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NUCLEAR REGULATORY COMMISSION

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DISCUSSION ON PROPOSED 10 CFR PART 61 RULEMAKING

PUBLIC MEETING

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TUESDAY, APRIL 28, 2015

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ROCKVILLE, MARYLAND

The Meeting met at the Commissioners' Conference Room, One White Flint North, Rockville, Maryland, at 9:30 a.m.

PRESENT:

FRANCIS "CHIP" CAMERON, Facilitator

LARRY CAMPER, NRC/NMSS

GARY COMFORT, NMSS

DAVID ESH, NRC/NMSS

JOHN GREEVES, JTG Consulting

CHRISTOPHER GROSSMAN, NRC/NMSS

LISA LONDON, NRC Staff Counsel

THOMAS MAGETTE, PricewaterhouseCoopers

CHARLES MAGUIRE, Texas Commission of Environmental Quality

DANIEL SHRUM, EnergySolutions

JOHN TAUXE, Neptune and Company

A-G-E-N-D-A

P R O C E E D I N G S

9:31 a.m.

MR. CAMERON: Good morning, everybody, here in Rockville and on the phones, and my name is Chip Cameron and I'm going to serve as your facilitator for the meeting today, and welcome to the meeting.

I'd like to just spend a couple minutes on meeting process issues so you know what to expect today and I'd like to talk about the objectives in the meeting, the format for the meeting, some simple ground rules and just go over the speakers and agenda with you.

In terms of objectives, they're very simple. We want to make sure that the NRC staff presents clear information to you on the rulemaking process and rulemaking issues for this low-level waste rulemaking.

And secondly, I want to give the NRC an opportunity to listen to the commentary from our panel today that we have in Rockville from the audience in Rockville and for those of you on the phone and who might be sending us questions through the Web.

In terms of format, the focus is going to be at the panel that we have at the table - a panel of experts of the subject of low-level waste.

In a moment, I'm going to go and have them

introduce themselves to you and the goal for the panel is not just for them to give their perspectives on the issue but to engage in a dialogue among all of you where you give your perspective.

But we also want to hear what your thoughts are on what someone else on the panel might say. Although the focus is at the table, we're going to go out to the public periodically through the day for any questions or comments they might have.

Again, the audience we have here in Rockville, the phones, the Web, and I'll cue you in to when we are going to be going out to you.

In terms of the ground rules, I would just ask - we are going to go to the panel first so I would ask anybody who is on the phones or in the audience to just refrain from asking questions until we get to that portion of the meeting.

I would also ask that only one person at a time speak, most importantly, so we can give our full attention to whomever has the floor at the moment but also so that our stenographer can get a clean transcript, and I'll introduce her - I'll introduce her now.

We have Katie Kolodzie, our stenographer-court reporter. She'll be taking a

transcript of the meeting.

And I should just note that although this meeting is being transcribed and the transcript will be part of the record that informs this rulemaking, we're asking all commenters at today's meetings - the panel, anybody on the phones or on the Web - we're asking you to formally submit comments to the NRC and that will be done in accordance with the process that Gary Comfort will describe to you in a few minutes.

Okay. And we do - when we do get out to the phones I'm going to ask you - or in the audience I'll ask you to introduce yourself so that we have that information for the transcript.

Now, in terms of the agenda and speakers, and Steve, is this available to everybody - the agenda - who is on the phones or the Web? They can gain access to that, right?

Okay. Cool. We're going to start with Larry Camper, who is the division director of low-level waste, among other things division. He's going to give a welcome and also some background on this rulemaking.

And we'll have some time for clarifying questions after Larry's talk. We're then going to go to Gary Comfort, who's with the rulemaking branch at the NRC and Gary will describe the rulemaking process

and how you submit comments.

Again, we'll go to him for some clarifying questions. Then we're going to get to the heart of the rulemaking and we have Dave Esh and Chris Grossman of Larry's staff with us.

And if you look at their slide package, which is entitled "Overview of Proposed 10 CFR Part 61, Technical Requirements and Guidance," on the overview slide you're going to see a number of rule topics.

Now, what's going to happen is either Dave or Chris will give a five- or six-slide overview of that particular topic. For example, the first topic is analyses time frames.

We're then going to go to discussion from the panel and we'll go out to the public for any comments that they have and then we'll move through item by item.

We break at 11:30 for an hour and if we could get through the first three topics - through intruder assessment by 11:30 we'll be doing well.

And with that, I would just thank you for being here. Before we go to Larry, let's go to introductions from the panel and we'll start with Tom Magette.

And if you could just tell us what your expectations - besides introducing yourself what's

your expectations for the meeting and/or the rulemaking might be and if there's a particular site that you have an interest - the low-level waste site - please mention that also.

So, Tom, let's go to you and then we'll proceed down.

MR. MAGETTE: Thanks, Chip. My name is Tom Magette. I'm with PriceWaterhouseCoopers. I'm the managing director of the nuclear offering and the capital projects and infrastructure group.

Most of my interest is around some of the newer concepts. As everybody here I'm sure knows, we've had two or three versions of preliminary ruling, which that we've had an opportunity to review and so I think the process heretofore has been really good for the public to be able to have input and influence how the rule has taken shape so that in terms of a proposed rule I think what we have already reflects a lot of that input, which I think is a good thing.

But still, of course, there are new concepts in here that came from the most recent SRM. So most of my comments and questions go around that. Obviously, we're still in the formulation stage of making comments. It's a 120-day comment period.

So a lot of what we're trying to do is

understand what staff has in mind so that can help shape our comments on the rule.

MR. CAMERON: Okay. Thank you. Dan?

MR. SHRUM: Dan Shrum with Energy Solutions. I am in charge of a regulatory affairs group. My expectation is to understand from NRC how they expect us to implement some of the rules that is being written.

This is - we know how to implement the existing Part 61. We think we have done - not just my organization but others have done a good job of implementing what we have now as Part 61.

But what will it be like and what will be the pitfalls for some of the changes and some of the new terms, some of the new expectations and what will that really look like.

And as the NRC wrote it what were their - what were they envisioning and how would that look when you actually go to implement it - implement the new rule.

MR. CAMERON: Thanks, Dan. John?

MR. TAUXE: John Tauxe with Neptune and Company. I'm an environmental engineer and principal with Neptune.

I appreciate the invite to be here and

comment on this. Part 61 is integral to a lot of the work we do - that I do doing performance assessments and my expectations for the meeting are to have a great dialogue here to bring up some of the perhaps trickier issues that are just inherent in this rule and its application and its implementation.

And I guess what I can bring to the table is having worked through this several times on different sites I have experience with modeling a number of different low-level waste sites both within NRC regulated, agreement state-regulated and DOE-regulated ones.

And so from my perspective I get into some of the details of the difficulty of how to apply this to actually building models and making decisions and that sort of thing. So looking forward to getting into that.

MR. CAMERON: Thanks, John. And Charles?

MR. MAGUIRE: I'm Charles Maguire and the director of the radioactive materials division at the Texas Commission on Environmental Quality.

I'm honored to participate in the panel this morning. This is very important work. First and foremost, I want to say to NRC how much I appreciate the way that they have chosen to work with us as an

agreement state.

They actually refer to me as their colleague and, as you can imagine, as a state regulator how pleasant that is to be able to work with a federal agency that considers you their colleague.

The other thing is I really want to compliment the Nuclear Regulatory Commission for its efforts to build consensus around both the policy and the scientific aspects of Part 61.

It's complex. It's important. It's a - it's something that will, I think, greatly impact the way we regulate low-level radioactive waste disposal sites.

And the - I remember three years ago yesterday when the executive management of my agency moved me from the water quality division to the radioactive materials division and one of the first things I was briefed on by my technical folks is Part 61, which was emerging, and it's been part of my management of the division.

We are very supportive of what is moving forward in Part 61 and so for today mostly what I'm interested in is their discussion as we further build consensus both from a policy and scientific standpoint.

MR. CAMERON: Thank you. Thank you,

Charles. John?

MR. GREEVES: Can you hear me? My name is John Greeves and I've spent many years in these environments - 30 years. Ten years ago I was able to retire from Nuclear Regulatory Commission.

You all can look forward to that someday, and so during those years here at NRC I had a role as an engineer manager supervisor in implementing Part 61.

I learned a lot and I would also say since the last decade that I moved on and have been consulting for industry and government I have learned a lot from a different perspective. So it's been a rich experience and thank you for having me part of the panel.

I think I have something to offer, and my observation is I think the proposed rule has some really good things that are in it and I, as you will hear by the discussion, I very much support those clarifications.

Frankly, I'm still reviewing the ruling. This is a massive amount of material so I'm bringing my preliminary thoughts to this meeting. I haven't been able to dig into the guidance document. My time is limited.

I'm an individual consultant so I don't

have a team of people backing me up. So anyhow, but my expectations are I'm going to do some active listening and engagement and I'll just sort of leave with having implemented regulatory activities including Part 61.

Having been on the outside and implemented them for various agencies that, to me, a rule should obviously provide adequate protection. I think Part 61 does it now, by the way.

It's been a work horse for a long time. Used properly, like the state of Texas, it works. Did it need some update? Yes. But I subscribe to a relatively simple rulemaking format, one that is clear and understandable and implementable.

So you'll see, I think, during the discussion that that's where I'm coming from. I think there's a lot of good in here.

There are some things I'm concerned about and I want to actively listen to other folks' ideas on that, and we'll all do a service come July and provide coherent comments. So thank you for inviting me.

MR. CAMERON: Okay. Thank you. Thank you, John.

Thank you all and let's go to Larry Camper.

MR. CAMPER: Thank you, Chair.

Good morning, everyone. And first, let me welcome everyone and all those online as well. We do appreciate your listening in to this first of our public meetings on the revision to Part 61.

I want to thank the panelists. Across the table I see colleagues and friends and a tremendous wealth of experience and expertise and so the panel discussion today will be of great value to what we are trying to do and I think it will be particularly valuable given that in our subsequent public meetings we don't intend to have a panel.

Rather, we'll go and communicate with members of the public and solicit input. So the dialogue that we have today helps to frame the issues and stimulate the staff for what kinds of questions we might want to ask of members of the public in the future. So very value added.

I also want to thank all those listening in online. I hope that there's a number of members of the public out there, members from agreement states, because we're going to cover a lot of things today that are very important.

So welcome and let's move ahead. Next slide. Let me say from the outset there's a couple

slides that I inserted into my package in the eleventh hour this morning - it's not in your package - that we will make the complete set available.

There was one or two slides I wanted to add to make sure we go back to the beginning. Our objective today, of course, is to discuss the proposed revisions to the commission's low-level radioactive waste disposal regulations.

We want to encourage the submittal of comments. We're going to have a lot of dialogue today.

The meeting is being transcribed but, of course, we do need formal written comments to be considered by the staff as we proceed down the road on the proposed rule language and then to answer any clarifying questions that you might have.

We have a 120-day comment period. We're having a total of, I think, five public meetings during this 120 days. So the staff is moving with some fervor to get a lot of input so I do encourage everyone to comment. Next slide, please.

So why are we doing this rulemaking? Let me say, first, something that I - I want to pick up on something that John Greeves said.

I don't think that any member of the public should feel that because this agency, our agency, is

doing this rulemaking that the regulations that are in place they aren't adequate to protect public health and safety, because they are.

The four sites that are operated commercially today by agreement states are all functioning very safely, very effectively and they're doing a very good job.

But the fact of the matter is we have certain developments that have come along that cause us to believe that a rulemaking is in order.

Another point to be made about the safety of the sites today it is also important for the members of the public to realize that the actual operations that take place today at all four of the commercial low-level disposal sites are substantially greater than were envisioned in the Part 61 rulemaking.

So considerable conservatism and safety have been added to the practice, if you will. So nothing about this rulemaking should imply inadequacy in terms of protecting public health and safety today.

But the reason we are doing this rulemaking is to require low-level radioactive waste, LLW, disposal licensees or license applicants to ensure that LLW streams are significantly different from those LLW streams considered during the existing Part 61 can be

disposed of safely.

Now, next slide. It is true and accurate that this all started around the disposal of large quantities of depleted uranium, and this is a slide that you do not have in your package, and I do apologize for that but we'll make it available to you.

And it actually goes back to the initial direction from the commission to the staff in 2005 in a document identified as CLI-05-20 Memorandum and Order. And it is an instruction that came to the staff as a result of the Louisiana Energy Services Proceedings - the adjudicatory proceedings that took place.

And the commission in this direction, which is very long, makes a statement, among other things, and perhaps I should read it because of those who can't see it.

The commission is aware that in creating the 6155 waste classification tables the NRC considered depleted uranium but apparently examined only specific kinds of depleted uranium waste streams, "the types of uranium varying waste being typically disposed of by an NRC licensee" at the time.

The NRC concluded that those waste streams posed an insufficient hazard to warrant establishing

a concentration limit for depleted uranium in the waste classification tables.

Perhaps the same conclusion would have been drawn had the Part 61 rulemaking explicitly analyzed the uranium enrichment waste stream.

Now, the reason that I feel it's important, especially for members of the public, to put this matter in context is because the commission, as you will hear during my commentary, has charged the staff with calling out certain issues, gathering comments about certain issues.

So I think it's important for us all to go back to the beginning of the direction that the staff received. I'll share with you why the staff handled the matter the way that we did and all this is designed to facilitate that comment gathering that I'll point out specifically along the way.

Next slide. The words continue from CLI-05-20 memorandum in order. But as part of 61 - Part 61's FEIS - that's final environmental impact statement - indicates, no such analyses was done. Therefore, the commission directs the NRC staff outside of this adjudication to consider whether the quantities of depleted uranium at issue in the waste stream from uranium enrichment facilities warrant amending Section

61.55(a)(6) or the Section 6155(a) waste classification tables.

So this was the starting point because remember that the LES proceeding was about a uranium enrichment facility. But as you will see, over time the staff realized that the issue was bigger than and more complicated than only the possibility of large quantities of depleted uranium.

Next slide, please. This slide is in your pack. So this slide picks up on SECY-08-0147 and this is some dialogue from the commission back to the staff after we have prepared the cited SECY paper 08-0147.

And the commission said to the staff previously in the adjudicatory proceedings for the Louisiana Enrichment Services - LES - license application the commission determined that depleted uranium was properly classified as low-level radioactive waste.

Although the commission stated that a literal reading of 10 CFR 61.55(a)(6) would render depleted uranium Class A waste, and that hasn't changed and nothing in this rulemaking changes that or proposes to change that, it recognized that the analysis supporting this section did not address the disposal of large quantities of depleted uranium.

Outside of the adjudication the staff was tasked to evaluate this complex issue and provide more specific recommendations to the commission.

The staff, when assigned the task that I've already cited, undertook an analysis and what the staff did in this analysis was to determine whether or not depleted uranium was suitable for near surface disposal.

And the reason that we started there is because one of the contentions filed during the LES proceeding indicated that it was not suitable for near surface disposal.

The staff was aware in 1980 that the Department of Energy had undertaken a programmatic environmental impact statement that evaluated four forms of depleted uranium in terms of its suitability for near surface disposal and determined in that programmatic environmental impact statement that it was suitable for near surface disposal.

So the challenge the staff took on then is or is it not suitable for near surface disposal.

We determined that it was, albeit under certain conditions. And when we communicated with the commission in SECY 08-0147 we provided that analysis and we made certain recommendations.

Next slide. There were four options in the paper. Option two and option four ultimately came to bear as directed by the commission and what you see specifically here is direction given to the staff by the commission in the SRM - the staff requirements memorandum - in 2009 that was associated with the paper 08-0147 that the staff prepared during '08, of course.

And the two tasks that the commission gave the staff at that time was to specify a requirement for a site-specific analysis, technical parameters, i.e., new definitions and performance period to support such analysis and develop a guidance document. That was option two in our paper.

And then the other direction from the commission, which was a variation of option four in that paper, said that in a future budget request the staff interpreted that to mean that the commission wanted us to pursue that matter.

The staff should propose the necessary resources for a comprehensive revision to risk inform the Part 61 waste classification framework with conforming changes to the regulations as needed using updated assumptions and referencing the latest ICRP methodology. This effort should explicitly address the waste classification of depleted uranium.

That assignment remains with the staff to address. However, as you will see, that second assignment was modified by the commission along the way.

Now, the reason I think it's important, again, to point all this out is to put a context around certain issues that the commission wants us to ask the public to comment upon.

And I know that, for example, the panel members here are acutely aware of all this but some members of the public might not be quite this aware, and if the public is going to comment on it they need to have the complete picture to understand and to then prepare their comments accordingly.

Next slide. Then the commission provided the staff with additional direction. It is fair to say that our commission has had a great deal of interest in this rulemaking and in this issue.

Each of the commissioners along the way have expressed a great deal of interest and it's very important to them and thus we got a lot of direction from the commission, probably more so than we typically get in a rulemaking.

But that's okay. The staff has a good understanding of what the commission wants us to do and

that's the way it should be.

So just prior to the staff providing its proposed rule to the commission, you might recall that the staff had put out two versions of the staff's language previously to gather comments and have public meetings.

But just before we provided the rule to the commission we got specific direction from the commission as cited in SRM-COMWDM-11002 and COMGEA-11-002 in 2012.

This came from Commissioner Magwood and Commissioner Apostolakis at the time. They led the way in creating this SRM which, of course, was ultimately vetted by the entire commission.

But in that direction the commission said to the staff provide flexibility to use current International Commission on Radiological Protection - ICRP - dose methodologies.

Recall that Part 61 is based on ICRP II and so the commission, clearly, wanted to see more current ICRP be available to licensees. Use a two-tiered approach of performance - tier one, compliance period covering a reasonably foreseeable future; tier two, a longer period based on site characteristics and peak dose to a designated receptor that is not a priori;

number three, flexibility to establish site specific waste acceptance criteria based on performance and intruder assessments; and number four, to balance federal-state alignment and flexibility.

Next slide. From that same SRM the commission provided some additional direction that said that these changes considered as part of the current rulemaking should be limited to revisions to address the four issues identified - the four that I just cited.

The staff should separate from any actions resulting from this SRM and continue to engage stakeholders to pursue the possibility of other risk-informed revisions to Part 61 as outlined in SECY 10-0165.

And to refresh everyone's memory, that is the SECY that the staff prepared that laid out a number of options to be considered for major revisions including the so-called comprehensive revision to Part 61.

So there's several moving parts going on simultaneously. Next slide. In that same SRM the commission said recognizing that the path forward on revisions on the issues outlined in SECY 10-0165 dependent upon the final content of the limited

rulemaking the notation vote paper providing the staff's recommendations on which if any of the risk-informed revisions in 10-0165 should be implemented should be submitted to the commission after completion of this rulemaking.

The commission did want anything to slow down or compromise completion of this rulemaking in a timely manner. Therefore, the staff was to address that issue after the limited rulemaking.

Next slide. Along the way, the staff, while working on 10-0165, gathered a lot of comments from members of the public, the industry, as to whether or not there was really any need to proceed with a comprehensive rulemaking as articulated by the staff in 10-0165.

We concluded that there was not a need and we communicated that fact to the commission. The commission agreed and in an SRM associated with 13-0001 in 2013 the staff should end further efforts associated with SECY 10-0165 - the staff's approach for comprehensive rulemaking to Part 61. So the staff truncated those initiatives.

Next slide, please. Now, this particular direction is very important because in addition to adding context it specifically will point out something

that the commission has asked the staff to gather comments about, and that is why I take the time to go through this context so that members of the public specifically know what the commission has directed the staff to ask for comments about. Comments today will be greatly appreciated as dialogue.

Written comments, obviously will be needed from members of the panel or members of the public or members of industry.

And the commission said the following: After the limited rulemaking was complete - that's this rulemaking - the staff should provide a commissioner's assistant note to the commission on the second rulemaking effort.

The second rulemaking effort would be the one that was earlier in the SRM 08-0147. Okay. The commission's assistant note should outline the objectives and time line for developing the regulatory basis of the second rulemaking in consideration of the outcome of the near term limited rulemaking that will precede it - this rulemaking.

The commission assistant's note to the commission should identify the specific comments that have been received on the need for a second rulemaking and clearly articulate the basis in accepting or

dismissing those comments.

Stating that another way, given that the commission has decided to proceed with the rulemaking that would require a site-specific performance assessment that would address the disposal of large quantities of depleted uranium and other unanalyzed waste streams, is there an efficacy for conducting a second rulemaking?

The commission would like to hear about that specifically and comments in that regard would be greatly appreciated.

Next slide. In the direction that was provided to the commission in a SECY - an SRM for SECY 13-0075, which was the SECY that the staff used to provide the proposed rule to the commission, the commission came back with certain direction and, again, this is something the commission has specifically asked the staff to get comments on, the proposed rule should be published with a compatibility category B applied to the most significant provisions of the revised rule including the compliance period, the protective assurance period and its analytical threshold and the waste acceptance criteria.

The commission wants to know if that should be compatibility B. Compatibility is always a

sensitive issue for the agreement states.

Compatibility B requires a level of exactness that is consistent with commission verbiage and our regulations and oftentimes the states in this case where the four sites are operated have some different views about that. So the commission wants to hear about that.

Realistic intruder scenarios based on expected activities on and around the disposal site at the time of closure should be used. Licensing decisions are to be based on a defense in depth - DID protections - for example, siting, waste forums and performance assessment - PA - goals and insights. The combination of DID - defense in depth - and performance assessment is the safety case.

The safety case is a well established nomenclature in term in the IAEA - the International Atomic Energy Agency - language. It's a new term for us but as a practical matter we've always been doing a safety case.

But the commission specifically said that DID plus PA equals safety case - and Dave Esh and Chris will talk more about that - and conduct a thorough review of the guidance with the low-level waste community.

Next slide. All right. So that's context about the background of commission direction and, again, the purpose was so that everyone including those listening in would know specifically what the commission wants to hear more about.

Now, in Part 61 that is in place today, has been in place since 1982, in 61.1 you'll find some language as to how the commission at that time chose to impose or direct involvement by the agreement states at the operating facilities around the Part 61 that was created at that time.

Department language in this paragraph, in 61.1(a), says the following: Applicability of the requirements in this part to commission licenses for waste disposal facilities in effect on the effective date of this rule will be determined on a case by case basis and implemented through terms and conditions of the license or by orders issued by the commission.

That specific language was included in 61.1(a) as a result of comments that were gathered during the comment-gathering period leading up to the implementation of the rule and as a result of some of those comments this particular language became part of Part 61.

And basically what those comments had

asked for, and this is discussed in the statements of consideration, is some flexibility for the agreement states in implementing this rule.

As it turns out, all of the three states at the time, because the site in Texas came, obviously, much later, adopted Part 61 by 1988.

They adopted Part 61 essentially in whole cloth with a few exceptions, but essentially in whole cloth. So this is how the commission handled imposing, if you will, the requirements of Part 61 on the agreement states that had the operating sites at that time.

Now, next slide. By contrast, today what the commission has directed as and the question is who would this action affect, and what the commission has directed the staff to do is to have this proposed rule affect existing and future low-level radioactive waste disposal facilities that are regulated by the NRC or the agreement states.

Why? Why the difference? That's a fair question. And the difference goes something like this. Today, we have an established regulatory infrastructure in Part 61 that has been adopted by all of the affected states - all four states that have operating facilities.

The essence of the issue today is different than it was then because now what this is about is requiring consideration and examination and regulatory oversight for unanalyzed waste streams as compared to what was evaluated at the time Part 61 went into effect.

That is the reason for the difference. However, the staff and the commission is aware that there may be sensitivity around this particular approach and we encourage any of the agreement states or members of the public to comment upon this approach that the staff and the commission is undertaking in this rulemaking because we know it's an important issue.

We are acutely aware at the moment that all four of the operating sites exist within agreement states and so their views around this particular approach would be great appreciated and welcome.

Next slide. So in some then the rationale for the current rulemaking is the following and this is, really, the essence of the issue. First of all, it's about depleted uranium, especially from enrichment facilities.

When we did our analysis we realized that at the time it was on the order of 700,000 metric tons of depleted uranium on the pads at Paducah and Portsmouth, and then if one considered the potential

for additional depleted uranium coming from enrichment facilities we could go somewhere north of 1 million metric tons of depleted uranium.

Low-level waste from DOE disposal operations - there is considerably more and different weights than was envisioned for disposal by the Department of Energy than was considered at the time of Part 61.

Waste forms and volumes have emerged that weren't evaluated at the time Part 61 was developed. Blended low-level waste at quantities greater than were assumed at the time Part 61 was created and then new technologies might generate unexpected low-level waste streams such as, for example, reprocessing.

So the staff in developing this rulemaking tried to put in place an overarching programmatic assessment approach that could address any waste stream regardless of what you call it or how you classify it.

Next slide. This is the first of several public meetings. We have - our next meeting is in Austin, Texas on May the 12th. Obviously, the WCS sites is in Texas.

On June the 2nd we will be in Columbia, South Carolina. Obviously, the Barnwell site is in South Carolina. We have a meeting on June 9th in

Richland, Washington because of the site based in Washington and then last but not least we have a meeting on June 10th in Salt Lake City because that is were the site is located at Clive.

Those meetings will take place between 6:00 and 9:00 p.m. in the evening and specific locations are still being developed. So I beg your indulgence for being wordy and for members of the public listening in.

But, again, I do think it's important if you're going to provide comments, especially those who don't follow this every day like all of us do it's terribly important to have that context and we do welcome as many comments as can be provided we look forward to our discussion today and, again, thank the panelists, thank all of you in the audience and thanks to those listening in. Thank you.

MR. CAMERON: Okay. Thanks, Larry. That was a real useful tour de force on history and you raised a couple of issues that I'm sure the panel would like to discuss. Is that not coming through?

How's this, better? All right. Thank you.

A couple of what I'll call process issues that are in addition to all the technical topics that

Dave Esh and Chris Grossman have the need for the second rulemaking compatibility level.

So we'll get to those before the day is over. I want to give the panel an opportunity to ask Larry clarifying questions. This is not the time for discussion but let's make sure that you understand what he was saying and we'll test out the phone system while we're at it in a minute.

Any clarifying questions from those of you here at the table? John, go ahead and then we'll go to the second John.

MR. GREEVES: Yeah, I'm not sure I'm going to get an answer but you went into a topic that I'm in interested in. You pointedly showed 61.1(a) and I think the states need to focus on what that says and what the impact of a new rule would be on them.

I guess my question is it's in this rule. It's not marked out. It says applicability of the requirements in this part in effect on the effective date of this rule.

So does that paragraph state - it's not marked up.

MR. CAMPER: What's the last part?

MR. GREEVES: That sentence is in the rule that you're proposing to keep. So I'm not a lawyer but

to me what that says is the applicability of this new rule on the effective date will be determined on a case by case basis, which I'm happy with. If -

MR. CAMPER: You're referring to the original rule?

MR. GREEVES: Well -

MR. CAMPER: Those are the original rules.

MR. GREEVES: It's also the proposed rule. Am I saying this right? Do people understand what I'm saying?

MR. CAMPER: No, it does not say that in the proposal. The distinction that I drew, John, was -

MR. GREEVES: Maybe I -

MR. CAMPER: Here's the distinction. In 1982 when Part 61 became effective the language that you see there on that slide is currently set forth in 61.1(a) and the applicable part said that applicability of the requirements in this part to commission the life of this waste disposal facility is in effect on the effective date of this rule.

That then will be determined on a case by case basis and implemented through terms and conditions of the license or by orders issued by the commission. That's at the time the rule went into effect in 1982.

Now, the difference is - the difference is today this rule, the one that we're discussing, would affect existing and future low-level rad waste disposal facilities that are regulated by the NRC integrated states at the time the rule becomes effective - this rule.

There's a difference there, and as I said the reason for the difference is is that today what's remarkably different is we are requiring the existing agreement states that have this to require a site-specific performance assessment to analyze unanalyzed waste streams that weren't considered at the time Part 61 was put into place.

