international utilities what I see is that waste which in the U.S. we classify as either -- well, particularly Class-C waste is what most international countries classify as intermediate-level waste. Our higher-activity Class-A waste and the Class-B waste is more or less low-level waste. And what we call Class-A unstable right now or Class-A that doesn't require stabilization, the dry-active waste, is often times very low-level waste in international communities.

So in the spirit of keeping the comprehensive revision on the table, you do get short-term benefits which

is why it's appropriate consideration for the limited rulemaking, but in the long term it lays a foundation for a more in-depth revision to consider alignment with international IAEA, very low-level waste, low-level waste and intermediate-level waste types of categories.

MR. SUBER: Thank you, Lisa. Anything else? Is that --

MS. EDWARDS: Just -- well, I have one other comment. I didn't know if you had any response to that or --

MR. SUBER: Oh, a response? Well, that's good. That will particular be helpful as we move forward. And while part of it may be appropriate for consideration now, but the latter part of what you said is particularly helpful as we move forward and give the Commission information as to what a future rulemaking would look like because -- and the SECY that I was talking about, of course, international alignment was one of the categories. And so we thank you for that comment.

MS. EDWARDS: Sure.

DR. LESLIE: Go ahead, Lisa.

MS. EDWARDS: Okay. The last one is the dose conversion factors. I understand that right now applying the updated dose conversion factors or tissue weighting factors for the most recent ICRPs or more recent ICRP recommendations is not currently on the table for the Section 61.55 classification tables. And I would urge that that be

reconsidered.

First of all, these new dose conversion factors are reflective of the latest science. And it's a shame to open up a rule after 30 years and not take advantage of that updated science. This is substantially different than the whole-body methodology that is currently reflected in our rule.

Importantly, updating the dose conversion factors our research indicates that it would lead to less stranded waste. So right now there are some decommissioned sites that have waste that's being stored because they do not yet have access to Class-B/Class-C disposal. There may be people who for some period of time will not have access to Class-B/Class-C disposal.

And while everyone in this room, I'm sure, is quite hopeful that WCS stays open for the rest of our careers and beyond, there is no guarantee that any -- that that disposal site or for that matter, any disposal site would stay open always. There could be political elements in that.

The reason I say it can result in less stranded waste is that some of the tissue weighting factors increase -- so they're not conservative right now -- and some decrease. In our review the more significant decreases are related to what we call class-driving nuclides. In particular, nickel-63 and strontium-90. One goes down by a factor of seven and one goes down, I think, by a factor of 15

or something like that. Can't remember which is which right now.

But this is important because that means with the improved science when you update the calculations with these new tissue weighting factors or dose conversion factors some of the waste that's currently classified as Class-B would actually turn out to be Class-A. So decommissioned sites that have this waste that's hanging out there waiting for a disposal avenue, some of that may have an immediate disposal avenue.

In other cases for those folks who would consider blending, a large-scale blending is an option, a larger activity band of waste could be a candidate for blending again, resulting in a greater volume of the waste that we generate being in that Class-A designation, I guess, which has a less-restrictive disposal and typically, we would think long-term easier access to disposal.

David, you mentioned that because of the interrelationship between the tables and other sections of the code that it could be quite problematic or difficult or -- I think maybe you said complex -- to update the dose conversion factors or to update the institutional control period.

And I guess what I'm suggesting is not a comprehensive revision of the table which might include

things like removing or adding nuclides that don't currently exist, looking at different intrusion scenarios, et cetera, that you'd have different performance objectives or different scenarios to meet those performance objectives.

Instead, what I'm suggesting for a limited rulemaking is maintain your existing algorithm. Within that algorithm there's a term for when the intrusion occurs, which means it just defines where in that time line you pluck your data set from to determine if the performance objective is met. Keep your algorithm the same. Just pluck it at a later date.

The second is with the dose conversion factors. Again, don't change your methodology or your algorithm in terms of how you go about determining the concentration limits. Only change the terms related to the tissue weighting or the dose conversion factors. And in my opinion that could be seen as a limited rulemaking.

There was one other point that I wanted to bring out.

DR. ESH: While you'll looking I'll add I don't disagree with you that those, I think, would be things that wouldn't be too difficult if posed that way. But the problem I see is that we applied that same sort of logic to adding uranium to the tables because -- and if we were going to use the same methodology and the same calculations we could put

uranium into the same calculations and generate uranium concentrations for the table.

