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Proposed Changes to 10 CFR Part 61

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING TO DISCUSS RECENT  
PROPOSED CHANGES TO 10 CFR PART 61  
LOW-LEVEL RADIOACTIVE WASTE DISPOSAL RULEMAKING

+ + + + +

WEDNESDAY,  
JUNE 10, 2015

6:00 P.M.

+ + + + +

Hilton Garden Inn  
Salt Lake City Downtown  
250 West 600 South  
Salt Lake City, UT 84101

PRESENT FROM NRC:

- Chip Cameron, Facilitator
- Andrew Persinko
- Stephen Dembek
- David Esh
- Christopher McKenney
- Lisa London, Esq.

AGENDA ITEM

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Adjourn

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

(6:00 p.m.)

1  
2  
3 MR. CAMERON: Thanks, Jeremy. Good  
4 evening, everyone. Welcome to the public meeting  
5 tonight, and our topic tonight is a proposed rulemaking  
6 on the disposal of low-level radioactive waste, and  
7 this rule was proposed by the United States Nuclear  
8 Regulatory Commission, and that agency is sponsoring  
9 this public meeting tonight. We're going to try to not  
10 use acronyms, so one thing you will hear tonight is NRC  
11 for Nuclear Regulatory Commission, and I will be  
12 serving as our facilitator for tonight's meeting, and  
13 in that role, I will try to help all of you to have a  
14 constructive meeting tonight.

15 I just want to go over some meeting process  
16 issues so you know what to expect tonight. I would like  
17 to tell you about the objectives for the meeting, the  
18 format for the meeting, some simple ground rules and  
19 introduce tonight's speakers to you. In terms of  
20 objectives, the first one is to give you a clear  
21 explanation of what is in the proposed rule and to  
22 answer any questions on the proposed rule. Second  
23 objective is to listen to your comments,  
24 recommendations on the proposed rule.

25 Now, we're transcribing tonight's

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1 meeting, and we have Kellie as our stenographer, and  
2 that transcript will be publicly available, and it will  
3 be your record and the NRC's record of what transpired  
4 tonight, and anything you say tonight is going to be  
5 formally on the rulemaking record. Now, the NRC is  
6 also soliciting written comments on the proposed rule,  
7 and the NRC staff, in a few minutes, will be telling  
8 you how you submit those written comments. But  
9 comments tonight will carry the same weight as written  
10 comments, and if you want to amplify on anything you  
11 say tonight and submit a written comment, that is  
12 welcome.

13 In terms of format, you can see from the  
14 agenda that we have three speakers, and I'll introduce  
15 those speakers to you in a minute, and after each  
16 presentation, we will go out to you for questions and  
17 comments. Now, I'll introduce Dave more formally,  
18 Dave Esh, but he really is going to address the heart  
19 of the issues tonight and go through the primary  
20 technical issues in the rule, and there's seven or eight  
21 of those, including an "Other" category. So after each  
22 of those important technical issues, we will go out to  
23 you to see if you have any questions or comments.

24 Now, we're also having people participate  
25 by phone, and that's why we have Jeremy, the operator,

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1 with us tonight. So we will be going out to those on  
2 the phone periodically. We also might get questions  
3 that come in through the web.

4 In terms of ground rules, when we go out  
5 for discussion, just give me a signal if you have  
6 anything you want to say, and I will bring you the  
7 microphone. And it's important that each time you talk,  
8 that you introduce yourself so that Kellie knows who  
9 is saying what, and I would also ask you that we only  
10 have one person speaking at a time, and that is so that  
11 we give our full attention to whoever has the microphone  
12 at the moment, but also so Kellie can get a clean  
13 transcript, she will know who is talking. And the  
14 introduction also goes for people who come in through  
15 the phone, too.

16 A third ground rule is to try to be brief.  
17 I want to make sure that we get everybody tonight, and  
18 there's a lot of material to cover, and I'm not going  
19 to put any limits on how many times someone talks, but  
20 I want to do this equitably to make sure that everybody  
21 who wants to talk gets an opportunity to do that.

22 And in terms of our speakers, we are going  
23 to go first to Drew Persinko, who is right down here.  
24 Now, Drew is going to give you a welcome and an overview  
25 with the proposed rule a little bit to have history

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1 behind it. And Drew is the deputy division director  
2 of the NRC's division of decommissioning, uranium  
3 recovery, and waste programs, and that's in the NRC  
4 office of nuclear materials safety and safeguards, in  
5 Rockville, Maryland.

6 After Drew is finished, we will go on for  
7 questions, comments. We will go to Steve Dembek right  
8 here. Steve is going to talk about the rulemaking  
9 process. He's a project manager in the low-level waste  
10 branch in Drew's division. So, again, we will go for  
11 questions, comments, and then we are going to go to Dave  
12 Esh.

13 Now, Dave is a technical expert on  
14 performance assessment, and he is going to tell you what  
15 that means. He is going to go through the proposed rule  
16 for you, and Dave is in the performance assessment  
17 branch in Drew's division, but we also have the chief  
18 of the performance assessment branch with us tonight,  
19 Christopher McKenney, in case we need to use his  
20 expertise at all.

21 We may have one of the NRC's attorneys from  
22 the office of general counsel, Lisa London, on the phone  
23 if we run into any legal issues that we need to answer.  
24 And I want to introduce Shawn Beardsly. Shawn is from  
25 Senator Hatch's office, and I just want you all to know

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1 that Senator Hatch is paying attention to this. And  
2 I think that, I think that we can go to Drew now.

3 MR. PERSINKO: Thank you, Chip. Can you  
4 all hear me fine? Well, good evening, everybody. I  
5 want to welcome you here to our 7th and final meeting  
6 on the 10 Code Federal Regulations, our low-level waste  
7 proposed rule in our rulemaking. We have had six  
8 meetings elsewhere around the country and this is our  
9 last one. We wanted to come to Utah and have a meeting  
10 in Utah because we wanted to have a meeting in each of  
11 the four states where commercial facilities are  
12 currently operating.

13 Copies of slides are out front, and I saw  
14 many of your grabbing the slides as you walked in. I  
15 have some -- in my package, I have some backup slides  
16 in there that talk about sort of the history of the rule  
17 that I do not plan to go through, but they are attached  
18 to my slides, so I encourage you to look at them if you  
19 want to see of the history of the rule. Next slide,  
20 Steve.

21 Okay. Well, the objectives of the  
22 meetings, Chip mentioned them in his opening remarks,  
23 but you can see the objectives on the screen. They are  
24 basically to discuss proposed revisions to the  
25 low-level radioactive waste rules that are contained

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1 in the Code of Federal Regulations, the 10 CFR Part 61.  
2 And for the acronyms, that is another acronym we use  
3 a lot here. CFR is Code of Federal Regulations. Most  
4 of you know that but there may be some who don't. So  
5 these regulations are in our 10 CFR Part 61. They are  
6 low-level waste regulations.

7 We also want to encourage you to submit,  
8 and others on the phone, to submit comments using  
9 methods that Steve will talk at when he speaks. Even  
10 though the meeting is being transcribed, I still  
11 encourage you to submit written comments on the record.  
12 As Chip said, Dave Esh will talk. He will present the  
13 technical details around the various aspects of the  
14 revisions, and Dr. Esh and Chris McKenney have been  
15 involved in this rulemaking since it started back in  
16 2006, so they have a long history of being with the rule.

17 The one last thing is we are going to answer  
18 your questions to the best of our abilities, but the  
19 real primary purpose of the meeting is to receive  
20 comments. I mean, we are going to discuss the rule,  
21 but then we want to hear your comments. As I said,  
22 that's a very -- one of the primary reasons for the  
23 meeting. Next slide, Steve.

24 So let me start by saying that we do believe  
25 that the current regulations, the 10 CFR Part 61

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1 low-level waste regulations, are adequate to protect  
2 the public health and safety, so why are we doing the  
3 rulemaking? Well, it has to do with things -- those  
4 regulations were put into effect back in,  
5 approximately, 1982, and things have changed a little  
6 bit since then, so we wanted to revisit the regulation  
7 to make sure that applicants, as well as active  
8 licensees, ensure that low-level waste streams that may  
9 be significantly different from those waste streams  
10 that were analyzed back in 1982 when the rules  
11 originally developed, we want to make sure that those  
12 new waste streams are, in fact, addressed. Steve.

13 This slide is pretty much for a high-level  
14 context. It talks a little bit about the history of  
15 the rule, without going into all of the back and forth  
16 of the lot of the details, but I want to give you a little  
17 context of the rule, of the proposed rule. The rule  
18 actually -- the rulemaking actually started back in  
19 -- back in 2005, 2006, and it actually grew out of  
20 an adjudicatory proceeding that took place regarding  
21 the Louisiana Energy Services in Richmond, a license  
22 application.

23 Following that adjudicatory process, the  
24 commission sent the -- directed the NRC outside of these  
25 adjudicatory process, they directed us to examine

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1 whether or not the regulations in 10 CFR Part 61 needed  
2 to be modified to address the disposal of large  
3 quantities of depleted uranium that were anticipated  
4 to come from uranium enrichment facilities.

5 So the staff undertook an analysis. The  
6 staff was asked to conduct an analysis to determine  
7 whether or not we believe that the large quantities of  
8 depleted uranium were, in fact, suitable for near  
9 service disposal. So that was the analysis we  
10 undertook. Our analysis showed us that it was,  
11 provided certain -- under certain conditions.

12 Along the way while we were doing the  
13 analysis, we also recognized there were other issues  
14 that we would need to address and should address, and  
15 those issues had to do with trying to address any other  
16 waste streams that might come along in the future so  
17 that we don't have to continuously revise our  
18 regulation for new waste streams.

19 There was considerable commission  
20 direction to us, and when I say commission, I want to  
21 make some of you -- we all work for the Nuclear  
22 Regulatory Commission, but when I say the commission,  
23 I am referring to the five commissioners, the actual  
24 commissioners. So the commission -- we are the staff  
25 of the commission and then there is the five

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1 commissioners. So there was considerable direction  
2 from the commission, meaning the five, the five  
3 commissioners.

4 So we put out a version of the rule once  
5 before and draft language of the rule, and we had  
6 several public meetings on the rule. It wasn't a  
7 proposed rule at the time yet. It us was just a  
8 preliminary proposed rule, if you want to give it a  
9 title, but it hadn't reached a proposed rule stage. We  
10 got several rounds of commission direction, and the  
11 commission direction, as I said, is in my background  
12 slides.

13 So we have reached the point now where we  
14 actually -- we have a proposed rule. We published it  
15 for comment back on March 26th, and we are in the 120-day  
16 comment period of the rule. When the 120 days is up,  
17 we will analyze the comments we receive, and we will  
18 work with the commission to develop a final rule. And,  
19 of course, we will incorporate any direction we get from  
20 the commission at that time.

21 The next -- the other item I wanted to  
22 mention or highlight is the issue -- you can see on the  
23 slide is the issue of compatibility. There is a lot  
24 of interest in compatibility for this rule. When I say  
25 compatibility, what I am talking about is really, it

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1 is a relationship between NRC's regulations and the  
2 agreement of state regulations. And what it means is  
3 it describes -- it really describes how precisely the  
4 commission wants the language in a given rule to be  
5 replicated in the agreement state regulations.

6 So for this rule, the commission directed  
7 the staff that the rule should be what is known as  
8 Category B. What Category B means is that the states  
9 need to adopt the NRC's regulations with, essentially,  
10 the same wording that the NRC has used in its  
11 regulations. So it is very much a -- very much verbatim  
12 for what the NRC has said.

13 There's also an issue of agreement state  
14 applicability, and I have some slides on that in a  
15 moment that I'll get to. And last, there's still an  
16 outstanding issue even when the rule is down. The  
17 rule -- and the outstanding issue is this: When the  
18 commission directed the staff to proceed and do a  
19 site-specific rulemaking on Part 61 rulemaking, it also  
20 charged the staff to look at modernizing and risk  
21 informing the waste classification tables, including  
22 what class of waste is depleted uranium. And those  
23 tables I am talking about is in the 10 CFR Part 61  
24 regulation, and that assignment to us is still there.  
25 We still have it.

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1           The commission gave us some subsequent  
2 direction now, and they did say that they want us to  
3 complete this rule in its entirety before we move on  
4 to the other rule. And before we start the other rule,  
5 they give us direction on what they wanted us to do,  
6 and I will read it to you. It is not in that slide but  
7 I will read it to you.

8           The commission told us that after the  
9 limited rulemaking, that is meaning the rulemaking we  
10 are here tonight to discuss, after the limited  
11 rulemaking is complete, the staff should provide a  
12 commissioner's assistance note to the commission. In  
13 other words, that's a communication device we use with  
14 the commission. We should provide a note to the  
15 commission on the secondary rulemaking effort for waste  
16 classification tables, and that note should identify  
17 the specific comments that have been received on the  
18 need for a second rulemaking, and clearly articulate  
19 the basis in accepting or dismissing the comments.

20           So what that means is in addition to the  
21 comments we were seeking tonight on the proposed  
22 revisions to the regulation, we are also interested in  
23 getting comments from you about whether or not you  
24 believe that another rulemaking would be needed to  
25 address the specific classification of depleted

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1 uranium and also risk inform the waste classification  
2 tables that are in the regulations. So we are  
3 interested in getting your comments on that, as well  
4 as the existing rule itself, the proposed rule that is  
5 out for comment right now. Next slide, Steve.

6 Okay. So this is -- these words you see  
7 on the slide, these are in our current regulations.  
8 They are currently in the Part 61 regulation. If you  
9 go about halfway down in there, there is a sentence that  
10 reads "Applicability of the requirements in this part  
11 to commission licenses for waste disposal facilities  
12 in effect on the effective date of this rule will be  
13 determined on a case-by-case basis."

14 So what was happening when the regulations  
15 were put into effect back in 1982, the commission wanted  
16 some flexibility for addressing states that had  
17 operating sites at that time. South Carolina comes to  
18 mind, Washington does. So when that rulemaking was put  
19 into effect back in '82, the commission wanted to deal  
20 with -- on a case-by-case basis, deal with the existing  
21 facilities. It turns out, anyway, later on, later by  
22 about 1988, I think the sites, the sites in existence  
23 at that time pretty much adopt the Part 61, anyway. But  
24 next slide.

25 For this rule, the current proposed rule

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1 that we have out for comment, it is a little different.  
2 This time the commission's proposed rule -- we point  
3 out that the proposed rule would affect existing and  
4 future low-level radioactive disposal facilities that  
5 are regulated by the NRC, or an agreement state. In  
6 other words, this rule will affect those operating in  
7 agreement states upon its implementation. So I know  
8 there is a lot of interest from some of the states about  
9 the rule being applicable to individual states, so I  
10 am pointing this out right now because it will affect  
11 existing facilities. Next.

12 So let me mention a little bit about the  
13 rationale again for the current rulemaking. I  
14 mentioned earlier that it really started off with large  
15 quantities of depleted uranium. And along the way as  
16 we were doing the analysis, we realized there were some  
17 other things that we really should address and it would  
18 be good to put in the rule. And the other things that  
19 we looked at -- so we really looked at a few other things  
20 in this rulemaking.

21 So we started off with depleted uranium,  
22 especially from enrichment facilities, and when we did  
23 the analysis, we knew they were somewhere in the order  
24 of about 700,000 metric tons of depleted uranium in the  
25 enrichment facilities. And we knew that additional

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1 depleted uranium would be generated as time went on.  
2 So there was quite a bit of depleted uranium that we  
3 had to address.

4 SPEAKER: How much was that?

5 MR. PERSINKO: It's 700,000 metric tons.  
6 So the other waste streams that I am mentioning that  
7 we also knew were -- that may be different is that we  
8 would have more low-level waste from DOE facilities  
9 than the regulation envisioned back when it was  
10 developed back in the early '80s.

11 There is also the topic of blended waste,  
12 and blended waste has come along fairly recently. What  
13 blended waste is, is waste that is composed -- it is  
14 a mixture of what would be Class A waste, Class B, and  
15 Class C, and it is blended together in such a fashion  
16 such that the concentration of the resulting mixture  
17 is really a Class A waste, so there was -- that was  
18 another aspect of the rulemaking that came along.

19 And then also I mentioned that we  
20 anticipated that somewhere down the road there would  
21 be new technologies that might emerge, so we wanted a  
22 more general approach that would be applicable as time  
23 went on, and we wouldn't have to go back every time and  
24 revise the regulation.

25 Okay. I mentioned that this is the 7th and

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1 final meeting, so these were -- these are the previous  
2 meetings we have had. As you can see on the screen up  
3 there, we started in March, in Phoenix, and we have  
4 had -- you can see on the screen but I won't read it  
5 to you, but you can see that we have had other meetings  
6 before. In addition, we have had a webinar over the,  
7 over the phone and over the web.

8 And I mentioned on the slide here, I said  
9 we have some post rulemaking actions. What I am really  
10 talking about there is that I told you, there is still  
11 an outstanding item. We owe the commission a  
12 communication on whether or not we think the waste  
13 classification tables need to be risk informed and  
14 revised and classified for depleted uranium. So that  
15 is what I am referring to on this slide when I say some  
16 post rulemaking actions.

17 So those are my introductory remarks. Are  
18 there any questions?

19 MR. CAMERON: Okay. Let's go out to the  
20 people here in the audience in Salt Lake. And, Naomi,  
21 could you please introduce yourself to us?