So today we have an established regulatory infrastructure that's been adopted by all four of the states that have commercial sites and what the commission is now asking them to do is take into consideration all the requirements in this rule, which basically is getting at analyzing unanalyzed waste stream.

MR. CAMERON: And just to make sure -

MR. GREEVES: I think we're talking past each other.

MR. CAMERON: - is what John Greeves read is applicable to the existing rule but not to this rule.

Is that correct?

MR. GREEVES: I think that's what he's trying to say.

MR. CAMERON: Yeah, that's what I heard.

MR. CAMPER: What I'm trying to say is - what I'm saying is - I don't know what he's reading it from. What I'm saying is I'm reading the language that was put into Part 61 at the time, which some - there have been some conversations where certain individuals have interpreted the language that was put into 61.1(a) as grandfathering.

It was not grandfathering. It was providing flexibility for the then-operating sites to bring to bear their regulations. They, in turn, all chose to adopt Part 61.

What's different today is the commission believes that now that we have an established regulatory infrastructure and what this is all about is really evaluating the five items that I cited in that one slide it's appropriate to impose those requirements on the agreement states now as part of this rulemaking and now provide the same type of flexibility that was provided when Part 61 went into effect in 1982.

MR. CAMERON: Okay. And Staff Counsel, Lisa London has indicted to me that Larry's

characterization is correct. And if we need to put a further gloss on that later, we'll do that.

John? John Tauxe?

MR. TAUXE: John Tauxe. Well, I wasn't going to ask about that, but now I have a particular question. Where it says on the effective date of this Rule, originally that was for the earlier Part 61.

MR. CAMPER: Are you referring to the current Rule or the original?

MR. TAUXE: Well they both have that language. I mean that language is not changed.

So when it says the effective date of this Rule, does that now in the new version refer to the effective date of the new version? Or is it still the effective date of the original version?

MR. CAMPER: That's the date of the new version. The version of the Rule that's under consideration.

MR. TAUXE: Okay. Okay.

MR. CAMPER: And bear in mind by the way, when this --

MR. TAUXE: So it's interesting. So the language hasn't changed, but the date then changes.

MR. CAMPER: Well, of course.

MR. TAUXE: It's referring to this Rule

meaning --

MR. CAMPER: Oh, of course.

MR. TAUXE: It's own, itself.

MR. CAMPER: Are you reading from the proposed Rule?

MR. TAUXE: The proposed Rule and the existing Rule are the same. It's the same.

MR. CAMPER: Well --

MR. TAUXE: But instead it says the date of this Rule. And that's not --

MR. CAMPER: They're not quite the same if you read on. You don't have --

MR. CAMERON: We do need a red line strikeout for it.

MR. TAUXE: Well, if the red line strikeout is accurate, then there's no change there, so. Okay, this may be -- okay, it's just the last part of the 60 --

MR. CAMERON: Let's get --

MR. TAUXE: But we can get to that in not matter --

MR. CAMERON: Well, let's get a clarification from Lisa right now so that we end the confusion. Lisa?

MS. LONDON: I don't know that I'll end the

confusion. I just did want to add a note that 61, that sentence from 61.1 is not being changed.

You're correct. You made a note that it remains the same. What I think Larry is pointing out is that that was a part of the original rulemaking. And it was intended to address comments received as a part of the original rulemaking.

So the intent behind that particular sentence is addressing the circumstances that were occurring in 1982. It is not intending to apply to this new rulemaking.

But it's certainly a -- I think you're raising an excellent point. And you should make the comment because perhaps it's something the Commission should consider.

MR. CAMERON: Okay. I think that that is clear. But we'll go back to John Greeves in a minute. But John, if you want to ask your question. And then we'll go to Charles.

MR. TAUXE: Yes, so the other question I had was, although you're focused on these specific areas, DU and that sort of thing, and flexibility. Are you interested in comments on other areas as well?

It seems that there's an opportunity to make other changes to Part 61 that might be useful even

though they are not driven by those particular topics.

MR. CAMPER: I'm sorry, what's your question? I was reading.

MR. TAUXE: Okay, so you identified the particular topics that were of interest that were driving the rule change here.

MR. CAMPER: Yes.

MR. TAUXE: Are you also interested since there's the opportunity here to fix other parts of 61, or modify other parts of 61, I don't mean to say fix it. Are you also interested in feedback on other parts of 61 that could be modified to improve it?

MR. CAMPER: We're always interested in observations about things that might be changed. But the Commission has to write today limited rulemaking.

And they've been very explicit in the direction to us to do a limited rulemaking. And a limited rulemaking focuses around this requirement to do a site specific performance assessment.

So, but for other things, I mean, that's certainly -- we'll certainly entertain them and listen to them and ponder. But that's the Commission direction.

MR. CAMERON: And you'll note, on Dave and Chris' slides, their overview, the last topic is other.

So, when we get there, we can see what else you want to offer.

Charles first and then we'll go to John to see if there's anymore, and Dan. Go ahead Charles.

MR. MAGUIRE: Yes, I think we've already demonstrated the importance of what we're here to do today. And that is to focus on those areas where the Commission is really seeking comments from us.

I appreciate having that clarified for me. There's a lot with Part 61 that could be talked about. I think it's important to understand here, thank you, Larry for bringing us to that understanding.

There are some specific places the Commission is asking that we provide them comments on. And I do think that at least for safe nexus will help us focus on what we need to be doing. Thank you.

MR. CAMERON: Okay. Let's go to Dan. We're going to come back to you John. But let's go to Dan.

MR. SHRUM: Two very specific questions for you Larry, in your slide 10.

MR. CAMPER: Sure.

MR. SHRUM: SRM-13-0001, what are the possible -- you asked us to comment. We will definitely comment.

This is the second time I've heard you say that. But we planned on commenting on the need for the second rulemaking.

But what are the possible outcomes? Or can you -- because to me this reads that you have to do a second rulemaking.

MR. CAMPER: Well, the Commission has given us several pieces of direction around this topic. The first part that came out of the SRM for 08 at 0147 when it told the staff that that future budget, blah, blah, blah, do that.

They subsequently then modified that along the way. And you see the most recent modification, the CA note to the Commission should identify the specific comments that have been received on the need for a second rulemaking. And clearly articulate the basis.

So, we interpret that direction change along the way to imply that the Commission is asking itself as to whether or not the original assignment to proceed with the second rulemaking is still warranted in view of the current rulemaking that is ongoing.

And I -- my view that the reason that the Commission has done that is because the Commission has now had a chance to examine the site specific performance assessment, which I would suggest is rather

comprehensive in nature.

And is asking the staff to gather comments as to whether or not a second rulemaking to determine specifically the classification of depleted uranium is necessary.

MR. SHRUM: Yes.

MR. CAMPER: Because the approach as I said, that the staff has used in our undertaking is regardless of what you call it, regardless of what class of waste it is, or what might emerge, the idea that a cite specific performance assessment for a specific site, will determine what, how much and in what form and quantity, et cetera, can be disposed of at a given site.

And so the Commission seems to be saying to the staff, gather more information about the efficacy for a second rulemaking.

MR. SHRUM: Okay.

MR. CAMPER: Is that clear?

MR. SHRUM: I had missed the word need. Earlier part at --

MR. CAMPER: Yes, need is in their language, yes.

MR. SHRUM: The need in there, okay. And the second question on 13, the proposed rule would

affect existing in the future LLRW disposal facilities that are regulated by the NRC or an Agreement State.

And you had mentioned the unanalyzed waste streams and we'll just talk to you because that's what this tends to go to. As I recall, depleted uranium was analyzed. A deminimis standard was developed and it didn't make it into the final rule.

MR. CAMPER: Uranium was analyzed. Albeit in very small quantities. I don't recall the exact numbers, but it was very small.

There was in the draft a value in the table for uranium that did not make it into the final version of the rule. And the reason for that, as best we can ascertain by doing our research back to those days was, as I said in my comments, there was essentially -- there wouldn't be enough of this material to warrant including it. That is a value in the table.

MR. SHRUM: Understood.

MR. CAMPER: Okay.

MR. CAMERON: Okay.

MR. SHRUM: Thank you.

MR. CAMPER: I want to make a comment.

MR. CAMERON: Go ahead.

MR. CAMPER: John and I -- going back to John Greeves question. I think I understand your point

John very clearly.

And your point is -- what I try to do in my remarks was to put front and center a concern that has been expressed with regards to the potential impact on the agreement of States. And in particular, a particular Agreement State with regards to a site.

And what I was trying to do was draw the distinction between the process that the Commission chose to use at the time and the expectation that these requirements would apply now. Now your point is very well made. Because the language in 61.1(a) hasn't been modified.

Maybe it should have been. Because as we state in the FRN, this action would affect, the proposed rule would affect existing and future LLRW disposal facilities that are regulated by the NRC and an Agreement State.

In other words, the driving force behind that logic is that what is fundamentally different today is that this is about requiring an existing regulatory infrastructure to account for, to assess unanalyzed waste streams.

The flexibility that was written into the language of 61.1(a) at that time brought to bear among other considerations that the siting requirements set

forth in Part 61 had already been met. The sites existed. And therefore there was a need the Commission believed, to provide some flexibility.

Now if it's confusing that the language of 61.1(a) hasn't been changed to address the expectation of the staff and the Commission at this point in time that is a point very well made. Thank you.

MR. CAMERON: Okay. And if we need to come back to this, we will. But John's question raised the possible need for a revision when the staff gets the final Rule.

I want us to move on. But I would like to give the audience and anybody on the phone a chance to chime in at this point since that was in the part and presentation.

Anybody in the audience have a clarifying question?

(No response)

MR. CAMERON: Okay, Arlene?

OPERATOR: Participants on the phone, if you have a question, please press star one and state your name clearly. One moment please while we wait for our first question.

We have one person. Please state your name. The line is open.

MR. CAMERON: Hello?

OPERATOR: Our first question comes from Susan Jenkins. Ms. Jenkins, your line is open.

MS. JENKINS: Thank you. This is Susan Jenkins with the State of South Carolina. And I have a clarifying question with regards to the proposed language in 61.13, technical analysis.

The new proposed language states licensees with licenses for land disposal facilities in effect on the effective of this subpart, must submit these analysis at the next license renewal or within five years of the effective date of this subpart, whichever comes first.

And the question I have is, hypothetically if a facility that is existing now and is operating now to accept waste, is closed at the time that this -- that this proposed regulation comes into effect.

And if, hypothetically, the site were -- had gone through its post-closure observational period, and was in the institutional control period, whereby there is a license that's in effect, that it's simply been transferred to the owner of the site, does this apply then to the owner of the site which would be the State?

MR. CAMERON: Okay. Thanks Susan. I

think a good question. And Response from Larry? Dave? Who's going to take this one?

MR. CAMPER: Well, I'll start. And I've asked Dave or Chris to add to it.

Susan, I wasn't going to specifically mention South Carolina, but since you have, the Barnwell Site is not closed. It is correct in my understanding, our understanding is that a particular cell or cells are closed.

But the site in itself in totality is not closed. And depleted uranium is a component of the source term. And therefore, the expectations of the language in this proposed Rule would necessitate addressing that.

And there are particular parts of the regulation that I would ask either Dave or Chris to specifically point out, that do that. But you have specifically pulled out the part in 61.13. There are other parts as well.

So with that, my simple answer would be yes. And if Dave or Chris want to elaborate, that would be fine. Or Gary.

MR. CAMERON: David Esh?

MR. ESH: Yes, this is David Esh. I don't have a good answer for that question at this time. But

I'm going to think about it and talk about it with our legal counsel to know what the right answer is.

So, it's a good question. It's a complicated question. And I think that's the type of thing we hope to get out of this meeting.

MR. CAMPER: And let me add to that too. Susan, this is -- this is -- your question, is precisely why I teed up this issue the way I did in my remarks.

We are very aware of South Carolina's concerns. And I thought that presenting it the way that I did, was a good way to put the issue front and center without specifically identifying South Carolina.

And I would reiterate what I said, we very much want comments around this issue. So, we greatly appreciate hearing from South Carolina.

MR. CAMERON: And Susan, thank you for that question. And I put the question in the famous parking lot. And there will be some consultation with staff counsel. And we will come back to that before the end of the day.

Arlene, any more people on the phone that want a question?

OPERATOR: At this time, sir, there are no further questions in queue.

MR. CAMERON: Okay. We're going to go to rulemaking process. But John, do you have a quick?

MR. GREEVES: Yes, just a comment. This was a good discussion. And the -- I think it highlights the importance of the paragraph you highlighted in your opening comments about the applicability.

And Susan raised a question, there are many questions in here, and I'll just observe, there are a number of burdens that this new rulemaking would put on, for example, the sited States. And that's why you get these kinds of questions.

Because there is, as we'll talk later, specifically, there's some new burdens here. And I think sited States are going to be interested in what does the applicability of the requirements in this Part mean to me about those new burdens?

So, I've raised it. And I think it's something we're going to, you know, hear more about. So, thank you very much. I'm not asking you the question.

MR. CAMERON: Thanks John.

MR. CAMPER: You know I agree. Let me just add something to this. I agree. The point, and I really appreciated Susan's question.

I also would point out, kind of getting at

Dave's careful answer. We also have to consider, if you go look at the analysis that the staff did when we did 08-0147, large quantities of depleted uranium.

What was large quantities of depleted uranium? 50 thousand tons. Was 50 thousand tons of depleted uranium disposed of at Barnwell? Probably not. That's the impression we have.

So my point is, the implications of the applicability of the requirement to the State of South Carolina needs to be carefully analyzed as to what is that actual impact, given the quantity of depleted uranium that is a component of their source term.

So it's a very specific, technical consideration.

MR. GREEVES: Yes, I'm not focusing on any particular sited State. I think there are burdens in this Rule across the board that bears some discussion like this. So thank you for bringing it up.

MR. CAMERON: Okay. This is good. Good discussion. Let's go to Gary Comfort on rulemaking process. Gary?

MR. COMFORT: Good morning everybody, my name is Gary Comfort. I'm a Senior Project Manager in the Rulemaking and Project Management branch in the NRC's Division of Material Safety, State, Tribal and

Rulemaking Programs.

I'm the primary rulemaking lead for this Part 61 proposed rule. And as such, you're welcome to contact me anytime after this meeting if you have questions in the future. And I have contact information at the end of this package as well as is also in the Federal Register Notice.

Next slide please. This morning what I plan to do is quickly go over a couple of key aspects of the process for the rulemaking. And later on we'll have the discussion of course on the technical content of the proposed rule itself.

As part of this presentation I plan to quickly explain why we are actually doing this through a rulemaking. The time line for the rulemaking. And then most importantly for everybody, how to submit comments.

I'm also going to be covering the time line and comment submittal process for the draft guidance that supports this rulemaking. Next slide please.

First of all, why are we doing this rulemaking? Or doing a rulemaking to implement these changes? The rulemaking is one way in which Commission's policies can be implemented.

In the long term it is best to regulate

through the development of rules. And not to regulate through other aspects such as orders or specific license conditions that may only apply to certain sites or cause inconsistencies between the implementation of it from those issues.

So rulemaking makes the requirements generally applicable to everyone. Whereas the order or license just applies to that one entity who received the order and license condition.

Rulemaking is also a public process that provides for stakeholder involvement. Which is very important to us. It allows us to get views from people that we may not have considered during the -- or had an opportunity to consider during the rulemaking.

They may provide information that we weren't aware of at the time. And they can also just state, you know, their objections as to why it's going to affect them more then the need to, you know, the need to further the rule that it should be put in place.

It basically, we provide this defined period to allow the comments, in this case 120 days. And as it's a public process, also all the comments that we receive will also be made publically available.

I mean, that's important because they'll be out on the web as we get them. To the extent we can

put them there or they're entered. Because people can look at those comments and also get their own ideas for additional topics for discussion they may want to include.

In developing the proposed Rule, we do consider recent research. Lessons learned from implementation of existing regulations. Issues identified during inspections of existing licensed operations.

Recommendations from advisory boards. And information included in any petitions for rulemaking we may have received from other stakeholders.

We also consider stakeholder input received during the development of our Rule in areas such as when we put out preliminary Rule language, you know, that's been posted in the past for public comment. All these aspects are considered in the development of this proposed Rule language that we went out for public comment now. Next slide please.

So this specific rulemaking was proposed and published in the Federal Register on March 26, 2015. We're requesting comments from all stakeholders on the proposed Rule language.

The public comment period lasts 120 days.

And will end on July 24, 2015. Now what's important when we receive comments, is the more clearly you can state your concern and any supporting information to support -- you know, to support that concern, it makes it easier for us to, and more efficient for us, to better address your comment.

If we get a comment that basically says, we don't like it, that's hard for us to deal with. I mean, people don't like things.

You know, but if you give us the reasons you don't like it, we can then go through and address those reasons or make revisions to the Rule as necessary because we did forget something or not realize there was a certain aspect that we didn't consider.

The final rule is expected to be sent to the Commission after this rulemaking comment period. We'll basically take all the comments, go through, bin them. And then we'll address them, each comment in those bins.

And come out with a final Rule that we'll present to the Commission. In that final Rule, we'll include how we address the comments and any revisions we've made to the proposed Rule.

We'll send that to the Commission. And our expected schedule is around 12 months from when the

Commission -- from when the rulemaking comment period closes.

But the exact timing of course is dependent upon other things. Particularly how many comments and the complexity. We want to make sure that we do address them appropriately and consider all of them completely.

Basically, the Commission will then consider the Rule. And then provide additional direction as necessary. Or direct us to publish the Rule as final.

In general, we expect that to be some time around, you know, three to four months. But again, it depends upon what changes the staff has had to make as a result of the Rule.

So we'd expect the final Rule to be published possibly as early as sometime in the late summer or fall time frame of 2016. It could be later though, again depending upon any delays in the schedule.

The final Rule right now is proposed to be effective one year after its publication. And this would be for any licensee or applicant in a non-Agreement State.

The Agreement States have three years to -- after we publish the final Rule to implement their

own regulations that will be compatible with ours. And they would generally have probably about a one year effective time period also. Next slide please.

The next slide basically is just a graphical look of what this rulemaking would be. And give you, you know, based on a very optimistic time frame of when the final Rule would be basically implemented by, you know, by NRC, which would be around August 2017.

That's being aggressive. And then the States would have theirs implemented by 2020. States can move faster if they want. But we generally ask them to get it down within three years and, you know, we get implementation after that.

Similarly the slide shows where we'd have guidance, you know, in the schedule for that. Where it goes, and I'm going to get more into the guidance in a few minutes.

Another important thing to realize on the comments -- well, I'll get into comments a little on the second. Can we go to the next slide please?

There is multiple ways for you to submit comments. They're listed in the Federal Register Notice. But you can do it through the mail, email, through our website at www.regulations.gov. You can

hand deliver them or fax them.

Probably the most effective way and efficient way for everybody is through the www.regulations.gov. But we of course will take our comments any ways that you would like to provide them.

On my next slide I do give the basically the different ways that you can submit those comments. More specifically, these are also restated from the Federal Register Notice.

Again, if you choose to provide us comments, which we hope you will, it's helpful that you explain why you believe any particular provision is a problem. Rather then just state that you're opposed to it.

The more information that you can provide to us, really does help us make, you know, address your comment appropriately. You're encouraged to submit the formal comments using any of the methods described on this slide.

Again, since this is a public process, all those comments will be publically available. And made publically available. And they'll be addressed in the final Rule.

Please note that also, the final Register Notice announces a proposed Rule for the opportunity

to comment on information collection aspects of the proposed Rule. This is discussed in Section 10 of the Federal Register Notice under the Paperwork Reduction Act statement.

Note that that has a different comment period and address for those comments that are specifically exclusive to information collection aspects of the Rule. Those are things like the record keeping and record storage type information that you'll have to do for the Rule.

And you know, how much paperwork you have to deal with it. Those comments are due actually a lot earlier. May 26, 2015. And they should be sent to NRC's Office of Information Services or the Office of Management and Budget as indicted again in Section 10 of the Federal Register Notice. Next slide please.

Next I wanted to discuss how to comment on the draft implementation guidance for the proposed Rule, which is found in draft New Reg 21.75, Guidance for Conducting Technical Analysis for 10 CFR Part 61.

This guidance document is also available for public comment. We announced it in the same Federal Register on March 26, 2015.

The guidance document provides more detailed information on the rules provisions. And

tries to give an idea of how we're going to implement a lot of the regulations that we did in the draft proposed Rule.

The comment period for the draft guidance document also closes on July 24, 2015. And we encourage you to look at that guidance document and provide us comments on it.

We expect to finalize the guidance document and publish it in a final form when we release the final Rule. Next slide please.

There are slightly different methods to provide comments on the guidance. This slide shows those. Again, those are listed in the Federal Register Notice for the guidance. So you can find those -- the ways to submit there.

The comments on the guidance are important to us. Because they tell us the need to -- you know, where we need to provide additional information or clarify any information that we provided.

Some of the guidance, you know, comments from the guidance may also lead us to change the regulations or draft regulations. Because, you know, we realize maybe there's an issue or conflict in what we really wanted to get done.

Again, I encourage you to submit the

written comments using either of the two methods shown on this slide for guidance. So, that's really my presentation. Last slide please.

My contact information is on this slide. You can email me or telephone me if you do have questions after this meeting. Or throughout the rulemaking process.

This information as I indicated for the people on the phone, is also in the Federal Register Notice. So, I'm welcome to any clarifying questions on the process.

MR. CAMERON: Okay. Thanks Gary. And we're going to try to move this along so we can get to our first technical subject.

But important to have -- give clarification on this issue. And I just wanted to note, I read something earlier on about the transcript will be part of the record that informs this rulemaking.

Well the transcript and the comments that are provided today, which of course are going to be in the transcript. That will be part of the formal rulemaking record.

And with that, any clarifying questions from the panel on the process?

(No response)

MR. CAMERON: Okay. Arlene, does anybody on the phone have a clarifying question on the rulemaking process?

OPERATOR: Yes sir, we do have one. Our first question comes from Mr. Paul Lohaus. Sir, your line is open.

MR. LOHAUS: Hello Chip.

MR. CAMERON: Hello.

MR. LOHAUS: Paul Lohaus here. You hear me okay?

MR. CAMERON: Yes, we got you.

MR. LOHAUS: Okay. I tried to get in the queue earlier. I just wanted to offer a clarifying comment, maybe some background on the question of applicability to existing sites.

There's two comment sections in line two of the Final Environmental Impact Statement that really address both the question of applicability to existing sites and compatibility. And the question of applicability to existing sites really is two separate issues.

One is, the applicability to existing sites. And the second is Agreement State compatibility. And the intent at the time by the staff, and really the Commission, was that the

applicability to existing sites, and really Commission licensees, because the Rule applies to Commission licensees, was that it be handled on a case by case basis.

And the question of compatibility was addressed separately. And the intent there was that the performance objectives and the waste classification, waste form, and waste manifest requirements had to be implemented on a uniform basis across the nation.

And the requirements on classification, waste form and manifest were actually delayed one year to provide time for the Agreement States to adopt those provisions. So that when those provisions went into effect, they were done uniformly across the nation.

So I guess my point here is that, I think that the two issues really need to be considered separately because when the Agreement States adopt compatible provisions, they'll need to apply those provisions on a case by case basis to their existing sites.

So my sense would be, is to retain the provisions in 61, but modify the provisions of 61.13 to make it clear that it's case by case. And the Agreement States implement to their regulations using

compatible requirements.

I appreciate the opportunity to comment.

MR. CAMERON: Okay. Thanks. Thanks Paul. I think that is helpful. And nice to hear you.

And we have Larry Camper.

MR. CAMPER: Hey, Paul, Larry Camper. Great to hear you.

MR. LOHAUS: Thank you.

MR. CAMPER: Hope you're doing well.

MR. LOHAUS: I appreciate the opportunity to listen in and participate very much.

MR. CAMPER: It's great, Paul. Good to hear your voice and wish you the very best. And golly knows, you know a lot about this going way back. So thank you.

You know, two points. One is on the compatibility issue, the Commission in this case specified in its SRM that it would be a Compatibility B.

And when the Commission did that, we did raise the sensitivity around the Compatibility B issue, including the fact that the period of compliance, i.e., 1,000 years is different then, and even less then, what is currently in place within the existing sites. Although one site is moving toward a higher period.

But it's less then in the existing sites. The Commission, my impression was, the Commission was striving for consistency across the board. And for a period of compliance to be the same everywhere.

Therefore, however, what the Commission also did in its infinite wisdom, was to direct the staff to specifically seek comments on this point. Which is why we are specifically laying it out.

On the other issue, your point is quite well made. And it's quite consistent with the language in 61.1(a). And you are right. It was addressed on a case by case basis.

Of course all the States chose to adopt Part 61 by 1988. Almost in whole clause as I said. But for example, Utah opted not to go with 61.5(8).

I guess the logic if one carried that forward, South Carolina in its comment could say, we prefer to see the same flexibility if you will, that was embodied in 61.1(a) and in fact still is in the proposed language. And therefore they might choose to exclude the requirement in 61.13 that Susan Jenkins cited earlier.

And the State could make its case in its comment as to why it believes that licensees with licenses for land disposal facilities in effect on the

effective date of this subpart, should do certain things.

So, I think that flexibility point is a very challenging issue. And I think South Carolina should comment accordingly.

But thanks, Paul. Very good.

MR. LOHAUS: Okay. Thank you much.

MR. CAMERON: Okay. Arlene, is that -- do you have anybody else on the line?

OPERATOR: Yes sir. We have one question from Ralph Andersen. Mr. Andersen, your line is open.

MR. ANDERSEN: Thank you very much. And again, like others I very much appreciate the NRC putting this meeting and series of meetings together on the proposed Rule.

I've already learned a lot so far in the meeting. And I'm looking forward to the rest of it. I had a question regarding the scope of comments.

There was an earlier discussion about the efficacy of the possible future rulemaking or addressing depleted uranium or other issues.

As a part of the comments on this Rule, I can imagine that our views on what might occur beyond this Rule, i.e., updating of the waste classification tables, will provide some context for the comments that

we make.

So my question is this, within the scope of comments that you're seeking and that you intend to address, would it be appropriate to include comments that link the comments we make on this rule to our ideas about a potential updating of waste classification tables in the future or specifically addressing the issue of depleted uranium or those other issues?

Or really, would you see those kinds of comments as out of scope for what you're trying to deal with right now?

MR. CAMERON: Larry?

MR. CAMPER: No, I don't think it would be out of scope. And the reason in particular, and I go back and look at the commission assignment to the staff and the SRM, although we have focused a lot upon depleted uranium, there was more to it then that.

It said in a future budget request the staff should propose the necessary resources for a comprehensive revision to the risk informed, the Part 61 waste classification framework. With conforming changes to the regulations as needed, using updated assumptions and referencing the latest ICRP methodology.

This method should explicitly address the

waste classification of depleted uranium. So, I think Ralph, with that charge from the Commission, the kind of comment that you're alluding to would be entirely appropriate.

MR. CAMERON: Okay. Good. Thank you, Ralph.

Arlene, anybody else?

OPERATOR: At this time sir, there are no further questions in the queue.

MR. CAMERON: Okay. Great. We're going to go to David Esh to kick off the first technical issue. David?

MR. ESH: Thank you. If I look at the clock and the agenda, I think we'll have roughly 25 minutes per topic. Now, I'm sure I can't speak for the others, I'd be happy to say here as long as you want to talk about things.

So, but keep that in mind as we go through each one. And we're certainly not going to filibuster any of these topics. We're going to give you a brief introduction.

We recognize you all probably have more then adequate reading proficiency skills. So, the -- we'll give you an introduction and then we'll get right to the discussion.

The first topic we're going to talk about -- well, let's go to the overview slide and I'll go through the topics we're going to cover.

So the Rule topics that we pulled out that we felt were ones we wanted to get some input on and probably were of interest to the stakeholders, are provided here. Analysis time frames. Performance assessment, intruder assessment.