And that was one of the options that we proposed to the Commission back in SECY-08-147. And they said not to do it at that time. They said, Wait until you do a comprehensive revision of the waste classification system in the future to do that sort of thing.

So to me, it doesn't make sense that we would -- even though I don't think it would be that challenging to do what you're saying, it wouldn't make sense based on their past direction to change the tables because of the institutional control period or the new ICRP methodology but then not add uranium to the tables. So I think we should either do all or do none. One or the other.

MS. EDWARDS: I'm not sure I'm in a position, at least from a technical basis, to comment on that. Because we haven't done any work with the depleted uranium. What you're saying on the surface makes complete sense to me. What I'm hearing is that the staff feels somewhat restricted based upon Commission direction on whether they can consider this or not. And I guess for my part, I would like to introduce to the public record and urge for you to reconsider that.

DR. ESH: Okay.

DR. LESLIE: Okay.

MS. EDWARDS: The last point that I would make

on that is really related to are we or are we not going to do an expanded or comprehensive rulemaking, the Big C, as we referred to it earlier. I hope that we do. And I suspect it will happen someday. Whether it starts in 2014 or some other later date.

My concern is that if we keep the rulemaking that we're doing right now on limited -- where we don't include a reconsideration of the institutional control period and the dose conversion factors we're missing an opportunity to get a very large percentage of the benefit that we could get from the new science.

And if that comprehensive rulemaking doesn't take place then the limited rulemaking actually accomplishes, you know, maybe as much as -- I don't know how you quantify it -- but, you know, 70, 80 percent of what our research indicates would be justified.

And then if the comprehensive rulemaking takes place and starts in 2014, great. We just expand upon that and go the rest of the way. But if it doesn't the benefit -- we still get most of it with this limited rulemaking.

MR. SUBER: Okay.

DR. LESLIE: Yes. Lisa, that was -- I especially like how you did the third point, which is you gave all technical bases and then you gave your position. So -- which is helpful. But I would encourage you -- or that

was a complete explanation. I'm sure stuff in writing, especially on, you know, how much can be accomplished with the different things, what's different between consistency of application of methodology versus changing the methodology might help the staff as they inform the Commission. So I strongly encourage --

MR. SUBER: Great.

And, Lisa, last point actually helped me through something I was struggling with in my presentation. I had a note down here and I couldn't figure out why I had that note. And I was like, "Wait a minute, what's -- why is this note right here." But now I remember, because it was actually a question for you.

Would it be a benefit -- I know we've talked about the guidance that we -- that we talked about the guidance that we produced for the rulemaking that was released to the states and but not released to the public. Now, I'm not committing to release that guidance to the public. But that's guidance that we have now. And I think it explains a lot of what we were trying to do, especially with the ICRP dose methodology in that guidance.

Would it be a benefit if we released that publicly so that you could see how the guidance complimented what we were thinking about for the rule?

MS. EDWARDS: Yes.

(General laughter.)

MR. SUBER: Okay. Good. Well --

VOICE: When you're talking about the previous --

MR. SUBER: I'm talking about the previous guidance. I'm talking about the guidance that we completed in January, I believe it was. Yes.

Okay. Now, like I said, I'm not committing to releasing that. But at least now we can start a conversation about whether it would be easier for you guys to comment, especially since it is highly unlikely that you're going to see guidance generated from the new rule. Okay? Which I think is -- Andy Carerra's going to tell us in a few minutes. But having that guidance already available will kind of give you an idea of what the staff thought belonged in guidance and how the staff intended to implement it.

MS. EDWARDS: Well, I'll expand upon my --

Yes, this is Lisa Edwards with EPRI again. I understand much in the landscape has changed since the January direction from the Commission. But the guidance that you prepared for where you had been previous on the limited rulemaking would be helpful to us because although there are changes in the landscape, we could get a glimpse at what you were thinking and that helps inform our evaluation of what we may see in July.

And the reason that's important to us is we have a limited period of time to look at both the proposed rule language and the proposed guidance language and give you feedback. And --

VOICE: Right.

MS. EDWARDS: -- I don't have an unlimited budget. So if I have a little more time that helps me dramatically.

MR. SUBER: Okay. Great.

DR. LESLIE: Thanks.

Are there any questions or comments on the phone?

THE OPERATOR: Once again, *1 for any questions or comments that you might have.

And we do have a question from Arjun.