22 MS. FRANKLIN: My name is Naomi Franklin.  
23 You neglected to tell, tell us where to do the written  
24 comments.

25 MR. CAMERON: That is coming up in the next

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1 presentation. And this is Naomi Franklin.

2 Yes, sir.

3 MR. FRANK: I'm John Frank. I live in  
4 Salt Lake City. I wonder if you could define the term  
5 that is in the title, and it seems like a critical term,  
6 and that is disposal. What does that mean for the NRC?  
7 It is a word that is commonly -- has many connotations.  
8 What is the exact definition as far as the NRC is  
9 concerned?

10 MR. CAMERON: Thank you.

11 MR. PERSINKO: I don't know the exact  
12 definition, but disposal to me -- I don't know if it  
13 is in the regulations or not. Is it?

14 MR. MCKENNEY: Yes.

15 MR. CAMERON: Disposal is oftentimes as  
16 differentiated from storage, for example.

17 MR. PERSINKO: It might be in the  
18 regulation. That would probably be the definition I  
19 would give you. Do you have it?

20 MR. ESH: I'll read it. Disposal means  
21 the isolation of radioactive waste from the biosphere  
22 inhabited by man and containing as food chains by  
23 placement in a land disposal facility. So that is the  
24 definition in the current regulation, and we have not  
25 changed it in the proposed regulation.

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1 MR. CAMERON: Okay. Let's go to Matt.  
2 Could you introduce yourself to us?

3 MR. FERCHEN: Sure. I am Matt Ferchen  
4 (sic) and I wanted to follow up on the point about the  
5 depleted uranium, which we appreciate hearing, and it  
6 is great to know that comments on the wisdom of  
7 classifying that are an important part of this, and  
8 there's a lot of us that have feelings about that.

9 I wondered if you -- I am sure your folks  
10 are aware that, you know, of course we have this sort  
11 of awkward and parallel process happening in Utah.  
12 Right? Where on one hand, you folks are writing rules  
13 addressing waste streams, while Utah is already sort  
14 of ahead of that. Right? Already nearing the latter  
15 stages of making a decision on that very thing. So,  
16 again, we have parallel trains going down the track,  
17 and I'm not exactly clear which one will cross the  
18 finish line first.

19 So as I am sure you know, Utah issued a  
20 document, a draft safety evaluation report, and it put  
21 a condition upon potentially accepting that waste at  
22 some point down the road, and that condition was that  
23 the NRC would let the state know whether it planned on  
24 classifying depleted uranium. And as you may know  
25 then, our governor, interestingly, even sort of went

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1 a step further and very strongly came out and said that  
2 this was very important to him.

3 So I guess I am just wondering if you can,  
4 can you comment upon what your reaction was to that  
5 request, and how you think that request fits in  
6 with -- and I don't want to mischaracterize how you  
7 stated it, but how this sort of next job to come once  
8 you finish these rules, which would be the  
9 classification. Thank you.

10 MR. PERSINKO: Right now, I mean, depleted  
11 uranium is Class A waste. The commission said that.  
12 It is Class A waste. It is treated as it's Class A  
13 waste. So for our purposes, I mean, it can be, it can  
14 be disposed of in the Utah site as a Class A waste. So  
15 that's our perspective right now, but, you know, as I  
16 said, the story isn't over on that yet.

17 I mean, this is where you get a chance to  
18 send some -- provide comments on your view of whether  
19 or not we should revise the waste classification tables  
20 and whether, as part of that, whether we should define  
21 the low-level -- define the depleted  
22 uranium -- classify, not define but classify the  
23 depleted uranium. Because right now, it is -- I mean,  
24 it is by default it is classified as Class A waste  
25 because it is not listed in the other classes, and the

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1 commission has told us that that is what it is. So for  
2 our purposes, we treat it right now as Class A waste,  
3 but this is your opportunity to, like I said, provide  
4 comments on that.

5 MR. CAMERON: Okay. Let's go to Rusty.

6 RUSTY LUNDBERG: Rusty Lundberg with the  
7 division of radiation control here in Utah. I would  
8 like to express appreciation, so that it is on the  
9 record, of NRC's efforts to make these meetings  
10 publicly available to those who are inside the states  
11 where commercial disposal is occurring.

12 And more importantly, the format of this  
13 so that it is an exchange of information, and questions  
14 can be asked and answered, and have that be a part of  
15 the rulemaking record and then secondly, as far as the  
16 extensive effort that has gone into this development  
17 work, we are not without recognition of not only the  
18 time that this has taken, but the considerable  
19 consideration that has been a part of this. We  
20 certainly recognize that as an agreement state with the  
21 NRC.

22 But what I really want to offer here is that  
23 as you continue to evaluate these comments, I think that  
24 there are aspects of what we are facing, what we have  
25 done in Utah as far as our own rules that we will be

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1 further commenting on that, but we just want to  
2 underscore the value of where we have been, and what  
3 is facing us in the near term as well. But in concert  
4 with that, just, again, express appreciation that we  
5 have this more personal exchange that we can have this  
6 time. So thank you.

7 MR. CAMERON: Thanks, Rusty. We are  
8 going to go to you, then this gentlemen, then the  
9 gentlemen in the back, and then go over to the phone.  
10 Please introduce yourself.

11 MS. KING: I am Cindy King. I am with the  
12 Utah chapter of the Sierra Club. I have a question that  
13 is dealing twofold; in the table that you list for the  
14 purpose of toxicity, how do you address that based on  
15 health versus a fiduciary responsibility of all  
16 regulatory agencies? And I would like that to be  
17 defined, and how you are going to do that. Because it  
18 depends -- the reason I am asking is the health risk  
19 could be accumulative not necessarily based on a  
20 fiduciary responsibility, which is defined  
21 differently. So I need to have a clarification on how  
22 that is going to be done. Thank you.

23 MR. CAMERON: And I think that that  
24 subject is going to be addressed in Dave Esh's  
25 presentation.

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1 MR. ESH: Maybe.

2 MR. CAMERON: Do you understand what Cindy  
3 means by fiduciary?

4 MR. ESH: I don't.

5 MR. CAMERON: Okay. Cindy can you  
6 explain what you are saying by fiduciary, and we may  
7 wait to answer this until later on, but if you could  
8 just explain what you mean by that.

9 MS. KING: I will give a general  
10 understanding because I do have a more precise one when  
11 I submit comments. I am talking about the protection  
12 of what they normally call seven generations or more.  
13 I have another definition that is more precise but it  
14 goes to the protection of the land, the water, the air,  
15 not only for today but for years to come. And since  
16 depleted uranium increases and can change its toxicity  
17 as it turns and goes through the various durations, that  
18 that's defined differently, and the tables might not  
19 necessarily address that based on a health risk versus  
20 a legal definition of fiduciary responsibility.

21 MR. CAMERON: Okay, that's clearer for us.  
22 And can we -- will you address this when we get -- we  
23 will put that in the parking lot. We will come back  
24 and it will make more sense in the context of Dave's  
25 presentation, so we won't miss that one.

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1 Yes, sir.

2 MR. MACKNER: My name is Ed Mackner, and  
3 I wanted to ask you, the word blending is actually  
4 you're diluting. Right? In other words, you are  
5 making a mixture. Right? And so, therefore, you're  
6 complicating the substances. You are going to have to  
7 have an approximate -- let's say down the road you find  
8 the technology that you can separate these particular  
9 other wastes. Are you aware of the amount of work that  
10 you might have to do in order to separate them, to take  
11 them, say, to another facility and maybe catalytically  
12 reduce the radiation by some -- so the blending is  
13 interesting because it seems like you are complicating  
14 the process.

15 It would seem to me if I were in charge,  
16 I would not, I would not blend. What I would do is  
17 separate because they are already separated. You  
18 don't have to do any work. And then maybe somebody like  
19 Mr. Buffet would offer a big prize for a scientist who  
20 could find some catalytic way of reducing -- increasing  
21 the half life. So my question is, why do you want to  
22 mix and blend?

23 MR. CAMERON: Okay, thank you. Who wants  
24 to talk to that? Chris, go ahead.

25 MR. MCKENNEY: Blending was a

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1 consideration because of changes in access to disposal  
2 sites, but blending has always occurred at different  
3 scales. What -- and what was being blended was pretty  
4 much physical alike things. So a resin bead. They  
5 come up with little beads used to capture stuff out of  
6 the water. Some higher concentration beads would be  
7 mixed with lower concentration beads, and then it would  
8 not be like physically separated completely. I mean,  
9 you can do some stuff, but -- and there were some, some  
10 parts of that works that actually reduce its form, so  
11 it was actually less able to be mixed. Some people  
12 projected that. And because of all those  
13 possibilities, which was that was on the large scale,  
14 but some of the power plants already have that as  
15 naturally in their plant. All of their resins feed into  
16 the same tank already for waste disposal.

17 So this issue has been there, and we  
18 have -- we wanted to make sure that in case some were  
19 to do that on a large scale, that they took into account,  
20 such as if they separated apart, or if you put a lot  
21 of it together one place in a disposal site. We wanted  
22 to make sure that the regulations made you look at that,  
23 to evaluate that as part of a provient. That is one  
24 of the reasons why we want to do the scientific analyses  
25 is because you can look at those types off issues.

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1 Those separations of an issue is the --

2 MR. CAMERON: I would just say that it's  
3 wonderful that all of you are here, and I know we are  
4 going to have an active discussion. Usually we have  
5 a lot of time for follow up, but I am afraid that we  
6 really are going to be pressed for time, but the NRC  
7 staff will be here after the meeting, also, and if we  
8 want to talk more about that, we can do that. But let's  
9 have one more question, and then see who we have on the  
10 phones.

11 Yes, sir.

12 MR. TAYLOR: Thank you. I am just  
13 interested in the --

14 MR. CAMERON: And your name, please?

15 MR. TAYLOR: My name is Steve Taylor. The  
16 federal -- there is a slide here called federal register  
17 notice, proposed rule for public comment, and it says,  
18 "Who would this action affect?" It says, "This  
19 proposed rule would affect existing and future LLW  
20 disposal facilities that are regulated by the NRC," but  
21 I would like to point out that it also affects people  
22 in this state.

23 I look at my relatives from Southern Utah,  
24 many of whom have died from the kind of undifferentiated  
25 tumors and cancers that are typically caused by

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1 radiation. They were assured by the federal  
2 government that the tests in Nevada would not cause any  
3 problem here. Those who were involved in uranium  
4 mining were also assured that there was no danger. And  
5 you know what? They are all gone. Thank you.

6 MR. CAMERON: Okay, point well taken.  
7 And, Jeremy, is anybody -- is there anybody on the phone  
8 who wants to comment on this overview presentation or  
9 ask a question?

10 PHONE OPERATOR JEREMY: If you would like  
11 to make a comment or ask a question, please press star  
12 one and record your name at the prompt. To withdraw  
13 your question or comment, press star two. One moment  
14 for the first question or comment. We do have a  
15 question or comment. One moment for the name.

16 MR. CAMERON: Is there anybody there or  
17 can we move on?

18 PHONE OPERATOR JEREMY: The first  
19 question is from Lisa London. Her line is open.

20 MR. CAMERON: Good.

21 MS. LONDON: Hi, can you hear me?

22 MR. CAMERON: Yes.

23 MS. LONDON: Okay. It is really not a  
24 question. I wanted to chime in. I know that there was  
25 a question regarding fiduciary duty and Dave is going

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1 to take a crack at looking at that when you are dealing  
2 with this section, and --

3 MR. CAMERON: Lisa, you are going to have  
4 to repeat that and go a little bit slower so Kellie can  
5 get it.

6 MS. LONDON: Sure, sorry about that, Chip.  
7 I know that there was a question on fiduciary duty.

8 MR. CAMERON: Right.

9 MS. LONDON: And that Dave was going to  
10 take a crack at answering that when he went through that  
11 relevant section of his presentation.

12 MR. CAMERON: Right.

13 MS. LONDON: But if you need to reach out  
14 to me, reach out to me.

15 MR. CAMERON: Oh, good. Thank you, Lisa.  
16 Lisa London is the attorney in the NRC's office of  
17 general counsel who is providing advice and counsel to  
18 the NRC staff on this. So it is good to know you are  
19 here, Lisa, or not here but up there in the sky.

20 Jeremy, anybody else?

21 PHONE OPERATOR JEREMY: Yes. The next  
22 question is from Ruth Thomas. Your line is open.

23 MS. THOMAS: Thank you. I wanted to get  
24 to the basics of this, and all along, there has been  
25 the use of words that need to be defined. I mean,

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1 low-level gives the impression that it's not much of  
2 a problem, and that is not the case, and the burial of  
3 waste is not something that can be done with this  
4 nuclear material.

5 Also, the word cleanup, the only thing  
6 that -- and I think the gentleman, the first gentleman  
7 mentioned that what is needed is isolation from man's  
8 environment. So what we are having is a problem of what  
9 to do with this waste, and it, at least in the past,  
10 it goes back to what was decided when the decision was  
11 made to use nuclear materials, to use the waste heat  
12 for power for electricity, and this has brought about  
13 all kinds of problems.

14 And there are evidence, there are  
15 statements, and NRC documents which conflict with the  
16 reality of the materials, like that table S.3, and the  
17 idea we know more about radioactivity, and it is not  
18 encouraging. I mean, these --

19 MR. CAMERON: Ruth, this is Chip, and we  
20 really appreciate you calling in, and I think the NRC  
21 recognizes the point that you are making. And for  
22 everybody here, Ruth is one of our more steadfast  
23 commenters on NRC activities. And, Ruth, you are in  
24 South Carolina; is that correct?

25 MS. THOMAS: Well, I have lived in South

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1 Carolina. I live in North Carolina now.

2 MR. CAMERON: Okay.

3 MS. THOMAS: And --

4 MR. CAMERON: Ruth, thank you, thank you  
5 very much, and we will surely hear from you later on  
6 in the evening, but I am going to ask Jeremy to tell  
7 us whether there is anybody else on the line.

8 PHONE OPERATOR JEREMY: Yes, we have one  
9 final comment from Marvin Lewis. Your line is open.

10 MR. CAMERON: Marvin Lewis, okay.

11 MR. LEWIS: I am speaking from North  
12 Philadelphia where we have had one of those interesting  
13 little happenings, where a train in a railroad yard went  
14 right off of its tracks at a 100 plus miles an hour,  
15 putting 200 people in the hospital and eight people  
16 dead. Oh, wow, an unusual occurrence. Gee, it says  
17 an unusual -- anyway, my point one, Ruth was talking  
18 about table S.3, and all the dosages are usually based  
19 on the numbers in the table S.3.

20 And the numbers in table S.3 by your own  
21 people, namely Walter H. Jordan, a judge of the  
22 Three-mile Island hearing board, Three-mile Island,  
23 No. 2 hearing board, pointed out many of the errors in  
24 table S.3. In other words, you are basing your  
25 dosages, you're basing your numbers of deaths on a table

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1 that has been shown to be just plain wrong.

2 Also, right now there is an effort within  
3 the NRC to align the cause of avoiding radiation at a  
4 higher number. In other words, most agencies in US  
5 government use a number of \$9 million per avoidant death  
6 is the reasonable cost. The NRC uses \$3 million for  
7 avoidant death or radiation of -- or association with  
8 it as a reasonable cost, one third of what the other  
9 agencies of the US government needs.

10 MR. CAMERON: Okay, Marvin.

11 MR. LEWIS: Also, I want to point out what  
12 Rickover said.

13 MR. CAMERON: Okay. After you point out  
14 what Admiral Rickover said, I think we need to move on  
15 to the next speaker. And I think people here probably  
16 appreciate what you are saying about the NRC, but could  
17 you finish up for us, please?

18 MR. LEWIS: All right. I am making a  
19 comment, not a question, and I am just pointing out that  
20 I feel this is a thoroughly premature act to look at  
21 this rulemaking before we settle on how much it is going  
22 to do for avoidant death of radiation.

23 Also, we are -- it's premature because  
24 nobody has ever really looked at this question of what  
25 table S.3 -- how long it is, and -- well, although it's

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1       been brought out by many people, including H. Jordan  
2       from the NRC that I pointed out.

3                   MR. CAMERON:   Okay.   Marvin, I am going to  
4       have to ask you to stop now.   I would say that you have  
5       raised an important issue, and that issue relates to  
6       the regulatory analysis that was done on this rule that  
7       examined costs and benefits, and Dave Esh may be talking  
8       about that a little bit more, and can tell you how you  
9       can get a copy of that, and it is also fair game for  
10      commenting.   But right now, I am going to ask Steve  
11      Dembek to come up and tell us about the rulemaking  
12      process.

13                   MR. DEMBEK:   Thank you.   Can you hear me?  
14      Thank you, Chip.   As Chip mentioned before, my name is  
15      Steve Dembek, project manager.   I work under Drew  
16      Persinko, among others, and I am going to talk to you  
17      today about why rulemaking.   So Drew talked about why  
18      we are doing this specific rulemaking.   I am going to  
19      talk in broader terms of why we do rulemaking in  
20      general.

21                   I am going to talk a little bit about the  
22      draft guidance document.   It is called NUREG-2175 that  
23      goes along with the rulemaking.   It helps to implement  
24      the rulemaking.   I am going to talk about the timeline,  
25      when is all this going to happen, where to get copies

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1 of any pertinent documents, and how do you submit  
2 comments on the proposed rule and on the draft guidance  
3 document.