The two other analysis periods. A protective assurance period and the performance period. Then the safety case defense in depth topic. Waste acceptance criteria and other.

Which, as John Tauxe has already indicated in one of his comments, he might have some thoughts on the other box. That's perfectly fine. You know, what we can and do with other comments depends on how it meshes in with the material that we did change in the Rule.

Because as Larry indicated, this was supposed to be a limited scope rulemaking. You always seem to get some scope creep with these sorts of things.

When it started, I looked at the problem and I though, well gee, you know, I can probably change a few sentences and get this ready in a couple of weeks. And now, here we sit, you know, five years later and

millions of sentences and thus.

So, yes, right. So, we also as acknowledged, developed a guidance document to go with it. It's this document here. The comment period is the same. It's roughly 450 pages. You have 90 days left. So, five pages a day will get you there.

Okay, so let's go to the next slide please. The context for analysis, this is a good figure that Chris Grossman put together, which as things changed in the Rule, there's at least the perception that it's very complicated.

But I don't think it's as complicated as the perception. This figure in my mind helped clarify that. What you're basically dealing with is some different requirements and different time frames. And how they interrelate or overlap.

So on the left hand you have the three different time periods. And for what the -- which of the Subpart C performance objectives they apply to over what time. At the top you have the assessment context and scenario development.

That applies to your overall analysis for the whole problem. Whether you're talking performance assessment or some other type of analysis. How do you get your scope right and ensure you've evaluated the

problem correctly.

And then we have this new requirement that was added in, in the most SRM about applying -- recognizing defense in depth more explicitly for low level waste performance, low level waste disposal facilities.

So, this figure, it helped me understand how things are fitting together. I hope it helps you. I also want to recognize all the people that have worked on this. It's not just Chris and myself.

We've had many other people, Priya Yadav, our Project Manager in Lower Level Waste Branch. Andrew Carrera, who doesn't work on it anymore. He worked with Gary.

Mike Lee was a Project Manager at one point in Low Level Waste. Lisa London and various other people from OGC have worked on it. We had a working group that met almost weekly for many years that we would talk about these various things.

And that's the one other point too is, many of you have made comments in the past. We do read all those comments. We discuss them.

We may not agree with you. So, you may have made a comment and you see, well that didn't change. We hope we have a good answer for that.

So, feel free to remake those comments that you don't feel like you've received an adequate change or response to. And hopefully you will receive one in the future.

Okay. So that's all the introduction that we need. And let's go to the first topic now. Analysis time frames.

This is a very complex issue in some ways. In other ways, not. It is a topic that we've had extensive stakeholder on and extensive discussion. We developed a white paper to try to come up with, well what do we need to do with this?

And then we got some direction from the Commission that changed our initial recommendation in SRM-SECY-13-0075. And we do really want to seek stakeholder input, especially on the compatibility designation as Larry Camper indicated earlier.

Okay, next slide please. So this figure shows, and maybe it doesn't matter where we were and where we are. Maybe we only need to talk about where we are. But it shows where we were and where we are in terms of the analysis time frames.

At the bottom it provides the two performance objective -- main performance objectives that the analysis time frames are applying to. 61.41

for protection of the general population. And then 61.42 for protection of the inadvertent intruder.

So as you go up, the green area on the right side is the compliance period. Which it's going to -- it's the same as existing in current Part 61, outside of the fact that you're going to be using new ICRP methodologies to do your dose assessment.

But otherwise, it still has a 25 millirem dose limit. And the ALARA as low as reasonably achievable concept is applied to it.

What's different for 61.42 is now you -- in the current regulation -- this was the only change that you really needed to do in this whole rulemaking when you looked at different waste streams.

It was to add in a requirement to do an analysis for a different waste stream for the intruder under 61.42. Because 61.42 was done for particular isotopes. So if you had isotopes that weren't in the list, how do you know whether that isotope is suitable for your facility or not?

61.42 in the regulation as it is currently written, not as proposed, does not require an intruder analysis. It only requires you to meet the waste classification tables and some other requirements to show that you can accept it.

So that was the only change that was needed. Now in 61.42, as Chris is going to talk about under the intruder assessment, you're required to do an intruder analysis and what we are proposing a 500 millirem dose limit for that analysis.

The same dose limit that was used in the original Part 61 when the 61.41 -- or 61.42 requirements were developed. Followed by the compliance period which would extend out to a period of 1,000 years as a protective assurance period.

And this is a little different and it's new in this proposed package. Basically, this is proposed as an optimization type approach, where the target is to minimize.

And there's some language about that in both the regulation and especially in the guidance document. The way that we have chosen to recommend you implement it in the guidance document, is to use risk based discounting for the protective assurance period.

Or really the inverse of risk based discounting. So, if your risk is low, your analysis requirements are low. If your risk is high, your analysis requirements are high.

That's the general, conceptual approach that we chose to apply to this protective assurance

period that you'll see, it extends from 1,000 years to 10,000 years.

And then similar to what we had originally proposed, the Commission didn't redirect us on this. The performance period occurs starting at 10,000 years out to whatever time is appropriate for your site.

It's only applicable if you have sufficient amount of waste in your site to cause you to need to do that type of analysis. So we came up with, there's a table in the regulations, Table A I believe, that has the recommended concentrations for when you -- that anal -- the requirement for that analysis would be triggered.

Those concentrations are basically the Class A waste concentrations, but on a facility average basis. So if you fill your whole facility with Class A waste, you would trigger the need to do that performance period analysis. If you're below that, you wouldn't need to do that performance period analysis.

So conceptually, that's how our proposed analysis time frames are working with the two main performance objectives. So a little bit more background. Next slide please.

And this is -- this figure I recognized

this morning is incorrect. The depleted uranium curve is increasing too much. I believe that's because it's not the total activity ratio.

It subtracted out the uranium activity. This is more intended to show the increase in the daughter radionuclides, which are the risk drivers in the uranium chain in most cases.

Uranium itself can cause risk too. But it's the red 210 and the radon that really gets you significantly. But that -- there's an error in that figure and I was not able to correct it because my computer it's on is having a Lois Learner moment at the time, so.

But the concept of that is correct. That basically the activity for depleted uranium increases because it's essentially cleaned of the daughter products. And they build in over time, albeit very slowly.

And for traditional low level waste, the activity is dominated by the short lived isotopes such as the cobalt 60 and some other species at the early times. But they decay quite rapidly on these time frames. And so then your risk is reduced to what residual long lived waste you may have disposed of in your facility.

So conceptually this caused a challenge for the analysis time frames because traditional low level waste and maybe the depleted uranium are somewhat divergent in their radiological behavior. Next slide please.

The analysis time frames. This is a figure we put together just to talk about uncertainty. Because we said, well we need to consider uncertainty in this.

And this is just a hand drawn figure with some various things to consider. But, we thought it gave the context for types of things you might want to consider when talking about analysis time frames.

And the biggest challenge for me is not necessarily the red curve or the blue curve. But it's the green curve. So the green one is the technology scenario as an activity.

I think the uncertainty associated with that can become really enormous and increase rapidly, especially on the hundreds, to many hundreds of year time frame. You're talking about cities coming and going and that sort of thing.

It's very difficult to predict. So if you're going to go with an analysis based approach or a strong analysis informed approach to show safety for

low level waste disposal, then you have to tread cautiously in this area.

And that's what we've attempted to do in the requirements that we're proposing. Okay. Next slide please.

So for analysis time frames, these are some definitions directly out of the regulation. I'm not going to read them. But we have a definition for long lived waste, compliance period, protective assurance period and performance period.

Those are the things that define when you might need to do the performance period analysis. And then what are the basically, points and space that you need to use for the other periods.

And as Larry indicated right now, that's in the proposed. It's going forward with Compatibility B. So everybody would be using the same numbers. Okay, next slide.

So what we're going to ask your feedback on is kind of the overall approach. This tiered approach with these various requirements. Certainly in the compatibility or long lived waste definition.

And then also this Table A, both conceptually and the value. So, is it, you know, in the right ballpark? How we set that up with the Class

A concentrations on a facility average basis.

By our analysis that was not going to require any of the existing facilities to need to do the performance period analysis. But it would if you took large quantities of depleted uranium require you do to the performance period analysis.

And so that's what we were intending. If you're taking something that has long lived persistent risks in and a large amount of it, then it should trigger some sort of an evaluation.

So that's where I'll stop and then I can go through the discussion.

MR. CAMERON: Okay. Thanks Dave. Let's follow the seeking feedback on topics and go through those and try to connect up thoughts.

But, how about comments on panel? Comments on overall approach. And we'll go overall approach and then we'll go onto the next one.

Anybody have anything on overall approach? I think Dan does. Dan?

MR. SHRUM: Overall approach, slide three, can we go to slide three? Which it shows the context for analysis.

The -- as somebody again, I'm going to view this as somebody who has to implement this. The

protective assurance period shows a stability analysis from 1,000 to 10,000 years. That's why that box is there, correct?

MR. ESH: Right. Correct.

MR. SHRUM: And I'm -- just to be clear, I'm not, you know, this isn't just the facilities that we operate. This is for any facility. Reasonably foreseeable, 1,000 to 10,000 years for stability.

And that includes analysis of concrete. That includes analysis of rebar. That includes -- all of those things are supposed to be included, correct?

MR. ESH: Right.

MR. SHRUM: Is that you're -- the way you would view that?

MR. ESH: Yes. We intended for that stability analysis to extend to the 10,000 time frame for all facilities basically, so.

MR. SHRUM: Okay. Would you in the concepts in 61.7, it talks about a 500 year time frame, at least a 500 year time frame. Put those together for me now.

So now I'm supposed to be looking from 1 to 10,000 or a minimum of 500, which, you know, I guess 1 to 10,000 is a minimum of 500. But it really, I was thinking more reasonably foreseeable is the 500 to

1,000.

MR. ESH: Right.

MR. SHRUM: We're pretty good at that.

MR. ESH: Yes.

MR. SHRUM: And as your chart shows, it really, you know, and that's a potential of we lose sight of how things react in the 1,000 to 10,000 year time frame.

MR. ESH: Yes, what we -- the -- you're right then, it does reference 500 years in the concept section. The concept section number 1, is not requirements, but it's basically describing some -- giving some narrative about the various aspects of the rule and how they may fit together.

So, keep that in mind when you read something in the concepts. However, the concepts should not be in conflict with the requirements. And I don't think they are.

Because in this case, this is the -- I think the 500 years you're referring to is with respect to the site characteristics, or evaluating the site characteristics. So that's kind of saying, what are my processes that may disrupt my site?

I'm going to look out for some period of time and say, what are the types of things I have going

on that might cause deterioration, degradation, release, instability of my system?

Once you ana -- once you develop what the set of features, events and processes that you may need to consider, that doesn't mean that you shouldn't extend the effects of those to some longer time and see what the effect of those process may be. Features, events or processes may be.

So, understand that that 500 years is talking about how do I get my set of events or my scope of the analysis right? But the time that you analyze for may be different then what you're -- what the period of time that you use to set the scope for that analysis.

MR. SHRUM: And you believe that you can do an effective analysis on the strength of materials from 1 to 10,000 years?

MR. ESH: Well, as with anything in Part 61, this is a risk informed performance based implementation. Are you relying on the strength of those materials for your analysis?

If you are and they help you reduce risk from your materials, then you better be able to provide a basis for what they're doing.

MR. SHRUM: Okay.

MR. ESH: If you're not relying on those

materials, then certainly, you know, this and the other requirements, especially with the longer time frames, it's not a matter of I have to provide scientific proof of all these elements. But you have to be able to make an informed regulatory decision that supports your case.

Those may be two dramatically different things. So making a regulatory safety case is different then doing computer model validation. They may diverge.

But you as a licensee or in consult with your State Regulators, you need to go through your process and decide, you know, how do you want to spend your money. And what can you defend and what can't you defend.

And you rely on the things that you can defend. And you don't rely on the things you can't defend. So that's -- conceptually that's how we intend for it to work.

MR. SHRUM: And conceptually, it's -- I have no problems running the model. But the model needs inputs and the inputs -- those inputs will be challenged for all of the facilities.

I was surprised, personally was surprised to see that box.

MR. ESH: Right. Yes, and I kind of --

MR. SHRUM: Because it would have -- or it should have been a shaded box. Or --

MR. ESH: Well, understand, the whole -- one of the main reasons why the original Part 61 was developed was because of stability issues at some of the sites prior to Part 61.

So, NRC came in and said look we need to deal with some of these stability issues. Let's put a regulation in place that's going to provide the requirements so we can avoid those.

If you're disposing of traditional low level waste where most of the risk or a lot of the risk, at least the short lived risk, is gone and the -- or greatly -- I shouldn't say gone, greatly decreased in say a 500 to 1,000 year time frame, well then, I would think a stability analysis that looks at the 500 year to 1,000 time frame is appropriate.

If you're going to take low level waste now that potentially has a long lived component and large quantities of it, I don't see where we would come out in a different position of that you shouldn't be able to demonstrate stability of that material.

Because the whole waste disposal scheme, say putting high level waste deeply, is related to this

stability issue. And how long you can justify stability of the material.

And that's -- that's reflected already in NRC's waste classification system with A being able to be disposed of more shallowly. And with different requirements then C waste which has more stringent requirements.

MR. CAMERON: Okay.

MR. SHRUM: Thank you.

MR. ESH: Yes.

MR. CAMERON: Let's go to John and then we'll go over to Tom, okay. John?

MR. TAUXE: Okay. Yes, a bunch of issues were brought up there. I also was confused by the 500 year -- the indication of 500 years there.

And it's in 61.72, in the concepts. But it's also in 61.50, in a couple of places there, (a)(2) and (3).

And so, I was confused by that. And looking back at the comments that Neptune made in 2013. By the way, if anybody's interested, there's some copies over by the door there. We submitted 27 pages of comments then too.

And I was confused then and I'm still confused about the 500 year thing. But, you mentioned

your -- he idea of evaluating the concentrations of your waste to the amount of waste at different time frames in the future.

And I'm seeing that here in the guidance on -- under site characteristics, page 225. You had these little equations if the concentration is less then a 10th or something, then evaluate for 500 years. And there's the 500 year thing again, which doesn't appear on this diagram.

So, somehow it's being introduced but not -- it doesn't appear on this diagram. So it's yet another sort of time line that's in there. So that's a little confusing.

But I do -- I do get this bit about, it seems to me what one would do in practice is to take your waste inventory and decay it into the distant future. And see where problems are likely to occur, either, you know, in what time frame.

Am I thinking of that right when I see the little, you know, the A, B, C parts of this equation here with looking at different time frames and when it looks like waste is going to appear to be a problem?

MR. ESH: Right. Okay. And to -- I mean, a little bit of just context on the 500 years. So you understand better when you make your comments.

Is, yes, that 500 years comes up in 61.7 concepts. It's carried forward into the guidance document. It's in a couple of different areas. It was originally there with respect to the site characteristics.

So how do you evaluate a new site and say, is this site suitable for low level waste? At 500 years was there at least a fuzzy line in the sand if you maybe want to say it's black and white or fuzzy, whatever.

But some sort of line in the sand about evaluating the characteristics of your site. And determining whether that site is suitable to take this material or not.

That 500 years we haven't changed and carried forward. I think we did add some additional language to it to kind of provide a little bit more flexibility. It's not a magic number.

You know, in reality, you should just say something like evaluate your site characteristics that you need to, commensurate with the waste that you're proposing to dispose of. Or something like that. That then you can do what's right for the material you're trying to dispose of instead of some other number that leads to maybe misinterpretation.

But, so the -- but if you look at the

revisions to 61.50, we tried to be faithful both to that number. But then changed based on what we're doing in the new regulation.

So, there were some siting characteristics that were intended to be exclusionary. So, you don't put waste in 100 year flood plain. Or don't put waste in a zone water table fluctuation.

I don't know, there was a number of the criteria, some that were exclusionary and then some that were more performanced based. They basically said, if you can't meet the performance objectives because your site has these characteristics, then you probably shouldn't put your material there.

That's a, you know, a little bit circular. You have to enter the circle at some point to make that argument and exit out.

But, so we changed that so that if you were disposing of large quantities of long lived waste, there's still a set of requirements, especially the hydrological ones that are exclusionary for a certain time frame. Basically that 500 years.

Because the idea is, I don't care, you know, John, you may be the best modeler in the world, but if you have a site that has flooding at it now and water table fluctuation. And all these other things

going on, what's the likelihood that you can get that risk assessment right with all those things going on?

Probably not good. So, that's the idea is, there's certain things that hey, if you're in the ballpark, you should probably look for a different site.

Past that point then, then it becomes a more site specific evaluation of whether those specific characteristics could cause you problems. So, conceptually with the changes to the time frames and then the associated changes to 61.50, that's where we were headed.

MR. CAMERON: Okay. Let's --

MR. GROSSMAN: Chip, if I could jump in here. I'm sorry to interrupt. But just for a little background for the panel and maybe for the public as well.

I don't know if we've ever explained this all that well. But our understanding of the history is that the 500 years comes from the initial analysis that was done in EIS.

And so the waste classification system, essentially the concen -- if you dispose of those concentrations after 500 years, your risk would be small enough that protection would be ensured.

And so, the idea was that these sites should be evaluated for that time frame. Because after 500 years, then if you use the classification system, your risk would be low enough that protection would be ensured.

That's kind of where that came from historically.

MR. CAMERON: Right. Okay, thank you. Thank's Chris. Let's hear from Tom Magette and John Greeves. And then let's go onto compatibility. Tom?

MR. MAGETTE: Thank you Chip. First a general comment then a couple of questions. In general the time frame analysis that you've proposed, I think is reasonable.

It might not be what I would come up with if I went to the board and started scratching around. But I think it's good.

I think 1,000 years is a good compliance period. I think it should be a high compatibility. It should be required of all the States. I think it's reasonable.

The new concept of a performance assurance period, I think is also reasonable. There's still -- I still have some questions about exactly how we're going to implement that that I want to probe with you

a little bit. And then the performance period I think is reasonable as well.

So, in general, I think you have a good construct to the Rule there. And I appreciate that.

As to the discussion about stability, I was going to say the same thing you just said Chris, basically. Which is the 500 was a requirement based on essentially a bad calculation of, you know, assumptions made about the waste that would be disposed as it was analyzed. And where to build the concentration classification tables.

And that seems to be different from, if I understand what you just said, David, what you're intending to apply for the performance analysis period. Which is more of a -- it's not an exclusion criterion.

It is a component of your analysis that says, if you're relying on the stability of this waste to demonstrate that you meet the performance objectives in 61.42(b), then you have to take credit for it and you have to justify it. That would be my rephrasing of what you said and what I understood that you said.

MR. ESH: Right, and let me just clarify. There's two components. So you have intra-stability and inter-stability.

So you have things external, exogenous

influences that can influence the stability of your disposal system. Then you have things internal to it.

So this is -- the analysis is supposed to take into account those external things which may extend out through longer time frames. And could potentially be exclusionary.

If those external things would not allow you to meet the performance objectives, then you're probably trying to put the wrong material in the wrong site. Whereas the intra-waste stability, I think that -- well, especially your description is spot on for that.

As Chris indicted, it was intended to work with the waste classification system to ensure that you don't create instability within your disposal system itself that's going to cause a challenge to the performance objectives. So, yes.

MR. MAGETTE: Okay, so based on that, then when I look at 61.13(e), there's a new phrase inserted in there -- (d), excuse me. It's all the same except for this phrase that's inserted. The long term stability of the disposal site can be ensured.

So I guess my -- it seems like that is inconsistent with what you just said. Maybe ensured is not the right word there that you want. It needs

to be taken into account.

But it doesn't become a new 10,000 year stability requirement.

MR. ESH: Yes. I understand the comment. We'll look at it.

MR. MAGETTE: Okay.

MR. CAMERON: Okay. So you got that David. All right.

MR. MAGETTE: One more question. Just in general, the 61.13(e), the Table A for the -- essentially like a threshold for when a long lived waste analysis is required.

Is there a technical basis for that? How did you come up with that? Essentially the 10 percent of the long lived isotopes in 61.55?

MR. ESH: Right. So, the way we came up with that is we wanted to say, as Larry had indicated in his opening remarks, are existing facilities operating with respect to long lived waste disposal? Because they all have some long lived waste in them of various amounts and various isotopes.

And are they operating appropriately with respect to that? And the general answer we came up with was yes. You know, there's tweaks and changes you could always make to analysis and evaluations. But the

general answer was yes.

And so, we said well, if we put a performance period requirement -- if we want to put a performance period requirement in place to deal with long lived waste, we don't want a facility just because it has a few atoms of some long lived isotopes to do this analysis. That doesn't make any sense.

We want to make sure if you're doing something that could have a long term -- larger and long term risk associated with it that it would capture those. But it wouldn't capture everything.

And so, anyway the short answer is then, we looked at existing facilities. We looked at conceptually what the problem we were trying to handle.

And then the Class A values on a facility average basis was a line drawn that would put the existing facilities if they were operating with traditional waste in the lower part of the diagram. And only if you were in say, a kind of a new paradigm or new waste stream, such as the large quantities of depleted uranium, it would be kicking you into the performance period requirement.

So, that's the, you know, verbal summary of how we came up with that.

MR. CAMERON: Okay. I think we need to

keep moving. And let's take one last comment on this issue from John Greeves.

And then I want to give Charles an opportunity to open up the compatibility, if you have anything to say on that. John?

MR. GREEVES: Yes. Just, the opening remarks were about perception with complexity. Well, I'm one of those that perceive it as being complex.

I look at the slides you show, your third slide with a nine box diagram. Your fifth one with many boxes. The seventh one with multi-colored lines. And the eighth one with a lot of text.

I sat through briefings of Paul Lohaus and Katie Dragonette years ago explaining Part 61. And it was never this level of detail. Like I subscribe to a simple rule, adequate protection, clear, implementable.

And this level of complexibility gives me pause in terms of implementation. Just, you know, the overall approach, which was the original question, you have proposed a three tiered system, which leads to some of this complexity.

I prefer a two tiered approach. In your slide six, if you can put it up there. Again, I'm trying to come from a, how can I implement? What's a

rule that's clear and simple? And if you look at your slide six, it shows the problem.

The problem is we have an early time frame. A lot of low level waste. High activity that decays after about 1,000 years.

So if you have a two tier system that reaches out to -- by the way, I subscribe to the 1,000 year metric for a period of compliance or time of compliance.

A one tiered system accounts for that, captures that. If you have a second tier that takes care of all the rest and require a site specific analysis, to me that's a simple two tier approach which at one point the then Commission subscribed to.

You got guidance to look at three tier at a later point in time. But, hey, it's evolving. So that's my point. I think the complexity that's in the proposed Rule, I wish it wasn't there.

And just as a comment, I think a lot of the material that's added is to me how to, as opposed to criteria. And I'd prefer to see a Rule that takes a lot of the how to and use it in the guidance which I think is where it is, so.

MR. CAMERON: Okay. That's -- John, that's great. Larry wants to respond.

MR. CAMPER: I have two comments. First, sometimes when you're walking around the jungle, it's good to fly over in a helicopter. You see more.

I think what -- I think what your comments about the complexity of this, we greatly appreciate those. We do understand those. And when I say fly over, what I mean is this.

Remember that the Commission initially directed the staff to use a two tiered approach. The Commission subsequently directed the staff to use a three tiered approach. We've attempted to address that concern.

Why did the Commission do that? I would never pretend to speak for the Commission. I can only share with you discussions that I had with each Commissioner and their staff and give some impression.

I think to a large degree the three tiered approach grew out of concerns about this thing called depleted uranium. It is complex. It behaves differently.

And I believe the Commission and some of their staff may have in fact been influenced by some of the same concerns that the staff had when we were working on a proposed Rule that contained a 20,000 year period of compliance. I think we all know and

understand the ingrowth of the daughter products on depleted uranium.

When it commences 8,000 years or so, when it peaks, it is a most unique thing. And I think that has led to the Commission's interest in a three tiered approach. And I think it's lead to some of the complexities that we see being talked about around this table.

Now having said that, I do think it's important for members of the public again to understand, we have a site in the United States today, all these sites have disposed of depleted uranium safely.

And we have one site in particular, an extremely arid site in the great State of Texas, that has given authorization to its operator to dispose of a large quantity of depleted uranium based upon a performance assessment.

Now, why does that work? It works because where I alluded to in some of my comments, one must understand that the operations for disposal today in these United States is remarkably different then it was envisioned in and articulated in the environmental impact statement leading to Part 61.

I mean, the levels of conservatism and the

kinds of things that are done, for example, at that site in Texas, is remarkably different then what was articulated in the EIS. Which served as the regulatory basis for the Rule.

So, John and others, I think that's why we have the three tiered approach. And I think that's why it's so complex.

MR. CAMERON: Okay. Thank you. And just before we go to Charles, I just want to note that if we had a whole lot more time, okay, we could ventilate these issues more thoroughly. But the value of this, it really tees up potential comment areas.

It clarifies information. And in terms of teeing it up, it not only tees it up for the people here in the audience today. But also for the people who are going to be attending the meetings in Austin, Columbia, whatever. So it's a value.

Charles, on Compatibility?

MR. MAGUIRE: Yes sir. And that can be brief. We're supportive of the time frames. We think Compatibility B is probably important in terms of the consistency issues that you might have to deal with.

We faced early on, probably mostly because of Carbon 14, the need to look at what sort of dose would occur to the public from the disposal of the inventory

at the WCS site. We also then got the opportunity to look at depleted uranium, large quantities of depleted uranium coming to the site.

I think, I've been involved -- I've been involved with regulation from the private sector side and then nine years with the Commission. The -- I find myself saying to people all the time, we used to be able to smoke in the building.

Things change and regulatory -- regulatory frameworks have to change with that. And so, any advent of disposal of depleted uranium, any advent of disposal of other long life radioactive material is going to have to have a regulatory framework that will allow us to assure the public that it's safe, that it's appropriate.

And that it's safe and appropriate over extremely long time frames. And so I like this approach. It's served us well in the things we've had to deal with.

MR. CAMERON: Thanks, Charles. Anybody else on compatibility? John?

MR. TAUXE: Yes, I do want to address that. I also, maybe we can come back to it. I just had a couple of quick comments. One on stability and the other one escapes me at the moment.

But compatibility I think is important to have consistency across the States. And I've worked on a lot of them and seen a lot of inconsistencies that sort of bother me. Maybe it's part of my OCD in nature.

But, it seems only fair that there should be compatibility and consistency across the States. I remember when I first looked at the Utah regulations when I was first invited to work on depleted uranium at Utah. I was surprised to see that the State only required analysis to go out 500 years. And that was it, despite all sorts of interesting radionuclides being disposed.

So, and -- oh, the other one was on overall approach. I think it's -- I'll just say it now quickly. The overall approach I think is great. The three tiered approach is fine.

That level of complexity I have no problem in implementing. My problems are in terms of clarity of language and things like that. That's what causes implementation problems for me.

MR. CAMERON: Okay. And if you have anything else, we'll circle back to that. But, let's go to the definition of long lived waste. Is that the topic? Long lived waste definition is the third bullet.

And we will be going to the phones Arlene as soon as we're done with this. Okay.

OPERATOR: Okay.

MR. CAMERON: Okay. Thanks Arlene. Anybody on long lived definition? Do you understand what the subject is? John?

MR. TAUXE: Yes, I think I understand it. Yes. And it comes into that equation I was point out earlier of where the concentration is. Because it's -- one clarity issue was there's a -- and actually this did get clarified in this latest revision that wasn't clear in the 2013 version.

Was about, are we talking radionuclides or long lived waste, which is a big collection of radionuclides. And that's a very important distinction. And it seems to have been made clear here that it's the collection of radionuclides.

It's the entire inventory and how we're looking at that. I also want to respond to something Larry said, that depleted uranium was unique in how it has very high concentrations later.