DR. LESLIE: Go ahead, Arjun.

DR. MAKHIJANI: Thank you, Bret. This is Arjun Makhijani from IEER.

So I understood from the comment from EPRI just now that Subpart C is not under consideration for revision at all right now? Is that right?

DR. LESLIE: Arjun, could you repeat your question?

DR. MAKHIJANI: I -- from the comment just now I am understanding that Subpart C of 10 CFR Part 61 is not under

consideration for revision. That wasn't my impression from the --

DR. LESLIE: Are you talking about the waste classification tables?

DR. MAKHIJANI: No, no. I'm talking about the dose limits, the organ doses, the guidance for the use of FGR-13 [Federal Guidance Report 13, entitled "Cancer Risk Coefficients for Environmental Exposures to Radionculides"], "reference man," all that.

VOICE: Okay. I think NRC's --

DR. LESLIE: Yes, Arjun. That is going to be changed. That was actually proposed to be changed in the status initial submission. It's going to be 25 millirem TEDE. And in that TEDE we have been allowing exemptions to use the 25 millirem TEDE dose for quite awhile. But that was going to be part of the formal change in the rule.

DR. MAKHIJANI: Well, I have a comment about that. I think that is a degraded public protection for actinides by more than an order of magnitude, including uranium. I made a comment to this effect in 2009 which -- to which I received no response and which has entirely been ignored. And also, you continue to ignore children in that you're continuing to use the "reference man."

So I think my comment would be that I would like to see the use of FGR-13 and organ doses maintained. I

especially don't like that organ doses are being dropped in the name of modernizing the science. There's nothing modern about dropping organ doses. And TEDE anyway depends, first of all, on having organ doses and weighting factors. So, you know, it's a -- TEDE is a construct; it's is the organ dose that's real, where the radionuclides actually go for internal dose. So that's the basis on which, for instance, the government's compensation program is based for nuclear weapons workers.

So I don't understand why you're dropping organ doses and not even telling the public that, for a whole class of radionuclides, not only actinides but also strontium-90, iodine-131, that you're greatly relaxing public protection requirements. Iodine-129. Now, iodine-131 wouldn't be important for waste.

I mean, I don't understand what is the basis for going to TEDE, other than relaxing the -- I mean, could somebody answer that for me? Other than relaxing? Is it not true that public protection would be relaxed for a whole class of radionuclides if we go to TEDE instead of maintain organ doses, as well? I mean, I'd at least like an answer on the record for that.

DR. ESH: Yes. Arjun, this is Dave Esh. And I'm not a health physicist and I can defer to our health physicists for a more formal answer to that if you desire it.

My --

DR. MAKHIJANI: Okay. I do.

DR. ESH: I'll give you my understanding of it. My understanding is that the TEDE approach is not ignoring the impact to organs. The impacts to organs are summed as part of that estimate that comes out of the TEDE calculation. So it's a different methodology but still including the impacts to organs without explicit limits to those organs.

Now, your issue regarding the children dose is different. And I think what we said in the past was when NRC has a policy regarding what they're doing with children doses within, I think, Part 20 --

Is that -- do you know if that's right, Drew?

Basically, when NRC establishes their policy regarding how they deal with different types of people in the potential affected population the low-level waste regulations will be done in a consistent fashion. Right now we are consistent with the way that NRC does those types of calculations throughout their programs.

DR. MAKHIJANI: Thank you, Dr. Esh. Two comments. One is, you know, if you just look up FGR-13 and do simple arithmetic you can conclude that for instance, the bone dose from uranium or thorium is greatly in excess of TEDE. TEDE not only incorporates or it depends on organ dose. It doesn't incorporate organ dose. It incorporates these

weighting factors for organs that change from time to time. Today this organ -- you know, today gonads are so many percent and tomorrow gonads are a different percent. Today breasts are a certain percent and tomorrow breasts are a different percent.

It's the organ dose that's actually for internal dose the most important scientifically valid quantity. TEDE is a derived quantity. Moreover, it is a fact that you can establish very quickly in three minutes from looking at FGR-13 that the allowable doses from a whole class of radionuclides, iodine-129, strontium-90, thorium, uranium, plutonium, neptunium, and americium would be relaxed by more than an order of magnitude if you drop organ doses.