4 So why do we do rulemaking? We do  
5 rulemaking to implement commission policy. The  
6 rulemaking process makes provisions generally  
7 applicable to all the licensees, as opposed to some  
8 other methods we have, such as issuing orders or issuing  
9 license conditions or exemptions. Those are specific  
10 to whatever party receives the order or license  
11 condition. When we make rule changes, it applies to  
12 everyone unless something in the specific rule says it  
13 doesn't.

14 Another reason we do rulemaking is it is  
15 public process. You are all here with an opportunity  
16 to comment. Normally we post a proposed rule in the  
17 federal register, and people are given the opportunity  
18 to comment, and we have to consider those comments  
19 before we finalize the rule.

20 So how do we come up with some of these  
21 proposed rules? Well, we look at various lessons  
22 learned. We look at any proposed rulemakings we get.  
23 We look at inspection activities, what we learned from  
24 inspection activities at different facilities. So we  
25 use all that information to come up with our proposed

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1 rulemaking. And in this case, the proposed rule was  
2 issued for public comment on March 26, 2015, and it has  
3 120-day comment period, which expires on July 24, 2015.

4 Now I will talk a little bit about the  
5 guidance document, which I mentioned on a previous  
6 slide. The guidance document is called -- it has a  
7 NUREG number, 2175. The guidance document was also  
8 issued on March -- in federal register notice on March  
9 26th, asking for public comment. It also has a 120-day  
10 comment period on it. And the guidance document gives  
11 more information to regulators and licensees about how  
12 to implement the proposed rule.

13 And this is a draft document for comment.  
14 We appreciate any comments we get on the NUREG, and the  
15 NUREG has flow charts, guidelines for what licensees  
16 should include, and what regulators should review on  
17 their analyses, and any -- it has references, and a lot  
18 of other materials. It's a very, very -- Dave Esh will  
19 talk about this a little bit, but it is a very thick  
20 document.

21 So what is our timeline? What are we  
22 working -- when will this see completion? Well, this  
23 is -- it notes on the bottom -- the note on the bottom  
24 shows the dates are approximate because depending on  
25 the type of comments we get, the process may take longer

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1 than envisioned. But, basically, we are in the  
2 upper-left portion of this slide, the public meeting  
3 and comment period, and starting in August, after the  
4 July 24 comment period ends, starting in August, we are  
5 going to develop responses for comments and propose a  
6 final rule to the commission.

7 And then eventually, we will publish that  
8 final rule, and then after the final rule has been  
9 published, it will become effective one year later, and  
10 then the agreement states will have three years after  
11 that to implement it. And the line below that shows  
12 the guidance document is going to follow a similar  
13 process but not as formal of a process, so we are going  
14 to develop responses to any comments we get, and then  
15 we will publish the final guidance.

16 And how do you get copies? How do you get  
17 more information? The best source is our website,  
18 which is [www.nrc.gov](http://www.nrc.gov), and then go click on tab  
19 radioactive waste, and then you go down to low-level  
20 waste disposal, and then you go down to site specific  
21 analysis rulemaking.

22 And then secondary, assuming the internet  
23 still works, I will walk you through this so you can  
24 see what the website has on this. But the website at  
25 the bottom there tells you different things the website

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1 has. Redlined strikeout versions of the proposed  
2 changes, so you can see what is changing from the  
3 current regulations. It makes it easier to look at  
4 that.

5 It tells you the document numbers of the  
6 regulations because when you comment, you have to list  
7 the appropriate document number so we know what -- so  
8 the administrative people know exactly what you are  
9 commenting on. It tells you how to use our NRC document  
10 access and management system, also called ADAMS, how  
11 you can use ADAMS to find different documents by using  
12 those numbers there on the lower right. And you can  
13 also, of course, come to your public document room at  
14 the NRC in Rockville, Maryland, to get this  
15 information.

16 This shows the NRC website. When you  
17 come -- this is just nrc.com it shows at the top there.  
18 When you come, the directions I gave you is go to the  
19 tab radioactive waste, and then another menu pops up,  
20 and you click on low-level waste disposal. And then  
21 on the lower right side, you will see an area called  
22 site specific analysis rulemaking, and that is what I  
23 am going to click on, and that is the rulemaking we are  
24 talking about tonight.

25 So you can come to that, and right away,

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1 there's a tab you can click on to see specific comments.  
2 It talks about the history of this issue. It has links  
3 to all the pertinent documents that Drew mentioned and  
4 that David Esh will mention later. I am going to go  
5 down a little bit. It tells you basically why we are  
6 doing rulemaking with a lot more details than what Drew  
7 gave you, and it gives you the meetings we are having,  
8 same as the slide that Drew presented earlier.

9 And here, the proposed rule language and  
10 redlines strikeout, you can click on that. Here's the  
11 federal register notices for the proposed rule, the  
12 proposed federal registry notice for the guidance  
13 document. The actual guidance document itself.  
14 There is basically a wealth of information here. And  
15 these meetings that we are having, for every meeting,  
16 we post the briefing material for the meeting, and also,  
17 once we get the transcript of the meeting, so you can  
18 read all this information, whenever you are interested  
19 in looking at this.

20 Now I will go back to the slide  
21 presentation. So the comment submittal process, this  
22 is the comment submittal process for the proposed rule.  
23 Please include docket ID NRC-2011-0012 in the subject  
24 line of your comments. And for commenting on the  
25 proposed rule, we have four different ways you can

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1 comment on the proposed rule. One, you can go to the  
2 overall federal government website,  
3 [www.regulations.gov](http://www.regulations.gov), and search for documents filed  
4 under the appropriate docket number there. You can  
5 also mail your comments to the secretary of the US NRC.  
6 You can email comments to the special NRC email site  
7 we have. You can hand-deliver comments to us in  
8 Rockville, Maryland, or you can fax your comments to  
9 us at the -- again, the secretary of the NRC.

10 The comment submittal process for the  
11 implementation guidance is different. So first of  
12 all, it has a different docket number, NRC-2015-0003,  
13 and for this, we have two different methods for  
14 submitting your comments. Again, [regulation.gov](http://regulation.gov),  
15 and, again, you have to use the different docket number,  
16 and you can also mail your comments, and this is a  
17 different mailing address. This is a branch chief in  
18 our office of administration at the NRC. And as it has  
19 been previously mentioned, we are also going to go  
20 through the transcript of this meeting, and all the  
21 other meetings, and look for comments.

22 So that completes my presentation. If you  
23 have any questions, you can obviously look at the  
24 website I mentioned, and you can contact me or any other  
25 project manager involved with -- he's a rulemaking

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1 project manager, Gary Comfort, and so you can use any  
2 of us, and I will be happy to take any questions now.

3 MR. CAMERON: Great. Let's go to Naomi,  
4 you have a question, and you are going to speak up so  
5 Kellie can hear you. Okay?

6 MS. FRANKLIN: Is that information on the  
7 slide available in these written pages?

8 MR. CAMERON: Yes, you have a copy of all  
9 the -- all the presentations were out front. It is the  
10 one that has my name on the front. Okay, thank you.

11 Sorry, introduce yourself, please.

12 MR. FRANK: I am John Frank. I am sure you  
13 grappled with this: If you make a rule that is supposed  
14 to last for five years, you can say, "Every year, I am  
15 going to check up on things and make sure you follow  
16 the rules," but you are making rules that are going to  
17 last for 1,000 years or 20,000 years. How do you do  
18 that?

19 MR. CAMERON: Okay, that's outside the  
20 rulemaking process question, but, Dave, do you  
21 understand what John is saying?

22 MR. ESH: Yes.

23 MR. CAMERON: Do you want to talk to that  
24 now, please?

25 MR. ESH: Well, I can talk to it now, and

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1 as I cover my materials, hopefully you will get some  
2 information, too. But, so the question is, basically,  
3 this is a very potentially persistent, long-term  
4 problem that you are looking at, and the rulemaking is  
5 a present day, short-term action. There are elements  
6 to it that are longer term.

7 For instance, the facilities will be  
8 operating usually for multiple decades, that you have  
9 regulatory oversight while it is operating, you collect  
10 monitoring information while it is operating. And  
11 then we also have an institutional control period of  
12 up to 100 years after the facility closes, where it has  
13 to have access controls of the facility, and  
14 environmental monitoring will be performed after  
15 closure of the facility.

16 But the regulatory process, you are  
17 correct, after those steps are done, then there isn't  
18 further regulatory oversight. That is part of what  
19 this rulemaking process is about, to try to provide  
20 appropriate criteria to apply, to ensure that safety  
21 can be preserved for that longer time period after  
22 regulatory oversight has ended.

23 So as I go through each of the elements,  
24 that is -- I will ask you to look at those, and kind  
25 of think of what comments you may formulate, either now

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1 or to send into us, whether those requirements are going  
2 to achieve that objective or not.

3 MR. CAMERON: Okay, thank you. Anybody  
4 else on rulemaking process before we go to the phones?

5 Okay, Jeremy, is there anybody on the phone  
6 who has a question about the rulemaking process?

7 PHONE OPERATOR JEREMY: We have one in  
8 queue, and as a reminder, if you would like to ask a  
9 question, press star one. Diane Dalego, (sic) your  
10 line is open.

11 MS. DALEGO: Hi, this is Diane Dalego. I  
12 am a senior -- information and resource service. I  
13 would like to officially request, and I will also write  
14 this in, but request an extension on the comment period  
15 for this rulemaking, both the rulemaking itself and on  
16 the technical backup document.

17 MR. CAMERON: Okay, thank you, Diane.  
18 That came across loud and clear.

19 MS. DALEGO: I am trying to speak quietly.

20 MR. CAMERON: Okay.

21 MS. DALEGO: We'd also like to have an  
22 extension of the comment period.

23 MR. CAMERON: Okay. And, Steve?

24 MR. DEMBEK: Yes, thanks, Chip. Thanks,  
25 Diane. That is a point I did not cover in my

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1 presentation that I should have. If you are going to  
2 give us comments, it is most helpful for the NRC staff  
3 if you have a basis for -- let's say you think the  
4 regular -- proposed regulation is too long. Well, tell  
5 us what is too long about it, or if you want an  
6 extension, tell us why you think you need an extension.  
7 That is -- that kind of information is a lot more helpful  
8 to us than "I don't like the rule," or "The rule is too  
9 long," "The rule is too short." Something with a  
10 little bit of a basis behind it would be helpful to us.

11 MS. DALEGO: The rule is too lax, it  
12 doesn't protect the public health, it is not  
13 enforceable, and we need additional time if we are going  
14 to get into the technical specifics of all of these  
15 issues.

16 MR. CAMERON: Okay, thank you, Diane.  
17 Let's go to Dave Esh.

18 MR. ESH: All right. Thank you, Chip.  
19 As Drew had said, we are happy to have you here tonight.  
20 We were out here in 2009, and I always felt that the  
21 input we receive from the Utah stakeholders,  
22 regulators, and members of the public were very useful  
23 to us in 2009, and even so far tonight, I feel they have  
24 been useful.

25 We can go to the next slide, Steve. I am

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1 going to provide an overview, just kind of high-level  
2 overview of some of the information, and then step  
3 through some of the more significant rule topics in  
4 detail. There is an "Other" category, that if you have  
5 a question or a comment that doesn't fall in any of those  
6 bins, you are -- certainly feel to comment on any  
7 subject that is important to you or that you have a  
8 comment on.

9 I am also briefly going to mention the  
10 guidance document. The guidance document is a useful  
11 part of this regulatory process because as you may be  
12 aware, you can usually only put so much information in  
13 a regulation. A lot of the information about  
14 implementation of the regulation will fall in our  
15 guidance documents. So that is a useful tool that we  
16 use, and it is an important tool, and hopefully we can  
17 get some feedback from you on that, too. Next slide,  
18 please.

19 This is a diagram from NRC's public  
20 website, radiation doses and limits. It is just to  
21 provide you some context of what we are talking about  
22 tonight. So NRC has annual nuclear worker dose limit  
23 of 5,000 millirems that is shown on the far left-hand  
24 side of the figure. We also have an annual public dose  
25 limit of 100 millirems shown in the center there.

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1 Those are both in green.

2 In the proposed rule requirement that we  
3 will be talking about tonight, we have a couple dose  
4 limits. We have a 25 millirems dose limits to any  
5 member of the public that applies to the 61.41  
6 performance objective. So you can see from the figure,  
7 that is in the range of doses that you get from your  
8 body or from cosmic rays. Then we also have a 500  
9 millirems dose limit that we apply under 61.42 in the  
10 proposed rule. That is for receptives that we call  
11 inadvertent intruder, and I will cover that in more  
12 detail who that first conceptual person is and what they  
13 may be doing. This isn't to trivialize the radiation  
14 exposures that you might get from a radioactive  
15 facility. It's just to provide some context to you.

16 So, also, I will point out, you know, if  
17 you live in a state such as, say, North Carolina and  
18 you move to Colorado, you are talking about a change  
19 in your dose, actual dose, that you receive today, or  
20 your family received today, something in the order of  
21 a couple hundred millirems. So there is radiation in  
22 the environment, the anthropogenic, or the man-made  
23 sources are part of that, but there are a lot of natural  
24 sources of radiation in the environment.

25 Now, there is one thing that you can do for

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1 your own radiation safety and that of your family is  
2 to get your house checked for radon because you can get,  
3 in some cases, very large doses of radon from your house  
4 from the natural environment. Next slide, please.

5 So what is in this proposed rule that we  
6 are talking about here today with you? We are  
7 proposing to amend our regulations that govern  
8 low-level radioactive waste disposal facilities. And  
9 the top two bullets and the fourth bullet are really  
10 the main elements of what is being proposed or required  
11 in the rule. We are having new and revised site  
12 specific technical analyses to demonstrate that the  
13 performance objectives are met. I am going to talk about  
14 each of those in some detail in the slides that follow.

15 Another main element is that we are  
16 permitting the development of site-specific criteria  
17 for low-level waste acceptance based on the results of  
18 these analyses. So that is different in this proposed  
19 rule, and I will talk about that in detail, also.

20 And the last element is also to ensure that  
21 the licensing decisions are based on defense-in-depth  
22 protections. That is a new requirement that -- based  
23 on the direction the commission gave us, and before we  
24 issued this proposed rule, they provided direction to  
25 include defense-in-depth protections to apply to

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1 low-level waste disposal. So that hasn't been  
2 explicitly or formally done before. It's done in other  
3 nuclear safety systems but not in the low-level waste  
4 disposal systems. So the next slide, please.

5 Who will perform these technical analyses  
6 or these requirements will apply to? Well, right now,  
7 there are four operating commercial low-level  
8 radioactive waste sites in the US, in Washington, Utah,  
9 Texas, and South Carolina. Down in the right-hand  
10 corner of this slide are the different facilities, the  
11 types of waste that they take, and then some compact  
12 restrictions that may apply to those disposal  
13 facilities. Of course, if you live in Salt Lake City,  
14 you are located near the Clive facility in Utah. Next  
15 slide.

16 So this is a high-level picture, diagram,  
17 that just communicates the type of questions that may  
18 be coming out of this rulemaking. You can read the  
19 regulatory text. I have very little of that in my  
20 slides tonight because we only have three hours for the  
21 meeting, but, of course, we are here on your dime, so  
22 to speak. The meeting will try to end around 9:00, but  
23 we will stick around and talk with you and answer any  
24 questions you may have afterwards.

25 But the high-level questions that may come

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1 to mind if you are a licensee or an agreement state  
2 regulator or even a member of the public, what is this  
3 all about, are on this slide 6. So how do I develop  
4 the right scenarios for my performance assessment?  
5 What am I looking at? Who are the people that are  
6 exposed? How will my radiation be released from the  
7 facility? How can I demonstrate that my site is stable  
8 for 10,000 years? How -- what should I do to  
9 demonstrate that my facility includes the  
10 defense-in-depth protections that I mentioned? Do I  
11 need to do a performance period analysis for my site?  
12 How do I demonstrate that I have minimized doses for  
13 the protective assurance period, or how do I develop  
14 waste acceptance criteria for my site? These are just  
15 the types of questions you may be thinking of. There  
16 are many more. I am going to go through the main  
17 elements of the rule that addresses these types of  
18 questions that you might have. Next slide, please.

19 This is a diagram intended to convey the  
20 context of how these requirements are fitting together.  
21 I think it is a useful diagram. You may not. It might  
22 be a helpful tool to use when you are looking at the  
23 rule language and/or the guidance document to  
24 understand how the things are fitting together. So at  
25 the top, the blue bubble at the top is the assessment

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1 context and scenario development. That is basically,  
2 how do I get the scope right for all the analyses that  
3 I am performing? The analyses are found below there  
4 on the three vertical blue lines in the middle that say  
5 performance assessment, intruder assessment and  
6 stability analysis. So how do I get the context and  
7 scenarios to write for the serious analyses?

8 On the far left coming across are the three  
9 time periods that apply for those analyses; the  
10 compliance period, the protective assurance period,  
11 and the performance period, and I am going to talk about  
12 that next, right after this introduction. The  
13 defense-in-depth protections on the right, they apply  
14 to all the different types of analyses and time periods,  
15 and then at the bottom, that all flows into  
16 demonstrating that you meet the performance objective.  
17 So go ahead to the next slide, Steve.