The funny thing, in two million years from now, I would say depleted uranium and spent nuclear fuel look very similar. Once all the fission products are died away from the spent fuel, it looks -- it's got a

lot of U238 in it. It looks a lot like depleted uranium. And they both look a lot like uranium mill tailings look today.

So, in a way it's not so unique. All these things are converging way out in deep time. And I guess we're saving the Table A discussion for following this?

MR. CAMERON: That's the next topic. Correct.

MR. TAUXE: Oh, okay.

MR. CAMERON: Anybody else on the definition issue? Larry, do you want to say something?

MR. CAMPER: No, I -- I appreciate that point John. I do want to make it clear for members of the public though. We use a totally different regulatory regime for disposal of spent nuclear fuel. Not lot low level waste.

MR. CAMERON: Okay. Are we ready for Table A discussion? Or John, do you want to -- go ahead John. Whatever you want to say.

MR. GREEVES: I'd like to start Table A, but wrap it backwards towards the definition.

MR. CAMERON: Go ahead.

MR. GREEVES: The definition and Table A work together. And I -- I'm not -- I'm having trouble understanding Table A. It's hard to penetrate.

So, my comment is, I would prefer to see Table A and the definition to go in guidance. It's sort of a how to. You know, you got to meet these performance objectives.

But, don't tell me how to meet them in the Rule. I think I like the concept in Table A. I can't tell you I fully understand it. That's the problem if I don't understand it, how am I going to implement it?

So, it's really a preference of taking things like Table A and that long definition of long life waste and have it be part of the how to in guidance as opposed to being up in the Rule.

There's you know, show up and my concern about, I have lots of good things to say about the Rule. But the concern I have is implementation of a lot of new language. And so, I'm going to stop right there.

MR. CAMERON: And John, just to put a finer point on that, a question about why you think that the how to should be in the guidance. Is it because it gives more flexibility to the -- not only to the licensee, license applicant, but also to the staff? Can you just tell them that?

MR. GREEVES: Yes. It comes from my 30 plus years of experience either writing, implementing, observing, commenting on rules. And to me, the best

rules are -- provide adequate protections.

Larry said early, simple, understandable, clear. It's the what? What's the criteria? And then, to me, guidance is best used to do the how. Okay. That's the clear criteria. Everybody understands it. And how am I going to implement that? And to me, that's best done in guidance.

I mean, the staff has done a very good job under 31.16, which not everybody in the room knows what that is. But it's, basically the tank analysis that South Carolina and in Idaho. And the legislation says use Part 61 performance objectives.

And the staff did a -- has done an admirable job on that. Because it had clear criteria. And then they wrote guidance which mirrors a lot of what's I think in your guidance. So --

MR. CAMERON: Okay. And Larry, before you go, I want to give you an opportunity to respond to anything that Tom Magette said. Tom, do you want to finish this off from the panel. And then we'll go to Larry and then the phone. What is this challenge?

MR. MAGETTE: But I have a follow up.

MR. CAMERON: Oh, and Dave too. Okay, let's hear from Tom and then we'll go to Larry and David and then we'll go to the phones. Tom?

MR. MAGETTE: I just have a question about 13(b), which contains Table A. Am I correct in viewing this as almost, or maybe not almost, but maybe a deminimis standard for whether or not a site contains sufficient long lived waste to require specific treatment under the third tier of the performance analysis?

MR. ESH: Correct.

MR. MAGETTE: Okay. So that's that it looks like to me. So, although I agree with John's general comment about some of the prescriptive nature of the Rule, which I think is better addressed on some of the other topic areas.

This particular one to me seems more like an actual requirement that could be useful to a site that in fact falls below the limits in this Table. And so that seems to make sense to me.

It goes to this notion of whether or not a site has to -- well, the existing sites versus future sites, this 61.1(a) 1982 discussion that we had earlier that we kind of backed into when we were doing clarifying questions. I think we probably need to have a little bit more discussion around.

But it seems to me this is at least for some sites today and in the future for that matter, a way

to not conduct some of the analysis that might otherwise be required as long as you meet the standard.

And if that is the case, and if we make sure that that's clearly articulated in the Rule language that that is the case, or maybe it's just in the statements of consideration for that matter, then I think it's a good thing.

MR. CAMERON: Okay. Larry and then David and then the audience.

MR. CAMPER: Well I think that -- thank you. I think that John's point about guidance versus secure the language is a point well made. And there's always that balance that you try to achieve. And I share much of your sentiment.

But I would have to say, and that's what I was going to say, and Tom has said it in his usual eloquent manner, this is designed to provide relief. It's designed to provide relief for the operator as to whether or not you need to do the third tier review based upon whether or not you exceed the limits specified in Table A.

I wonder in fact, how useful it might be to the State of South Carolina, for example.

MR. CAMERON: David?

MR. ESH: Yes, and I was going to add to

that, it's definitely intended to provide relief there when you do or do not need to do that evaluation. And the reason why we put it in the regulation, it's very analogous to the waste classification tables for protection of the intruder that was originally done.

So if conceptually you have trouble with Table A, then I think you should also have trouble with the waste classification tables. Because they're almost identical.

Use some of fractions. Here's the concentrations. The only change being that it's based on a facility average basis. And that we also added in, instead of it just being long lived transuranics, it's long lived isotopes because we needed to capture the uranium.

So, the value for that, the long lived alpha admitting was made more generic. Otherwise conceptually, that was our intention. Now, if it's confusing in language or that sort of thing, those are the types of things we want comments on so we can make it less confusing.

But conceptually that's what we were shooting for.

MR. CAMERON: Okay. Thank you. Larry, thank you. David. Anybody here in the audience in

Rockville on this first topic?

(No response)

MR. CAMERON: Okay. Arlene, does anybody on the phone want to make a comment on the analysis time frames? The first topic of discussion?

OPERATOR: Yes sir. We have Roger Seitz. Your line is now open.

MR. SEITZ: Thank you. And I appreciate the opportunity to have a chance to hear your perspectives and a chance to comment.

I just wanted to add one though on the stability question. And based on what you were saying Dave, is stability -- does it need to be an objective for that protective assurance period? Or are we providing protectiveness with the performance objectives?

MR. ESH: Right. So what you're saying is, should you even have a separate subpart © performance objective for stability. Or is it all rolled under your analysis for 61.41 and .42. That's a good question.

You know, we -- the reason why it's separate is because to be quite frank, it was separate when we started working on the regulation. And it is an important consideration by the Commission,

stability of the site. How do you evaluate the stability of the site?

So, and we put this in the guidance document. I'll just throw it out there because it might be of interest to some of you.

The way we would look at it sitting in our regulatory house, is somebody might come in with the greatest analysis in the world that they say look, this demonstrates -- I can meet 61.44.

But if the support is not there for that analysis or we believe there is, you know, unresolved -- the questions you simply can't resolve about the stability of that site, maybe your risk assessment tools aren't sufficient to evaluate that condition. It's similar to conceptually what's done with those exclusionary waste -- or safe characteristics under 61.50.

There may be technical considerations for a particular site that make it not very amenable to risk assessment to put it generally. So, we have that in the guidance under 61.44 as the -- that would be within the regulatory analysis process that we would use or that our Agreement State regulars could use that say hey, irrespective of your risk assessment, because of these stability issues, I'm not going to allow you to

dispose of this sort of waste.

Or, I'm going to limit you this amount of this concentration or this quantity or combination thereof, so.

MR. CAMERON: Okay. Thanks, David.

MR. SEITZ: David can I --

MR. CAMERON: Yes, Roger?

MR. SEITZ: Yes, this is still Rogers. I just wanted to -- I think, I can -- I think the 1,000 year period of compliance just for consistency with the past is fine. But maybe there's an argument that can be made that you don't need the stability beyond that time if you're already covered under the other objectives.

MR. ESH: Sure. I understand. Thank you.

MR. CAMERON: Okay. Thanks, Roger. Any -- Arlene, do you have anybody else?

OPERATOR: Yes, sir. There's one left. From Paul Lohaus. Your line is now open.

MR. LOHAUS: Hello Chip.

MR. CAMERON: Hi, Paul.

MR. LOHAUS: I think the comment I wanted to offer has really already been made. But it deals with the issue that John raised about the complexity.

And the question of whether a requirement was in the rule as a prescriptive requirement. Or whether you maintain your rule on more of a performance base and have objectives that are then met through application of more detailed guidance.

And we wrestled with that question and one of the criterion that we used to sort of make a distinction on whether the requirement should go into guidance as a guidance how to part, or whether it should be an actual prescriptive requirement in the Rule, really was sort of two based.

One was whether the requirement was necessary to meet or implement other requirements of the Rule, such as classification system. And the second sort of dealt with whether the requirement was absolutely necessary. Really a minimum requirement to help ensure that the performance objectives would be met.

And again, I think waste classification's a good example of that. And I just wanted to comment quickly on the question of what we used relative to the time frame for stability on facility design.

On the facility design, the waste form and the container, the concept was to rely on that for a 300 to 500 year time frame. And the analysis

supporting the Rule, were really based on the fact that at 500 years, most of the waste would basically be homogeneous with a few exceptions, activated metals potentially.

And the analysis were based on ensuring that you would meet the performance objectives at a 500 year time frame even though the analysis were carried out to a 10,000 year time frame. But at 500 years, under the Rule, you should have good assurance that you'll meet both the intruder performance objective and the environmental release objective, the 25 millirem standard.

So that was really the -- sort of the contents that we applied. And obviously the current Rule as proposed, carries that out quite a bit further. And does add, as John notes, a fair degree of complexity.

I appreciate the opportunity to comment. Thanks a lot.

MR. CAMERON: Okay. Thanks. Thanks, Paul. A final quick comment from John?

MR. TAUXE: On the stability, I'm sort of in the camp with Roger Seitz on this. I don't really understand the need for stability in its own right.

And it seems like the, you know, going

after the performance objectives in .41 and .42 is sufficient to ensure safety of the site. If it's low risk, if it's falling apart, you know, maybe that's not in of itself a problem.

My other quick comment on stability is the definition here. And I commented on this earlier in the 2013 comments. In definition it says, stability means structural stability.

Well, that's just a tautological definition. And some extra explanation as to exactly what is the thinking behind that? Like are we talking about a subsidence or erosion or what, you know, give us some more ideas of what you're talking about stability as structural stability is not just -- it's not a very useful definition.

MR. CAMERON: Okay. Good.

MR. TAUXE: And then I have Table A comments if we're still doing that. Just some --

MR. CAMERON: Why don't you do it quickly. And then we'll give John a --

MR. TAUXE: Okay. Quickly, Table A, okay, you guys have gone part way to using SI units by converting rem to sieverts. I applaud that. Let's finish the job and express this instead of in curies in becquerels. Or at least in both.

And put the SI first and put the others in parenthesis if they're needed. But let's get away from curies here.

And also, the -- one confusing thing, just in how the Table is presented. Is the way the units are in the header of the Table for some of the items in the Table. And then there are footnotes down below. And the way it's written in the red line strike out, footnote three on 10 makes it look like 10 cubed.

So, there's just some formatting issues with that Table that I think could use some clarification. And I'm a big proponent of metrication. And I would suggest you complete the job and let's do this in becquerels phase.

MR. CAMERON: Thank you. Thank you, John. And John Greeves.

MR. GREEVES: Yes, I'll try and be quick. I've got a concern about the implementation of stability from 1,000 to 10,000 years. It's -- I think it's got implementation issues. I wouldn't have difficulty defending stability for 10,000 years.

And when the we, the then staff was doing this, the context we had was uranium mill tailings. We could really only come up with a concept that was implementable on the order of 200 to 1,000 years, the

mill tailings piles are the still example.

And I invite you to think about the difficulty of implementing a 10,000 year approach on stability of just -- and like other speakers, I would think relying on the .42 and -- .41 and .42 performance objectives as an analysis would take care of that concern.

Laying something into .44 that might require an applicant or a regulator to try to defend a 10,000 year stability is going to be problematic.

MR. CAMERON: Okay.

MR. ESH: Within 61.44, in the guidance document, we do indicate that you can evaluate stability with respect to how it influences your ability to meet the other performance objectives. So it's not an abstract dimensional change type of analysis or anything like that.

It is tied to facility performance. And the other thing I would add is, how are you going to say what the facility performance is if you can't say that your facility is stable? Those things seem to conflict with each other.

So, I understand the argument that may be 61.44 you're saying can be rolled into the other ones, but conceptually, stability of your system has to be

part of your risk analysis. Whether you may have a case as John indicated, where you can show even with instability my risks are manageable. That's a fair argument and approach.

But I think the issue of stability, it's not that you can just get away from it. And especially if you're disposing of material that has a long term persistent hazard. That's the -- the waste you're choosing to dispose of, show me that it's safe.

MR. CAMERON: Okay. We're going to take a break. Arlene, I'm assuming there's no one else on the line?

OPERATOR: No sir, at this time the queue is clear.

MR. CAMERON: Okay. We're going to come back at 12:45. That doesn't give you the full hour for lunch. But almost, okay.

We'll come back at 12:45. And a question for the panelists since you're traveling and everything, if we need to go over to 4:00, is that going to be acceptable? Okay.

So, let's break. 12:45. And Arlene, we'll be back precisely starting at 12:45, okay?

OPERATOR: Yes, sir.

MR. CAMERON: Thank you, Arlene.

OPERATOR: You're welcome.

(Whereupon, the above-entitled matter went off the record at 11:54 a.m. and resumed at 12:49 p.m.)

MR. CAMERON: We're going to continue now with the second technical issues, and this performance assessment.

And, David, you're going to do this one, too?

And we're going to have a presentation by Dave Esh. And then we're going to open up to a panel, and then the audience and the phone.

David?

MR. ESH: Thank you, Chip. This is the second topic. We had hoped to get through three before lunch. We got through one, so hopefully we'll improve our pace a bit.

But, the second topic is performance assessment. And my introduction is going to be considerably more brief for this one than the previous one.

It's not a new topic. We believe in our minds the way we consider it is it's a more renaming of or restating of the previous topic in the existing

regulation, which is technical analysis. We have added some modifications to what we say modernize the technical analysis requirements, but those things that are added we feel should be part of any technical analyses that's being performed now. It just makes some of them explicit in the requirements.

So, the new requirements are reflected in 61.13, and they're in three main areas here: They reflect the scope of the analyses, features, events and processes, uncertainty and variability and the consideration thereof, and what I feel is one of the most important topics, model support for the evaluation you're doing.

In addition to that, we have a requirement to update the performance assessment at closure. And as we discussed earlier in the morning, we modified the siting characteristics consistent with the disposal of long-lived waste. So, overall though in the performance assessment area it's a migration of some things that were implicit to explicit just because those are the things that we felt were the key components of the performance assessment that somebody needed to evaluate.

Along the lines of what we discussed in the

morning though, these requirements I'd say are pretty much a high level. They basically say consider uncertainty and variability. They don't say what you need to do or how you need to do it, but they put the requirement in place that you need to do that sort of evaluation.

So next slide, please. This diagram shows conceptually what we think of the performance assessment process. It's in the center. It's a learning or evaluation process. You have the main elements of collecting data, which can include the site characteristics, design and waste form. From that you develop conceptual models and then develop numerical and computer models, and then combine the models and estimate the effects and iterate until done.

Around the outside of this diagram we've reflected the requirements that we added to the regulation that are either related to or about the performance assessment. So at the bottom there's four reflected here for 61.13 that are directly related to the performance assessment or associated analyses. And then the three at the top are related to kind of more bookkeeping or completeness associated with doing the performance assessment.

So, then the next three slides I'm not going to read. They're here in the slide package so that you have the text in front of you if you want to state any of the specific language as we discuss it here. But basically on the first one we give the definition of "performance assessment" and then we list what the various analyses that you need to do with respect to the performance assessment.

The last thing on slide 16 is a hazard map example. This our in-house GIS expert Alan Gross developed. We had him do a whole series of these. This issue of, well, maybe it doesn't apply to those of you that have a site, but if in fact somebody was trying to do a new site and if I was a regulator in an Agreement State or at the NRC and I was trying to evaluate the suitability of a site, we though the hazard map examples would be useful as they're not an exclusionary if the map is colored where my site location is, I can't put it there. It's a I need to look at this aspect in a little more detail or more detail for my disposal site if in fact it says those types of hazards may be present. So we thought that would be a useful tool that people could use to evaluate a site. And then siting characteristics. These re

all in the guidance document.

Okay. So, on slide 17 what we're seeking feedback on with respect to the performance assessment is first for performance assessment people maybe this is heretical, but at the high level is it even suitable to use technical analysis to evaluate the disposal of long-lived waste? We've heard that from some stakeholders leading up to this point. That's the first topic.

The second is the specific new technical analysis requirements that we've provided for the performance assessment.

And then the modifications to the siting characteristics requirements. We can discuss that in more detail here, if you'd like, if you've had a chance to look at those changes.

And then finally the requirement to update the performance assessment and closure under 61.28.

MR. CAMERON: Thank you, David. And I think we'll go through the bullets one by one.

And I would just note earlier this morning Susan Jenkins on the phone was referring to a hypothetical site and she asked a question about 61.13. And we thought that we would be getting back to her with

some clarification on that this afternoon, but after talking to the staff, they thought that was a really good comment and they want to take it back to the working group to address. So I just wanted to note that that is going to be an open issue for the staff.

So, with that, suitability of using technical analysis. John, you want to go on that one? You have anything?

MR. TAUXE: I'd just like a little more clarification about what exactly you mean there.

MR. ESH: Right. Okay. So one way you could go about providing requirements for this type of problem would be similar to what's done in similar countries or that even the NRC did with the waste classification table. At the sea limit above that you have greater than class C waste that then says may not be amenable to disposal in the near surface. It depends on the conditions and it would be evaluated on a case-by-case basis. So, the idea is that you could us technical analysis to determine what the limits might be for a particular type of waste or site or location, or you could specify a quantity and concentration number.

So, X curies of depleted uranium as

suitable for disposal in the near surface and above that not suitable. So it's at the top level something different than using technical analysis and performance assessment to establish limits or requirements. And you see that in some other programs internationally, is they'll set limits for long-lived alpha that don't have a very clear derivation as to how they come up with them. And that's the requirement. If you're above that concentration of becquerels per kilogram of long-lived alpha, then it's not suitable for near-surface disposal. So they use an approach to manage uncertainty that way, which is kind of different than the technical analysis-based approach that we've put forward in this regulation.

What we've put forward is in alignment with what's been done in the past in the U.S., but it's just to acknowledge that there are other approaches and to hear the Panel's views on is this the right approach or is there some merit to some of those other approaches?

MR. CAMERON: And with that clarification, do you want to comment now, or should we go to Tom Magette first?

MR. TAUXE: We can --

MR. CAMERON: Tom?

MR. TAUXE: Well, just even those examples you threw out must have some technical analysis behind them, you'd think, rather than just pulling a number out of the air. But it's not necessarily a site-specific technical analysis or it wouldn't be, but there must be something behind that.

MR. ESH: Right. Not necessarily. I mean, I think in some cases it's more of a political or policy approach or statement as to this is where we're going to set a line and the below it you do this and above it you do that. It's a way to manage the problem. And John was talking about wanting simplicity in things, so that's a pretty simple way to do things.

And I think it works if you have say one type of waste or one location or a few locations that you're dealing with, because then you could tailor that number to the specific site or type of waste and locations. But if you have potentially a variety -- you know, the United States is very diverse in terms of its natural environments and conditions that you can potentially deal with. And that was part of the problem with developing the waste classification

tables in the U.S. is you have to make one size fits all, but one size doesn't really fit all.

So, this would be the same thing here. But at a high level we wanted to discuss it to make sure, okay, everybody's okay with using the technical analysis. Now let's get down to the meat of the matter and decide what are the specifics of the technical analysis, specific requirements of the technical analysis that we need to have.

MR. CAMERON: So, let's see if you're all comfortable with this before we get into the details with Tom.

MR. MAGETTE: So, the answer to your fundamental question I think is yes. I like the idea of technical analyses. I think it goes straight to Larry's point from this morning, which is what could possibly be better than a site-specific analysis? Now, obviously part of that is also the concentration volume mass of the waste, the containerization, all that. But, yes, a site-specific analysis to me is the gold standard.

And to your point, David, that you just made in terms of a one-size-fits-all, you'll never come up with a set of classification tables that will be

better than a site-specific analysis. Having said that, I think it's reasonable to have exclusion criteria. Pretty much all siting techniques for any kind of facility have some level of exclusion criteria. So you don't want a low-level radioactive waste facility within 100 feet of an elementary school, which is probably not going to be in your Regs, but you know what I mean. So, yes, flood plain, the ones that you identified. That's also imminently reasonable. But I think going more to a technical analysis standard and getting away from the classification tables is a good thing.

When we come to the next point, I have some specific comments on what's in 61.13 that I do think some of it is too prescriptive. But also even if you keep a more prescriptive approach, I have some specific comments on that. But in general I like the approach. I think it's sound.

MR. CAMERON: Let's go to Dan. Dan?

MR. SHRUM: Again, not to belabor it, but we were expecting a requirement for performance assessment, so I think we're all in agreement.

But Tom mentioned that it's the gold standard. And speaking of gold, I do have a comment

on the cost to industry. I'm not sure where you got those costs. They're not even remotely close. They're very low.

And my other question is does that include the additional model when you go to closure, this million dollars cost to industry?

MR. ESH: I'm not the person to answer the questions about the cost numbers that have been developed. I don't know. The answer is we'll have to go back and look at that.

I remember helping at least a couple individuals when they were working on that, providing names of people in industry to supply information for them to develop those estimates. At one point I provided some contacts for them to get information. I don't know who or where they may have got the information from to do it. But we'll have to get back to you on that one.

MR. SHRUM: And I don't know that it matters. I mean, it's going to be a requirement. But these guys do it, Neptune. And I guess you didn't even notice that, did you?

MR. ESH: Are you saying John's too expensive?

MR. SHRUM: Yes, John's too expensive.

(Laughter)

MR. CAMERON: Okay. In Phoenix the question of the regulatory analysis came up that the NRC does, and I'm told that it is available to the public. Okay? That's cost analysis. So look for that.

Let's go to the 61.13 questions. Unless, John, you have --

MR. GREEVES: I thought you were going to go through the four. You started down there and you never got to me.

Quickly on technical analysis, the original rule 61.13 is titled, "Technical Analysis," so I agree that it needs to be done. I think there are ways to clarify that which in part you've done. And when we get to 61.13, I'll explain why I think you went a bit too far. So, I'll stop with that. I agree we really do need technical analysis and I'll make some more comments when we get to 61.13.

MR. CAMERON: Do you want to --

MR. GREEVES: Just continue?

MR. CAMERON: -- say anything on 61.13 --

(Simultaneous speaking)

MR. GREEVES: Just to -- by the way, I'm finding this panel discussion feedback very useful, so I thank you for putting that together.

And following up what I said earlier, 61.13 has been implemented in the past. People have been doing technical analysis. People have been doing performance assessments. We just didn't call it that back in 1980. And I just don't think it's necessary to take what used to be 4 paragraphs and turn it into 16. I think you could do it in a shorter amount of space and call for site-specific analysis, which is needed. And the more specificity you put in here, it just becomes I think potentially a burden on both the operator and the reviewing agency and Agreement State.

And just as an aside, I'll second what Dan Shrum said. Part of what I do is GoldSIM analysis for other clients, and the numbers you have in here are way under my experience putting together a GoldSIM model for this type of activity. I'd be happy to be a source if somebody wants to know about that.

MR. ESH: But remember --

MR. GREEVES: You can spend a million dollars a year on GoldSIM without a bit of trouble.

MR. ESH: But remember the cost estimates

are the delta for the new rulemaking compared to what you have to do now. So if you said people are already doing all this, then what's the additional cost that you're talking about?

MR. GREEVES: It's sort of -- and you're reminding me, the language you have in the many, many more paragraphs will lead me to believe you're looking for a PRA-type analysis. And that's a step change over what people have done in the past. Recent past I think Texas has done some things, but I think other sited states have not gone that far. And this rule is begging for a GoldSIM-type analysis and those things cost you millions of dollars. All you have to do is look at what's on the table now to analyze the site at West Valley. That thing is going to cost millions of dollars and take years. And that's the kind of analysis this rule is going to cause to happen.

MR. CAMERON: David, do you --

MR. GREEVES: My opinion.

MR. CAMERON: -- agree with John saying that this is more of a PRA? Do you agree with what he just said?

MR. ESH: No, I mean, what I said in my opening remarks, or I hope I said was that we don't view

the 61.13 requirements as anything different than what is or should be being done right now anyway. And so, you can't have it both ways. Either it is being done and therefore the new requirements don't cause you any trouble, or it's not being done and then the new requirements will cause you burden, one way or the other.

So, our view is that from what we've seen with the various analyses is they've become modernized. They're doing the things that we put in the requirements. This just puts it in the checklist there. When the state regulators or us look at one, we can make sure -- go through each of those elements and yes they did this, and yes they did this, and here's how they did it, so on and so forth.

MR. CAMERON: Dan, do you have a comment? Then we'll go to Tom.

MR. SHRUM: Very quick. Yes, we've been doing it. I mean, both of our facilities we have done models. But we actually had this discussion this morning. Is your expectation that this is a probabilistic analysis? I thought I read that and I couldn't find where I thought I read that. Is this a --

MR. ESH: No.

MR. SHRUM: -- different breed of animal?

MR. ESH: No, we don't prescribe what type of analysis you need to do. And when you get a chance to get through the 450 pages of guidance document I think you'll hopefully see that. You can do a deterministic analysis. In fact, if your site is simple and you can do a simple analysis and make a simple argument of safety, by all means you should do that. There's no reason to add in the complexity unless you have to or choose to because it's some business advantage or whatnot. But we don't prescribe a certain type of analyses.

And that's why in say the performance objectives we have just a numerical value. We don't have the peak of the mean value from the probabilistic analysis must be 25 millirem. It just says 25 millirem. And then in the guidance document we say if you're doing probabilistic analysis, here's the metric to use. If you're using deterministic, here's what you use, and so on and so forth.

MR. CAMERON: And Larry before Tom. Larry?

MR. CAMPER: Dave, going back to John's

comment about level of complexity, which he's brought up several times in his commentary, which is understandable, and going from 4 paragraphs to 14 paragraphs, I counted and I think that's about right. But what is -- simply state what caused that. Why do we go from 4 to 14?

MR. ESH: Right, the issue is that as you go from say a traditional low-level waste stream to maybe a concentrated long-lived waste stream, then some of those elements of a performance assessment, like consideration of uncertainty and variability or model support, support for your calculations by comparing the data and analogs and those sorts of things -- that becomes much more important because you're dealing with a harder problem and potentially a more risky problem. So, the reason we added those requirements is because when you move to this other type of problem, it becomes a more difficult problem. And we wanted to ensure those elements of a modern performance assessment were in the requirements.

So, all of it does to be implemented in a risk-informed performance-based manner. So, what you need to do with evaluation of uncertainty for your simple problem might be a lot different than what you

do with an uncertainty evaluation for a complicated problem.

MR. CAMERON: And, Tom?

MR. MAGETTE: Thanks, Chip. So, it strikes me that in attempting to define a performance-based approach you have become a little bit more prescriptive than you need to be. And I think 61.13 is the case where you do simply have more specified requirements than are necessary.

And even to your last point I would say these requirements are not iterative. In other words, they don't become greater as the problem becomes greater. They just apply, as is the case with the regulation. So, what you're looking for for a harder problem -- you've also required an applicant to come forward, or a licensee of an existing site to come forward with a model that has sufficient capability to comply with a harder problem. So, I think you have imposed an additional requirement where it may not be necessary.

And so, I mean, if I look at this -- and I do think most of this would fit in the guidance actually. So, if I look at 61.13(a)(1) to consider features, events and processes -- and all that

paragraph perfectly fine. Okay. Evaluate them in detail too if their omission would significantly affect meeting the performance objectives. See, I don't think you have to say that. I don't think you have to specify what you have to do in order to show what wouldn't happen. That might be something to get into in guidance.