TEDE on no account is protective of the public to the same extent. It doesn't matter that it includes weighting factors. My question was -- I would like an answer, a simple answer to the question, it is (a) would allowable doses for these radionuclides under the TEDE 25 millirem rule go up or not and (b), by how much so that the public at least knows what the NRC is doing and how under the guise of simplifying things or modernizing things the public protection is being relaxed greatly?

I mean, I think that's the whole comment about strontium-90, for example. You relax strontium 90 to TEDE and you make bone dose go away, you make bone marrow dose go away.

And in regard to children I'd like to say you are currently and continuously in violation of the executive order on children. Since the late 1990s all agencies of the government are required to recognize that children are specially affected. So it doesn't matter that other parts of the rule haven't been changed. You are changing this rule and you are, in my opinion, while changing the rule, deliberately deciding not to include children and therefore, the --

And I would like to say for the record that in my opinion -- not a lawyer, I admit -- but deliberately deciding after we have said many times that the executive order on children requires you to do this, to continually ignore it. And not even to respond to it.

So I would like a response to two things. And then, you know, I will rest on this thing. But will the allowable doses to the public from classes of radionuclides go up if organ doses are dropped; and are you in compliance with the executive order on children currently and would you be if you decided not to include children in this rule change? And I really would like an answer to this in writing.

DR. ESH: The second part of your concern regarding the children doses, I can't address. It's out of my realm of expertise. But we understand it very well. And I'm sure we will address it in -- going forward in information we produce. Especially if you make the comment to us in the

rulemaking process under the docket.

The other aspect regarding the organ doses -- and you said you wanted the answer. Well, what's going to happen? In some cases the organ doses would be higher than what you would estimate from the equivalent effect using the TEDE approach. In other cases it would be lower.

You're right. For some isotopes -- I think you noted uranium -- that's my understanding, too. But basically, the approach of the NRC has been as the health/physics community updates their models and methodology, generally given to the lag of the process with which government can keep up to speed with science, that we eventually update our requirements, processes, et cetera to be consistent with that.

So I know you have concerns about it. But I don't think those concerns necessarily should be directed at NRC when they are derived from the global health/physics community.

DR. MAKHIJANI: This is what I'm objecting to, Dr. Esh, is that they are not derived from the global health/physics community. I know what is going on in the health/physics community. I am a member of the Health/Physics Society. I do quite a lot of health/physics professionally. There is absolutely no basis to say that somehow we're modernizing the rule by dropping organ doses.

Because TEDE is dependent on, first of all, calculating organ doses. You have no TEDE if you don't have organ doses.

And then you introduce these weighting factors which have changed over the last few decades and which will probably change again. I don't know that they will, but certainly they've changed in the past. So I do not believe that this appeal -- and moreover, I think you are quite wrong that if you have a 25 millirem limit for organ doses and for effective dose equivalent that in some cases you would have better protection under TEDE. I can tell you unequivocally you would not have better protection under TEDE dropping organ doses in any scenario. None.

DR. LESLIE: Okay. Arjun, I want to thank you for your comments. One of the actions I kind of put in the parking lot is, you know, we didn't bring everyone here today in terms of the health physics. But it's something we've noted.

And the other thing I got to remind folks right now is that we're not in rulemaking. And so at this point we're trying to gain the information necessary to develop the technical basis.

I think you've articulated some things that will allow the staff to fully flesh this out in terms of when they look at the implementation of the ICRP or addressing the Commission direction these are the types of things that go

into developing what are the considerations to address the ICRP.

So I -- with that, Arjun, I -- I don't think -- they can't commit to responding to you in writing because we're not in rulemaking space. But I think you've been able to articulate fairly well some thoughts they need to address in terms of as they're thinking about this in the regulator basis as they develop that.

DR. MAKHIJANI: But the reason to get exercises -- you say the same thing again and again and you get no response and no change and there's no effort even to look up and make the least bit of effort to educate yourself. If Dr. Esh didn't understand FGR-13 he could have in the last three years looked it up and been better prepared to respond right now. I said the same things three years ago and I'm getting exactly the same response today. So it's kind of why have public comment if you don't intend to take into account or even have a technically accurate response for something that requires only ten minutes of arithmetic.

DR. ESH: I understand FGR-13 and I understand that organs are included in the TEDE calculation which you, in fact, admitted yourself after maintaining that moving away from organ doses we are not affording protection to organs anymore.

DR. MAKHIJANI: No, you are not. You

are -- it's not a question of affording protection to organs. It's a question of whether your doses -- allowable doses would go up. Please don't misstate what I sad.