18 So the rule topics were on the initial  
19 second slide that I had. I am not going to read those  
20 for you, but I want to reiterate, there is an "Other"  
21 box there, so if there is something that you have that  
22 doesn't fit in one of the boxes, certainly feel free  
23 to ask it or to make your comments.

24 MR. CAMERON: Dave, when you go through  
25 these, we are going to stop and go out to you after each

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1 one, but, Dave, when you see the most appropriate place  
2 to address Cindy's question that we have in the parking  
3 lot about the fiduciary, please do that.

4 MR. ESH: Right, and as Lisa indicated,  
5 that might be a better question to give to her because  
6 I am an engineer, and I don't intend -- I don't claim  
7 to be a lawyer or a play a lawyer. So, I mean, I can  
8 give you the engineer version of the answer to your  
9 question, and you can also get the legal answer to your  
10 question, if you would like that. But let's go on here,  
11 and then I will address that maybe in the performance  
12 assessment area. And if I forget, remind me and re-ask  
13 that after that session, and we will talk about it.  
14 Next slide, please.

15 So the first main topic that I am going to  
16 discuss is the analyses timeframes. This is a very  
17 complex issue. It doesn't seem like it should be but  
18 it is. We have had expensive stakeholder input on this  
19 topic, a variety of meetings. We developed a white  
20 paper for our initial recommendation, which was a  
21 10,000 year compliance period, followed by a  
22 performance period. That's -- and the ML number  
23 provided here, that is a document number at NRC that  
24 you can use to find that paper and look at it if it would  
25 help you formulate your comment or questions.

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1           Then after we developed our initial  
2 recommendation, the commission provided direction to  
3 us in this SRM-SECY-13-0075. That is basically how  
4 these five commissioners communicate with the staff.  
5 In that direction, they provided us a 3-tier approach  
6 to use for the analyses timeframes, and that is what  
7 I am going to talk about in the three topics as we go  
8 through them here.

9           But we are seeking your input on the  
10 analyses timeframes, especially the compatibility  
11 designation. So compatibility is an important topic  
12 for rulemaking at NRC because it defines how the  
13 agreement state programs have to write their  
14 regulations. And in the direction from the  
15 commission, they said all significant portions of this  
16 rulemaking should be compatibility B, which means the  
17 agreement state programs have to be essentially  
18 identical to what NRC has described. That means if NRC  
19 says the compliance period is 1,000 years, all the  
20 agreement states would use 1,000-year compliance  
21 period, even if they were using something longer at this  
22 point in time, which is, in fact, the case. They all  
23 have been using something longer. So next slide,  
24 please.

25           So the analyses timeframes and the

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1 considerations we put into of what we recommended of  
2 the waste characteristics are the primary ones because  
3 that is something that you know pretty well today. You  
4 can get a handle on what you think some of the  
5 uncertainties are, but some of those are hard to judge  
6 and hard to manage.

7 We also looked at the domestic experience  
8 in this area, so what has been done in other  
9 regulations, what has been done by the state programs,  
10 where they are now in the timeframe. And then we look  
11 at international experience, too, and so throughout the  
12 world, what do people do with their analyses  
13 timeframes.

14 And then pass commission policy, too,  
15 because NRC regulates many different things, not just  
16 low-level waste; high-level waste, uranium mill  
17 tailings, and decommissioning, those are three areas  
18 where analyses timeframes are prescribed for other  
19 programs.

20 These three figures that are on here, I  
21 don't intend for you to read them. They are in your  
22 backup slide, so you can see there is a version there  
23 that you can see. They are intended to address three  
24 of the five bullets that are on the side there; waste  
25 characteristics is the upper right-hand corner,

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1 uncertainty is the kind of multicolored crazy one there  
2 in the lower right, and then the table down at the bottom  
3 is the domestic experience. Okay, next slide, please.

4 I mean, I talk with my hands. One meeting,  
5 I knocked a cup of water across the table, so I'll warn  
6 you, I have a laser pointer now. What are the  
7 timeframes and dose limits for the analyses? So this  
8 is what is in the proposed rule that you will review  
9 and be commenting on.

10 The analyses timeframe is a 3-tier  
11 approach that was given to us in this SRM-SECY-13-0075  
12 by the commission, it starts with a compliance period  
13 that begins with site closure and goes out to 1,000  
14 years after site closure. So that's your compliance  
15 period. For the two main performance objectives that  
16 you're assessing dose is in 61.41, protection of the  
17 general population, and then 61.42, protection of the  
18 inadvertent intruder.

19 There are -- those limits and ALARA that  
20 apply for those two timeframes, the public dose  
21 limit -- it's a dose limit in 10 CFR 61.41, the proposed  
22 rule is 25 millirems per year and the ALARA, and then  
23 for the protection of the inadvertent intruder, it's  
24 a 500 millirems per year dose limit. The protective  
25 assurance period extends then from 1,000 years out to

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1 10,000 years, and the standard to apply to minimize the  
2 radiation doses during those timeframes to 500  
3 millirems -- to a 500 millirems target or other limit  
4 that can be justified based on economical and technical  
5 consideration.

6 So this second tier of analyses is, and I  
7 will talk about it in more detail, is really an  
8 optimization-type process. It is not a standard  
9 "Estimate doses and compared to a limit." It is a  
10 little bit different. Optimization is used a lot for  
11 remediation problems, but it's not used as much, at  
12 least internationally, in a disposal-type problem. So  
13 that is a little different for this regulation compared  
14 to what you might see elsewhere if you go out exploring.

15 And then after the 10,000 year period,  
16 there is performance period that doesn't have numerical  
17 goals, but it has a, let's say, qualitative or limits  
18 that is minimized to the extent reasonable achievable,  
19 your radiation doses. This performance period only  
20 applies if you have sufficient concentration and  
21 quantities of long-lived waste that you are going to  
22 dispose of in your facility.

23 So the analysis could effectively be a  
24 2-tier approach if you don't have a lot of long-lived  
25 waste. If you have a lot of long-lived waste, it will

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1 be a 3-tier approach. This 3 tier, the way I look at  
2 it is it is a tier that we added to ensure transparency  
3 of the information and the analyses with the  
4 stakeholders. So, even those people disagree about what  
5 you should be doing with those very long-term doses and  
6 what they even mean, at least you should generate the  
7 information so that people can discuss them. So that's  
8 the way the analyses timeframes are structured in this  
9 3-tier approach. Next slide, please.

10 We do have some definitions. These are  
11 directly out of the regulation. I am not going to cover  
12 the 3 tiers of the analyses timeframes again because  
13 I just covered them in detail, but the other one is the  
14 long-live waste definition. So, what is long-lived  
15 waste? How do I know if I have to do that performance  
16 period analyses? This is the definition that we are  
17 proposing to use to determine if something is  
18 long-lived waste. It is including radionuclides that  
19 are both themselves long lived, or potentially produce  
20 progeny as they decay that are long lived. So it has  
21 both of those components in the definition as proposed.  
22 Next slide, please.

23 So what we are seeking feedback on is the  
24 overall approach, the 3-tier approach with the various  
25 analyses applied, and I will talk about the protective

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1 assurance period and the performance period analyses  
2 in more detail after this. The compatibility  
3 designation for this, or the fact that the commission  
4 said, "Go out with compatibility B but seek public  
5 comment on that approach," and then the long-live  
6 wasted definition, how you determine if something is  
7 long-lived or not.

8 MR. CAMERON: Okay. Thanks, David. Any  
9 commentary here in the room on this topic, the analysis  
10 timeframes? Let's go to Matt and then we will go to  
11 the woman in the back of the room. Matt.

12 MR. FERCHEN: Sure. So I guess I have a  
13 question, which like most questions are, there is a  
14 comment built into it, and I just -- you folks talked  
15 at the beginning, and I want to reiterate it for,  
16 perhaps, other people in the room, that there was a  
17 preliminary proposed rule language, in May of 2011, and  
18 then the commission gave you all the series of direction  
19 and orders.

20 So there was preliminary proposed rule  
21 language from the NRC staff in May of 2011, and in  
22 February of 2014, there was orders, directions from the  
23 commissioners. And there's a few areas, and this is  
24 definitely one of them, in which there was a rather  
25 sharp contrast between what the staff concluded -- you

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1 spoke about reviewing what other agencies do, looking  
2 at the research, all the things international, you did  
3 all that, staff did it. Staff said the compliance  
4 period should be 20,000 years. Okay?

5 And, you know, there was a whole  
6 justification of that, a rationalization, explanation,  
7 a very thorough accounting as to why that was the  
8 timeframe that we should know precisely what the risk  
9 is, what the dose is, what it should be. And then a  
10 little less than three years later, the commission came  
11 in and said, well in fact, it should only be 1,000 years.  
12 It is a dramatic difference. I think we can all agree  
13 it is a really dramatic difference to go from 20,000  
14 years to 1,000 years.

15 And I don't want to be cynical and I don't  
16 want to cast dispersions or anything, but that also  
17 happens to be the precise timeframe that the regulated  
18 industry here in Utah put in its comments. And Energy  
19 Solution said, in fact, the NRC stated in June of 2011,  
20 after the May 2011 draft language, they said, of the  
21 view that while the compliance period of 10,000 years  
22 may be workable, the compliance period of 1,000 years  
23 is preferable. Then, of course, the commissioners did  
24 precisely that.

25 So how do we justify that dramatic change

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1 in the length of the compliance period? Did the  
2 science evolve dramatically from 2011 to 2014? Did we  
3 have a whole bunch of new knowledge that led us to  
4 conclude that, in fact, we could be 95 percent shorter  
5 in the amount of time we look at that? It is hard to  
6 not have a cynical response to that dramatic change,  
7 given the relatively short timeframes, given all the  
8 hard work the staff did, and then given sort of the edict  
9 that was handed down. Thank you.

10 MR. ESH: Right. And I think that is a  
11 good comment, and I certainly understand it. And, of  
12 course, I guess I am sympathetic to it because I was  
13 on the receiving end of that direction. So, you know,  
14 I think part of where they were coming from, they  
15 did -- they wanted to consider uncertainty and  
16 uncertainty in longer timeframes, and how basically  
17 meaningful the information is that you might generate  
18 from these analyses.

19 Now, as a practioner of performance  
20 assessment, I know a lot about what goes into them. I  
21 spent a lot of time looking at uncertainties and trying  
22 to understand them and propagating them through these  
23 analyses, and I think there's a kind of impression that  
24 there is a lot more certainty associated with 1,000 year  
25 analyses than a 10,000 year analyses, but my personal

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1 opinion is that is not correct. Okay?

2 So there are uncertainties for all sorts  
3 of components of the analyses, from the natural system  
4 and how the engineered systems are going to behave, but  
5 then especially what are people doing. And the example  
6 I like to give is Las Vegas; so, if you could go back  
7 in time 300 years to where Las Vegas is, and whoever  
8 is living there, you ask them, "What is going to be here  
9 300 years from now," I don't think they would do a very  
10 accurate estimate of what, in fact, is in Las Vegas  
11 today.

12 So the societal component can be very  
13 dramatic and volatile and change a lot, and that is  
14 something we considered in our approach. And my view  
15 was, you should make your requirements based on what  
16 you most know today, and those are things like waste  
17 characteristics, and maybe to some extent the behavior  
18 in natural systems, you can do a pretty good estimate,  
19 because disposable, in general, is putting things under  
20 the ground and you are looking at slow-moving  
21 components, like geology, not, say, an active  
22 component, like a river system or something like that.

23 So that is part of the consideration, but  
24 the real answer I believe is, as I indicated on my first  
25 slide, there is a diversity of opinions on this topic,

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1 and the commission at that time and the composition that  
2 they had, they had a different opinion and a different  
3 interpretation of the information than we did whenever  
4 we sent up our recommendation. And they are the  
5 policymakers. You know, they give us directions, and  
6 we do to the best of our ability to implement their  
7 directions.

8 MR. CAMERON: Thank you, Matt. Thank  
9 you, Dave. Can you please introduce yourself to us?

10 MS. JENSEN: My name is Janet Jensen. So,  
11 I have several times heard Energy Solutions be very  
12 candid and very open and very public about the fact that  
13 depleted uranium gets hotter and hotter and hotter for  
14 2.3 million years. And for humans, for the human  
15 species, that is basically forever. So how does the  
16 NRC decide that they should assess the safety of  
17 depleted uranium with a cut off of 10,000 years as  
18 opposed to 2.3 million years?

19 MR. ESH: Right. Well, for the -- as  
20 proposed in that 3-tier approach that I went over, that  
21 performance period would apply to a waste stream, like  
22 the depleted uranium, and there is no limit on that as  
23 to the timeframe you should analyze. So, at least an  
24 analysis of some sort should be performed for the  
25 depleted uranium that may apply to those very long

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1 times. It is not termed a compliance period or a  
2 protective assurance period. It is termed something  
3 else.

4 But the way our regulations are structured  
5 is we have our performance objectives in 61.41, 42, 43  
6 and 44, and 61.41, and 42 especially, you have to  
7 demonstrate that you can meet those performance  
8 objectives. As this regulation is written out and  
9 proposed, it has an A, B and C. You have to demonstrate  
10 that you can meet all A, B and C, not just A or not just  
11 B if you have this large amount of long-lived waste.  
12 61.41(C) and 61.42(C) are both going to apply to that  
13 material.

14 MS. JENSEN: So will you test for safety  
15 and will you be testing for safety for 2 million years?

16 MR. ESH: Right. Well, the analysis for  
17 that timeframe, as I indicated, it doesn't provide a  
18 limit on the timeframe for the analyses. There is no  
19 cut off for how long you should evaluate for. And that  
20 analyses, though, there is a lot of debate, there was  
21 a lot of debate as we tried to develop that position,  
22 both internally and if you look at international  
23 programs, as to how valuable that information is that  
24 you might generate and how should one interpret it.

25 Everybody has a different view on the

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1 topic. You know, my personal view is probably different  
2 than what is found in the proposed regulation. So what  
3 is implemented there, though, is a requirement to  
4 evaluate or to demonstrate how your system is going to  
5 perform for the material that you disposed of. And I  
6 will talk about that performance period in more detail,  
7 but there is an analysis to be performed for those very  
8 long timeframes.

9 MR. CAMERON: So when you get to that  
10 performance period --

11 MR. ESH: Right. If I don't answer your  
12 question there, feel free to pose it to me again, and  
13 I will try to answer it again.

14 MR. CAMERON: Please introduce yourself  
15 to us.

16 MR. CODELL: I'm Richard Codell. My  
17 question is about the performance period, and sorry,  
18 you said you would cover that more, but let me just ask  
19 it anyway. You said -- the wording on the slide said  
20 minimized to the extent reasonably achievable, and is  
21 that for the site as built? Is that for better  
22 engineering measures alone, or could it also include  
23 choosing a more stable site?

24 MR. ESH: Right. The minimized to the  
25 extent achievable, I think, is more focused on the

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1       engineered system, the engineered components, what you  
2       might be able to change about the system. But as  
3       you -- especially as we look at this protective  
4       assurance period, the middle tier of it, I think that  
5       is an area where you could possibly ask a question of  
6       "Is this the right site for this material?"

7               If you are -- you know, disposal is  
8       different than remediation. Disposal, you are  
9       choosing to put something somewhere. So if you are,  
10      in your analyses, are estimating large impacts from a  
11      choice to dispose, is there a better location where you  
12      could dispose of it that would not have those large  
13      impacts, I think that is a fair question to ask. Now,  
14      if your doses are low, or reasonable, or inline with  
15      the standards in the earlier compliance period, then,  
16      you know, maybe that is not a consideration because you  
17      are saying, you know -- or going to be comparable to  
18      what would be any sort of facility at the different  
19      location. So we can revisit that, too, if I don't  
20      address it well enough for you.

21              MR. CAMERON: Okay. We are going to go  
22      here. Yes, sir.

23              MR. TAYLOR: Thank you very much. You  
24      know, you are the NRC, and it is understandable that  
25      you are assessing the nuclear effects of this material,

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1 but our Navajo friends who live downstream from -- and  
2 obtain their water from watersheds that were affected  
3 by mining for uranium in the '40s and '50s, have had,  
4 as I understand, catastrophic effects. That is mostly  
5 U-238. Right? U-235 is a very small component, and I  
6 would imagine that this low-level depleted uranium has  
7 a very small initial component of U-235.

8 MR. ESH: You are correct.

9 MR. TAYLOR: It is mostly U-238. Do you  
10 consider other kinds of toxicity in your evaluation of  
11 a particular site or a particular policy?

12 MR. ESH: Right, and --

13 MR. CAMERON: Your name, sir?

14 MR. TAYLOR: Steven Taylor again.

15 MR. ESH: Right. The NRC, we evaluate  
16 radiological risk, and we believe the radiological  
17 risk, or the dose level that we evaluate, in many cases,  
18 are comparable to the levels of chemical risk or  
19 chemical toxicity that you might evaluate.

20 Uranium is a little bit different beast,  
21 though, because uranium can cause problems with kidneys  
22 especially, and it can have some chemical toxicity  
23 effects. So that is a good comment. We have heard it  
24 from some other commenters throughout this process, and  
25 all I can say at this time is it's a good comment, and

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1 we acknowledge it.