I mean, 3, I have a couple problems with 3. Consider the likelihood of disruptive or other unlikely features, events, etcetera. Consider the likelihood of unlikely. I mean, to me at that point if there's a real question about something that an applicant omitted because they believe it was sufficiently unlikely, then I would expect to see either justification for that if it's on the border an RAI. And I'm not trying to lay the groundwork for a bunch of RAIs, but some of this I would expect to be -- and this would go to your last comment, David, where if you need it and it applies --

MR. ESH: Right.

MR. MAGETTE: -- you would expect the applicant to include it. And if you didn't see it, you'd ask for it. If you don't need it and they don't include it, then all is good. So, I do think there's

a level of prescription here that you don't need in a rule in order to get what you want.

MR. ESH: Well, and the issue with that one in particular is that -- okay. So, say you're analyzing traditional low-level waste for a short period of time. It's just a probability argument. What's the likelihood that you have something unlikely happen that's going to drive your risk? When you extend the time frames, you can capture more and more of those unlikely events or processes that may happen. And I would point to say Part 63 with Yucca Mountain that has FEP requirements in it, the features, events and processes. They define a frequency cutoff that says when you need to consider something and when you don't.

We didn't do that here. We took a high-level approach to just say at the high level this is what you need to include. In the guidance document we do recommend some frequency cutoffs and why you might use those. And they're different than Part 63, and we provided an argument for that. So, I would say keep that in mind.

I understand your comment. The whole idea between the requirements in 61.13 were to get three

things right: the scope right, consider uncertainty and provide support for your calculations. So, if there's a simpler way to achieve those three things, fine. What we have on paper right now is obviously what we came up with through our working group process.

MR. MAGETTE: I think there probably is a simpler way. I'd be happy to give you a written comments to give you some specificity of our thinking.

One other example and one generic comment. Like the technical adequacy of the model point here, I mean, really I think that that's also not rule language to my way of thinking. If there's any doubt as to the tool that an applicant comes forward with, staff has ample opportunity to deal with that.

And my final comment, Chip, is that I also don't agree with your earlier comment that if you're already doing it, it's okay to have it in the rule because you're already doing it and nothing has changed. Maybe life should be that way, but I don't think life is that way.

I mean, there is a thing called regulatory creep, and the more of it you basically document in the regulations, then that becomes a new standard which people then ask for more on top of. And regulations

are implemented by human beings and that's all well and fine, but I do think that's something to be wary of, the notion that, hey, they're already doing it.

MR. CAMERON: Okay. Thank you. And Larry has something to say. Then we're going to go to Charles, then we're going to go to the siting characteristics.

MR. CAMPER: Just a quick regulatory philosophy insert, if you will. One might argue that the level of detail that's being now required by 61.13 is overbearing or maybe too much, whatever. But I do think that one of the things that drove the staff to specify all those various things is something I alluded to earlier. We were having conversations with the Commissioners as we were putting this together. There were more things on their minds about consistency than only the compliance period.

I can recall specifically one Commissioner saying to me sites should be evaluated essentially the same wherever they are or any site to be developed. And whatever those parameters are should be evaluated. We should be specifying what they are to ensure consistency. So, the staff had that on its mind when it did some of this from a regulatory philosophy

standpoint.

MR. CAMERON: Okay. Let's go to Charles. And then Dan has the 61.13. Let's move onto the other issue because we do want to get to the audience and the phones. Charles?

MR. MAGUIRE: Thank you. And maybe my perspective will be a little different as an Agreement State regulator. Some people talk about regulatory creep, others just talk about the creepy regulators.

(Laughter)

MR. MAGUIRE: Some days I'm both. It's important. I mean, these items that they're pertaining about are important questions that you have to be able to answer when you face your public, when you face elected officials because there's an ever-evolving market for disposal. And you could launch into a licensing process thinking you would know prescriptively exactly what waste streams were going to come to the site. If you knew that, you could probably develop a deterministic model that answered enough of your questions or concerns that you could turn around and face the public that you're responsible to with really nice answers to difficult questions. That has not been our situation with the site.

Now, when I came to the Division three years ago we had a deterministic model. My background with modeling and things on the water quality side, I quickly wanted a better model. I wanted a model that did have some computer power associated with it. And so, we pressed the regulated entity to develop a model that was probabilistic. We wanted to be able to look at numerous scenarios, numerous situations, an ever-changing waste stream and still be able to make the licensing decisions we were being asked to make.

Now, is that expensive? Yes. I don't even want to know what that cost. But it was important to us to be able to answer the questions. And I think what I see in the regulations as you're putting them forward is general enough that the states would have the flexibility they needed to look at this site by site. And I would just say it is a site-by-site situation. And more than any other thing it depends on what that site is planning on to bring into its inventory as to how engaged you're going to have to be in the model.

And so the importance of some of these things I think is variable from site, from waste stream, from business plan, but I think you've got the right

components identified as to the sort of things you have to get camped out on. I think in some cases to be comfortable from the regulatory perspective you may well have to have some sort of probabilistic modeling capability where you can look at combinations of scenarios. And I think we're fortunate we have -- software has come along to meet the demand. I think modeling skills are there. And so, it can be done.

What's important to us is that we modify the performance assessment at least annually. And so, it's not just a one-time beast. It's an annual beast, or maybe more often depending on what licensing changes are being proposed. But it lets us look carefully at a lot of different things that affect the hard questions that we have to answer. So, I think it's important to move down to framework. I felt like you made it flexible enough that somebody that would -- a regulator that's not in my situation wouldn't have to do what I have to do, wouldn't have to have what I feel like I have to have, but could have it if they wanted it.

One of the things that I think I need to add -- and, Chip, I know the time. This morning we talked about compatibility, and I think this is the

place where really I wanted to talk about a compatibility -- I'm not going to call it an issue. It appears that you all are moving down a pathway that would make this Compatibility B. I think in this particular area we are thinking about it, but we may want to ask you to consider C.

Because as we look at the performance assessment model, as we look at what the entity that the regulator is wanting to dispose, our current rules put a performance analysis in terms of 1,000 years or peak dose, whichever is longer. And I don't know if that "or peak dose" creates heartburn for the NRC in terms of Compatibility B. If it does, we might ask you to think about that.

But I think in situations particularly where you're considering depleted uranium or greater than Class C, or other really long-lived radionuclides, 1,000 years might not be long enough to look at a compliance period and completely satisfy the hard questions that get asked.

MR. CAMERON: So, Charles, all of that sounded very helpful for the staff, but just to clarify, for 61.13 you're suggesting that the staff might want to look at Compatibility Level C rather than B?

MR. MAGETTE: Well, just in terms of where the compliance period is being established and the modeling tools are being proposed, I guess the technical things. If there's room in there to look at a peak dose versus -- I mean, certainly longer than at that. Nothing less than 1,000 years, but longer than the 1,000 years. I think there are places where what you're offering for consideration might suggest that a longer compliance period might be more appropriate. Maybe I'd put that under scope.

MR. CAMERON: Okay. Thank you. Dan Shrum on 61.13 and then we're going to move to the next issue. Dan?

MR. SHRUM: As I was reading through the buildup to the actual rule, there seemed to be a tone of -- and I'll just read the words: "Limit the scenarios to reasonably foreseeable activities that are realistic and consistent with activities in and around the disposal site at the time of closure."

So that seemed to be a theme. Those are good words and we like that. Let's limit it to a limited type of scope of what reality is.

In 61.13-3 which Tom already alluded to, "consider the likelihood of unlikely," and

61.13(a)(9), "consider alternative conceptual models." So you've used the word "consider." You have to consider effects, which we understand. But now you have to consider the likelihood of the unlikely and we have to consider the alternative conceptual models or FEPs that are consistent with available data, duh, duh, duh, duh, duh.

That's from a legal -- I'm not an attorney, but from a legal standpoint that's a little scary for me because that's a do loop. You familiar with do loops?

MR. ESH: No.

MR. CAMERON: What are you suggesting that they use instead of "consider?"

MR. SHRUM: Well, it just needs to be removed. The reason for that is it will never end. So I do a very thorough $4½ million model. I submit it. And somebody challenges it and says, well, you didn't consider the Martian attack and you have to consider it. You have to actually model it. That's what you're using the word "consider." So, I don't think that's where it meant to go, but that's what the words ended up saying is that you have to do that model.

MR. ESH: But just in a general sense, when

we use the word "consider," that doesn't mean model. I think that's a misinterpretation of how we would represent that word.

MR. SHRUM: A performance assessment shall consider.

MR. ESH: Yes, but you can consider in a lot of different ways. I can write a paragraph showing that I considered various features, events and processes without doing a model of it. I mean, that's the issue is like of course you could be narrow-minded about how you go about this, but you can also be smart about it. And we've provided the flexibility that you can be smart about it. Whether you utilize that or not, that's of course up to you.

MR. SHRUM: Okay. Think of the people that aren't in this room right now, are looking for a reason to put you into a do loop. Consider alternative approaches, which is a do loop, and consider the likelihood of the unlikely. They're just --

MR. ESH: Right, but the likelihood of the unlikely, that's not what it says. It says consider the likelihood of disruptive or other unlikely events. So, "consider the likelihood of disruptive events" is

the main piece there.

MR. SHRUM: It's an "or" though. There's no --

(Simultaneous speaking)

MR. CAMERON: Okay. Guys, I think we --

MR. ESH: But, yes, I mean, it's to consider both of them, but the idea is that you can't define your scope just based on what's happening today if you're doing a projection of future performance. You have to consider this lesser likelihood, features, events and processes, otherwise you'll have an incomplete analysis that of course you should be challenged on. This provides the mechanism for you to show how you've developed the scope of your analysis. That's what this requirement is about.

MR. CAMERON: Well, before we go to John for final comment on this, we're going to hear from staff legal counsel Lisa.

MS. LONDON: Hi. I just wanted to add a point here, and I think this has been a very helpful discussion. And, Dan, I actually do understand what you're talking about and I appreciate the concern.

And I just wanted to add I think part of the context of these revisions really is this idea of

performance-based, risk-informed performance-based. And so I think your concern is a valid on. I think unfortunately those that may be called to question regarding the work that they do to defend their site may have to look to the overarching purpose of the rule, and that involves looking to the statements of consideration and understanding that the approach was not intended to necessarily consistently be prescriptive. Where we were prescriptive it was because we felt we needed to be prescriptive.

And where we perhaps built in language that could be read to sort of allow this do loop, I think it's more in the nature of providing that overarching view of risk-informed performance-based. And you'll be forced to tell that tale should you get called to the mat on it. But I think it's the narration that the NRC has because it's what we were going for.

MR. CAMERON: And because facilitators are supposed to do this, I would just note that John Greeves' point about the how-to in a Reg Guide may lessen some of the concerns about the "consider" word being brought up in a contention in an adjudicatory proceeding.

John, final comment on this? Then we'll

go to --

MR. TAUXE: Yes, one can consider and then dismiss a particular item. And also I want to make sure that there's a distinction made between a performance assessment and a performance assessment model. A model is used to support the performance assessment. A performance assessment is more a document that makes an argument about something. It may not even have a model behind it. I would be surprised if it didn't have something behind it. But the performance assessment is not the performance assessment model and the performance assessment can consider things that the model does not.

MR. CAMERON: Okay. Good. Good distinction. 61.50 modifications to the siting characteristic requirements. Any comments on that?

(No audible response)

MR. CAMERON: Okay. How about requirements to update the PA at closure?

(No audible response)

MR. CAMERON: All right. And this is --

MR. TAUXE: Seems to me it's a good idea.

MR. CAMERON: You don't need to necessarily say anything, but "good idea" is a good

comment. John Greeves?

MR. GREEVES: Alternative views. It's a good idea, but what I'm concerned about is effectively adding many, many more paragraphs to this will be a burden on somebody, sited states for example. And I think there are sited states out there now who are close to having done the job and performed a tremendous service for the country over the decades and now they're faced with a rule that puts a burden on them to do this -- and you read these words in here. It reads like PRA, the full extent of what's in 61.13. So, I'm concerned about the concept of having the additional requirements in this rule and it drove my comments back to the beginning about the 61.1(a) paragraph that says "as applicable at the time."

So, I'm a little circular about this, but I have some misgivings about requiring a full-blown performance assessment which is going to drive somebody to spend a lot of money at the end of their program when they've already essentially in an interview closed a number of cells years ago.

MR. CAMERON: Thank you. Thank you, John. We're going to go to the audience here. Anybody?

(No audible response)

MR. CAMERON: And, Arlene, do we have anybody on the phone who wants to comment on this last topic?

OPERATOR: I would like to remind all parties, audio parties that if you have a question, please press star, one and state your name clearly.

But at present, sir, there are no questions in the queue.

MR. CAMERON: Okay. Thank you.

We're going to go on to the next topic. And I'm sure this is going to get much easier and simpler as we go along. And this one is intruder assessment. And, Dave, is that you again?

MR. GROSSMAN: No, that's me.

MR. CAMERON: That's Chris Grossman.

MR. ESH: Everybody gets a break from me.

MR. CAMERON: Okay.

MR. GROSSMAN: Okay. Thank you, Chip. For this session we'll talk about the intruder assessment, which as Dave mentioned during his initial presentation was kind of the one thing you had to do as part of this rulemaking to address the un-analyzed waste streams, the waste streams that weren't analyzed

to develop the waste classification systems.

So, currently Part 61 does not require an explicit intruder assessment. It relies on the waste classification tables to provide that protection and the analyses that went in to develop them in the initial rulemaking back in the 1980s.

And as Larry mentioned in his talk this morning, the industry has identified new streams that were not originally envisioned and weren't analyzed in that initial analysis such as large quantities of concentrated depleted uranium.

So, the proposed rule in 61.13 specifies a new analysis for inadvertent intruder assessment. And it is a new analysis. The proposed modification requires what I call stylized analysis. And this is one reason we use a different terminology than "performance assessment," which is a comment that we've received in the past as why not just lump this all under PA? Because we view it as it is a little bit different than someone might do in a PA if they chose a probabilistic route, although it could be done under that as well.

So, it would require stylized analysis. Instead of solely relying on the waste classification

system and analysis used to develop that system. The new requirements are largely in 61.13 and they focus on three areas: What's the scope of the analysis? And most of this in the intruder area focuses on what are the receptor scenarios? And a lot of that is actually in the guidance more than in the rule, but the rule does specify, as Dan pointed out in one of his comments just a little bit ago, about reasonably foreseeable and consistent with activities expected at the time of site closure. That language is actually focused on the intruder assessment, not so much the performance assessment. So, I just wanted to clarify that. The Commission direction there was for the intruder scenarios be consistent with site closure.

So, we also talk about intruder barriers. Intruder barriers were part of the rule before in this area, in 61.13(b). And so, what we've done is extend that and say the assessment should demonstrate the performance of those barriers and also, like the PA, deal with uncertainty and variability. The assessment is used to demonstrate compliance with the performance objective at 61.42. And then there's also a requirement like the PA to update the assessment at closure.

So next slide, please. I apologize. That's very hard to read, but it gives you an idea that there's an thought process to this, a general thought process to how this goes. And it's not too indifferent from what a PA is outside of the formation of scenarios because they're focused largely on receptors and what a potential intruder might do. And as I mentioned, they're based on scenarios that are realistic and consistent with expected activities in and around the disposal site at the time of closure. Dave just pointed out to me that the flow diagram is also available on page 4A in the guidance, if you want to see it a little bit more clearly.

And then the dose limit for the compliance period, which Dave also mentioned earlier, was 500 millirem, which is consistent with the original analyses that developed the waste classification tables so that there's a consistency between the tables and what you would do in this analysis.

Next slide, please. So the next several slides go through the different parts of the regulation and where regulations involved intruder assessment have been changed. In 61.2 we deal with definitions. So, there has been a little change to the "inadvertent

intruder" definition to be consistent with the Commission direction. And then we define what an "intruder assessment" is here, and its components.

The next slide, please. 61.7(c) is the concept section of the rule. And this kind of lays out the philosophy of inadvertent intrusion and why it's important for low-level waste.

Next slide, please. This is a continuation of that. I won't read these in the interest of time, but they're here for your benefit if you need to refer to them.

Next slide, please. 61.13(b) is where the real requirements for what the intruder assessment are identified. And the three areas kind of tailor with my introductory slide: the scope, barriers, and then uncertainty and variability.

Next slide, please. Forty-two is the performance objective. There's A, B and C to that for the different time periods.

Next slide. That's the last time period.

And then the next slide, please. So we're looking for feedback from the Panel and for members of the public who choose to comment on these areas where the changes have occurred related to the inadvertent

intruder assessment that deal with the definitions, the concepts, the requirements for the analyses and then updating at closure, and also the performance objective.

MR. CAMERON: All right. So, let's start with the high-level, the first new definitions. Dan?

MR. SHRUM: Just to be clear, when you say "intruder," you always mean the inadvertent intruder, correct?

MR. GROSSMAN: Correct.

MR. SHRUM: So, am I incorrect? Was there a time when there was such a thing as an intruder and we didn't have to protect the intruder, somebody who intentionally goes and gets into a facility?

MR. GROSSMAN: The initial analysis that developed Part 61 back in the '80s differentiated between an advertent an inadvertent intruder. And Part 61 has always been focused on the inadvertent.

MR. SHRUM: Okay.

MR. GROSSMAN: Yes.

MR. CAMERON: High level? John?

MR. TAUXE: I still fail to appreciate the need for an intruder assessment. I really don't understand the fundamental driver for this. From my

perspective evaluating a member of the public covers that. If you consider a member of the public as anybody who might be doing things around the site and what they might be doing, that would cover anything that an intruder would do. I guess one difference is that the intruder, reading in the guidance here, is to be evaluated with a probability of one that an intruder will happen.

And the examples given here in 13 are normal activities. Well, normal varies from site to site. Including agriculture, dwelling construction, resource exploration or exploitation; e.g., well drilling. There are sites where none of those apply. And so, I've never understood why an intruder is necessary to have its own assessment, or even to evaluate somebody like that. And the fundamental flaw for me is that it's very messy. The line between what's a member of the public and what is an intruder can get really fuzzy.

For example, let's say a site is there and under natural evolution of the site waste becomes exposed. This has happened even during operations at sites, which means it will happen once institutional control is gone. If somebody comes along and sees a

shiny object and they say, oh, that's kind of cool; I think I'll take that home, is that an intruder? Are they less protected than a member of the public or is it just a member of the public who was sort of hiking along and saw this thing and said, hey, this is kind of fun. It's washed out of the site and maybe it's down in a creek or something like that.

Or let's say somebody comes along and does something to the site unknowingly that triggers a problem with the site. It doesn't affect them. Whitt considered such a scenario like this, but it's also valid for land disposal sites. The first person that comes along, they do something that causes a problem. They aren't affected. Are they an intruder? Well, they didn't have any exposure. Then that causes something to happen that affects somebody else later, a member of the public who may not even be on the site, but now is exposed to something that was a result of something else. Who's the intruder? Who's a member of the public? Why does it need to be so complicated?

So, maybe you can tell me why an intruder assessment is necessary above and beyond just everybody's a member of the public. Let's consider what all receptors might be doing and the probability

that they might be doing it. And essentially it should all boil down a population dose assessment under ALARA. It seems like protection of the greater good of everybody, that's the way to do it. But maybe there's another reason that the intruder assessment has to happen. If that could be explained to me, I'd appreciate it.

MR. CAMERON: Basic question for the staff. Why do you need this provision for inadvertent intruder protection. And we're going to go Magette and John Greeves after we hear an answer.

MR. GROSSMAN: So, I just want to clarify that there is a distinction drawn between an intruder and a member of the public in that a member of the public is exposed to releases from the site. So they're an off-site person. And intruder is someone who comes onto the site. So there is one distinction there.

And part of the reason for doing this was to maintain some consistency because we weren't changing the classification system. In order for this analysis to be somewhat consistent with that approach we felt that we would stick as much as possible to that construct to do that and look at these stylized scenarios for an intruder with the limits that were

similar to what was done in the '80s to develop the classification system. There was some concern about getting wildly different than that system and having both systems in the rule at the same time.

And I don't know if Dave wants to add to that.

MR. ESH: Yes, one of the things I would add is that you talk about probability, okay, and probability of one. There is an implied probability of the intruder scenario by the higher dose limit. Okay? If the intruder was just a member of the public and for whatever period we said the dose limit was X, say 256 millirem, there would be no reason to give the intruder a higher dose limit. He's just a member of the public like anybody else. He would be 25 millirem, too.

The fact that it is 500 is reflecting -- the intruder is not an expected construct for the evolution of the site and the system. He's an unexpected outcome. The institutional controls, while not guaranteed to be durable, the intention is that that process will provide a layer of control to prevent inadvertent use of the site. But the controls over the long term, the reliability of them is not guaranteed.

That's partly where the intruder construct came from.

So, the intention is that the controls that you put in place will hopefully work and be robust for a long period of time. But if there aren't people actively there doing things, maintaining fences and all the sorts of things you do with active controls, how long is that going to prevent somebody from using the site in some way that you didn't intend?

MR. TAUXE: So, after the loss of institutional control, the fence turns into an imaginary line.

MR. ESH: The fence is still there.

MR. TAUXE: Well, let's say after the loss of passive control the fences aren't always -- the fences will disappear. They'll get scavenged. After that, then someone who enters on to what was once called the site, is that person an intruder?

MR. ESH: Yes.

MR. TAUXE: Why not a member of the public? They can't tell the difference. There's no signs left. How does a member of the public know that the site is even there? And now they come an intruder?

MR. ESH: Right. Remember --

MR. TAUXE: Why is the intruder not

protected --

MR. ESH: Remember there's and element of --

MR. TAUXE: -- at the same level?

MR. ESH: -- of controls. There's other controls like deed restrictions and things like that and site ownership, federal and state ownership of the site. There's all those things that are temporary.

MR. TAUXE: I know.

MR. ESH: I don't disagree with you, John. All those things are put in place to try to prevent the situation that somebody uses that site in some way that you don't intend them to. So those things are put in place. But then the Commission stepped back and said, yes, but irrespective of all those things we can't guarantee that they're going to work for a long period of time. So, then we come up with the waste classification system and intruder requirements and intruder barriers on top of that other layer of protection. This is part of the defense-in-depth argument that goes on. When you go to longer times, I agree with you totally, it gets much more difficult to make those arguments because your initial layers of defense may get challenged.

MR. CAMERON: Let's get some new voices in here. Larry has something. Tom has something. John Greeves has something. Larry?

MR. CAMPER: Well, it's always easy for me to sit here and listen to these discussions and step back from the technical for a moment and look at regulatory philosophy. And let me share three thoughts with you, John.

One, the idea of protecting the inadvertent intruder. Going back to when Part 61 was originated, as well as in most international schemes, protecting an inadvertent intruder is a well-understood and established concept. It is an invasive intruder by nature. Certain assumptions are used to define what that intruder does. It's not a member of the public walking by and picking up a piece of metal. The other thing is today in Part 61 the requirement is to protect the intruder. That's all it says. And the assumption is you do that by putting waste in the ground that meets the classification system. Under the proposed regulation the licensee has the option of using a WAC. How does one protect the inadvertent intruder if one uses a WAC?

MR. CAMERON: Okay. Tom? Tom and then

we'll go to John.

MR. MAGETTE: Just one quick comment about the intruder concept. The problem I have is assuming that it's a residential intruder, I think especially if you combine that with the requirement that you look at essentially a perpetuation of the current features and characteristics of the site. And I think there are plenty of existing -- or there are existing sites as well as where I would look at if I were going to site a future site that it would be perfectly reasonable to assume today that they are not residential in nature, would they be resided upon. So I think that's a bit of a stretch.

And then when you start to combining that with barriers, I don't know how you quite perpetuate the concept of protecting a person that when you perpetuated the site conditions you couldn't necessarily foresee being there.

MR. GROSSMAN: Yes, Tom, I'd encourage you to take a look at the guidance when you're preparing your comments. I think we're moving away from that idea somewhat in the guidance. Although the examples are there, we talk about activities that can occur around the site. And the term in the language or in

the rule language is "occupy." I don't think we view that as someone who sets up camp on site necessarily. It just means that they're on the site.

MR. CAMERON: So the guidance is instructive on this.

MR. GROSSMAN: I believe it is. We've tried to do that, but we appreciate comments.

MR. CAMERON: And the question might be is the guidance --

MR. GROSSMAN: Yes.

MR. CAMERON: -- consistent with the rule language?

MR. ESH: And in that section, in the guidance, when you look at it, just note that we recommend a variety of approaches you can consider. And of course, one of them is to just use the default scenarios.

Because if you want to get into a do loop, then start messing around with intruder scenarios. That's guaranteed to get you in a do loop. Because you'll have stakeholders that will come sit in your public meetings.

And they'll say my relative so-and-so does this, and they live X miles from your site. And what

are you to say then, no, he doesn't? I mean, they'll bring very specific examples of people that do things in conditions that they think are relevant.

And if you're opening up the scenarios, maybe some of the less conservative scenarios, you might get stuck with evaluating some that are quite a bit more restrictive. So just keep that in mind. But that basically is what we outline. In the guidance we talk about that.

MR. CAMERON: All right. Let's go to John Greeves. And then let's go to the third bullet, new technical analysis requirements. John?

MR. GREEVES: Yes. I just want to bring this back to the fundamentals. The framers of Part 61, in what I would call wisdom, the whole sense of it was that performance objectives are primary.

There are four performance objectives. They're all important. There's the protect the public, protect the intruder is a performance objective. It's not negotiable. You've got to do that.

Protect the operational activities which is what the Commission does day in, day out, but what's special about Part 61 out of these other three, the

public in the long term, the intruder and then the fourth one, stability.

So everywhere you look in Part 61, it says to the extent practicable, but you've got to meet the performance objectives. So it's, you know, this discussion we're having about should we not do intruders, frankly, it's part of the fabric of the rule. It's there. It's the performance objective. It's the four things. They should be maintained.

And we sort of came at this from the technical analysis. The four paragraphs that were there before said do a technical analysis to support the performance objectives. To me, that's all four of them, one of which is the intruder.

So I don't think you need the, like, 12 more paragraphs. It's already there. And you can do a technical analysis of the intruder.

And, yes, there is some language in here that refers to the tables. And, yes, that is a crutch to maybe not do a technical analysis. But the lead sentence says do a technical analysis for all the performance objectives.

So I think it's there in something less than an additional 12 paragraphs that could clarify

that.

And I just repeat what I said earlier, the four existing performance objectives which, by the way, get tiered off in many other directions, including the 31.16 legislation that DOE has to actually implement in other -- there's, you know, the decommissioning rule. They all really point back to these types of four primary criteria. So I'll stop with that.

MR. CAMERON: Okay. I think this discussion is taking us through a lot of the bullets. And Dan has a brief point. And, Dan, if you want to start us off after your comment, if you have anything to say on the new technical analysis requirements, please do so. And then we'll see what the others have to say.

MR. SHRUM: You just mentioned the guidance, which I haven't had a chance to really get into. It kind of changes the inadvertent intruder. Is that what I heard you say?

MR. CAMERON: I would say that we'd offer the flexibility to licensees to use more site-specific scenarios. So maybe let me recouch what I said before.

MR. SHRUM: The definition doesn't though.

MR. CAMERON: The definition --

MR. SHRUM: The definition in the proposed rules is pretty specific of what he does or the person does.

MR. CAMERON: Right. But if you look at it the definition has not, and it has changed some, I think. I can't remember exactly how. I think we may, I can't remember what we added to the definition.

But if you look at the scope of the inadvertent intruder assessment, I think there is where you'll see about what the intruder does when he's onsite. So engages in all activities, which a lot of these are similar to what was done before, but then, or other reasonably foreseeable pursuits that are consistent with activities in and around the site at the time of closure on Slide 24. That's where I think you'll see the scope is changing from kind of assumptions in the past.