DR. ESH: Well, that's fine.

DR. MAKHIJANI: I said that --

DR. ESH: You can --

DR. MAKHIJANI: -- you are relaxing protection to people in relation to a certain amount of radionuclides because the allowable doses from plutonium would go up if you dropped organ doses. That's a precise statement. You also said that TEDE would protect better in some cases but -- and not in other cases. And that's a completely wrong statement.

DR. LESLIE: Okay. Thank you. Thank you, Arjun.

DR. MAKHIJANI: Sure.

DR. LESLIE: One of the -- again, I put it on my tickler list in the parking lot to go back not only in this space but I think Dave brought up one point in terms of how we look in 10 CFR Part 20, as well. I know -- I think the staff is working on providing input on that potential comprehensive rulemaking, as well. And so I think that might be another place where the agency could consider it if that goes to rulemaking, as well.

Are there other comments on the phone?

THE OPERATOR: Not at this time, sir.

DR. LESLIE: Okay.

Any other comments here in the room?

MR. PERSINKO: Let me just say something. This is Drew Persinko. One of the bullets Greg had on his slides for emerging issues was -- that was brought up somewhere in one of the previous meetings was the need for a -- revising the Environmental Impact Statement. I was just wondering if there were any comments on that that anybody wanted to provide.

DR. LESLIE: I've not seen anything.

Dan, do you? Oh, okay. No problem. Anyway, so I think with that I'm -- we're going to give an opportunity -- oh, go to the next slide, Miguel, if you don't mind. Before we kind of wrap up the meeting I just want to give the opportunity to give the folks here in the audience and also on the phone one last time to kind of think about the totality of what they've heard today.

You know, the staff went through and we appreciate all of the input you've provided so far in the past meetings. And to the extent that you've amplified and provided a technical basis today or expanded upon your technical basis that's been, I think, helpful for the staff as they go forward.

Are there any other questions here or things that you've heard either in the morning or this afternoon that

you want to take another bite at the apple, so to speak?

(No response.)

DR. LESLIE: Okay. Are there any additional comments on the phone?

THE OPERATOR: Yes. We do have one from Mike Lee.

DR. LEE: Hi. Yes. In the spirit of kind of winding things up I just wanted to go over a couple points very briefly. First of all, I know there's been a lot of support and discussion regarding the DOE 1000-year requirement for their performance assessment. But I think we all need to be reminded of the fact DOE's managing wastes under a slightly different paradigm.

And, Linda, if you're still on the phone, you can correct perhaps when no one else can, DOE.

There are approximately 144 or 150 sites in the DOE complex. I think over 100 will be -- remain in some kind of institutional control for well beyond the foreseeable future. And I noticed that we have a provision for repeating their performance assessment or at least evaluating it periodically.

Under Part 61 regulation it's not envisioned that the site's in perpetual care or institutional control. But in looking at how we define what a time of compliance might be we need to remember, or at least a reminder, that we're

talking about two different systems. Under the Part 61 system I think it's positioned at some point the site be phased into what sites are to be past institutional control. And, you know, what happens? That remains to be seen.

The second point, I think, is that -- I think reference was made earlier that 10,000, 12,000 years ago Utah was under the sea. I don't think that's an accurate statement. I think there were some pervasive Pleistocene-age lakes around at the time but not -- it wasn't under the ocean.

As regards the 1000 calculation or 10,000 year calculation, what we haven't really talked about is the fact that in terms of geomorphic modeling and landscape evolution studies there has been work done in terms of looking at how you use numerical computer codes based on some simple physics to evaluate landscape evolution. And as we look at the 1000 year modeling proposal you need to factor that in, as well. I don't believe that we have the right people here to do that today but that's something that perhaps we can look at in the future.

Last, it was referenced to the 100 years for the institutional control requirement of Part 61. And I think if the folks go back to the Federal Register notice for the final proposed rule in 1982, there's some discussion as to why the staff -- or the Commission -- excuse me -- selected 100 years. I don't think it was necessarily capricious. I think

it was more based on an assessment of the benefit margin of extending the performance institutional requirement from 100 to 300 years. That's all I wanted to say. Thanks.

DR. LESLIE: Thank you, Mike.

Any others on the phone?

THE OPERATOR: Not at this time, sir.