2 MR. CAMERON: Okay. Thank you, Steven.  
3 We are going to go here and here, then we will see if  
4 there is anybody on the phone.

5 Yes, sir, please introduce yourself.

6 BOB BRISTER: My name is Bob Brister. I  
7 live here in Salt Lake City. My question is, is this  
8 waste material still being produced, how much is being  
9 produced, how long do we anticipate it being produced,  
10 and are these the only sites that are being targeted  
11 for this waste?

12 MR. ESH: Right, okay. So the material is  
13 still being produced. It is produced in the uranium  
14 enrichment process. So there is commercial enrichment  
15 processes; Louisiana Energy Services and also in New  
16 Mexico that generates depleted uranium. There is a  
17 large amount of depleted uranium that has already been  
18 generated. Most of it is in a form of uranium  
19 hexafluoride, which is a gas, in canisters; Paducah,  
20 in Portsmouth, I believe. It's in -- if you have never  
21 seen it, you know, go on the internet and look it at.  
22 It is basically massive football fields, an area of  
23 these canisters that hold this material.

24 So that material has been generated and  
25 something has to be done with it. Those canisters are

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1 made of steel. You know, steel in the environment  
2 lasts so long. You can look around you and see carbon  
3 steel and other types of steel corrosion that happens.  
4 So is it a pressing need right now? Is it an emergency?  
5 I don't think so, but is it a problem that needs to be  
6 addressed? Yes.

7           There has been some question or comment  
8 about whether this material is a waste or whether it  
9 is a resource. We work on the disposal end, so we don't  
10 necessarily make any policy or have any opinion about  
11 whether it is a waste or a resource. If somebody wants  
12 to dispose of it as a waste, our job is to develop the  
13 criteria that you would apply for it. So, it is being  
14 generated. The commercial generation will come up  
15 with -- or I think will total about 700,000 metric tons.  
16 There's already about 700,000 metric tons that have  
17 been generated, so there's about 1.4 million metric  
18 tons of the material that is either generated or will  
19 be generated. Then the rest of it depends on the  
20 nuclear fuel cycle because it comes out of the process  
21 for making the fuel for the nuclear fuel cycle.

22           MR. CAMERON: Okay, thank you. Yes, sir.

23           RICHARD: Hi, my name is Richard. I am  
24 with the Brigham Young University Chapter of the  
25 American Nuclear Society. We are applying for

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1 official recognition, which we expect within a next  
2 couple of weeks, and I just had a question about -- well,  
3 my first question is, you have this table of goals for  
4 doses in general population and protection of an  
5 inadvertent intruder. As far as the 3-tier analysis  
6 is concerned, is that the only thing that you guys are  
7 considering changing in these new regulations, what is  
8 in this table?

9 MR. ESH: No, there are other changes to  
10 the regulation that I will cover. This was kind of the  
11 first topical area. This 3-tier analysis is one of the  
12 key issues because of the depleted uranium is -- it's  
13 a uranium that is very long-lived, and the depleted  
14 uranium is basically cleaned of the daughter products  
15 from the uranium decay chain. So the material today  
16 is different than the material you will have in your  
17 1,000 years, 10,000, and then the 2.3 million --

18 RICHARD: Right. I was just wondering if  
19 this is all we need to know about the 3-tier analysis.

20 MR. ESH: Right. About the 3-tier  
21 analysis, yes, I think conceptually, or structurally,  
22 this is what you need to know about it, but I am going  
23 to cover the middle tier, the brownish area here in more  
24 detail, and then the performance period section in more  
25 detail as we go forward here.

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1 MR. CAMERON: Second question?

2 RICHARD: Yes, okay. My other question  
3 was, it says protection of general population under  
4 column No. 1.

5 MR. ESH: Right.

6 RICHARD: I imagine that is cumulative to  
7 the entire population?

8 MR. ESH: That is individual dose limit.

9 RICHARD: That is individual dose limit?

10 MR. ESH: That is not a population dose.

11 RICHARD: And I guess I would ask a final  
12 question, it seems to jump from 25 millirems per year  
13 to 500 millirems per year after a 1,000 years. Is that  
14 based on anticipated degradation of the facility or --

15 MR. ESH: I don't believe so. I believe  
16 the approach -- if you look at the right-hand side of  
17 the figure, there are some texts here on the side that  
18 says, "Increasing uncertainly, flexibility to  
19 licensees and decision makers." So that middle tier,  
20 the 500 millirems, is not a limit. That is a target,  
21 and you can look at the specific proposed language in  
22 the regulation, but the standard is to try to minimize  
23 the impact during that period.

24 And as I am going to talk about in this next  
25 section, or two sections from now, it is an optimization

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1 process, so you are trying to make things as low as you  
2 can. Where -- how low you make them will depend on your  
3 specific problem, the waste, and your system, that sort  
4 of thing.

5 MR. CAMERON: Okay. We really need to see  
6 if anybody on the phone has some questions.

7 Jeremy, people on the phone, questions?  
8 Comments?

9 PHONE OPERATOR JEREMY: As a reminder, to  
10 ask a question or make a comment, please press star one.  
11 And we do have one question or comment in the queue.  
12 One moment for the name, please. And the question or  
13 comment is from Diane Dalego. Your line is open.

14 MS. DALEGO: Hi. I have two questions;  
15 one is whether the staff would ever decide to implement  
16 or to make a regulation that is more protective than  
17 the commissioner directs to you in the first place.  
18 You had said that the commissioners made decisions on  
19 what you needed to do. So are those decisions final,  
20 despite whatever the public or the stakeholders would  
21 say, and, you know, what flexibility is there in that?

22 MR. ESH: Right. And the answer is, if we  
23 want to remain employed, then we implement the  
24 commission's direction. So, but we do have a process  
25 to voice a differing opinion on decisions. We have a

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1 differing professional opinion process where we can  
2 voice it if we don't agree with something that the  
3 commission did, and there is a mechanism within the  
4 agency that someone reviews that material.

5 But the answer to your question about would  
6 we implement something that was different than they  
7 proposed, or, you know, more restrictive? No. And I  
8 think there was another part to it. What was the second  
9 part, Diane?

10 MS. DALEGO: The second question is  
11 whether -- I think this is maybe kind of what John Reese  
12 was asking you for yesterday. Have you applied the  
13 performance assessment, or these kinds of analyses, to  
14 the existing nuclear radioactive waste sites to see  
15 whether or not they have actually complied with the 25  
16 millirems dose after all of these years, or any of the  
17 other stability criteria, have the older sites been  
18 analyzed? I realize they weren't licensed under 10 CFR  
19 61, except for Batey's, but have these analyses been  
20 done because it seems like it is very farfetched to -- it  
21 seems like what is going on here, which I oppose and  
22 my organization opposes, is that you have made an  
23 elaborate calculation system analyses that is done by  
24 the same people who will receive the waste and the  
25 profit from it, and all they have to do is carry out

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1 some equations. Then you guys see if the equations  
2 look right, and then they can pretty much put any waste  
3 into these disposal sites that they want, and there will  
4 never be any consequences that they have to bear.

5 So this rule appears to be, and we oppose  
6 this, an expansive opening of what can go into the  
7 disposal sites, that -- basically, it is fine if you  
8 want to deal with orphan waste, but now it appears that  
9 any amount of orphan waste, any kind of waste greater  
10 than Class C transuranium, possibly even deregulated,  
11 high-level liquid waste that is solidified or whatever,  
12 could potentially be declared waste processing, and  
13 enabling the whole -- everything but the high-level  
14 waste and in the US to go into -- and the world,  
15 actually, to go into these sites. Have you applied it  
16 to any of the performance -- applied from the existing  
17 sites?

18 MR. ESH: Right, and we have not applied  
19 the proposed requirements to the Legacy sites, so, for  
20 instance, in Illinois or Kentucky or New York, because  
21 as we talked about in the last meeting, those were done  
22 prior to Part 61. You said Part 61 requirements don't  
23 apply to them. As you indicated, the Batey facility  
24 did apply the Part 61 requirement. It is closed. It,  
25 to this day, still undergoes monitoring, and I don't

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1 believe has showed anything close to the performance  
2 objectives.

3 The performance objectives today still  
4 apply to all the existing facilities. So, in the  
5 proposed rule, the performance objectives are being  
6 changed, but, for instance, for 61.41, you are just  
7 moving from the ICRP two dose methodology to a more  
8 modern methodology.

9 MS. DALEGO: You are moving to what?

10 MR. ESH: You are moving from the ICRP  
11 older dose methodology, ICRP two, to ICRP 2630 type of  
12 dose methodology, total effective dose equivalent. So  
13 that -- you know, to say that --

14 MS. DALEGO: So they --

15 MR. ESH: Just a second. To say that we  
16 are proposing something that is opening the door to all  
17 sorts of things to happen, there is an existing  
18 regulation for which all of these materials can be  
19 disposed of under. We are trying to propose  
20 requirements appropriate for potential new materials  
21 because the existing regulation does not require, as  
22 I will talk about in maybe a half an hour, 45 minutes,  
23 an intruder assessment.

24 So that is the key part that the waste  
25 streams that are significantly different than what was

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1 analyzed in the early 1980s, you had -- somebody has  
2 to do a new intruder assessment, whether it's the  
3 regulator or the licensee. And in these proposed  
4 regulations, it is the licensee that is going to perform  
5 that analyses. So right now, all the waste that you talk  
6 about and all that could happen under the existing  
7 regulation if we did nothing, and that is the point that  
8 you need to understand.

9 MR. CAMERON: Okay. We really need to  
10 move on, but apropos --

11 MS. DALEGO: I'll just point out,  
12 though --

13 MR. CAMERON: Diane, Diane, we really need  
14 to move on, okay?

15 MS. DALEGO: Okay.

16 MR. CAMERON: And apropos of Diane's first  
17 point is something that Steve mentioned, is that if the  
18 staff is going up to the commission with a final draft,  
19 final rule, it is very important when you comment on  
20 the proposed rule to provide a rationale for why you  
21 think something should be changed because that often  
22 can support what the staff is saying, and that can be  
23 influential and persuasive with the commission.

24 So, thank you, Diane, for that comment, and  
25 let's go to the second topic. And I think some of you

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1 who may have questions about this, there will be some  
2 things that resonate in these later discussions that  
3 we can get to your questions. So, David --

4 MR. ESH: Right, the first four or five  
5 topics that I go through are all interrelated, so don't  
6 feel like you are being missed if you didn't get your  
7 hand picked on the first topic.

8 But the first analyses that I am going to  
9 talk about is the performance assessment. So if, if  
10 you remember that kind of diagram with the things going  
11 different directions early on in the presentation, one  
12 of the analyses that are important for that is the  
13 performance assessment. That is how you assess  
14 compliance with 61.41. So a performance assessment,  
15 for those of who might not be familiar, it is basically  
16 a technical analyses where you take a real system, you  
17 are going to develop a mathematical model, or some sort  
18 of abstraction of that real system, in order to try to  
19 estimate future performance. So down here in the  
20 corner is a plot of various dose curves for different  
21 radionuclides from the disposal facilities, and the  
22 timeframe goes from zero to 10,000 years.

23 Inherent in this is if you are doing  
24 modeling to try to do a projection is you need adequate  
25 support for this calculation, and that support I am

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1 going to talk about in the next slide, it can take a  
2 lot of different forms, but that is a key thing to  
3 understand. This isn't just a calculation. It is a  
4 calculation with technical support for it.

5 So as Chip indicated, when you give your  
6 comments to us on the regulation, it is very helpful  
7 if you give a basis for it because we may share your  
8 opinion on something, but if we don't have a basis, we  
9 can't just necessarily generate a basis. If you give  
10 us a basis, that might give us the ammunition to change  
11 something in the regulation. Next slide, please.

12 So the model support, what you are looking  
13 at is how to bring in information from past, present,  
14 and future conditions. So present information might  
15 be things like lab experiments or field experiments,  
16 so maybe you do a tracer study at the site to look at  
17 how radionuclides are going to move through the  
18 environment.

19 Past information is maybe how you look at  
20 historical data from the site, in terms of weather,  
21 erosion, other types of processes, and then especially  
22 analogs, because if you are going to project  
23 performance over very long times, it is -- the utility  
24 of maybe the present information, in some cases, can  
25 be limited.

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1           The analogs can give you information that  
2 you need to look at cautiously over how things may have  
3 behaved over very long periods of time. So analogs  
4 might be things like isotopic studies about how various  
5 isotopes have moved or petitioned in the environment.

6           And then also as part of this process,  
7 there's future information because the facilities will  
8 be operating for multiple decades, and then there is  
9 an institutional control period of up to 100 years where  
10 you can collect monitoring data. All of that  
11 information can be used to compare to your technical  
12 analyses and see whether the technical analyses is  
13 valid. So there is a licensing decision that's made  
14 upfront, that the licensee is at present at the site,  
15 and the regulator still provides oversight of the  
16 operations of the site and the monitoring data during  
17 operations of the facility. And then when you move to  
18 a closure period, there is a final analysis that is  
19 being done as proposed in this regulation to verify that  
20 your initial analyses is what you thought it -- things  
21 are still as you thought they were when you did your  
22 initial analyses. Next slide, please.

23           So the performance assessment, in our  
24 view, it is not a new topic, it's a renaming of technical  
25 analyses in the existing regulation. The proposed

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1 modifications modernize the technical analyses because  
2 the existing Part 61 was developed in the early 1980s,  
3 and so you have roughly 35 years since it came into  
4 being. The science has changed quite a bit on some of  
5 these things. The computers, we have a lot -- we have  
6 available today, and many of you have in your pockets,  
7 are a lot different than what was available in the early  
8 1980s. We should make use of that information when we  
9 are making these decisions.

10 There are new requirements provided in  
11 61.13. These have to do with three main areas. So the  
12 scope of the analyses; the language that we use,  
13 features, events, and processes, what are all the  
14 things that are going to be going on at your site today,  
15 and in the future, that could impact how this facility  
16 performs. And then uncertainly, uncertainty on how  
17 well you know information, uncertainty on how  
18 information might change in the future. That's an  
19 important part in the performance assessment process,  
20 and then also, as I've indicated, model support.

21 Now what I would say is that these elements  
22 that are explicit requirements in the new regulation  
23 are part of any modern performance assessment and are  
24 usually part of any historical performance assessment.  
25 We are moving from implicitly those things applying in

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1 a performance assessment, to explicitly in applying a  
2 performance assessment. And we don't think this is a  
3 large burden because any modern performance assessment  
4 is doing these three bullets that are indicated here.

5 Then as I said previously, we have a  
6 requirement to update the performance assessment at  
7 closure, and then something else that we did was we  
8 modified the site characteristics consistent with the  
9 disposal of long-lived waste. So the siting  
10 characteristics are found in 61.50, and that's when you  
11 are deciding to put a site somewhere, what do you look  
12 at. So things like, is the site going to flood? Is  
13 the water table going to fluctuate? How much  
14 seismicity might you have? What's the erosion at that  
15 location? All of those things go into selecting a site  
16 to deciding to put waste there. Do people live there?

17 In general, our sites are all in very low  
18 population locations. They also -- three of them are  
19 in pretty arid locations. But are there natural  
20 resources that might be exploited? Those are all  
21 considerations that go into siting characteristics,  
22 but when you're disposing of very long-lived waste  
23 then, how do you demonstrate that you are not in  
24 100-year flood plain for 10,000 years, for instance?

25 What we have done is we separated out

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1 siting characteristics that are exclusionary and  
2 identified a 500-year period where if you have those,  
3 you shouldn't be putting a site there. Because the  
4 early Legacy sites that I talked about earlier, such  
5 as Maxey Flats and New York, they had difficulty with  
6 the stability of their facilities, mainly related to  
7 water. So things with water did not work as people  
8 thought when they initially sited and then started  
9 operating those facilities.

10 That is part of why the regulations 10 CFR  
11 61 came into being is NRC looked at that and said, "jeez,  
12 people aren't getting this right with the stability of  
13 these facilities and we are having a lot of problems  
14 that we are needing to go back and deal with, so let's  
15 make requirements to try and avoid those problems," and  
16 I think it has been pretty successful so far. We  
17 haven't had any of those existing facilities that are  
18 having significant water problems at that time -- you  
19 know, Barnwell had some challenges, but they made  
20 modifications to try to improve their water management  
21 at that site. So, anyway, that's the gist of  
22 performance assessment. Next slide, please.

23 This shows the various requirements  
24 related to performance assessment around the outside  
25 of the diagram on slide 18 here. The performance

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1 assessment is in the center. It says data collection  
2 and develop models, develop numerical and computer  
3 models, estimate the effects as needed until you are  
4 confident in the results. So all these requirements  
5 that support or are related to performance assessment,  
6 three of them I covered are in -- you know, three of  
7 them I covered here in 61.13. This one here, the  
8 results of the performance assessment can be used in  
9 your defense-in-death analyses, I will talk about the  
10 defense-in-depth analyses later. And I'm also going  
11 to talk about waste acceptance criteria, and I've  
12 already talked about 61.50 and 61.28. Next slide,  
13 please.