MR. SHRUM: And then I'd mentioned that before. Okay. Well, we'll probably comment on it, but to me the definition still says the person. It does say might, might occupy, which would give you less than a probability of one. Possibly you could use that argument.

But if, again, as Tom just mentioned, if these are now being sited in areas where people don't live, they're inhospitable to human health or people living there, so you could almost lead that that doesn't need to be done if that's not what's going on at the area right now.

But then it still says they would engage in normal activities such as agriculture, dwelling, construction. So that would lead you back to, well, you have to do that analysis anyway. So is it better in here or more detail?

MR. GROSSMAN: I don't think the guidance --

MR. CAMERON: In here, you mean the regulatory guidance? Yes, okay.

MR. GROSSMAN: I don't recall by memory every word in the guidance. But I don't think the guidance will get you to a point where, because no one's living there today that we don't have to do the intruder.

MR. SHRUM: Okay. I need to do some work. And to go to the next issue, I don't have anything else.

MR. CAMERON: Okay. Anybody on the requirements for technical analyses, given the fact

that they're, at least now, is an inadvertent intruder analysis. Anything on those requirements?

(No audible response)

MR. CAMERON: Okay. And there's also a bullet on the closure issue, much the same as the last one. Do we have anything else on inadvertent intruder before we go to the audience and the phones?

(No audible response)

MR. CAMERON: Okay. Let's go to the phones first. Arlene, does anybody on the phone have something to say on inadvertent intruder?

OPERATOR: Yes. We have Roger Seitz. Sir, your line is open.

MR. SEITZ: Hello. Just a comment. I had a question on the requirement to update the intruder assessment at closure.

It's my understanding that the intent is that your intruder assessment is used to develop your waste acceptance criteria. Other than than, I don't understand the purpose for updating the intruder assessment at closure. And I had another question, but I'll start with that.

MR. CAMERON: All right.

MR. GROSSMAN: So the waste acceptance

criteria would be based on your technical analyses. I would say the full complement of them, not necessarily just the intruder assessment. Although, oftentimes that does drive the waste acceptance criteria. And so in that light, it might be more expansive.

We would say, I would also respond that, like, as you learn information as you go through operating the site, about the behavior of the site and the types of waste that you've included, there may be the need for some sort of mitigation at the end if you get to the point at the end, and you've revised your intruder assessment because of the waste streams, that your WAC has changed. And that way you accepted is no longer acceptable.

So that's part of the rationale there, is to make sure that we're still protecting the intruder as you move into the institutional control period and then beyond.

MR. CAMERON: Any comment on that, Roger, before your next question?

MR. SEITZ: Yes. I guess I still have the concern. Because if you've done your due diligence, you have agreed upon waste acceptance criteria, I'm not sure what changes that conclusion. And I think it's

a fundamental question about this grandfathering or not grandfathering. It fits in that area, probably.

MR. CAMERON: Okay. And another question, Roger?

MR. SEITZ: Yes. Just two quick comments. One thing on that 61.13, I just wanted to be on record agreeing that, it seems to me that the rule is, you're kind of blurring the lines between what should be a regulation and what should -- guidance or implementation guidance, that kind of thing. I think you're starting to dive into some detail that may not fit with the role of the rule.

And I just wanted to comment, I did read the guidance. And I generally like the approach in the guidance where you focused on those scenarios that were considered for Part 61 originally are sufficient and protective. And kind of using those as a starting point seems reasonable to me.

MR. CAMERON: Great, thank you. Thank you very much, Roger. Arlene, anybody else?

OPERATOR: Sir, our next question comes from Mr. Ralph Anderson. Sir, your line is open.

MR. ANDERSON: Thank you. I guess, to a certain extent, I'm repeating comments made earlier on

the updating of the assessment at closure.

But things I'm trying to get my around are, David and Chris, in theory, if you essentially used your performance assessment to bound the waste that would be received at the site, then it strikes me that, in theory, you won't be exceeding that.

That is to say, when you reach closure at best you would be right at that point ideally. But more likely than not, you in fact would have received less waste than you had anticipated by the analysis you did. Because the license --

(Telephonic interference)

MR. CAMERON: Understand.

MR. ANDERSON: What the delta is that you're trying --

(Telephonic interference)

MR. ANDERSON: -- closure to go back and redo the analysis.

MR. CAMERON: And, Chris, any response to what Ralph just said?

MR. GROSSMAN: I'm not quite sure I --

MALE PARTICIPANT: You're off.

MR. GROSSMAN: Oh. I'm sorry. I just turned myself off. I'm not quite sure I understood the

question. So let me rephrase it, Ralph. And if I got it wrong, you can correct me.

So you're saying in the situation where a licensee may use a very conservative amount of waste in their original PA or any of the analyses, and they get to the end, and they take on a lot less than that, what's the need for updating the analysis?

MR. ANDERSON: Yes. In a sense. And, Chris, let me just cite, or even an insight, the purpose of the analysis is to determine what waste streams you can receive, you know, at what levels, and forms and so forth. But when you're all done, in theory, you never received approval to get more than that. So you somehow ended up --

(Telephonic interference)

MR. GROSSMAN: I would say that what you would need to submit would not necessarily be all that extensive then at the end, unless there was new information along the way about the behavior of the site during your operations that --

(Telephonic interference)

MR. GROSSMAN: But most likely that would have been folded into updates over time.

MR. ESH: And part, Ralph, part of the

issue might be either give a more direct example. When you're in the initial analysis or getting the approval to receive a waste stage, you may have an estimate, say, about your future cover design and what you expect to do with, say, a key parameter like infiltration over time.

When you get to closure, you may have an actual cover design or actual cover information and a better estimate of what those infiltration rates may be.

That new estimate of the infiltration rate is the type of thing that you would be reflecting in this updated analysis when you get to those up layers, a latter step in the process.

So that's just an example of the type of thing we were thinking of. It could be a change in inventory. But as you note, you know, if you're doing a good job with your waste acceptance in your initial analysis, the change in inventory thing shouldn't get you. It shouldn't be different. It should always be less than what you had analyzed.

Don't laugh. There is, some new information came to light that the inventory was different than what you thought you received. That

would be a situation where the inventory could be higher.

But that should be unlikely. It should be more on the technical side of things where maybe you have additional information at closure that's different than what you analyzed initially.

MR. CAMERON: Okay.

MR. ANDERSON: Okay. Well, then let me suggest then that maybe the approach should also include just doing what I would view as a sensitivity analysis to see if there's any need to really update the assessment, rather than just simply requiring -- and maybe you just have to be inclusive, where somebody would simply look at the previous assessment and say, you know, there's nothing that would substantially diminish the conservatism that's built into my original assessment, rather than having to go forth and do a whole new assessment. Maybe that's implicit. But that would be my comment.

MR. ESH: Okay. Sure, we understand your comment. Thank you.

MR. CAMERON: Okay. Thank you, Ralph. Arlene, anybody else?

OPERATOR: Yes, sir. Bill Dornsife.

MR. CAMERON: Bill Dornsife. All right. Hi, Bill.

MR. DORNSIFE: You all know me, don't you?

(Laughter)

MR. DORNSIFE: I have two comments on the previous section. I joined late, because being retired now I don't get up early, even for NRC.

MR. CAMERON: Well, that's more information than we need, Bill.

(Laughter)

MR. DORNSIFE: From what I understand, there really is not a lot of specificity in either the rule or the guidance on the model that you need to use to do your performance assessment.

I have a concern with that, because most, for example, most of the models that are out there don't look at diffusion, particularly upward diffusion of mobile radionuclides.

And that can be a major pathway in an arid site, particularly in terms of the intruder analysis. So, you know, go back and use RESRAD, that doesn't look at diffusions. So, you know, it may not capture all the potential pathways.

And my second comment is, as a former

regulator, I would want to have periodic updates of the performance assessment. I realize that it's presumed you do one when you renew the license. But, well, things change over time. And, you know, a periodic update would be important.

I don't think of that as being regulation. But I think regulators ought to be very sensitive to having a performance assessment management plan that would essentially do that.

MR. CAMERON: Thanks, Bill. And Larry Camper has something to say about your remarks. Larry?

MR. CAMPER: We're glad you're up, Bill. John, I think Bill's arguing for an additional paragraph or two.

But I do think that, on Bill's point, one of the things with regards to the analysis at site closure, just as we are having this discussion today, I think all of us would agree if one goes back and looks at the technical analyses set forth in 61.12 or 61.13, the sophistication and the overall enhancement of the performance assessment process has grown and changed dramatically over years.

And I dare say that it's fair to say that a performance assessment that was done today using

existing modeling techniques, et cetera, et cetera, is significantly different than was done when one opened a site many, many years ago, using 61.12 and 61.13. So that was part of the philosophy. I'm sorry.

(Off the record comments)

MR. CAMERON: Okay. Bill, thank you very much. Arlene, is anybody else on this issue?

OPERATOR: Yes, sir. Our last question comes from Mr. Paul Lohous. Sir, your line is open.

MR. LOHOUS: Hi, Paul Lohous here. I don't really have a question, but I did want to comment, maybe provide some perspective on the need for a site-specific intruder analysis.

One of the assumptions, as was discussed in developing the current classification system, is that an inadvertent intruder would be unlikely.

But in the unlikely event that the institutional controls, both active and passive, were to fail, we wanted to make sure that if someone did enter the site and contact the waste, that that inadvertent intruder would be protected.

So what was done is there were intruder analyses that were conducted that developed concentration limits for the classification system

that would ensure that, should an individual enter the site at some point in the future, that individual would be adequately protected.

And we put a performance objective in to ensure that the inadvertent intruder would be protected. But we did not include a requirement to do a site-specific intruder analysis, because the waste classification system coupled with the waste form and the requirements on disposal of the different classes would ensure adequate protection of the inadvertent intruder.

And I may not have this right, but it seems like, in the effort to address new waste forms, the larger quantities of depleted uranium and the blended wastes, the requirements within 61.58 sort of seem to be passed over.

Because those requirements were specifically added to try and look to the future so that, as new waste streams came, you know, sort of came into existence, there was a mechanism to address those from the standpoint of classification and ensure that there was continued adequate protection of the inadvertent intruder.

So it seems like in addressing depleted

uranium, all of the waste streams are now subsumed in the need to do a site-specific intruder analysis.

And I'm not certain what a good alternative would be, but that does trouble me some. Because the whole purpose of the classification system was to negate the need for doing site-specific intruder analyses and to make sure that the classification system was uniformly applied to all waste generators across the nation.

MR. CAMERON: Okay.

MR. CAMPER: Thank you very much.

MR. CAMERON: Thanks, Paul. We have one comment here or a question in the audience. Linda?

MS. SATORA: Thank you. Linda Satora, DOE. So I just wanted to point out, it's rare that I agree completely with Bill Dornsife, but today I do.

One concept that -- I haven't made it through the whole order, and I haven't even started on that order, and you guys have a regulation. I haven't even started on the guidance. So I apologize in case this was mentioned.

You know, at least the Department of Energy view, and you don't have to accept our view, but we believe that the performance assessment is an iterative

document that changes regularly.

And so, you know, depending upon new information and new waste streams that you didn't anticipate originally, so potentially it impacts your, you know, your waste acceptance criteria changes over time which is recognized in failure regulation. But when that happens, it could require an update to the performance assessment.

So we would encourage that it not actually be just in guidance, if that is where it is. You might want to add a requirement that indicates that as new information is found, and you don't necessarily have to do a whole new PA. In fact, what the Department of Energy does is something called a special analysis, which is kind of like a mini-PA.

And those are actually reviewed as a regulatory document, and we consider it a modification to the original PA.

So it's not just -- we have two levels. We have one like a screening one called an unreviewed disposal question evaluation which, at the end of that, if you do it and they say there's no change, you're done.

But if there is a change to the performance assessment, then that is an update. And I just wanted

to offer that as a suggestion, that that is an option.

And it keeps it from being a very expensive new PA which, you know, is typically, in the DOE world, approximately $2 million to $3 million for a PA.

But the point being, at some point you will have to do your whole new PA. Because there will be, we consider, enough new information to consider doing that because of just new information. But anyway, that was my thought.

MR. CAMERON: Okay, good. Thanks, Linda. And I see Chris Grossman nodding his head, affirmatively. I'm sure David and Chris are familiar with the DOE approach of the special analysis. But thank you for bringing that up.

And now we're going to go to our next topic. And there is only three substantive slides here, although the first line is it's a very complex issue, protective assurance analysis. And is that you, David?

MR. ESH: It is me.

MR. CAMERON: Okay.

MR. ESH: Sorry, it is me. This slide, besides the title, is the same as the slide from the technical -- or the analysis time frames. So I'm not

going to spend much time on this, only to say, of course, this is the second tier of the overall approach that we've proposed for analysis time frames. So we can go to the next slide, please.

So on Slide 30, this is the text for the performance objective. The way that we've structured the regulation now is the time frames are specified in the definition section. And then the performance objectives just reference those definitions.

So now you have 61.41 A, B and C, A being for the compliance period, B being for the protective assurance period and C being for the performance period, if applicable.

The key thing for you to note, I'd say, on this protective assurance analysis time frame is, as I stated in my opening remarks, this is structured, I would say, as an optimization process where your target is to minimize.

So it's similar to ALARA. The Commission, because we don't have a dose limit, per se, for this time frame, we have, I'd say, an objective function for the optimization. We didn't use the ALARA language, because the ALARA language requires a dose limit.

But what we have here is this language,

"The annual dose established on the license shall be below five millisieverts, 500 millirems, or to a level that is supported as reasonably achievable based on technological and economic considerations," and so on and so forth.

So the idea is that, for this second tier of the analysis, they will try to reduce things as much as you can. And you'll provide an argument for how much you've reduced them, bottom line. Conceptually, that's the way it works.

Okay. So the next slide please. This is a diagram from the guidance document, Figure 61. And this is one approach that we put in there that the staff would find acceptable to go about this process where we defined different tiers with levels zero through three here and some dose numbers on there.

But basically, depending where you are on this peer monitor, on this scale, your level of effort increases for your analysis. So we're scaling the required complexity of analysis with the risk.

As the risk gets higher, analysis is going to be more complex. As risk gets lower, analysis can be simple, so simple that if you are in Level 0, your analysis is basically done. You say, I'm a few

millirem, I don't need to do anything. And so we're kind of saying, yes, we agree. If you're a few millirem, you don't need to do anything.

We need to demonstrate if you're, you know, below a few millirem and a lot of those numbers are reliable, but beyond that you don't have to make any sort of argument. So that's conceptually what we did for this protective assurance analysis period.

We realize this is new from what you've previously seen. So you might have a lot of comment on it. You might not have it now, because you might need to digest it, both in terms of the statement of consideration, the rule text and the guidance document before you can formulate those. But we did want to talk with you about it and get your insights.

So on the next slide, on Slide 32, what we're seeking feedback on is, overall, this protective assurance analysis requirements and this concept using the optimization type approach with the minimization target.

And what we recommend in the guidance document, it's not in the regulation, is the easy way to do this is just to extend your performance assessment into your assessment to this time frame and use those

doses you estimate from it as part of this optimization argument or approach.

You can do something else. You could make an argument based on the technologies you've employed, and how effective they are and what else might be available. You know, that might be a way to argue that you've minimized to the extent possible.

But anyway, those are the -- oh, and the last one, the risk-based discounting. That's probably pretty key. So, you know, we wanted to get out of this potential loop of the time-based discounting issue, because nobody can really agree to that at all, it seems.

And there's lots of good arguments both ways. But we thought this was something that maybe people could agree to, internally we agreed to it, but this idea that your level of effort should be commensurate with the risk. And that's what we have tried to lay out here for the protective assurance analysis.

MR. CAMERON: Okay, great. Let's go high level on the concept and, I think, David's last remark about commensurate with risk was pretty important. Tom, do you have anything on this?

MR. MAGETTE: Just one thing. I think you might have answered it, David. But I want to make sure I heard what you said right, that essentially, because my question was both of the 61.42 paragraphs in the compliance period and the protective assurance period refer back to 61.13 A. So in fact, the guidance says all you have to do is really extend the clock. You don't have to look at new FEPS, you don't have to redo, just project further out.

MR. ESH: Right. We wanted to make this, we wanted to have a long-term analysis component to it. But we didn't want it to be overly burdensome. So we said one way you could that is to extend your performance assessment to your assessment. Yes.

MR. CAMERON: Okay. Anybody else, Charles, anything from you?

MR. MAGUIRE: We did, on the WCS site, we did use the 10,000 year protective assurance analysis as part of the complete performance review on the site. And I think you're going to talk about non-10,000 years next.

MR. ESH: Right.

MR. MAGUIRE: We did that too.

MR. CAMERON: John Greeves?

MR. GREEVES: I'm still absorbing now, but so we're talking about the performance assessment period. And it said, I can't get clear. You weren't calling the 500 a limit, right?

So I think there's a little tension about that. And I think that's part of your question, should it be a limit or should it not be a limit. And I like the number. I think it gives you a sense of safety between 1,000 and 10,000. So I like the metric. I just don't know how the words come out. Is it a limit? Is it a goal? I think that needs some important discussion.

As a former regulator, I'm comfortable with limits. I know how to them. Goals and minimize are troubling words to me.

MR. ESH: Right. And we looked at that. There are a number of programs with other agencies that they use those sorts of approaches. So this wouldn't be a unique approach. It would be unique in that it's showing up in low level waste. But that, conceptually, trying to, you know, use different types of things, best available technology and all those sorts of things show up in regulatory space.

MR. GREEVES: I subscribe to, you know,

extending the PA analysis and the intruder analysis to evaluate this. I'm just not sure how a regulator would implement a concept that isn't based on a limit. That's all.

And I'll go back to something I said earlier on today, I almost looked at this as being the second tier just at the peak dose, wherever that is. It's a concept that I would subscribe to.

MR. ESH: Yes. We received pretty specific direction from the Commission on this area. So that's what we implemented, of course.

MR. GREEVES: And I read the, the Commission's given you direction a number of times. And one time they said two tier, and another time they said explore three tier on time outs. So I think it's fair for me or anybody to say we like the two tier, or I like the two tier concept as feedback to you.

MR. ESH: Right. And we appreciate the comment. And other --

(Simultaneous speaking)

MR. ESH: I think you made the comment about, you know, should there be a dose limit and what should it be? That's a good comment to make too if people have feedback on that.

Because the way we did it is basically this tier does not have a dose limit, per se. It has an optimization target. So that provides a lot of flexibility, and it'll also provide, I'm sure, a lot of aggravation for some stakeholders.

Because, you know, people like the specificity of a number and for whatever reason. And the ambiguity of something that's less firm causes a lot of heartburn for people, which I understand. But that's what we implemented here. And, you know, we appreciate your comments on it.

MR. CAMERON: Okay. I'm glad that you made that clear, direction from the Commission. And, Tom?

MR. MAGETTE: One follow-up question, David, on the point I just raised. Maybe it's a comment as well. In 61.13 A-4, it talks about the potential for other FEPS if compelling scientific information exists.

You know, given that there may be people that succeed you but lack your imminent reasonableness, and that we may have to deal with state regulators who have different viewpoints, that compelling scientific kind of troubles me. Do you elaborate on that in guidance?

And I guess my question would be, you know, maybe on thing you could say in guidance, if you don't, is that if you're extrapolating, you're okay. You might choose to do something different. But extrapolating would always be okay.

Because there's lots of other words around the rule that come from the SRM about, you know, the current conditions and not trying to do the crystal ball analysis for the future. And I think maybe this is another way of trying to say that, but maybe if you stick to something that's a little bit more ironclad that says you don't have to project.

If you have a reason, as an applicant, to project, then the regulator could evaluate that. But you're always okay by straight-lining.

MR. CAMERON: And Larry has a comment, I think.

MR. CAMPER: Yes. Going back to John's point about, and then what David had to say in response in terms of the Commission direction, I think for those out there who have not spent all their time reading this or might not be quite as familiar as all of us in the room, let me read what the Commission specifically said on this point.

"A further protective assurance analysis should be performed for the period from the end of the compliance period through 10,000 years. Given the significant uncertainties inherent in these long time frames and to assure a reasonable analysis, the performance assessment should reflect changes in features, events and processes of the natural environment such as climatology, geology and geomorphology only if scientific information compelling such changes from the compliance period is available.

"In general, the analysis should strive to minimize radiation dose with the goal of keeping doses below a 500 millirem per year analytical threshold. The radiation doses should be reduced to a level that is reasonably achievable based upon technological and economic considerations." So clearly they had a constraint, if you will, in mind.

MR. CAMERON: Okay. And you look perplexed by it, what Larry just read. Or am I completely incorrect?

MR. SHRUM: No. No, Tom and I are having a discussion. I don't have a problem with this other than the way it's written. So I was going to give an

example, but I don't think it would go over very well, about how you deal with your children. So let's not go there.

But it does say reflect new features. And it starts off as a you have to go do this type of thing, as opposed to what you just read which is a don't go do this thing unless there's some compelling reason. And that's, I think, my reality is it's a different approach to this issue.

MR. ESH: And just to clarify, this issue is about the scope of the analysis for the longer period compared to the shorter period and how you ensure it's appropriate, basically.

What's essentially recommended is just you take the scope from your original analysis and you extend it. If you have information that suggests you should supplement it or modify it, but all means you should use that information and supplement it or modify it. That's the bottom line approach to this whole analysis, what we're trying to achieve.

If there are language corrections or suggestions that you have, please make those. And we'll look at them and see if there's some modifications that make it cleaner or more understandable, what you're

supposed to do for this analysis.

One issue that I would point out is that many of the features, events and processes that are applicable to the compliance period are, they may not have an impact for the compliance period because of their magnitude, frequency, what not during that first 1,000 years.

But they may have an impact during that longer time frame, say, you know, effluvial erosion, or aeolian erosion or something. It might not be significant for 1,000 years, but it might become significant for 10,000 years.

So just because something was not significant for the first 1,000 years doesn't mean it's not supposed to part of the scope of the analysis for that second time frame, just to clarify that. That's the way we've written it right now. You can feel free, of course, to comment on that.

MR. GROSSMAN: And I believe we do, in Chapter 2 of the guidance, elaborate quite a bit on the FEPS process and some of these issues in particular. So that would be a good place to look as well.

MR. CAMERON: Okay. Arlene, do we have anybody on this particular topic?

OPERATOR: Sir, we have Roger. Roger, your line is open.

MR. SEITZ: Thank you. Could you put Slide 30 up for me?

As written, I see two separate requirements there. First sentence has a requirement that you have to minimize releases. The second sentence says that you have a dose and you're maintaining a dose at a level of 500 or less or reasonably attainable.

I really like the second sentence. But I think, take a close look at that, and are you implying there's two separate requirements there?

And just in general, I have a concern with the use of the word minimize and how you would actually meet that. I understand that you'd written some guidance on that. But in the rule, if you say minimize, I'm concerned how that's interpreted.

MR. CAMERON: So, Roger, are you saying that, is the second sentence just elaborating on the general concept in the first sentence? Or are there two requirements?

MR. SEITZ: As written, I read two separate requirements.

MR. CAMERON: Okay. Dave, Chris, any

clarification on that? Are there two requirements in that particular paragraph or only one? Or John is saying three requirements, there's three requirements. Okay.

MR. SEITZ: I like the second sentence. I think that could capture it.

MR. ESH: Right. Well I think if you look at the existing regulation, under 61.41, we ended up with what was a extremely long sentence in here when we wrote this. And so we tried to break it up into multiple sentences to make it read better.

But we were shooting for the same approach that is in the existing 61.41. So I understand your comment. We will take a look at it.

MR. CAMERON: And, John, on this issue, go ahead.

MR. TAUXE: And I think I also read, it may have been in the guidance, about maintaining releases, talking about releases instead of doses. And that made me think of EPA's 40 CFR 191. Where there are individual protection requirements and there are containment requirements.

And we talk about releases. That's sort of a containment requirement issue that I don't think that

was intended by any of this.

So you might just do a global search on releases and see if -- unless that was part of the intent. In which case it needs to be brought out into its own piece a little bit more. But there's the releases versus doses question.

And then the one, I've had a long standing issue with this and discussed it back in our 2013 comments, that the title of that section is, Protection of the General Population. And yet in the text it's, Protection of any member of the public.

Those are different concepts. The general population, which is an appropriate one I think, is asking for a population dose assessment. Which, you know, comes under ALARA and all that but any member of the public is picking out, perhaps your maximally exposed individual or something like that. That's a very different concept from general population. So --

MR. ESH: Yes.

MR. TAUXE: -- I think that is still in this new language. And I think that's still a problem.

MR. ESH: Right. And we understood that comment before. Just to let you know, we use the average member, the critical group concept, to define

that member of the public that you're talking about.

And I think that the argument that's put forth is that by protecting the member of the public, you're protecting the general population. So it's -- I understand --

MR. TAUXE: That's the other third one, is an average member of the critical group. Because --

MR. ESH: Every member --

MR. TAUXE: -- that's not any member of the public.

MR. ESH: That's the description and language that we use to say, who that member of the public is. That's the dose construct that we're using to define that any member of the public.

We're basically said, if you use this average number of the critical group, that's what we deem sufficient to demonstrate the protected, any member of the public.

MR. TAUXE: Okay. I guess if I'm reading it from the outside it says, any member of the public. So I would consider infants.

MR. ESH: Right.

MR. TAUXE: And --

MR. ESH: So when we receive that --

(Simultaneous speaking)

MR. ESH: -- yes, we received those comments that we need to be --

MR. TAUXE: So --

MR. ESH: -- we need to have --

MR. TAUXE: -- I don't know if there's a -- if that indicates you might have a language change in order for that just to help clarify. You could say member of the critical group.

MR. ESH: Right.

MR. TAUXE: Members of the critical group.

MR. ESH: Okay.

MR. TAUXE: Instead of any member of the public.

MR. ESH: Yes, I understand those comments.

MR. TAUXE: Okay.

MR. CAMERON: Okay. Roger, thank you for that comment.

MR. ESH: I'm sorry, one thing, Chip. On 61.41, the existing 61.41, if you look at it now, John, it starts out, concentrations of radioactive materials which may be released to the general environment, and then it says stuff, and then results in a dose.

So it's typing the two together. It's basically saying that releases that turn into dose is what you're trying to deal with.

And the same thing now. We're trying to do the same thing. We may have broken it up into a couple sentences that left you with the wrong impression, but we were attempting to do the same thing as the existing requirements.

MR. GROSSMAN: And the reason it was written that way is to differentiate between offsite and onsite kind of exposures. So the intruder versus someone who's offsite.

MR. CAMERON: Go ahead, Larry.

MR. CAMPER: Just one quick point. Going back to Roger's point.

You know, the words -- I can see his point. However, you have to keep reading. That annual dose established on a license shall be below, shall be below. That certainly sounds like a limit, doesn't it, John.

Or, or a level that is supported and so forth. So you have to keep reading to realize that it's not in fact a requirement or a dose limit.

MR. CAMERON: Okay. Arlene, anybody else?

OPERATOR: Yes, sir. Bill Dornsife, sir, your line is open.

MR. DORNSIFE: Now I have a problem with the 500. I recognize it's probably based on the uncertainty from a 1,000 to 10,000 years, but I think public will have a problem since it's above the 100 limit for the public.

And I can't imagine a good site or a decent site that can't meet 25 millirems out to 10,000 years. There's something wrong with that site.

MR. CAMERON: Any reaction to that, David?

MR. ESH: No. I mean I understand his comments, yes. And we've heard similar comments leading up to this point.

MR. CAMERON: Okay.

MR. ESH: So that's definitely information we want to take into consideration.

MR. CAMERON: Okay, thanks, Bill. Arlene, anybody else?

OPERATOR: At this time, sir, there are no further questions or comments in the queue.

MR. CAMERON: Thank you. Thank you very much. Let's do this next performance period analysis and then see where we are in terms of time and

predictions and what we need to do then.