DR. LESLIE: Okay. So what I've -- I'm going to ask Andrew to come to the microphone. This is right before we're going to have Drew kind of summarize some things. But I think it's important for -- you know, the Commission actually, in their recent SRM, as Drew said --

Come on up, all the way up front.

They outline four areas, stakeholder, process, you know, policy. I thought that was useful because there some comments earlier today, Well, when is the next time we're going to hear something. And, you know, Drew had made a comment about how they had done it before was slightly out of process.

I thought it was helpful to put up the slide again and have Andrew give a little explanation of what is the -- what are the next steps once he gets the input from the staff in September, having brought in all of the comments that you provided, both in these meetings and on the docket.

So, Andrew, can you --

MR. CARRERA: Thank you, Bret.

Andrew Carrera of NRC. Just right before our lunch break Drew Persinko came to ask me if I can maybe elaborate a little bit on the NRC rulemaking process -- the normal NRC rulemaking process and how the staff has gone above and beyond that process to involve stakeholder and try to get involved stakeholder earlier in the rulemaking.

I'll start with the Administrative Procedure Act, I believe, of 1946 as amended. And what this act does is that it provides a framework for federal agencies on how they should operate their day-to-day business. And among -- within this act it's also include the rulemaking process for federal agency. And all it does is that it require federal agency, you know, after they develop a proposed rule they would publish proposed rule out for public comments in certain amount of days and then come take those comments back, analyze and address those comments in the final rule. And that was the normal NRC rulemaking process, as well.

And recognize that this -- the Part 61 rulemaking, you know, it's -- it generate a lot of public interest. The Commission has directed the staff to allow the process to have an enhanced public participation future. And that's what the staff actually did with that.

In the previous iteration of this site-specific analysis rulemaking the staff has -- after we form a rulemaking working group we develop a preliminary proposed

root language. We then publish on regulation.gov to receive -- to get public comments before the working group would finalize on a draft language. So in a sense we publish a draft of a draft of the proposed rule just to make sure that we address all the issues that the stakeholder would have. And that's -- you know, a lot of you were at that public meeting.

And once we receive those comments on the draft of the draft of the proposed rule the working group went back and made limited changes to the regulatory language and submitted forward, carried that language to the Commission as a, you know, proposed rule.

Unfortunately, we received different direction since then. However, in this coming iteration the -- you know, the staff plans to go through the same process, as well, in the sense that we're going to develop a -- you know, preliminary proposed rule language and we plan to publish on regulation.gov to get public comments, as well, before we finalize the proposed language and put forward for the Commission for consideration.

And once the Commission approves that proposed language we will publish it out for the official public comment period, where we receive comments. And as you see, we are in the top bar, in the top arrow we are currently in the first arrow box, where we receive comments to develop the

technical basis. And I believe the technical basis will be somewhat finalized by September of 2012. And that's when I will take over and start the formal rulemaking process.

DR. LESLIE: So did that clarify when you might see something? Sorry. Lisa?

MS. EDWARDS: This is Lisa.

DR. LESLIE: Hold, while they confer. Okay. Go ahead, Lisa.

MS. EDWARDS: Did you say that a draft of the proposed rule would be put out or not? I couldn't --

MR. CARERRA: That's -- we haven't concrete set -- I haven't concretely set it, you know, put in the schedule format yet. But that's some of the things that I plan to do. I'm not committing to it right now. But it seems that --

MS. EDWARDS: It's a possibility.

MR. CARERRA: Yes. It's a possibility. And the Commission seems to favor, you know, get, you know, early public comments on that.

MS. EDWARDS: I hope it comes to fruition.

MR. PERSINKO: I have to say -- this is Drew Persinko. I mean, that's always a goal. Openness is always a goal of ours. But we are on a tight schedule to get this done by July. And I think what we're hearing is that we'd like to do that. I didn't -- I guess I just heard we're not

committing to it because we're under a very tight schedule to get this done. But, of course, Andrew runs the rulemaking machine over there. And so we're providing the technical basis to Andrew. But --

MR. CARERRA: Thank you for clarifying that. Almost got myself in trouble there.

DR. LESLIE: All right. Thank you, Andrew. That's helpful.

MR. CARERRA: Thank you.

DR. LESLIE: Drew, do you have some final --

MR. PERSINKO: We up to that point already?

DR. LESLIE: I think so. I've asked on the phone. I've asked here. Maybe you'll surprise with more insights.