14 So this is the verbal description of what  
15 a performance assessment is. You are going to identify  
16 the features, events and processes that might affect  
17 the system. Then you are going to look at how the  
18 effects of these features, events and processes may  
19 impact the performance of the disposal system, and then  
20 estimate the annual doses caused to those significant  
21 features, events, and processes. So when you start the  
22 performance assessment process out, you may have a very  
23 big universe of things that you could consider to see  
24 what applies at a particular site. As you go through  
25 the analysis process, you pair down those various

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1 processes, features, events, and processes, and  
2 determine on a safe, specific basis what might apply  
3 to your site. Next slide, please.

4 This is an example from the guidance  
5 document. We have a variety of what we call hazard  
6 maps. These were developed using GIS analysis,  
7 Geographic Information System, and the intent of these  
8 diagrams, which are in back of the our guidance  
9 document, they are in appendix B of the guidance  
10 document, are to be a review tool for either a licensee  
11 or agreement state regulator, or a member of the public,  
12 when you are looking at a particular facility, to say,  
13 what are the hazards that might apply to this facility,  
14 and where should I provide more review effort, or where  
15 should I focus my attention?

16 They are not done at a resolution where,  
17 say, you could plot the Clive site down here, and if  
18 it is in a black area, you say it should be excluded  
19 because it is in an area of flooding. You need to zoom  
20 in on the area then and look at the specific detail.  
21 But I think it is a good review tool to kind of focus  
22 your evaluation and analysis. That is a sample of the  
23 information that is in the guidance document. Next  
24 slide, please.

25 So what we are seeking feedback on with

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1 respect to the performance assessment is, No. 1, the  
2 suitability of using technical analysis to evaluate the  
3 disposal of long-lived waste because there may be  
4 alternative approaches rather than this analysis-based  
5 approach. The analysis-based approach is what has  
6 been used in the United States for low-level waste  
7 disposal and other types of problems, and it is used  
8 liberally internationally, but it is not necessarily  
9 the only approach. You know, you can come up with  
10 restrictions on types of waste disposal that are  
11 irrespective of a technical analyses. So you say, as  
12 a matter of policy, I don't want to put this type of  
13 material in this location, for instance. It doesn't  
14 matter what the technical analyses might say.

15 Then, of course, we have these new  
16 technical analyses requirements in 61.13. The  
17 question would be whether we need those. Did we miss  
18 any? You know, if you look at 61.13, is there something  
19 not there that you think should be there? Those are  
20 the types of comments that we would like to receive,  
21 and then the last two modifications that I commented  
22 on.

23 MR. CAMERON: All right. Thanks, David.  
24 Questions? Let's go back here, and then we will go over  
25 to the side. Please introduce yourself.

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1 MS. NOVAT: I am Mary Ellen Novat (sic.)  
2 David, I want to go all the way back to the definition  
3 of long-lived waste and ask you which of those  
4 categories -- into which of those categories do you put  
5 depleted uranium?

6 MR. ESH: Right. Depleted uranium would  
7 be long-lived waste because it has both long-lived  
8 parent radionuclides, the U-235, U-234 and U-238, and  
9 then it also has long-lived progeny that results in the  
10 decay chain. So depleted uranium would be long-lived  
11 waste according to that definition.

12 MS. NOVAT: In multiple categories?

13 MR. ESH: Yes, in multiple, but whether  
14 it's multiple or one doesn't matter. If it just  
15 triggers one of them, then it is long-lived waste.  
16 Right.

17 MS. NOVAT: Okay. And then did I  
18 understand your answer to Steve over here to be that  
19 you are assessing -- this performance assessment is  
20 only for radioactive characteristics and that the  
21 byproducts that are -- say heavy metals and other  
22 things, are not within the performance assessment  
23 security concerns?

24 MR. ESH: Right. Yes, the performance  
25 assessment is looking at the radiological impacts. In

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1 the US, you do end up with a type of waste that can be  
2 called mixed waste that has concentrations of heavy  
3 metals or chemicals that may require -- may cause it  
4 to be designated as a chemical waste, then the  
5 requirement for chemical waste disposal apply, as well  
6 as the radiological component. At NRC, we're a  
7 radiological agency and so we deal with the  
8 radiological impacts.

9 MS. NOVAT: Okay. So there is another  
10 agency, another regulatory agency, which would  
11 necessarily be involved in depleted uranium as it  
12 decays?

13 MR. ESH: Right, I don't think depleted  
14 uranium is considered to be a mixed waste, but I am not  
15 a -- you know, I am not a chemical waste, mixed waste  
16 expert. So somebody else can have a --

17 MS. NOVAT: Okay. Well, it was my  
18 understanding that as it decayed, and as it came in  
19 contact with water especially, that there were  
20 chemicals that would occur in that waste that would be  
21 incredibly hazardous in a shorter time period.

22 MR. ESH: Right, the uranium itself,  
23 whenever it reacts with water, it will change the form  
24 of uranium, the form that the uranium is in, but it is  
25 still uranium. But when it radiologically decays into

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1 some of its progenies, then it changes the particular  
2 isotope that it is. So from uranium to thorium to lead,  
3 for instance, as it goes through the decay chain.

4 MR. CAMERON: Thank you. Let's go over  
5 here.

6 MR. HORROCKS: Thanks, Chip. Earl  
7 Horrocks, State of Washington, I missed you guys last  
8 night. I have a chance to catch up with you now. New  
9 technical analysis, if we've already got an analysis,  
10 a PA in place, it encompasses your FTPs, are we required  
11 to do an actual new PA?

12 MR. ESH: I think you will need to look at  
13 the new requirement and evaluate it against the  
14 analyses that you have done and see whether you believe  
15 that the previous analyses meets the new requirements,  
16 but as I -- you know, I am not an expert in all the  
17 analyses because they are done in agreement states  
18 program. I have looked at most of them. And as I  
19 understand your analyses and the way it has been  
20 performed and the timeframes that were evaluated, I  
21 think this regulation would have little impact on the  
22 Washington state analyses.

23 MR. HORROCKS: One other question I have  
24 with you is, we relied heavily -- about, you know, 15  
25 years ago, we did, more or less, a deterministic PA.

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1 In consultation with NRC and Chris' group, you guys,  
2 I think, are leaning more towards probable realistic  
3 PAs; is that right?

4 MR. ESH: Right. For members of the  
5 audience that might not understand the term,  
6 deterministic analysis is you pick one value for each  
7 of the inputs or parameters that go into the analysis,  
8 and you do calculation, and you basically get one curve,  
9 or one result. The problemistic analyses is, you  
10 specify the uncertainty of each of the parameters that  
11 go into the analysis and then you sample values from  
12 the distributions that represent the uncertainty for  
13 all the parameter, and you get what we call a horse tail  
14 claw, because many times it looks like a horse tail.  
15 You get a whole series of curves that come out from the  
16 analyses, and those each representative one potential  
17 evolution of the system.

18 So we don't say that you have to do a  
19 particular type of analyses at your site. We provide  
20 guidance, if you are doing either type of analyses, the  
21 things that you might want to consider. As you move  
22 to more technical, challenging problems, and higher  
23 concentrations of long-lived waste, then you probably  
24 want to consider the problemistic analyses because you  
25 have more uncertainty that you have to deal with.

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1           But if you can do a conservative  
2 deterministic analysis and make a licensing decision  
3 on it, that by itself is a very appropriate way to go  
4 about the licensing process. It is easier for people  
5 to understand, it is easier to justify, and it is easy  
6 to interpret.

7           MR. HORROCKS: Thank you.

8           MR. CAMERON: Okay. Matt?

9           MR. FERCHEN: Yes, I wasn't sure if this  
10 comment fits better here or in the WAC part, but in the  
11 interest of being here now, I will quickly make it. We  
12 have raised this issue in earlier iterations of the  
13 rule, and I wanted to quickly reiterate it now, which  
14 is that, you know, relying upon technical analysis, I  
15 think it sounds good, but there is a practical result  
16 of it.

17           And I think that the practical result of  
18 it is that it makes decisions much less penetrable by  
19 an ordinary person, or by a group of citizen, or by  
20 elected officials, by the vast majority of people;  
21 that, you know, when you look at the performance  
22 assessment that we are wrestling with now in Utah, it  
23 is an extraordinary complex piece of work.

24           And I think it is safe to say that the  
25 public interest group I work for has probably read more

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1 of it and engaged with more of it than virtually anyone,  
2 outside of the folks that were directly involved,  
3 either created it or paid to evaluate it. And the God's  
4 honest truth is, I don't think we've actually read ten  
5 percent of, if I were to guess. I know there were whole  
6 appendixes, whole sheets of data, whole tables, that  
7 we just can't get to. We don't have the expertise and  
8 we simply don't have the time.

9 So, you know, one of the real advantages  
10 of the tables and the classification system was that  
11 there was a shorthand that an ordinary person, an  
12 elected official, could sort of wrap their head around.  
13 You could sort of say "Am I comfortable with waste that  
14 is a problem for 100 years, for 500 years, for 10,000  
15 years," whatever that number might be. And then that  
16 becomes like an interesting debate. You can say "How  
17 confident are we that things will change? How  
18 confident are we that civilization will go?"

19 But what we've now moved to is conversation  
20 about, like, the proper coefficient for burrowing ants.  
21 I mean, that is literally the conversation. Right? I  
22 mean, it's about burrowing ants, and it is about, you  
23 know, rising lake levels and sand dune formations, and  
24 it is extraordinary. And I dare say that there are like  
25 80 people on earth that really understand it, you know,

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1 and I am one of them. And I am a humanities guy. It  
2 is embarrassing in some ways.

3 And so I sort of think that the science of  
4 this makes sense, the logic of it makes sense, but the  
5 practical implication of moving in this direction puts  
6 the decisions behind this incredibly complex wall that  
7 is really hard to peer around. And I will just make  
8 one more point about it. It also puts an enormous  
9 amount of power in the hands of consultants, and, you  
10 know, I like those consultants.

11 We really like SCNA, the one that has done  
12 the work here in Utah. I don't have problem with the  
13 folks in Neptune. I haven't met them, but I am sure  
14 they are solid professionals. But there aren't many  
15 of them. There's a small number of such firms in the  
16 world. It is in their best interest to make their  
17 clients happy so that they have repeat business, and  
18 they come back to the work. And if you have this tiny  
19 number of firms paid to, you know, create models, it  
20 is in their interest to create the model that reaches  
21 certain outcomes. It's just a fact. We all know that.  
22 We know the way consultancy works.

23 So that has been our major concern with the  
24 shift to PAs and the shift to WAC approach, is that it  
25 sounds like a good idea but the practical result, I

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1 think, is going to lead over time to much less public  
2 participation, much less weighing in from elected  
3 officials, and much harder for states and policymakers  
4 and regulators to be really involved in it.

5 MR. ESH: That is a good comment. We have  
6 heard that comment before. I think we heard it from  
7 your predecessor. He said it in a way of you're kind  
8 of putting the fox in charge of the hen house, I think  
9 is the way he put it. And, you know, my answer to that  
10 is you still have a farmer. Your farmer is right there  
11 in the checkered shirt, Rusty. Maybe he didn't know  
12 he was a farmer, but there is somebody there still  
13 chasing the fox away from the hen house, if that is what  
14 you think you are running into.

15 So this process does require a couple of  
16 things, though. It requires a strong regulator, you  
17 know, a strong competent regulator that can review that  
18 material that might be generated. And it requires  
19 transparency of information with the stakeholders, so  
20 that if you do have the interest in evaluating it, and  
21 you do want to challenge it, you can get information,  
22 and you can evaluate it.

23 But it is a -- you are correct in everything  
24 that you said. As computers have evolved, a lot of  
25 other things have become more complicated, and the

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1 analysis associated with waste disposal has done that,  
2 too. It's a much more complicated analyses with a lot  
3 of detailed things that go on in those analyses.

4 MR. CAMERON: Okay, thank you. Jeremy,  
5 anybody on the phone that wants to talk about  
6 performance assessment?

7 PHONE OPERATOR JEREMY: Once again, if you  
8 would like to make a comment or ask a question, please  
9 press star one. We have no parties in the queue.

10 MR. CAMERON: Okay. Can we move on?  
11 Intruder assessment, okay.

12 MR. ESH: The intruder assessment is an  
13 analyses that applies to 61.42, and this is new analyses  
14 that is being required in this regulation. So the  
15 performance assessment is really a renaming of the  
16 technical analyses that exists today in the regulation.  
17 The intruder assessment is something that is not  
18 required in the current regulation.

19 This is a diagram just to give you a picture  
20 of what can be looked at in an intruder assessment.  
21 Obviously, engineers make poor graphical artists, but  
22 this is a picture of a disposal site where you may have  
23 some deposited waste, and the types of scenarios that  
24 somebody might evaluate as -- the waste -- the area  
25 where the waste is disposed of in Part 61 is a controlled

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1 area for up to 100 years, institutional controls.  
2 Those are active controls to make sure that somebody  
3 doesn't use that area.

4 After the active institutional control  
5 period, there is a layer of passive controls that apply  
6 at a disposal facility, and that involved something  
7 like state and federal ownership of the land and deed  
8 restrictions, for instance, to try to ensure that  
9 nobody uses that area in a way that you don't want to  
10 in the future.

11 But when the regulations were developed in  
12 early 1980s, there was a random, common flood canal,  
13 where, for instance, they put chemical waste in an area,  
14 and then through a series of human errors, basically  
15 built a school there which led to the release of that  
16 material into the neighboring houses. And so that was  
17 in the minds of the nuclear regulators whenever Part  
18 61 was being developed. And so 61.42 is inadvertent  
19 intruder performance objectives to look at, well, what  
20 if somebody uses this disposal facility in a way that  
21 we didn't intend when it was sited. Next slide,  
22 please.

23 And I didn't have the burrowing ants there  
24 on the figure for you, Matt, but you can put those on  
25 there. Of course they would not be to scale. They

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1 would probably be six feet around.

2 The inadvertent intruder assessment is a  
3 new analyses. It's proposed modifications to require  
4 what we call stylized analysis instead of relying on  
5 waste classification tables, that's something we just  
6 talked about. The waste classification tables in the  
7 existing Part 61 were based upon this type of intruder  
8 analyses. It's just that the regulator did this  
9 analyses, not the licensee.

10 The problem with the regulator doing the  
11 analyses is that in order to have a table of single  
12 values, you have to make assumptions about  
13 environmental conditions and a variety of other  
14 parameters. So in the US, we have such a diversity of  
15 environments, sites, engineering, disposal depths,  
16 etc., applying a one analysis fits all to that type of  
17 problem doesn't make sense from an engineering  
18 perspective. It might make good sense from public  
19 policy perspective.

20 So that is the kind of thing you have to  
21 weigh, the transparency and the kind of check and  
22 balance that you have in the system for, you know,  
23 consultants doing wrong, or that sort of thing. But  
24 that is kind of what we debated and discussed whenever  
25 we went through modifying the requirement.

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1           And so the inadvertent intruder assessment  
2 is new. There are requirements in 61.13 associated  
3 with the scope, the use of intruder barriers, and then  
4 consideration of uncertainty and variability; very  
5 similar to requirements that are provided for the  
6 performance assessment. And then the performance  
7 objective in 61.42 has been modified to reflect this,  
8 and we also have a requirement similar to the  
9 performance assessment that you must update your  
10 intruder assessment enclosure. Next slide, please.

11           So this flowchart is a little hard to read.  
12 It's from the guidance document. Hopefully you get a  
13 chance to look at the guidance document. It is just  
14 basically a step-by-step process that you go through  
15 and complete the intruder assessment. Some people are  
16 kind of inside-the-box thinkers and some are  
17 outside-the-box thinkers. We have both types of  
18 information in that guidance document that hopefully  
19 appeals to either.

20           The bottom line is we are requiring that  
21 the intruder dose assessment is a site-specific  
22 intruder dose assessment. One of the key points is  
23 that it's supposed to be, based on the language from  
24 the commission, that are realistic and consistent with  
25 expected activities in and around the disposal site at

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1 the time of closure, and we are applying the dose limit  
2 of 500 millirems of the compliance period. This is  
3 total effective dose equivalent dose limit. The dose  
4 limits that was used by the NRC to develop the waste  
5 classification tables was also 500 millirems  
6 methodology. It's not the new total effective dose  
7 equivalent methodology. Next slide, please.

8 So what we are seeking your feedback on is  
9 we have revised new definitions of the intruder  
10 assessment that are found in 61.2. We have revised  
11 concepts that are provided in 61.7. The concept  
12 section in this regulation that exists in the current  
13 regulation and in our proposed regulation is a little  
14 bit unique. You don't necessarily find that in  
15 regulations.

16 But it kind of describes how everything is  
17 supposed to be working, and, you know, how it fits  
18 together, and what the components are. So that does  
19 not provide requirements, but it kind of provides the  
20 narrative that apply to the requirements later on. And  
21 as I indicated, there are new requirements for 61.13,  
22 61.28, and 61.42.

23 MR. CAMERON: Okay, thanks, David.  
24 Anybody on the intruder assessment aspect? Okay, we  
25 will go back to Steve.

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1                   And, Steve, if you can just state your name  
2 again for the record, please.

3                   MR. TAYLOR:       Steve Taylor.       I am  
4 interested just how blast hardened this facility is  
5 going to be because it seems to me that ignoring the  
6 short-term radioactive potential for this thing, the  
7 chemical potential sounds serious to me, and I wondered  
8 if a terrorist would not find this a nice target to fly  
9 over with a small airplane and drop a bomb on it. It  
10 is upwind from Salt Lake.