And this, David, this is you? Or is it --

MR. ESH: This is me.

MR. CAMERON: David, okay. This is Slide 34.

MR. ESH: Correct. So the performance -- there you go. The performance period analysis is the third tier in the analysis time frames.

It's applicable to times after 10,000 years. It applies only if you have sufficient waste, and that's going to be on the next slide.

The concentrations are based on the facility average using a sum of fractions approach. And it's designed to assess how the disposal site limits the long-term impacts.

It does not have a dose limit target associated with it. It's basically, the way it was designed was to be freedom of information or truth of disclosure type of thing.

Basically, based on the waste I took in the site I have, what do I thinks going to happen and why do I think that's okay.

So it's qualitative, it does not have a dose limit. There may be -- it's a qualitative decision.

This is what people stumble around.

But it may be based on quantitative work. And it may also be based on qualitative work. If, for instance, you were really close to the Table A values, just slightly over, you might be able to just make a word based argument as to why you think you've meet these criteria without doing any, you know, special modeling for instance.

But anyway, so that's the way the performance period is constructed. It's intended to provide the information to all stakeholders the best you can, as to what you think is going to happen for these very long time frames.

And then on Slide 35, as we discussed earlier, John had some good comments about this table, both in terms of units and the use of the superscripts or the footnotes.

Yes, I already ran into that in the existing regulation. I believe there's a superscript. And somebody had, when they copied the table over, it lowered the superscript and so they were using the wrong number for the concentrations. So yes, that's a good practical comment about the table.

But conceptually what we intended to do, as

we discussed earlier, is the Table A values. Define when you need to do that analysis or not.

So if you're below, then you don't need to do the analysis. If you're above, then you would need to do the analysis in some form.

If we go to the next Slide, 36, this then talks about what the analysis are. In E here, I'm not going to read that for you.

And then in Slide 37, this is an example from the guidance document. It's basically a table of a long-lived isotopes.

Where we tried to do things like this where maybe if you're a traditional low-level waste site and this would be kind of new to you. Especially this overall analysis.

So what is -- what would I expect to maybe see as a long-lived isotope or if I'm in agreement state regulator and somebody comes in and they say, well I have isotopes A, B and C, you might be able to use this table and say, okay, what about all these other guys here, you know.

There's a number of those that traditionally show up in low-level waste performance assessment inventories. You know, why do you have

these three but you're missing the other 13. And so that sort of thing.

The tools like that, we attempted to put in the guidance document to help people with their, both their analysis and/or if you're a regulator with your view.

Okay, so on Slide 38 we're seeking feedback on this overall approach to the performance period analysis. Then the use of the Class A values is a trigger point for the requirements, whether they need to be higher or lower, does it seem reasonable.

The averaging approach to make it simple. We're using these globally volumes to get out of this issue of, well I have one package that is very concentrated and I have a bunch that are not very concentrated, so does that mean I have to do this analysis. Well using this global average gets you out of that sort of complicated issue.

The metric, I would say for the performance period, which I didn't read there. It's using a little bit different language.

It's minimization to the extent reasonable achievable. So -- but the bottom line is you're going to describe your design and your system and how it works

and how it's limiting the impacts to the extent that you are able to achieve.

And so the requirement is to identify the things that contribute to limiting the long-term impacts.

MR. CAMERON: Okay, thank you. Thank you, David. Let's start with the approach. And I think we'll sweep everything in from there.

Who all of you around the table think about this approach to performance period analysis? Hey, Charles, go ahead.

MR. MAGUIRE: Well when we looked at the DCS site, because there was going to be an inventory of carbon 14, we did a 50,000 year performance analysis as WCS presented us with a license agreement that would allow large quantified with depleted uranium at the site.

We wrote the performance model out a million years to look at that to see what was changing.

I think the nature of the waste streams publish and dictate whether or not this would be, number one, interested, number two, important. I can tell you there were fascinating days around my conference table trying to look at what a million year low model might

be.

But the innocent pardon for us to exercise, I call it embracing our inner geek, it was important enough for us to exercise our thoughts there. Mostly to discover what we needed to require currently, to allow for the disposal.

To just think about all of those things that, you know, were so far out there. You don't know whether they're going to be true or not true.

But I haven't really decided, in my experience, whether the engineering drives the model or the model drives the engineering. But they certainly both are in the vehicle together, if you will.

And so I think this part of it is important. Maybe not so much in terms of the regulatory benefit of having this notion that we're going to minimize things out there, as it is to the regulatory aspect of forcing you to look at what's going on down inside that cell.

MR. CAMERON: So that's the important part of it rather than the minimization?

MR. MAGUIRE: Yes.

MR. CAMERON: That's fine.

MR. MAGUIRE: Not so much a target number there. And so, you know, you certainly provided that

flexibility of the role.

But I think the role that it plays is really to drive some decisions in terms of the engineering that comes into play. The health physicist that comes into play, the geology that comes into play.

It forces you to embrace you inner geek. I think if you're going to realistically deal with something out past 10,000 year.

MR. CAMERON: Okay. Thanks, Charles. Anybody else on this particular topic? John.

MR. TAUXE: I think the performance period is critical to consider. The level of effort in the analysis is going to vary a lot from site to site.

And I think that important sort of first tier look at it is understand what you can say about extremely long time periods or deep time or whatever you want to call it. And then also understand what you can't.

You had the diagram up earlier from the NRC paper on uncertainties and how they, you know, balloon. But there are something's that are certain in the long-term.

As a geologist, there's some geological certainties at some sites, you know, at NRC. So I can

say, Los Alamos.

It is certain that probably the mesas that are containing radioactive waste now, will ultimately fail. They will all disappear. So it's in the very long-term, it's a geologically unstable site.

Now, then there's the question, does it matter or not and that sort of thing. But that's at least a certainty you can nail down.

There are other sites where, we'll we don't know yet. In two millions years it may look even better than it looks now.

Radioactive decay and end-growth, which comes back to this Table 7.2, that's fairly certain. The physics behind what is going on there is certain.

Now where those things will be in the world is potentially highly uncertain. But it's useful to go through the exercise, at least to identify what's certain and what's uncertain.

And I guess ultimately it's useful, for my perspective, to distinguish one site from another site. And decide, is this something that's going to be a problem here or well maybe it happens and maybe it's really not a problem in the long run.

But we ought to at least look at it to see

if there are real problems out there. So.

MR. CAMERON: Great. John?

MR. GREEVES: Just probably repeating myself, but anyhow. A point mentioned today is I think what the proposal is is over-prescriptive. And I enjoy seeing less of that.

I just point to what Charles told us about the facility in Texas. They, on their own, they looked at carbon 14 at 50,000 years and then they say, oh, okay, depleted uranium, it's on my plate.

So a regulator will look at, they don't need this level of language in the rule to cause them to do those kind of analysis. Which is basically an extension of the PA and the intruder analysis to make sure, for this specific site, I'm safe for the compliance period and I'm safe out to, I'll call it peak dose.

The specificity I think in the proposal you have now is just too much to me. It's too prescriptive.

So I would just invite you to think about removing some of that in the guidance space. So just before -- and I've heard my colleagues, some of which point out, hey, I may be like 61.13(e) if it helps me fence something off.

But I heard Paul Lohaus say earlier, when they tried to decide on what to leave in the rule, his metric was, is it something I really need to support the performance objectives. And fencing something off is -- doesn't fit my module of those lines.

That prescriptiveness, isn't helping me meet a performance objective. It's, to me, maybe better in guidance space. So it's a debatable subject.

So I just share that with you and we'll see where it goes. And I'm listening and maybe two meetings from now I'll have a, you know, a different comment, but thank you.

MR. ESH: Just one clarification. If you look at the performance objectives now, as they've been rewritten, 61, all of them, A, B and C, 61.41 A, B, they have a component for each tier.

So I guess what I'm trying to understand from you is that you think the performance period information is too prescriptive, but yet the requirements that we put in place are only, I think there's one in 61.13, basically to do the performance period analysis. It doesn't say much else about it.

All that is in guidance and it's reflecting what is now part of the new performance objective. So

are you saying to remove the requirement that says you need to do the analysis or that you shouldn't have that part of the tier or both or neither? I don't --

MR. GREEVES: All right, I'll go back to what I said earlier. I'm more comfortable with the two tier approach. I hear people saying I can live with three tier approach.

But I think it's simpler. As I said earlier, it shows how you meet safety for the compliance period. And then you, we have said, just update the performance assessment in the intruder analysis at the peak, and it would capture the rest of the safety issues.

I agreed with the metrics you're putting into the performance objectives, I don't think that the prescriptiveness that's elsewhere, small example was at 61.13(e), is needed.

It just -- I think there are some, what I'll call land mines, in some of these places. That if you get into a litigative environment, this extensive prescriptiveness can cause you difficulties in terms of addressing it.

MR. CAMERON: All right.

MR. GREEVES: I'll try and do better in my written comments.

MR. CAMERON: No, I think you're basically getting your point across, John. Arlene, is there anybody in the phone that wants to comment on this particular topic?

OPERATOR: Yes, sir, there are. Mr. Bill Dornsife. Sir, your line is open.

MR. DORNSIFE: Yes, I think there ought to be a statement somewhere in the guidance. But if you have a robust performance assessment bottled that includes things like inter-climate, changing site characteristics, all of those are taken into account.

And you still need the Part 61 performance objective to 25 millirem for the public. That would be the public and the 500 millirem for the intruder, that's all you have to do.

MR. ESH: Yes, Bill, this is Dave. Yes, I understand that comment. And I think that was our intent if we didn't explicitly say it. So we'll look at the guidance and see if we didn't make that point clear.

MR. DORNSIFE: Okay.

MR. CAMERON: Great. And, Arlene, anybody else?

OPERATOR: Yes, sir. Mr. Ralph Anderson,

sir, your line is open.

MR. ANDERSON: Yes, just a simple comment, I hope. In regards to this particular assessment, you know, it strikes me that you have a member of stakeholders outside the regulatory, the licensee or the rest of those technically inclined people, that are going to be somewhat mystified by dose level.

And I would suggest that when you go to a final rule, I'm assuming that you retain this requirement, that you provide some reference that the stakeholders can refer to that makes it very clear, why is this particular assessment being done and how is this information intended to be used in the decision to either license, renew a license or allow closure.

Because I think that's where people are going to be struggling. Is to understand how the output of this evaluation ultimately is going to influence some decision. Because I don't think that's abundantly clear.

MR. CAMERON: So you think it needs more context, Ralph? Perhaps in the supplementary information.

MR. ANDERSON: Yes, that could be it. It's just that I believe the state regulators in the

future are going to need something that they can point to that puts a box around this.

Otherwise I just think it's going to be left as very open-ended as to whether the information to actually influence an ultimate decision by the regulator.

MR. CAMERON: Okay, thank you. Anybody else, Arlene?

OPERATOR: At that time, sir, there's no questions or comments in the queue.

MR. CAMERON: Okay, thank you. We've been making a lot of progress here. We have two important topics left. I don't know if we need to go to four, okay, but just in case we do maybe we should take a little bit of a break now, okay.

And I have about eight minutes to 3:00. Why don't we come back at 3 o'clock and then we'll go into the defense-in-depths topic.

(Whereupon, the above-entitled matter went off the record at 2:52 p.m. and resumed at 3:08 p.m.)

MR. CAMERON: Okay. Two topics, specific topics left, and the next one is Defense in Depth and Safety Case/Defense in Depth, and is that Chris?

MR. GROSSMAN: That is me, yes.

MR. CAMERON: Chris Grossman is going to do this one for us. Oh, let me, before we get into that, just a request for some availability of documents from John Greeves, one of which was mentioned which is the regulatory analysis on the rule, and he also wondered if there is a backfit analysis.

So can we make the regulatory analysis, tell people where that's available?

MR. COMFORT: The regulatory analysis --

MR. CAMERON: Yes, Gary?

MR. COMFORT: Yes, the regulatory analysis should be available on the rulemaking website. I mean it was put out there the first day when it was published.

This is the regulatory analysis not the regulatory basis or anything. We're talking about the numbers document that tells all the costs that we --

MR. GREEVES: Okay. So the answer is yes, it's on the website.

MR. COMFORT: It's on the website.

MR. GREEVES: Some of us haven't detected that.

MR. COMFORT: It should be on regulations.gov where most of the other information is

also.

MR. CAMERON: Okay.

MR. COMFORT: I don't know, did we get it up -- we'll also place it on NRC's website on the Part 61 webpage.

MR. GREEVES: And maybe that's why I couldn't find it.

MR. COMFORT: But it is in the regulations.gov also. If you put in the docket for the --

MR. GREEVES: That is not a user-friendly site.

MR. CAMERON: Okay. So you're going to get it on there, and you also asked about the backfit analysis. I don't think there is a backfit analysis. In fact, I don't -- There is no backfit requirement.

Backfit does not apply to Part 61, so there's no backfit analysis. All right, let's go to Safety Case/Defense in Depth.

MR. GROSSMAN: Okay. Thank you, Chip. So, okay, I got the next slide. Currently Part 61 is not explicit about Defense in Depth but it is implicitly included in the current regulation.

And so the Commission directed the Staff

to make that more explicit in the rulemaking, and specifically the Agency set up a Risk Management Task Force a number of years ago and one of the recommendations was to include explicit characterization of how Defense in Depth applies to low-level radioactive waste disposal.

So you'll find a lot of this in the Federal Register Notice as a background for including the Safety Case and Defense in Depth. And so the proposed rule includes the discussion of the Safety Case, which we believe that Part 61 always kind of embodied that concept, though it didn't use the terminology exactly, as well as Defense in Depth protections.

And we'll give you an example here on the right in the figure of the Safety Case for Part 61. This will be kind of a blend of what's existing as well as what's proposed then because we include things like the Defense in Depth Analyses, which would be a new requirement under the proposal.

So the proposed rule explains how the combination of Defense in Depth and the technical analyses comprise the Safety Case and essentially what we tried to do is structure it so that what a licensee was required to submit previously for a license

application comprises elements of the Safety Case, and that includes then the technical analyses that follow along as well as the new Defense in Depth Analysis.

The Safety Case then should be used to support the licensing decision. So the next slide. So I'll start with Safety Case and then at the end of this I'll bring it back to the Defense in Depth.

In 61.2 we've defined what a Safety Case is, so basically like question, information, it demonstrates the assessment of the safety of the facility and it talks about, includes the technical analyses as well as Defense in Depth, so you can read the rest of that.

61.7 gives a little bit of the philosophy to the Safety Case and how it's used in the licensing process. That's on Slide 42.

Then on Slide 43, 61.10 is really where we introduce what is the Safety Case and essentially what we've added is 61.10 is the content of a license application.

We've added a subpart (b) which basically says this information comprises your Safety Case. So then on Slide 44, going back to Defense in Depth, and we've introduced a definition for Defense in Depth

here.

It is consistent with the Agency's definition for Defense in Depth, and so you can read that there. It's the "use of multiple independent redundant layers of defense such that no single layer no matter how robust is exclusively relied upon," and then it gives examples of what it includes for a land disposal facility.

Slide 45 is the language in 61.7, the concept section for Defense in Depth where we talk about the philosophy of Defense in Depth as it applies to a low-level waste disposal facility, and we mention the idea of the risk-informed that Eric had mentioned with the risks.

And on Slide 46 is where we introduce requirement for what needs to be included for a Defense in Depth and it's a new analysis to demonstrate that the disposal facility includes Defense in Depth protections.

We attempted to do as little changes as possible to bring this about, this Commission direction about, so that we didn't disturb the rule too much.

It could've been a very extensive revision based on the Commission direction, but we didn't think

the Commission was going that way considering this is a limited rulemaking so we tried to be as minimal as possible in the rule.

And so a lot of what you'll find about what the Defense in Depth analysis is is in guidance space. And then on Slide 47, so we're looking for feedback on the definitions for both the Safety Case and Defense in Depth as they apply to low-level waste.

Any feedback you have on the philosophy of the Safety Case and Defense in Depth, that's outlined in the concepts, as well as requirements for the Safety Case and the requirements for the new technical analysis for Defense in Depth.

And then being a technical analysis, like the other technical analyses, it would be required to be updated at closure.

MR. CAMERON: Okay. Why don't we start with definitions and concepts and then go to requirements and new technical analyses. Definitions and concepts, Tom?

MR. MAGETTE: Thanks, Chip. So I think the definition of Defense in Depth that you have is perfectly fine.

It's exactly what I would expect to see,

something that talks about the various layers, you know from the siting, the performance of the site, the packaging, waste forms, et cetera, so I think that's fine.

There are a couple things in here that I would take exception to, and I'll actually start with one that's not on your slide, which is 61.51(a), which says "Site design features must be directed towards Defense in Depth."

Now I'm not entirely sure what that means, but I don't know how you have designed Defense in Depth at a waste disposal site, but in a reactor, if you're looking for a core cooling you have, you know, high pressure safety injection and you have low pressure safety injection, you have a variety of systems to keep a core -- Or you have, you know, diesel generators as a backup to make sure you have power.

But I don't think you have backup depth in your design of a disposal site, so I don't think that's the right wording to convey what it is that you are trying to accomplish.

I have a little bit of the same concern about 61.13(f) where you say "analyses." I don't know what you analyze in a Defense in Depth approach. I mean

I think you -- What I would look for is something that essentially discusses or describes how you have applied the concept of Defense in Depth.

And then you could talk about your siting methodology and site isolation, site, you know, the site attributes, geology, and et cetera, and then you'd go through each one.

You could literally enumerate each one of those items that are listed in your definition and describe how they account for Defense in Depth, and I think to the extent that there's an analysis of that, it's the analysis of the overall performance of the site, which is the PA.

So I think using terms like "a Defense in Depth of a design" or "analyses of Defense in Depth" I think are a little bit misleading and I think they could be misinterpreted by, you know, other regulators who maybe didn't have that same perspective that you do that try to take a minimalist approach, because I agree with what you said.

I think it is clear that the existing 61 has a Defense in Depth approach to siting the disposal of low-level waste. So just those two sections I think, they're subtle wording changes.

MR. CAMERON: Go ahead, Larry.

MR. CAMPER: Yes. Thank you, Tom. And let me say on this, and Chris actually alluded to this in his comments.

We wrestled with just what to do here, because on one hand we added a few words and we focused on guidance, but the challenge that we faced was, and these comments are most helpful to us, looking back to the SRM that we got from the Commission it said "Licensing decisions are to be based on Defense in Depth."

That's pretty strong language that the Commission wanted to see something more. Now, and there is some different views amongst the Commissioners, by the way, on this, understandably so, but so we tried to find the right mix of how to get at what, the direction we were getting but yet not be overly burdensome.

MR. MAGETTE: I think you are very close and I think putting the definition that you have put in, like I said I think it is truly spot on and I think building it into your language about the Safety Case accomplishes exactly what the SRM asks form.

I mean I think you have accomplished

exactly what the Commission put in the SRM, even if you make the changes I have suggested, particularly 61.51(a).

I just don't think there is a depth of design component to this question. I don't know what it would be, you know, because someone's going to, what, two liners, three liners, I mean what is design depth?

MR. GROSSMAN: An example could be your waste package and then a liner.

MR. MAGETTE: Okay. See, and I think that's already, that's capturing your definition where you talk about a waste package and, you know, et cetera, et cetera, et cetera.

You have the site performance, you have the site characteristics, you have the waste package, you have limits on the volume of concentration of waste types, so that comprises Defense in Depth. That's a system-wide Safety Case.

That undoubtedly incorporates Defense in Depth, but it doesn't, this doesn't try to torture itself, and I'm not suggesting you guys did that, because I understand that the Commission gave you something of a challenge here, but I think you met the challenge perfectly with your definition.

MR. GROSSMAN: Is the concern with your question on the 61.51 that we are saying that you have Defense in Depth in just the design or versus the whole system?

MR. MAGETTE: It's not necessary versus, but explicitly with the design.

MR. ESH: I said it could be interpreted that you need Defense in Depth of your design.

MR. GROSSMAN: Yes, because that's not what we're after. It should be in the system that the whole system has to --

MR. ESH: The design should be part of the Defense in Depth argument but not that you have to achieve Defense in Depth by the design, so --

MR. MAGETTE: And I agree completely with that.

MR. GROSSMAN: Yes.

MR. MAGETTE: I think I understand your intent and as I understand your intent and as you've clarified it here I agree with it. I just think 61.13(f) and 61.51(a) go beyond that as they are worded.

MR. CAMERON: I think John Greeves has some similar concerns. John?

MR. GREEVES: Tom and I didn't talk about

this before, but independently, yes, I have a problem with 61.13(f). You don't analyze for Defense in Depth, it's a layering process.

So I think you actually have done what the Commission asked you to do which is explicitly lay Defense in Depth in the process.

It's just a couple of places, my view, 61.13(f) is one of them, you went too far and I haven't looked at what Tom what talking about, the other provision, but I think, you know, losing a couple of those prescriptive pieces I still think you've done what the Commission asked you to do.

(Simultaneous speaking)

MR. CAMPER: So, John, let me ask you a question, especially being a former Regulator.

MR. GREEVES: Okay.

MR. CAMPER: So you just said it is the conducting of an analysis that you take exception to?

MR. GREEVES: Yes, it's just jarring, Larry.

MR. CAMPER: Okay. So with that having been said, how would you have satisfied the Commission direction that licensing decisions are based on Defense in Depth protections? How would you assure that

without an analysis?

MR. GREEVES: Easy. I'd go to the Commission and say that as in every other regulatory area that I have regulated we used Defense in Depth.

You said it's implicitly in 61, now it's explicitly in there, and I would tell them because I'm paying attention to siting issues, I'm doing performance assessment, I'm doing analysis, and there are, you know, operational procedures and I'm minimizing that into the future, there's layers here.

I just think the paragraph (f) is a little jarring.

MR. CAMPER: So I think what I hear you saying, and correct me if I'm wrong, the regulator would be looking at the applicant's package in its totality --

MR. GREEVES: Yes.

MR. CAMPER: -- would be observing that there is an integrated safety system, which is what we've referred to as DID previously today, and all these things together are there but you don't see the need for the applicant to do an analysis as such.

In other words, the regulators ensuring that DID is in fact part of the application, is that

kind of what you're saying?

MR. GREEVES: Well first the applicant has that burden, too, and the regulator has the burden to check and agree that Defense in Depth has been exercised.

I just, in particular 61.13(f), I don't think you need it.

MR. CAMPER: Right, okay.

MR. GREEVES: You can actually put it in guidance space.

MR. CAMPER: Right.

MR. GREEVES: It's just, you know, I mean in a contested environment somebody's going to come along and say okay, where is that analysis, where is that calculation, and where does DID in that -- It's just, it's a little bit of a trap that's all.

MR. CAMPER: Well this is good because I want to make --

MR. GREEVES: I think you've actually done what the Commission asked you to do.

MR. CAMPER: This commentary is very helpful to the Staff because, as I say, there is Commission interest, even though there's a strong Commission direction, there's Commission interest in

those particular analyses and I think it's important for the Staff to be fleshing this out totally.

MR. GREEVES: The words you used before, which I don't have committed to memory, was a basis for, is the word "analysis" in that sentence?

MR. CAMPER: No, it says "Licensing decisions are based on Defense in Depth protections and performance assessment, PA goals and insights."

Actually what is says, to be specific, it says "Licensing decisions are based on Defense in Depth (DID) protections (for example, siting waste forms), and performance assessment (PA) goals/insights."

MR. GREEVES: It's all of that.

MR. CAMERON: And I think everybody on the panel has something to say on this discussion, so let's just go with Tom Magette and go Dan, John, and Charles, if he wants to say anything.

MR. MAGETTE: I think if you start the quote a little early from the SRM, and I think this answers your question, Larry, from a regulators perspective how do you assess this.

It says "The proposed rule should include a clear statement," a clear statement, "that licensing decisions are based on," and then, again, it lists some,

we've listed -- Does it say "analysis?" That word's not in here. So I think it is a fairly straightforward exercise.

I don't think an application for a license should be silent on it and I think it's perfectly reasonable for you to expect a section in that application that says here is the various components of our Safety Case and how that provides Defense in Depth, and that to me is a perfectly reasonable thing to do.

I don't think that requires any additional analysis other than the analysis that the PA will provide and I think that's perfectly consistent with the direction of the Commission and I think it's pretty straightforward to analyze that as a regulator.

MR. GROSSMAN: And I think if you look at the guidance, and I know Dave showed the bubble figure with the different analyses and the arrows during the different time periods, I think the attention, particularly if you look at the guidance, this should come through that you are to draw on the insights from those analyses to do this -- And when we say "analyses" we don't always mean a quantitative calculation.

There is flexibility for the licensee to

do that in the guidance, but we view it as it could be simply, like you said, a discussion of here is what we're drawing on and we're drawing the insights from our analyses to show that this is where we get our Defense in Depth.

But if there's a better location please provide comments about where we could identify that in the rule that might be more --

MR. CAMERON: Then Larry, and then we're also going to go to Boby in a minute.

MR. CAMPER: So, Tom, let me pull that thread just a moment.

MR. MAGETTE: Yes.

MR. CAMPER: I listened to what you said. Would your comment suggest that it would've been sufficient, say, for example, within the statements of consideration to have a clear statement that the licensing decisions are based upon Defense in Depth protection such as so forth and so on, would that have been sufficient?

MR. MAGETTE: I think it might have been, but I think putting what you've done by putting the definition into 61 and then simply a statement -- I mean I don't have a problem with the existence of a 61.3(f),

I just wouldn't use the word "analysis," acknowledging, you know, Chris's comment that it doesn't necessarily have to be quantitative, I would just say you have to have a description of how your Safety Case provides for Defense in Depth.

MR. CAMPER: So simply avoid the term "analysis?"

MR. MAGETTE: Exactly.

MR. CAMPER: Yes.

MR. MAGETTE: Then you refer back to that definition and, I mean I think that's pretty clear and I think it does what the Commission -- It's consistent with how I read what the Commission told you, and I'm sure they'll tell you if it's otherwise when you take the rule up to them.

MR. ESH: Because remember they also said that in this area that the changes should be reflected throughout the rulemaking package, so, you know, those things combined led us to kind of discuss quite a bit well what is that we need to do to implement this recommendation and Safety Case at the highest level could've called for a complete restructuring of the whole rule, you know.

When you look outside the U.S. and look at

Safety Case in other programs we could've said we restructured all of Part 61. We discussed it and we said this is a limited-scope rulemaking, we don't think they intend that, let's see what we need to do.

With all of these things, as Chris indicated, you run into a situation where you have a change that you need to make but then you also have to have some piece, which is what somebody needs to do to meet that change.

You know you can't just put well, they need to do X and say nothing about it, there's no analysis, there's no information requirement, there's no nothing associated with it, all the pieces of the regulation should have, if we're adding something that is something that somebody needs to meet, it needs to have what piece is the action or information they need to supply to meet that piece.

That's why a number of things are listed in that analysis section to tie those things together, and as Chris indicated analyses does not mean necessarily a computer model. It can be paragraphs of discussion as to why you've met that requirement.

MR. MAGETTE: And that makes sense, but I think sometimes people will be led in a different

direction by the word "analysis."

But I mean if you think about Defense in Depth, if one of those barriers fails, in other words if packaging fails, then you have a site that's designed to contain some contamination that's leaked from a package.

If that fails then you have site geology that's designed to inhibit the transport of that material. If that fails you have a remote site that's far enough from a human receptor.

MR. ESH: Right.

MR. MAGETTE: So that is Defense in Depth and a way to ask an applicant to describe that clearly I think is what you need.

MR. CAMERON: And so the term analysis implies too much here. Okay, yes, I think you all are on the same page.

Let's go down to Dan and John and Charles, if he wants, and I want to go back to the NRC Staff, back to Boby, after we hear from you guys, okay. So, Dan, your comment?

MR. SHRUM: Well it's the same discussion. I reiterate that it appears to be in the wrong place simply because it's under technical analysis and that

implies something.