MR. PERSINKO: I hope not. Okay. First let me start by saying I heard Bret over there mention the name Larry Camper. Just want all of you whose eyesight is maybe failing or maybe the phones aren't working too well, my name is Drew Persinko, not Larry Camper. So my closing remarks are going to be different than what you might have heard if Larry was here.

Let me just try to walk through it. You know, as I started off in my opening remarks, I said that the purpose of the meeting was to obtain feedback on Part 61. And we did. I think we had a really good discussion actually. And, you

know, one of my fears was that we would just repeat the meeting we did in Phoenix. I wanted to do more than that. I just didn't want to have another repetitive meeting here.

So we tried to bring something new to the table at this meeting that was not at the Phoenix meeting. For example, we had the crosswalk. We brought the crosswalk to the table. We had met with the Agreement States and we brought the Agreement State perspective to this meeting, which was not in Phoenix. So we also had feedback from the Phoenix meeting which we brought to here to help us start the discussion again, which was good.

Dave had brought into his discussion a period of performance. He brought some new ideas regarding international approaches and the screening approach. And we had some more specific questions regarding the Waste Acceptance Criteria. So we were trying to expand this meeting either in depth or in breadth than just -- than what we did in Phoenix. And we're going to try to do the same thing in July. Just hopefully, it won't be a repetition of this meeting. And I'll get to that in my closing remarks in a minute.

So let me try to just give a quick kind of highlight of what I think some of the big points I heard today were and if I do misstate it, please correct it.

But in the direction that we received from the

Commission, the most recent direction, the January SRM concerning the flexibility on the ICRP dose methodologies, I think we again heard that there's continued general support for this flexibility, for including this flexibility in the rule. We heard information like we support the -- using the latest science. We also heard a little bit about expanding the rule to include the -- to update the tables for the dose conversion factors.

We also had some discussion about updating the performance assessments in light of changing ICRP methodologies. And we had a discussion there about how DOE does their process for updating PAs. And the thought was we would look at that. We may be able to include it in guidance as to some guidance on how to update performance assessments in light of changing ICRP methodologies.

On the subject of the 1000 pound gorilla in the room, the compliance period and the period of performance, which is always a lively part of the meeting, what we had was a -- like I said, Dave brought some new ideas to the table, the international approach, maybe a screening approach. But I think, you know, we discussed that. But I think it also then sort of gravitated back to what's the number. And I think we again heard -- we heard -- we had -- heard support for 1000 years. I think we also heard support for 10,000 years.

We had information -- we tried to pursue why

more in this meeting than we did in previous meetings. Why? Why is that being put forward? And I think what I heard for the 10,000 years was public confidence. That was put forward as a -- as one reason for maintaining 10,000. One thousand years, the basis for that was it would be consistent with the way DOE does their approach. And a lot of the waste is DOE waste.

So we have two different time periods here put forth on the table. And it sort of parallels what we heard previously. But I think we have maybe some more meat on the bone as to why now. It doesn't answer the question. But we still have some more meat on the bones.

And I think we also heard -- well, maybe we ought to separate out depleted uranium. We heard that today.

We had a discussion about the DOE approach. 1000 years. But then also, in addition to the 1000 years compliance period we had the idea that a risk perspective was also provided to it if the dose came out to be greater than 25 millirem. And we had quite a bit of discussion about that and whether it was a requirement in DOE Order 435.1 or is it simply a DOE standard practice.

We also -- on the topic of period of performance it was put forth that we maybe should compare the disposal under Part 20 to gain insights for the period of performance. Mr. Seitz said that. We also talked about international

approaches and I think we heard, Don't just rely on numbers. And we didn't rely on numbers because there's a lot of things built into the approach in the international world that may not be so obvious at first glance. And we also heard from the public that DOE should not be disposed of in a near surface facility. We also heard that.

For the waste -- DU. What did I say?

VOICE: You said DOE.

MR. PERSINKO: Sorry about that. I didn't mean to get a laugh out of that. Sorry about that, DOE, if you're still on the phone.

DU should not be disposed of. My eyesight's not doing too good these days. DU should not be disposed of in a near-surface facility. For the Waste Acceptance Criteria we had general support again for the Waste Acceptance Criteria. And the Agreement States weighed in this time which we didn't have in Phoenix. They generally support it but as you heard, they do have some reservations about it, too, and some issues with it. So that's something that needs to be considered.