11                   Has that -- you know, your consider -- your  
12 analysis has looked at the chemical toxicity as being  
13 essentially equivalent to the nuclear toxicity, which  
14 at this time is very low, but it seems to me that those  
15 are two entirely different considerations. Thank you.

16                   MR. ESH: Right, that is a good comment.  
17 The one part of an answer I can give to you is that  
18 analysis for intruders is meant to look at the  
19 inadvertent intruder, somebody that uses the site not  
20 knowing it is a disposal site. The commission has said  
21 that the requirements are not to apply to an advertent  
22 intruder, so somebody that wants to do theft or sabotage  
23 or those sorts of things, that doesn't apply to them.

24                   MR. ESH: So the rule does not even  
25 consider that danger?

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1 MR. ESH: Right.

2 MR. CAMERON: We have another comment  
3 here. Go ahead, Chris.

4 MR. MCKENNEY: The rule, when we are  
5 talking about the long-term safety evaluations on this  
6 type of thing, as part of any license application, there  
7 are a number of operational scenarios that we have to  
8 evaluate, including large fires, fire potential, what  
9 happens if a plane crashes into a disposal cell. I did  
10 one of those way back in the day.

11 But, yes, we have all the types of  
12 transportation accidents they have to evaluate.  
13 There's all these other ones that we are not talking  
14 about today of operational safety, safety during  
15 operations and transportation to the site, that those  
16 type of analyses are already discussed as just normal  
17 operations and not part of this performance assessment  
18 or intruder assessment. So those types of scenarios  
19 are discussed during licensing.

20 MR. CAMERON: Thank you. Matt?

21 MR. FERCHEN: I apologize if I am talking  
22 too much, but I guess we are the ones that have the  
23 luxury of -- the time to read all of this stuff and  
24 digest it.

25 MR. CAMERON: The pain.

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1                   MR. FERCHEN:     The pain, yes.     Just  
2                   quickly about inadvertent intruder, just to point out,  
3                   this is another area in which the commissioners  
4                   overruled the staff strongly.   And so back in May of  
5                   2011, the staff proposed the assessment would have to  
6                   model that an intruder occupies a disposal site after  
7                   closure and engages in activities as someone occupying  
8                   the site.

9                   Energy Solutions, a month later, said they  
10                  only thought that reasonably foreseeable scenarios  
11                  should be modeled, and then the NRC commissioners  
12                  overruled the staff in February of 2014, and said they  
13                  should only look at scenarios that are realistic and  
14                  consistent with expected activities in and around the  
15                  disposal site at the time of site closure.

16                 So, you know, I am packing a bunch of  
17                 language there, that went from you better make sure it  
18                 is safe to live there, to all you have to look at is  
19                 what is happening at the time the place is closed.   And  
20                 I think for us, when we look at long-lived waste streams  
21                 for depleted uranium, climate change, a lot of things  
22                 coming down the road that are hard to predict, it seems  
23                 unnecessarily limited to only look at things that are  
24                 happening now or 100 years from now, rather than the  
25                 full range of activity.     The staff agreed and

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1 unfortunately the commissioners didn't.

2 MR. ESH: That is a good comment. The one  
3 thing I can point you to is chapter 4 in the guidance  
4 document on the intruder analyses, where we go through,  
5 in great detail, approaches that we would find  
6 acceptable to develop intruder scenarios because you  
7 hit the nail on the head; for the intruder calculation,  
8 one of the key things that can change the dose numbers  
9 is what the people are doing.

10 You know, if they aren't there much, and  
11 they aren't exposing much of the material, then they  
12 are going to get a low dose. If they are there and doing  
13 a lot of thing that disturb the material, then they  
14 potentially get a much higher dose. And we have -- in  
15 the guidance document, what we basically say is, "Look,  
16 you should be very cautious about how you go about this.  
17 That door swings both ways. You can come up with  
18 scenarios that are less conservative if you want to do  
19 it on a site-specific basis, but then you might end up  
20 with scenarios that are a lot more restrictive, too,"  
21 because somebody from the community can come in and say,  
22 "Look, I live here, and this is what I do, and it is  
23 a lot different than what may have been analyzed in your  
24 scenario." How can you override that individual, for  
25 instance, when they actually live there and they are

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1 actually doing something that you didn't analyze?

2           So we say, "Look, stick with the default  
3 scenario. That is one way to do it. Or if you are  
4 going to use a site-specific analyses, then also  
5 analyze the previous NRC default scenarios and provide  
6 a comparison between those two results. So then your  
7 stakeholders can see how important those assumptions  
8 are about what the receptors are doing and, you know,  
9 their activities. Because then they might have a lot  
10 of questions about that part of your analyses, which,  
11 you know, would be fair game."

12           So we think that is a good -- like, you  
13 know, something for the stakeholders that you should  
14 have transparency about that important part of the  
15 analyses.

16           MR. CAMERON: Jeremy, does anybody on the  
17 phone want to make a comment on inadvertent intruder?

18           PHONE OPERATOR JEREMY: Once again, if you  
19 would like to make a comment, please press star one.  
20 And we do have our first comment coming in. One moment  
21 for the name, please. Sarah Fields, your line is open.

22           MS. FIELDS: I have a hard time getting my  
23 brain around why these waste, which will be long-lived,  
24 are not going to be treated similarly to uranium mill  
25 tailings. Here in Utah, we will have at least six

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1 facilities that will be under perpetual care by the  
2 Department of Energy, and even for currently operating  
3 uranium, the dose standard is 100 millirems, not 500  
4 millirems to the nearest receptor.

5 So my understanding of how you treat  
6 long-lived radioactive contaminants is that you put  
7 them in a situation where they are both aligned in  
8 common and that they have an engineered cover and that  
9 they are under perpetual care. Even under these  
10 circumstances, the NRC, in their regulatory program,  
11 assumes that such a facility would not need long-term  
12 maintenance, but the Department of Energy is now  
13 finding out that some of these facilities that was  
14 designed to not require long-term care and maintenance  
15 now do require long-term care and maintenance.

16 Going back and looking at NRC and PA  
17 regulations having to do with the handling and -- well,  
18 the creation and disposal of nuclear waste were well  
19 aware that the early assumptions were very incorrect,  
20 and in many instances, they still have not updated these  
21 assumptions. So my general comment would be that these  
22 wastes have to be treated similarly to uranium mill  
23 tailings, with the permanent covers, and be under  
24 perpetual care.

25 MR. CAMERON: Thank you, thank you very

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1 much.

2 MR. PERSINKO: Let me add something to  
3 that.

4 MR. CAMERON: This is Drew Persinko.

5 MR. PERSINKO: Sarah's comment -- first of  
6 all, thank you for the comment, Sarah. I just want to  
7 point out, also, that, you know, the uranium mill  
8 tailings sites that you mentioned, many of them, the  
9 title one sites, anyway, go way back. They are very  
10 old. They go back to the Cold War era, the '50s, and  
11 a lot of things were done very different back then. The  
12 tailings were kind of not -- they are not in line many  
13 times.

14 So there is a different -- there's a lot  
15 of differences, I think, between a mill tailings site  
16 and the kind of sites we are talking here today. And,  
17 also, I just want to point out also that the regulation  
18 of the tailings, which the NRC does, was under the  
19 statute of the uranium mill tailings radiation patrol  
20 act. So congress specifically gave us a statute that  
21 said, "Here is how you will deal with the title one  
22 uranium mill tailings site," and in that statute, it  
23 was specifically stated that Department of Energy will  
24 be the long-term care of this facility.

25 So I think we just have to be careful here

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1 that we don't -- you know, there are very distinct  
2 differences between mill tailings and what we are  
3 dealing with here.

4 MR. CAMERON: Okay, thanks, Drew.

5 MR. ESH: That was a good comment, and I  
6 understand it. And it is pretty accurate to say that  
7 we are -- between the two, we are substituting kind of  
8 a perpetual care component to a -- with a long-term  
9 analysis component. So, you know, that is fair, but  
10 what I would say is that in the low-level waste disposal  
11 systems, you do have to demonstrate compliance with  
12 61.44, which is a stability objective, and the  
13 stability objective, one way you can do that is with  
14 an engineered cover. And if you think the amp part of  
15 the problem is difficult, try moving to the  
16 geopathology part of the problem.

17 But the engineered cover is one way that  
18 has been used in uranium mill tailings to try to achieve  
19 the performance goals for uranium mill tailings  
20 facilities. We extended that to the low-level waste  
21 problems, and in the guidance document, that there is  
22 an appendix that details the design-based approach and  
23 even extends that further. So in uranium mill  
24 tailings, you are looking at 200 years to up to 1,000  
25 years to try to design the covers for uranium mill

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1 tailings. For the low-level waste disposal facility,  
2 you might be looking at -- up to 10,000 years to try  
3 to provide erosion protection for the system.

4 Well, when you move to that timeframe, then  
5 you have to start looking at things like rock  
6 durability. What type of rock am I using? There is  
7 a rock scoring process to try to determine what rocks  
8 are durable with your particular environment. There  
9 is an analysis process to design it based on the  
10 probable maximum flood that you can expect at that  
11 facility. The probable maximum flood is the  
12 statistically largest flood that you can ever imagine  
13 at that location, and the magnitudes of those floods  
14 are enormous when you look at volume of water or amount  
15 of rainfall in a 24-hour period that you're talking  
16 about.

17 So that is part of this process. That part  
18 is in the guidance document, but the rest of your  
19 comments, you know, I acknowledge, and it was a good  
20 comment.

21 MR. CAMERON: Okay. Jeremy, anybody  
22 else?

23 PHONE OPERATOR JEREMY: There are  
24 currently no questions in queue.

25 MR. CAMERON: Okay. David, I am going to

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1 suggest, because I want to make sure that everybody here  
2 gets your presentation on each topic, could you go  
3 through two topics, and then we will go on for questions  
4 on either of the topics?

5 MR. ESH: Sure.

6 MR. CAMERON: That will cut down on the  
7 transaction time. Thank you.

8 MR. ESH: Okay. Protective assurance  
9 analyses is the second tier of the analysis timeframe.  
10 The main thing you have to know about this is it's  
11 proposed in the regulation as an optimization type  
12 process, rather than comparison to a dose limit. That  
13 is a little bit different.

14 As I indicated earlier, you will see that  
15 in remediation-type decisions. It is not as common to  
16 see it in a waste disposal type decision. That is the  
17 direction that we received from the commission when we  
18 went from 2-tier approach to the 3-tier approach. The  
19 goal, though, is to minimize the doses during that  
20 second time period. So that's from 1,000 years to  
21 10,000 years.

22 What the staff recommends is, the simplest  
23 approach is to simply to extend your performance  
24 assessment and intruder assessment analyses. Most of  
25 the cost of developing those, there isn't a large cost

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1 between the different timeframes from zero to 1,000 and  
2 1,000 to 10,000. It is setting up the analyses to begin  
3 with and developing all the inputs that go into it. So  
4 all the things that related to what ants are doing and  
5 petitioning of chemicals between the environmental  
6 media, how water is flowing through the system, what  
7 is happening with the atmospheric condition, the  
8 receptor pathways, and who the receptors are, all that  
9 burden comes upfront, and you have to do it. It's 1,000  
10 year period, so why not use that information as part  
11 of the decision that you are trying to make, or the  
12 criteria that you are trying to evaluate here in the  
13 second tier of the analysis.

14 And in the guidance, what we also decided  
15 to do was kind of scale this effort by the risk that  
16 you are estimating. So if you are at a high-risk  
17 situation, then you should be in a high-effort  
18 situation, in terms of the type of analyses you need  
19 to provide and how detailed that analyses needs to be.  
20 And if you are in a low-risk situation, then you have  
21 a low effort that you need to provide for that analyses.  
22 Next slide, please.

23 So this is the figure from that guidance  
24 document where basically the effort increases as you  
25 go up here to these different levels. And if we say

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1 a few millirems, then your effort is fairly minimal that  
2 you need to do for this 1,000 year to 10,000-year  
3 period. Then as you move up the scale, there's  
4 progressively more effort, and we give examples of the  
5 type of effort that you might need to do as you move  
6 up the dose scale.

7 So, we think this is fairly reasonable, but  
8 it is kind of a new approach based on the direction we  
9 got from the commission, so it is an area where we hope  
10 to get some comments on. Look at both the requirements  
11 and the regulation and then especially the guidance  
12 document that we developed for it. Next slide, please.

13 So the protective assurance analyses  
14 period, the main things are the optimization with a  
15 minimization target, and we are using, or recommending  
16 using the guidance document risk-based discounting.  
17 And, also, the easiest approach that we recommended is  
18 just -- or the most straightforward approach is to  
19 extend the performance assessment and intruder  
20 assessment to that timeframe. So we will do the next  
21 topic now, which is related.

22 Performance period analyses, this is  
23 applicable to the times after 10,000 years. It is only  
24 to apply if you have sufficient waste, and we give a  
25 direction -- or requirements and the direction in the

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1 guidance about how you determine if you have sufficient  
2 waste. So there's a table in the regulations, Table  
3 A, which I will show here coming up, which provides  
4 concentrations of waste on a disposal site average  
5 basis they use to determine "Do I need to do that third  
6 tier of the analysis?"

7 Because we didn't want it to be just a few,  
8 you know, atoms or queries of a particular type of  
9 waste, that that is going to require somebody to do this  
10 analysis. That is not very -- you know, NRC tries to  
11 be risk informed performance based, and that is not very  
12 risk informed performance based. So we tried to make  
13 a trigger point where we think this would definitely  
14 apply to large quantities of depleted uranium. You  
15 would be in this -- above those values provided in Table  
16 A, and, therefore, you would be doing the performance  
17 period analyses.

18 Other types of long-lived waste would also  
19 trigger that performance period analyses. The  
20 objective of the performance period, though, is to  
21 communicate with your stakeholders and how disposal  
22 sites are going to limit those long-term impacts and  
23 what design features and site characteristics are  
24 contributing to minimize them, to minimize the impact  
25 to the extent reasonably achievable.

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1           So this was in our proposal to the  
2           commission in 2011, and they didn't change -- this is  
3           something that the staff proposed then, and it is in  
4           the proposal now. Next slide, please.

5           So this is the table that is in the  
6           regulation. These are the Class A concentrations.  
7           Actually, this table is slightly different than what  
8           is in the proposed regulation. At our first meeting,  
9           one commenters said -- we had the super script next to  
10          numbers here, and so like a 10 with a 3 next to it,  
11          somebody might interpret that as 1,000 and can be  
12          confusing. And it is not 1,000; it is ten. So we -- in  
13          the presentation material, we moved the super scripts  
14          over here, just so it wouldn't be as confusing.

15          But, otherwise, this is table in the  
16          proposed regulation. These are to be generated on a  
17          disposal site average basis, excluding buffer zone.  
18          So disposal site is the area where you're actively  
19          disposing of waste, maybe the material in between  
20          disposal cells, including the backfill that goes into  
21          those cells. So we wanted something that was simple  
22          and implementable for a licensee and a regulator, a  
23          licensee to calculate and a regulator to evaluate "Am  
24          I in this performance period analyses region or not?"

25          There are some exceptions to it, though,

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1 as indicated here, or if necessitated by site-specific  
2 conditions. That is because, like I mentioned  
3 earlier, with the waste classification table, it is  
4 hard to do one size fits all for this sort of thing.  
5 The guidance document lists what some of those  
6 site-specific conditions might be. Those, we believe,  
7 should be exceptions. Generally, they shouldn't apply  
8 at your site, but as you are reviewing this aspect of  
9 the problem, you might want to look at it and say, hey,  
10 do I have any of these things at my particular site that  
11 I am evaluating? Next slide, please.

12 This is an example from the guidance  
13 documents. We have the definition for long-lived  
14 waste. This is a review tool where we provide a list  
15 of all the isotopes that we would identify as long  
16 lived, the parents and the progeny, and then this  
17 low-level waste PA inventory is whether we generally  
18 would expect to see those in a low-level waste  
19 performance assessment. That doesn't mean that you  
20 can just look at this table, but it is probably a good  
21 review tool to determine what isotopes you might need  
22 to evaluate.

23 Now, in low-level waste performance  
24 inventory, there are manifest requirements, so when a  
25 generator makes waste, they have to identify certain

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1 things when they send that waste to a disposal facility,  
2 but the PA for the disposal facility, the performance  
3 assessment and the trigger assessment for the disposal  
4 facility have to develop the inventory that they are  
5 going to dispose of, and that may include isotopes that  
6 aren't identified on the manifest. So just keep that  
7 in mind for this part of the problem. Next slide,  
8 please.

9 So what we are seeking feedback on in this  
10 area is this approach to this third tier, whether the  
11 Class A values are appropriate to trigger the  
12 requirements for the analysis, our averaging approach  
13 of trying to use this simple way to average it over the  
14 disposal site volume, and then the objective is to  
15 minimize to the extent reasonably achievable and to  
16 identify the features that contribute to long-term  
17 impacts.

18 MR. CAMERON: Okay. Thanks, David.  
19 Let's go to phones first on these two issues. Jeremy,  
20 can you see if there is anybody on the phone that wants  
21 to address either protective assurance period or  
22 performance period?

23 PHONE OPERATOR JEREMY: If you would like  
24 to ask a question or make a comment, please press star  
25 one. I am showing no question or comments in the queue.