Maybe you could put in the concepts, because it is a concept of how a licensing decision is made, and that is a regulator will look at Defense in Depth and make a conclusion over the entire package.

But my other comment is we can't lose sight of, we stopped discussing it, but the 61.51, the site design features must be directed toward Defense in Depth, and, again, I think we understand a little bit better, but some clarity there also that we're not going to build in multiple redundant systems that do the same thing.

And if that's what you mean then that's fine, but if it means that that's the expectation like you would see in a power plant, it's a system that multiple systems do the same thing, then that would be pretty difficult in a landfill.

MR. CAMERON: Okay. John?

MR. TAUXE: Yes. I agree with the discussion about the term "analyses" and that under technical analysis it tends to imply to some folks that that would involve some calculations or something, but if it can be an expository analysis using words I think that's much better.

This whole idea of Defense in Depth reminds me of the 40 C.F.R. 191 assurance requirements where it's mostly words discussing Defense in Depth basically, so an interesting parallel there.

I have one question about the diagram on Slide 40 that you had showing the Safety Case and Defense in Depth and how things fit together.

On the one side you had Defense in Depth components and then on the other side Defense and Depth Analyses is under technical analysis components, and so does that mean that the Defense in Depth components are part of the Defense in Depth Analyses, or are they separate?

I don't know, it's a little confusing to me as to how that's supposed to fit together. So I don't know if I am just confused and the diagram is clear to others or if perhaps the diagram could be rearranged somehow.

So that's one comment on that. Another one is I see that there is performance assessment, intruder assessment, long-term analyses, so are those different things?

Is the long-term analysis, or what we might call a deep time analysis, to be separate from a

performance assessment? Would a performance assessment go out to the 10,000-year mark and stop and then there would be a separate analysis that looks at stuff in the performance period that's not part of a performance assessment model, I'll say?

If that's the case then that's very different from the way things are done now, typically. Usually we just run the model out for a long time and, in fact, in some language that's out there now, for example, in the Request for Proposal for the West Valley site they are specifically asking for a long-term performance assessment and they are interested in the very long term in the performance assessment.

So I'm curious if long-term analyses are different from the performance assessment.

(Simultaneous speaking)

MR. ESH: Now, John, I'll clarify that for you.

MR. TAUXE: Okay.

MR. ESH: The long-term analyses may be an extension of the performance assessment, intruder assessment, but it could also be something different, so that's why that slide looks the way it does.

MR. GROSSMAN: Yes. Yes, and I would say

that the comment about the Defense in Depth components, what we tried to represent, albeit maybe not perfectly, was because kind of the other requirements of Part 61 that lend toward Defense in Depth, such as the requirements for waste acceptance through either requirements for site ownership, site design, and so forth, those are kind of physical things.

Those would feed into the analysis that then you could expound upon how our site has Defense in Depth. But what we were trying to do is represent that analyses on the right side and then the physical things on the left.

MR. TAUXE: Okay.

MR. GROSSMAN: Yes, that's the Safety Case.

MR. TAUXE: Then the only other comment I have is when I think of Defense in Depth I think of things that are, for example, part of your site that aren't taken credit for in an analysis, you know, some containerization or something like that.

So that's Defense in Depth, and if you are taking credit for it as part of a performance assessment then it's not -- Well it is sort of Defense in Depth, but anyway that's the perception that I have of what

that language would mean.

MR. CAMERON: Okay. And I think we are going to have a suggestion on the chart. If it's a little bit, if it may be confusing to the public John may have a recommendation, but let me see if Charles, Charles do you have anything on this?

MR. MAGUIRE: Let John go since he's --

MR. CAMERON: Okay.

MR. GREEVES: I wanted to, just trying to be helpful, the chart, I know what it means, but it might be helpful to some if the Defense in Depth on the lefthand barge actually sat on top of all of us because, you know, I take comfort in all of the things you have in the first column, you know, the site ownership, the concentration limits, et cetera.

And I take comfort in the analysis part on the right, and to me both of those is what I would rely in telling the Commission or anybody else, the Judge, the applicant said he has Defense in Depth, he did all these things, I reviewed it.

So I would simply take that lefthand box and put it across the top.

MR. CAMERON: And that sounds consistent with what Tom's characterization --

MR. MAGETTE: Just a portrayal. Is that what you had in mind, Chris?

MR. GROSSMAN: Well the Commission direction --

MR. MAGETTE: Or could it be what you have in mind?

MR. GROSSMAN: The Commission direction, what we were trying to represent graphically was kind of the Commission direction to base licensing decisions of the Safety Case on Defense in Depth and the technical analyses, so that's why we had to kind of bifurcate them like that.

It may not have been -- We'll work on improving that graphic for future meetings to get it more clear.

MR. CAMERON: I know sometimes you can try to react and it gets confusing.

MR. GROSSMAN: Yes.

MR. CAMERON: Larry, do you want to say something before we go to Charles, and then we'll go to Boby?

MR. CAMPER: Actually I wanted to hear what Charles had to say about this topic before because I have one observation I want to share with all of us

about --

MR. CAMERON: Charles?

MR. MAGUIRE: And I'll be quick. When, of course, we were looking at the site, we felt like Defense in Depth was an important component of the licensing decisions that we needed to make.

As we looked at this and we looked at, of course, what the Commission was working on in terms of moving forward with Part 61, the way we looked at that is there are all of things that we know to do to produce safety and make a safety case.

What we thought was really the press, the press that was zoned with the Defense in Depth, they said not only would you look at these as individual components of the Safety Case but you would look at them collectively, that you can look for the interaction between the site characteristics and the engineering components to be sure that you were getting plus plus, a synergetic response if you will.

And so, you know, we looked at lots of things. I made a list, this certainly isn't everything we looked at, but the depth of burial, the placement of waste in reinforced concrete canisters, disposing units lined with concrete, drainage layer and the

cover, cover wall, include 1-foot of concrete among 17 other layers, NRC Branch technical position of concentration averaging, low precipitation rates, subsurface is compacted clay, site location, waste form, waste acceptance criteria.

Those individually are things that make us safe. How those things play together, even something like the VTP, how that all interacts in terms of building the case.

And so I don't know if analysis is the right word, if that's a scary word don't use it, but certainly there is some thought process here that looks to be sure all the pieces in and of themselves are making a more in depth piece of the safety case.

MR. CAMERON: Okay, everybody is on the same page there and Larry, you go ahead, and I'm going to --

MR. CAMPER: I think I'll try to finish up this topic if I might. Let me say a couple of things. One is there were certain parts of this rulemaking that generated a great deal of Commission interest, period of compliance, the three-tiered approach. There's somewhat a difference in depth, interestingly enough. And this input that we're getting back from all of you,

ranging from could it be in the segments of consideration or concepts section to making certain that adjustments and how we structure it, is the word analysis the right term? All these things are useful and obviously we'll explore this at each one of our meetings.

But when it comes time to write the final, this is one of those areas where we envision as we prepare the rule, we'll probably have a commissioners' assistants briefing and share with the commissioners' assistants how the staff -- internally, John, we can meet with the commissioners' assistants and say this is what the staff is thinking, this is the way the staff is headed. It's a way to get a preliminary sense or signal of, you know, yeah, that looks pretty good or you guys have missed the boat entirely, what are you thinking about? Or it's okey-dokey, whatever, and anything in between.

So this is one of those topics when we cull this out over these meetings and your input has helped us structure our next meetings. But at some point, as we finalize the rule, this is an area where we'll probably go talk to the commissioners' assistants ahead of time and say this is what we did. This is what we

heard. This is how we modified it or not modified it and why and so forth and so on. So this is extremely useful dialogue. Thank you.

MR. CAMERON: Okay, and let's go to the audience and NRC staff. Boby, you want to introduce yourself?

MR. ABU-EID: Good afternoon. I'm sorry I could not be with you this morning because I had another meeting. But I appreciate being part of this discussion. It's a very important discussion. Just to give you a background where it came from, DID, defense-in-depth, it came from NUREG-2150 based on the recommendation which Commissioner Apostolakis was the leader actually, the lead also for NUREG-2150 and reviewing all of the other programs and the recommendation it was to establish, publish a statement specifically for waste management was indicated the need for defense-in-depth approach. And of course risk-informed, performance-based approach. That's the origin of that so the Commission they adopted that recommendation in NUREG-2150.

Now concerning this figure, I do agree with the staff. I think the staff they did a very good job to look at the safety case, although I was hoping to

see more details of the safety case when we look at the international guidance and standards for the safety case is more complicated than this, what the staff has tried to simplify it in a nice way and I congratulate the staff for doing that.

I do agree that the defense-in-depth should cover all of those aspects because defense-in-depth is a term that was borrowed from the reactors where you do have mechanical systems, you do calculations and then you go beyond the design and that's usually the intent of defense-in-depth is to go beyond design basis. In other words, the Commission, they wanted us to look at in the design to go beyond the normal case where we analyze the features, events, and processes, and to look at more severe conditions. And currently, we have exercise where we are doing, actually looking at more severe conditions based on Fukushima events.

Therefore, I would say defense-in-depth that it made some kind of assessment beyond the design basis in terms of what kind of acceptance, waste acceptance criteria, what kind of engineering barriers that we need, can we do improvement that in case there are severe conditions. And that, I think, is the

intent of the Commission behind the defense-in-depth. Thank you.

MR. CAMERON: Boby, could you just repeat your name so that Katy has it?

MR. ABU-EID: My name is Boby Eid. I'm with Larry Camper in the Division of Uranium Recovery and Waste Management.

MR. CAMERON: Do we need to know anything else besides Boby?

MR. ABU-EID: Yes, the formal name is -- the last name is A-B-U, A alpha, B, boy, U university, hyphen, E Edward, I, Ion, D, David. That's the last name. Thank you.

MR. CAMERON: We all know you, but people who read the transcript, and we can get a clarification if you need it later.

And Tim, Tim McCartin.

MR. McCARTIN: Yes, Tim McCartin, NRC staff. And just a perspective from the development of the high level waste regulations in a similar area. And we dealt with multiple barriers which was the way to show defense-in-depth for the high level waste program. And we put a lot of time and effort into it and I think I'm hearing some of the similar discussions.

We ended up, the only analysis was done with the performance assessment.

And the requirement in the regulation was to describe the capabilities of the barriers consistent with the performance assessment. And then that was the single requirement. There was no quantitative measure for well, what makes it defense-in-depth? That was always going to be a subjective decision. You would look at the capabilities of the barriers for that facility and then it would be the judgment of the NRC staff, does that constitute defense-in-depth?

And just as another perspective from obviously the high level waste, but it was simply one calculation of the performance assessment was the quantitative basis for describing the barriers.

MR. CAMERON: The term used was description.

MR. McCARTIN: Yes.

MR. CAMERON: Okay. Thank you. Arlene, is there anybody on the phone who wants to comment on this issue?

OPERATOR: Roger, your line is open.

MR. ANDERSEN: Just a couple and I guess I joined the queue a long time ago, so I'm going to

repeat what other people have said, but I am also concerned about the use of the word analysis.

A suggestion I have is something more general like document contributors to defense-in-depth or something like that. I really support the idea of the safety case and the defense-in-depth concept as a way to demonstrate protectiveness and document protectiveness.

MR. CAMERON: Okay. Thank you. And I think we have Brandon. Is there anybody else on the line?

Okay, let's go to the last subject which is waste acceptance criteria.

MR. GROSSMAN: Thank you, Chip. It's Chris again. Okay. We're on slide 49 of the package.

As part of regulatory effectiveness, NRC strives to use risk-informed, performance-based approaches to enhance efficiency and effectiveness in the regulation. In that light, the Commission directed the staff to include new requirements for developing waste acceptance criteria using one of two approaches, either the existing 61.55 waste classification system or developing site specific waste acceptance criteria from the technical analyses.

This intends to allow flexibility to do that based on site specific information.

So what the staff has done is we've refashioned the current 61.55 into requirements for waste acceptance. So we've done away with the old 61.58 and introduced this new 61.58 for waste acceptance criteria. And it focuses on three areas. One is developing waste acceptance criteria, what is needed to demonstrate the new WAC, waste acceptance criteria, excuse me.

The second area focuses on how do you characterize the waste to show that you're meeting the waste acceptance criteria for the facility. And the third then is the certification process, how you demonstrate that your waste is acceptance for disposal.

The changes to the rule were largely in two areas. In the concept section, we talk about the philosophy behind this. And as I mentioned in 61.58 is where the meat of the changes are.

So if we go to slide 50, please?

This just deals with the concepts. We talk about waste acceptance and we've refashioned the concepts to kind of step up above the waste acceptance criteria to say there now is a waste acceptance approach

and you have two prongs of how you can demonstrate that waste is acceptable.

On to slide 51.

And the requirements for waste acceptance are specified in 61.58 and as I mentioned slide 51, I've listed here the requirements for the waste acceptance criteria.

Let's go to slide 52.

This is the section 61.58(b) that talks about waste characterization, what an applicant or a licensee would need to provide to characterize the waste or to show that the waste is characterized appropriately.

And then on the next slide, slide 53, is the requirements for the certification program and what that needs to entail.

Then slide 54, we're looking for feedback on the waste acceptance requirements and then the concepts as well that have changed to reflect that.

MR. CAMERON: All right. Does anybody want to start us off?

Tom?

MR. MAGETTE: Sure. Thanks, Chip. I'll just say that I think it's a sound concept in my view.

I think it's a really good idea. I think you've articulated it well. I think also I agree with Larry's comment this morning that essentially this would be the gold standard for determining if your side can accept any given package or volume or concentration of a given isotope of waste and if you have this, I don't know what you could get that's better. So I think this is a really strong element of the proposed rule.

MR. CAMERON: Dan?

MR. SHRUM: I agree with Tom. This is great. This is kind of what we had hoped for. I do have a -- what's a hybrid? With the waste classification and the WAC, they're still both going to be there. Just to point out that these are the new ICRB standards for waste for the WAC and you're going to have a different standard for the tables. May become problematic and I don't -- haven't gotten my head around how all that's going to work, but they'll be different within the same document and I think the best way -- maybe the right way is just to say you'll go with WAC. Tables are going to be used for people who want to hold on to tables.

MR. CAMERON: John. John Tauxe.

MR. TAUXE: I've got a couple of issues.

I think, in general, it's a great idea. And I understand the need for it for generators and folks like that that have to be able to ask a site what they can accept. A couple issues are one of flexibility and here in -- let's see. It's 58 -- well, the number is here on page 44. I guess it's down to (g) where applications for modification of the criteria.

Is one expected to have -- to submit a WAC to the regulator and then every time you want to modify it, you have to submit a new one and get that -- is that like a license modification or something like that? It seems a little onerous. Where to me, a WAC should be more fluid, that it's something that you would publish to generators and say here's what we currently can accept. And it has to be able to change them. As the site accepts waste, the room for radiological materials is left in the site, changes depending on the waste that they've already accepted. And so the WAC, it would seem, would change.

But I understand the need for something like sort of a working WAC that is at least something that well, we know we can accept this if you have something special, then we need to run perhaps some kind of analysis on the PA and see if we can accept that other

stuff. Even though it might be outside of working published WAC.

So I don't know. I'd like to see more flexibility in it. And then all these items here, the physical characteristics and all that that were enumerated, none of this in here as far as I can tell addresses anything about uncertainty and for doing a probabilistic risk analysis or PA, that's a problem because we often come down to the case where the most uncertain thing is really what the inventory is and inventory is based on ultimately on waste receipts and manifests that go through the WAC and the WAC then specifies what should be on the manifest, I guess, at some degree.

And so I know it would seem like a burden on generators to somehow evaluate the uncertainties that they have about things, but especially after Billy Cox worked me through how power plants, for example, estimate what's in their low-level waste, there's a lot of uncertainty in there and that can reflect then what is known about the inventory of the site. And so it would make sense to me if there were some way of capturing uncertainties in some of these things, too. And right now it's just not addressed.

MR. GROSSMAN: The intention there, John, was in 61.58(b)(7) under characterization. We talk about any other information. Maybe that's not clear enough. If you think we need more specificity on the uncertainty.

MR. TAUXE: The use of the word uncertainty might be useful.

MR. CAMERON: And Larry?

MR. CAMPER: I have a couple of questions. Dan, it kind of goes back to the point you made. We all know that today each of these sites have, in fact, developed a WAC. But if I look at the license that's been issued for the site, I assume in the case of the Energy Solutions facility in Clive, it says it's authorized for disposal for Class A waste or does it say Class A waste and waste meaning the waste acceptance criteria? Waste acceptance criteria. It doesn't cite the classes of waste.

MR. MAGUIRE: It's based on the waste acceptance criteria and that's a statute in Texas now the waste acceptance criteria has evolved with the performance assessment as it's evolved. We play every time the waste acceptance criteria is -- needs to be modified, that requires a --

MR. CAMPER: So the license for WCS doesn't specify Class A, B, C. It specifies the waste acceptance criteria.

MR. MAGUIRE: Well, it does limit it to low level radioactive waste, Class A, Class B, Class C.

MR. CAMPER: Okay. And then what about in South Carolina. Dan are you familiar with that? Does it specify Class A, B, C or does it specify the waste acceptance criteria?

MR. SHRUM: I don't remember. I'm sorry. I know that they have a WAC because it's actually lower than A, B, and C.

MR. CAMPER: Well, the reason I ask the question is is because we have an established system obviously, that's grown up around the use of the classification scheme and the table 61.55. But as an operational matter, sites have also been, in fact, producing a waste acceptance criteria. So I wonder the fact that we put the other pathway in the regulation what will that change really from an operational process standpoint? I mean will Utah, for example, just as an example, say Class A or the WAC? Because in some cases that site might accommodate higher concentrations of waste for Class A that are in the

table.

And so I'm just curious as to the operational value that will ultimately come out of this and will it ultimately be used. I think we all think it's a good idea and I'm just looking at applicability and usability.

And then the other question I have for you is given that as pointed out in Chris' first slide, that is the 61.55 waste classification system or, or. Have we gone too far as a regulator by requiring that a WAC be created?

MR. CAMERON: Tom Magette.

MR. MAGETTE: The proviso -- if you look at Chris Grossman's first slide, John, it says this is an "or" provision. The Commission has given the flexibility to continue to rely upon the 61.55 waste classification scheme or a waste acceptance criteria. Or. But yet in our regulatory language, we are requiring the conduct of a WAC.

My question is is that an appropriate place to be? Does that seem to be okay?

MR. CAMERON: I think Tom has an opinion for you.

MR. MAGETTE: Of course. I'll start with

your second question first to which I will answer yes. It's entirely appropriate for you to require that for a couple of reasons, one of which is if you don't require that and that probably affects the answer to your first question because you might not get people doing that unless you say this is an alternative that we have concluded is safe and effective for protecting the health and safety of the general public. So I think it's perfectly reasonable for you to require that as an alternative.

The other piece of that is we talked about this notion that the best level of protection and as with other elements of this proposed rule, if you don't require them, why have we bothered? Because you only have one site that only takes Class A waste. If you're not really looking to make sure you dispose of that waste separately that's below that Class C limit, then you've changed nothing. And so I think it's important for you to require that for those two reasons.

As to how licenses are worded, I think what you're basically saying is this is what you're establishing as a safe limit. You're not trying to second guess the policy of the four sited states or for that matter one of the 46 unsited states that might be

sited some day. Then that's what you would be doing, I think. So it's highly appropriate for you to set a standard of what is safe apart from those policies of those states.

MR. CAMERON: And Charles, do you have any comment on Larry's questions before we go to Dan?

MR. MAGUIRE: Not really. It is a statute in Texas that the WCS site has waste acceptance criteria. I think one of the things that might be different in terms of what you've talked about, we do have two resident inspectors at the site and the waste has to be certified prior to disposal. And so the WAC, the license, all of those things are verified, I guess I'll use that word, prior to disposal and the sale.

MR. CAMERON: Let's go to John Greeves and then we'll go to Dan and John Tauxe.

MR. GREEVES: I had some comments which I still want to give, but I want to just get back to the question Larry raised. I actually want to hear over the next months from the sited states how they're going to address this hybrid approach. I'm trying to be sympathetic and I think some of them are going to want to hold on to the classification tables. Isn't that our policy? And frankly, it's in legislation in terms

of responsibility. So I subscribe to the hybrid approach and I'm interested to hear how the sited states are going to actually implement that.

I also subscribe to the waste acceptance criteria, the "or" provision because I think it's a much more accurate description of what the risk is for this site. And I almost wish the Department of Energy was part of this panel because they have real experience implementing this. So hopefully, in the ensuing meetings, we will hear from them.

So getting back to my original comments which I was being patient that I was going to say about -- the 61.58, we have a little bit of a broken record here. I subscribe to the WAC approach. I don't think you need 16 paragraphs specificity to describe it, something simpler.

And kind of a corollary question I actually liked 61.58 the way it was before which is one paragraph. It's useful. Did you consider taking the WAC approach and giving it its own number? Why did you blow away the current useful 61.58? Did this come up?

MR. GROSSMAN: Yes. The reason we used 61.58 to do this is because we felt once we implemented this, there was no need for 61.58 as it exists today.

MR. GREEVES: That's an opinion. I have a different one. I wish we would leave 61.58 and find a home for the WAC for what it's worth.

MR. CAMERON: Larry?

MR. CAMPER: Well, on the 61.58, too, John, in addition to the point that Chris made, it's a by exception provision. It simply hasn't been used. The State of Utah doesn't even have it in its regulations.

MR. GREEVES: I would assert it has been used. When I was regulating and one of the sited states had some stuff, we came and we had to do an analysis. The Commission, for me, had to do an analysis.

MR. CAMPER: Did you create a classification of waste?

MR. GREEVES: Well, it was material that I think we used that provision that we said it's safe, it doesn't ring the bell. Leave it alone. And --

MR. CAMERON: Let's see if Dan has any perspective on this and also he had something to say from before. Go ahead, Dan.

MR. SHRUM: You asked the question is this the right way to go? Yes, this is the correct way to go. It gives flexibility again. I think I remember

reading three of the four agreement states haven't adopted 61.58. So it's not just Utah that -- is that in there?

MR. GROSSMAN: I can't remember off the top of my head how many states do or do not, but we do talk about how many use --

MR. SHRUM: Yes, anyway. So Tom mentioned that this appears -- will be the Utah rule. This will mostly affect Utah because it's a Class A, right now, right now, it's more -- that's who it will affect the most. Texas already has a WAC. We have a WAC. US Ecology up in Washington, we all the WAC. This allows an option.

What you're doing is giving the option and the rest of it will all be happening within mostly the State of Utah, so it's fine the way it is.

MR. CAMERON: Okay. Go ahead, John, and then we're going to go to the phones.

MR. TAUXE: Well, then maybe that brings up a question of compatibility with the "or." I mean is the "or" to use the tables or WAC, is that something that the states can decide on their own, whether they want to use the tables or the WAC or will the states be required to also say you can use the tables or the

WAC, licensee.

MR. CAMPER: Let me answer that. The goal of the Commission for this particular provision was to provide flexibility to use either the waste classification table or the waste acceptance criteria. However, the staff would interpret this part of the regulation as a significant component of it. It would therefore be compatibility B.

MR. CAMERON: Arlene or Brandon, is anybody on the phone on this issue, waste acceptance?

OPERATOR: No one currently in queue at this time.

MR. CAMERON: Thank you. Thank you, Brandon.

I think Larry, Larry, do you have a comment?

MR. CAMPER: Thank you, Chip. I do and I want to thank the panel for the feedback because this is an area again, the Commission, I think we all understand the role of a WAC and the value of a WAC. It particularly has value when you align yourself with a site specific performance assessment, if you stop and think about it. One could argue that it is the essence of the site specific performance assessment.

So the important thing for the staff, given that the Commission has put this provision into the regulation and given that we have a system that's grown up over all these years that is built around the waste classification system, the question that it is utility and is it something that's going to actually get some movement out there amongst the states, that it's something that's valuable for us to be able to communicate with the Commission when we go back with the proposed rule. So thank you. It's very good input.

MR. CAMERON: Okay. And --

MS. YADAV: This is Priya Yadav. I'll can give you my name if you can't spell it. But Chris, I don't know if you mentioned that we have Section F which says each licensee shall annually review the WAC. I don't know if you mentioned that. And we don't have anywhere else for any of the analyses. So that's just something that's out there for you guys to think about so you don't have to update it that frequently, but at least annually you have to update the WAC.

And the other thing is about the regulatory analysis. It is in ADAMS and it's on the FRM, the ADAMS number is in the FRM, so it will take us a couple of

days to get it on the site specific analysis website which is where you got the redlines. So I'll get it on there, but if you want the ADAMS number, it's in the FRM and I can give it to you if anybody needs it now.

MR. GROSSMAN: I can wait a day.

MS. YADAV: Okay, a day. Okay.

MR. GROSSMAN: I can wait until next week.

MR. CAMERON: Thank you, Priya. There was another category, I think that you've already -- Larry said that the second rulemaking, comments on the second rulemaking are within the scope. Comment, we had a discussion on compatibility including Charles' point about a possible Category C for one provision. You've talked about the guidance, so I think you're done. I don't know whether the staff wants to say anything more about the guidance.

And Larry, the senior official will close it out for us.

MR. CAMPER: Thank you. Thank you very much. Anything else, does anybody else want to -- John?

MR. GREEVES: One of your original questions, any clear message on the second rulemaking? I want to be real clear. I don't think it's necessary.

This one has been hard enough. You've put in place a site-specific performance assessment.

MR. CAMERON: Fewer paragraphs --

MR. GREEVES: No, this is different. You've got a hook, Larry. You know what I'm talking about? You've got an assignment to come back and tell the Commission what you heard from the public stakeholders and us being very clear what you are proposing with some adjustments, it's going to do it. It accomplishes the goal. There's no need to go back and do another rulemaking and revisit the classification system. My opinion.

MR. CAMPER: Thank you, John.

MR. GREEVES: Eventually, I'll put that in writing.

MR. CAMERON: We have one person, one staff member in our audience. Chris?

MR. McKENNEY: Chris McKenney, NRC. One that was not on the earlier meeting this morning is that we will be setting up a webinar on May 18th and the time is --

MR. GROSSMAN: It's a week. We haven't set a date.

MR. McKENNEY: There will be a webinar

more focused on the guidance document that's going to be held and so that will come up on the website. We haven't figured out the exact date and time. We're working with DOE because we're working through using the community practice that we are members of that can reach into a lot of different PA people so that we can try to get additional comments on the guidance document.

MR. CAMERON: And will that be on it -- and so if people go to the NRC public meeting schedule it will be on there. They can see that. Okay. May 8th, look for that.

Larry.

MR. CAMPER: Thank you, Chip, and others. Again, with regards, John, to your last comment, thank you for that, but please do provide that in writing as well and any other views on this so it can be processed as a comment, per the process.

Today has been very useful, I think. I think your views have been very thought provoking. You've given us a lot of things to use as we proceed for the next public meetings. You've given us some things to think about as we ultimately prepare a final rule, proposed rule, a final rule I should say for

Commission consideration.

So we thank you. I think this has done exactly what we had hoped that it would do because the following public meetings don't have a panel. It's the staff communicating with members of the public and reacting to comments that are provided, so this helps us formulate and we can share in those public meetings some issues that were raised here that can promote some other thought.

So I will close by saying just to remind everyone that's out there listening, we do have a meeting scheduled in Austin, Texas for May 12; a meeting in Columbia, South Carolina for June 2; Richland, Washington on June 9; Salt Lake City on June 10; and those meetings will be from 6 to 9 p.m. in the evening and locations will be determined.

I would also like to close by thanking the staff for all the hard work that they did, not only to put together this proposed rule over a very long time, but also the specific preparation for this meeting and so forth. So I thank all the staff very much. Thank you. We conclude.

(Whereupon, the above-entitled matter went off the record at 4:11 p.m.)

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