We also heard that regarding the Waste Acceptance Criteria we might want to start off with using NUREG-1854 as a good place to start. As far as compatibility is concerned, some of the things we heard were flexibility is important but we need consistency with respect to technical

standards. We also heard that the ability of states to be more restrictive should be retained, that the NRC should not require strict compatibility.

And we also heard that the classification of "C" should be retained for the WAC -- or should not -- concern about the compatibility category of "C" for a WAC and that it was put forth by one participant that the WAC should be a compatibility "A" or "B" so the states need to allow the WAC to be permitted in their states.

Some other things we heard beyond this afternoon concerning Greg's discussions, we heard some other topics in the emerging technical issues. I think we've heard some of these before. But I think this time we had a better explanation as to why this would be included and why this is being put forth. We heard about the Phantom Four radionuclides again, that this would be -- it's creating difficulties. And we suggested also -- we suggested that maybe a way to address this short of rulemaking might be to look at the TER that the staff wrote in -- back in 1995.

We heard that the institutional controls should be looked at to be extended from 100 to 300 years for various reasons that Lisa Edwards explained. We also heard that the dose conversion factors -- we should -- it was recommended that we update the waste classification tables to incorporate the latest dose conversion factors.

Let's see. And then we also committed that we would -- there was quite a bit of discussion concerning the TEDE dose versus organ dose. And there were some -- two questions put on the table by Arjun. And we will consider those questions as we develop the rule and we will respond to the questions put forward at the meeting.

We were also asked a question, "Are we or are we not going to do a more comprehensive rule?" All I can say is right now it's still on our plate. The Commission has not told us to not do it. In fact, they have told us in the latest January SRM that we should continue to pursue our efforts in SECY-10-0165. I mean, Commission could change their direction at any time they feel like. But right now the most recent direction we have as of January is that we should continue our efforts in the comprehensive rulemaking, the SECY-10-0165 area.

With respect to our path forward, I mean, we will be at some point informing the Commission one way or another about what we've heard at these meetings and the desire to include some additional information into it. But right now our direction per the January SRM is to stick with the four items that were in the SRM.

And like I said, though, that could always change. The Commission could change their direction at any point that they want to. I would say, though, that if it

wasn't included in this rulemaking and the future rule, the SECY-10-0165 comprehensive rule is going forward that those kind of issues would then be considered in the future -- in the future rule.

Let's see. The next meeting is July 19 on Part 61 revision. Our third and last meeting on the subject would be July 19 in Rockville, Maryland. We're hoping to change the format for that meeting so that it's not give us your comments on the transcript and we have that. We're hoping that we can make that into more of a round table discussion. And that's what we're pursuing right now, as trying to set up the format a little differently to have various groups represented at that -- on the round table.

But if you attend the July 19 meeting you actually get two for one. See, because it's a special that day. Because we're also planning to hold the July -- the concentration averaging BTP meeting public comments on -- to discuss the BTP on July 18. So if you come to the BTP meeting you get two for one that particular month.

And that's really all I have in the summary. That -- I was trying to take notes as to the -- what was said and then try to pick out -- sift out what the higher messages were. And that's what I came up with.

So what I'd like to do is thank everybody for attending in person and thank you for attending by phone. It

was -- I think it went well, actually with the phone and the in-person attending, as well as the phone -- the bridge line. I think that worked well. So with that I'd like to thank everybody for attending.

Well, okay. Hot news right off the press, as we speak. I wish I knew that ahead of time. More to come on the July 18 BTP meeting. We were trying to have it on July 18. What I was just told is it may not happen. And so maybe the special, the blue-eye special's off. I don't know. But that's where we are. But we definitely will have the July 19 meeting on Part 61.

So with that, I'd like to thank everybody attending in person or by phone. Thank you very much.

DR. LESLIE: And, Drew, I would like to thank the staff. I think they came fairly well prepared today. Well, and management, too. Staff and management.

And kind of one of the reminders again, from a facilitator's standpoint this was a very useful meeting. I didn't have to cry like a little boy and say, Why, why, why. People were pretty good with that.

The staff will post the transcript and a meeting summary afterwards on the low-level waste disposal site, site-specific rulemaking area. And also, just a reminder that, you know, as you go back and have heard things people can and should submit written comments to

www.regulations.gov, and if you do, to the docket number which is NRC-2011-0012. That would be greatly appreciated.

And with that, we'll close the meeting. And thank you all for your participation.

(Whereupon, at 2:50 p.m., the meeting was concluded.)