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1 MR. CAMERON: All right. Let's go to here  
2 in Salt Lake. Let's go to the Farmer Lundberg, I guess.  
3 Right? Rusty Lundberg.

4 RUSTY LUNDBERG: Thank you. Rusty  
5 Lundberg, again with the Division of Radiation Control.

6 Dave, I was wondering as you talked about  
7 the protective assurance period and implying that there  
8 might be a natural extension of using what you find in  
9 the compliance period for a PA or the intruder analysis,  
10 that you can step into this other period, the protective  
11 assurance period. I am wondering if there might be a  
12 consideration that maybe you need some kind of trigger,  
13 rather than some kind of automatic jump in to such an  
14 extended period of time, even though it may seem simple  
15 to do zero to 10,000 for some of these things, I think  
16 just from our experience, I think there are a lot of  
17 considerations and inputs that really make for a more  
18 complex view, rather than just a simple extension, and  
19 I am just wondering if there might be some kind of  
20 trigger point, rather than just an automatic extension.

21 MR. ESH: Right. That's a good comment.  
22 I understand it. I just don't know right now what we  
23 may have written and say the guidance related to this.  
24 I will have to check. But, in general, your comment  
25 is correct, like you can't just blindly extend the scope

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1 of your shorter-term analysis and apply it to the longer  
2 term. There may be things that kick in, in that longer  
3 timeframe, that weren't relevant to your first 1,000  
4 years that become relevant in the next 9,000 years.

5 So your scope may be different between  
6 those two timeframes, the analysis may be somewhat  
7 different, but what I was trying to talk to is there  
8 might be a different type of analysis that somebody  
9 wants to use for that protective assurance period,  
10 rather than looking at their performance assessment and  
11 intruder assessment. You know, maybe they do some sort  
12 of cost benefit analysis or decision analysis, or other  
13 sorts of things that are done for optimization-type  
14 problems. There might be something along those line  
15 that somebody wants to do. I don't know exactly what  
16 those might be or what they might look like, but -- and  
17 that is why we recommend the approach that we did, but  
18 that door is open, right now at least.

19 MR. CAMERON: Cindy?

20 MS. KING: Cindy King with the Sierra  
21 Club. I think this is the part where you are going to  
22 explain fiduciary duty to me.

23 MR. ESH: Right.

24 MS. KING: And I haven't heard it yet, so  
25 are you going to explain it in engineering terms, as

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1 well as legal terms, as well as health effects? That  
2 is my one question.

3 My other concern is, so far we -- in our  
4 discussion up to this point, we are currently making  
5 the assumption that we are going to have the same form  
6 of governments that we have across the world, or even  
7 in the United States. How are we going to assure that  
8 1,000 or 10,000 years down, to assure that we have a  
9 regulatory agency? I mean, even in my own state, for  
10 example, our legislative body hates the Department of  
11 Environmental Quality, which Rusty, who has been  
12 speaking, works under, and they constantly are taking  
13 money away from that department and its various  
14 divisions. So my question goes to, how do we expect  
15 our regulators to regulate if they don't have the funds  
16 to do so?

17 MR. CAMERON: And I guess the  
18 institutional control issue is tied in to the fiduciary  
19 duty. Should we see what Lisa London would like to  
20 offer?

21 MR. ESH: Let me address the last part  
22 first about the funding issue for the programs. We  
23 do -- NRC does basically review, to put it in simple  
24 terms, of the agreement state programs, and part of  
25 the -- part of what we look at when we do that review

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1 is staffing and qualifications; you know, do they have  
2 the resources to perform the reviews that they need to  
3 do?

4 We also will look at reviews that they have  
5 done and look at the quality of those reviews, not  
6 necessarily at an extremely detailed level, but, you  
7 know, the last of these that I was on for Texas, I do  
8 actually -- I did actually get their performance  
9 assessment model and look through their performance  
10 assessment model and see how they were treating data  
11 and that sort of thing.

12 So the resource question, as I indicated  
13 earlier, as you are moving towards an analysis, a more  
14 analysis-heavy approach, it does require that you have  
15 appropriately funded, qualified, competent regulators  
16 to look at it because they are -- besides the public,  
17 they are supposed to be a check and balance in the  
18 system.

19 MR. CAMERON: Very good point.

20 MR. ESH: The fiduciary part -- I mean, my  
21 quick engineering answer is the analysis timeframes  
22 that we are looking at are supposed to be accounting  
23 for impacts to future generations, not just the present  
24 generation. And so that is one of the comments that  
25 we received from some groups.

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1           That's different than even say the  
2 analysis that might be done for municipal landfills or  
3 even some chemical waste disposals, where those are a  
4 short-term analyses with the potential to review it at  
5 the end of some period, and maybe decide to stop. You  
6 know, if they aren't seeing much that might be released  
7 from that facility, they don't do a long term -- a very  
8 long-term analyses for those types of facilities. We  
9 are recommending in these requirements long-term  
10 analyses to look at the impact of future generations.

11           The impact to, say, environment in  
12 general, the NRC has always taken the approach that the  
13 limits that we provide for radiological protection of  
14 humans also afford some protection to other parts of  
15 the environment, you know, Biota and those sorts of  
16 things, but Chris has more technical expertise in that,  
17 from my area, and Lisa can give you a legal view.

18           MR. CAMERON: Let's hear from Chris, then,  
19 Jeremy, if you can make sure that Lisa London is ready  
20 to talk to us in a minute or so. But let's hear from  
21 Chris McKenney.

22           MR. MCKENNEY: In addition, of course, we  
23 are talking a lot about the regulations on the direct  
24 safety requirements for land disposal sites. At the  
25 NRC, we also have the responsibility to do a national

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1 environmental policy act evaluation of any decision.

2 And so on a site-specific basis, that is  
3 where we would be reviewing, are there any stressors  
4 on the environment that are more different than caused  
5 by the humans? So we don't just say the human doses  
6 are low; therefore, the bugs and bunnies are fine. We  
7 do the evaluation for any endangered species. We do  
8 the evaluation for any other species as part of the  
9 environmental -- part of NEPA, because it doesn't  
10 matter if that stressor is radiation itself, or if it  
11 was land removal, or if it was a heat source in the  
12 water, those all could be stressors on Biota that could  
13 cause a change, and those have to be evaluated by the  
14 national environmental policy act for any major  
15 decision.

16 MR. CAMERON: And bugs and bunnies include  
17 ants.

18 MR. MCKENNEY: Maybe, yeah. But the  
19 other point, which she had which is on government  
20 things, that is sort of built into Part 61 from the fact  
21 that, hey, if these sites were under perpetual care and  
22 that is what happened to them, that would be great. And  
23 we try to have them under federal or state  
24 landownership, but when we are licensing them at the  
25 start, we don't want to make the assumption that they

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1 will be under perpetual care because we don't know what  
2 is going to happen in the future.

3 That is why we say that we only will allow  
4 somebody to take credit for 100 years of institutional  
5 control. It doesn't say it has to be given up at 100  
6 years. It says when you are doing the analysis and  
7 saying when somebody could damage the site or  
8 something, you can't assume that it will be under  
9 perpetual ground. You have to make the view that that  
10 may be a lower budget item at some point, and changes  
11 will occur.

12 MR. CAMERON: Okay. Jeremy, is Lisa on  
13 the line?

14 PHONE OPERATOR JEREMY: Lisa, if you  
15 could, please press star zero.

16 MR. CAMERON: It is not that late on the  
17 East Coast, is it?

18 MS. LONDON: Yes, I needed to hit star one.  
19 I forgot about that. Thanks, Chip. My response to the  
20 fiduciary duty question would be that the NRC, I think  
21 we would answer that we view this fiduciary duty as  
22 being achieved through striving to meet the obligation  
23 that the NRC has between goals of human health  
24 protection and common defense and security. And those  
25 are protections of the human health and environment and

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1 common defense security. Those are twin goals, and  
2 that is essentially how we carry out our fiduciary duty  
3 to the public.

4 I would note that Dave and Chris really hit  
5 on some points I think that are important. If you take  
6 a look at the technical documents underlying this  
7 rulemaking action, you will see discussion,  
8 intergenerational equity as being discussed, and I  
9 think Chris really noted the fact that the entire Part  
10 61 is going towards trying to ensure a safer system is  
11 adopted from the get-go with passive controls and with  
12 engineering tools that can be used to create such a  
13 system.

14 But the staff really did try to take a very  
15 balanced look at those intergenerational equity  
16 issues. I think more discussion from the earlier  
17 technical document, such as the white paper that was  
18 generated as a result of the initial staff  
19 recommendation for one of the longer compliance periods  
20 that was recommended to the commission, but that would  
21 still ultimately be one of the factors considered in  
22 the proposed package sent to the commission. And you  
23 can look at the federal register notice and see that  
24 discussed to some degree. And so that would be my  
25 response.

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1 MR. CAMERON: Okay. Thank you, Lisa.  
2 And David, let's go to safety case and waste acceptance  
3 criteria. And note that Matt has asked a question  
4 already that probably applies to the WAC. Go ahead.

5 MR. ESH: Okay. The safety case, I will  
6 go through fairly quickly. The safety case, first  
7 slide 38, this is a figure from an IAEA document, the  
8 International Atomic Energy Agency. They have an  
9 approach to the safety case that is very comprehensive.  
10 The safety assessment is one important component of it,  
11 but it is one of many components. This approach is  
12 described in specific safety guide No. SSG-23. You can  
13 get that from their website. Next slide, please.

14 So the safety assessment has a variety of  
15 components to it, including a management system,  
16 nonradiological and environmental impact,  
17 radiological impacts, operational safety, and site and  
18 engineering. The safety case as we are proposing in this  
19 regulation, next slide, please, is, I would say, very  
20 similar to the major components of the IAEA safety case,  
21 but as I indicated, the IAEA safety case is a bit more  
22 broad in some areas.

23 So they have something with stakeholder  
24 interaction during the siting process, some formal  
25 components like that, that aren't part of Part 61. So

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1 that is where there are some differences. But the  
2 essential elements are described here. The safety  
3 case for long-term safety in 10 CFR Part 61 includes  
4 the technical analyses, the various ones that I've  
5 described so far, as well as the defense-in-depth  
6 components, which I am going to talk about in a few  
7 slides here -- or in these slides.

8 So our proposed rule provides a discussion  
9 of the safety case and the defense-in-death protection.  
10 It explains how a combination of these things should  
11 be used to support the licensing decision. Now, one  
12 thing we had to do is define what is defense-in-depth.  
13 We looked at whether it should be different for a waste  
14 disposal facility than a different type of system.  
15 Defense-in-depth is used in NRC for many different  
16 types of safety analyses or systems, generally active  
17 type of systems. So reactors, things with pumps, that  
18 sort of thing.

19 A waste disposal facility is a little bit  
20 different because while it has -- many of them have a  
21 lot of engineering in them, they generally are looking  
22 at passive performance of those systems over long  
23 periods of time after you close them. You can't rely  
24 on maintenance of those systems. You can only look at  
25 their passive performance.

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1           But the defense-in-depth definition also  
2 was decided to maintain the same one that applies to  
3 other NRC systems, and that is the use of multiple,  
4 independent and redundant buyers of defense so that no  
5 single buyer, no matter how robust, will be exclusively  
6 relied on for safety. That does not mean that you need  
7 two of each type of component in a waste disposal  
8 system.

9           So if there are two -- a drainage layer in  
10 the engineering cap, you don't need two drainage  
11 layers, but what you do need to demonstrate is how the  
12 various parts of the disposal system in the natural  
13 environment performs to provide this defense-in-depth.

14           So if you get down to the point where, gee,  
15 I fail my performance objectives if I don't have  
16 infiltration cover, and I make them if I have my  
17 infiltration cover, well, then that will be a case where  
18 I think you don't have defense-in-depth because you are  
19 not able to demonstrate the performance of your  
20 situation by removing that one component. So that is  
21 what we are talking about with defense-in-depth; not  
22 redundancy of a specific components within the system  
23 or redundancy of the system overall. Next slide,  
24 please.

25           This is our definition of safety case. I

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1 am not going to read it. The main point is, the safety  
2 case is the collection of all the information that you  
3 are using to make your licensing decision. We don't  
4 believe that the safety case that we are defining now  
5 is significantly different from the licensing  
6 decisions that have already been made for existing  
7 facilities.

8 So an existing facility might be saying,  
9 "Well, what do I need to do for the safety case?" My  
10 answer would be, maybe describe it a bit differently,  
11 and say, here is my safety case, and describe all the  
12 things that go into it. But other than that, there is  
13 not necessarily new components that -- outside of the  
14 defense-in-depth because the defense-in-depth is going  
15 to be required, irrespective of the safety case. So  
16 that is the definition that you will find in the  
17 regulation. Next slide, please.

18 So what we are seeking feedback on is our  
19 definition for safety case and defense-in-depth as I  
20 either presented them or described them. The concepts  
21 related to these in 61.7, and then the requirements for  
22 it in 61.10. The same thing with defense-in-depth,  
23 there's a requirement for that in 61.13, but it is not  
24 specific. It basically says that you need to provide  
25 defense-in-depth analyses, but it doesn't say

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1 specifically what they are. You know, is that the  
2 right approach? That is what we want your feedback on.  
3 And then the requirements, just like the performance  
4 assessment and the intruder assessment, to update it  
5 at closure.

6 So we will go to waste acceptance criteria  
7 now. Waste acceptance, I believe, is -- part of this  
8 new regulation. The new requirements for developing  
9 waste acceptance criteria provides for an "Or"  
10 approach; so you can use the waste classification table  
11 to identify what concentrations of radionuclides you  
12 can accept at your site, something that Matt and I  
13 discussed here earlier and we can discuss again, or a  
14 site-specific waste acceptance waste criteria. So  
15 what that means is using the result of -- the licensee  
16 would be using the result of their analyses to identify  
17 what concentrations the specific site could accept.  
18 So this material is found then outside the waste  
19 classification table, which are still in 61.55.

20 And 61.58, so 61.58 is a revised section  
21 that focuses on three areas that all apply to waste  
22 acceptance; characterization, the criteria that he  
23 used and then the certification process. Next slide.

24 Here is the definition -- or the concept  
25 for waste acceptance, and it just reiterates what I

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1 already said. Next slide, please.

2 What we are seeking feedback on is the  
3 concepts regarding waste acceptance and then the  
4 requirements for waste acceptance. There is very  
5 detailed information on the -- in the guidance document  
6 because it is a new area, especially using a  
7 site-specific waste acceptance criteria.

8 One important point is even though you may  
9 be using different approaches to identify what  
10 radiological concentrations you can accept at your  
11 site, there are still other waste characteristics in  
12 10 CFR Part 61 that you must satisfy, and those are  
13 61.56, and those are things like the waste can't be  
14 pyrophoric, there's limitations on how much liquid can  
15 be in the waste; a variety of things like that.

16 MR. CAMERON: All right. Here in Salt  
17 Lake, comments on the -- we will go to Mike first. Mike?

18 MR. GARNER: Mike Garner with the  
19 Northwest Compact. David, in the Federal Register  
20 Notice, under the NRC proposed option, is the following  
21 sentence: The hybrid waste acceptance approach  
22 provides a framework for the use of either the generic  
23 low-level radioactive waste classification systems  
24 specified in 10 CFR 61.55, or the results of the  
25 technical analysis required in 10 CFR 61.13.

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1           So let's say a licensee in an agreement  
2           state -- let's say a licensee and an agreement state  
3           decide to use the classification tables. They would  
4           still be required to do the requirements under 61.13?

5           MR. ESH: Correct.

6           MR. GARNER: And why would that be?

7           MR. ESH: Right, because they still have  
8           to demonstrate that they meet the performance  
9           objective, 61.41 and 61.42, and the way that you do that  
10          is via the technical analyses. So, I mean, to put it  
11          cleanly, the issue becomes -- if you take a material  
12          like depleted uranium that is Class A by default in the  
13          table, if you just use the tables, then it is basically  
14          going unanalyzed from the intruder assessment  
15          perspective. If you have to do the 61.42 analysis,  
16          then it gets analyzed. You can still use the waste  
17          classification tables if you choose to, but it assures  
18          for certain types of waste that may not have been  
19          analyzed when the waste classification tables were  
20          developed, that they get analyzed in this process.

21          MR. GARNER: But, for example, let's say  
22          the agreement state and the licensee just want to  
23          continue to use the classification tables. That  
24          analysis is still required?

25          MR. ESH: Right, that analysis is still

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1 required. And from our view and our experience, the  
2 performance assessments, because they are dealing with  
3 different types of processes and they are not a stylized  
4 calculation, are much more expensive and burdensome to  
5 complete than the intruder dose assessment. In many  
6 cases, the intruder dose assessment, you can almost do  
7 in spreadsheet. It's not the type of calculation that  
8 you need detailed, complicated computer models for.

9 MR. GARNER: Okay, thank you.

10 MR. CAMERON: All right. Let's go to this  
11 gentleman. Please introduce yourself.

12 SHANE: I am Shane and I am an undergrad  
13 student at Brigham Young University. So I had a  
14 question about choosing the limits that -- I realize  
15 that the ideal is to minimize it, the 25 millirems and  
16 the 500 millirems. As I have been doing research on  
17 this, I've learned that Utah has a lot of natural  
18 uranium. I appreciate your comment about testing our  
19 home for radon because there is background radiation  
20 wherever we go. I think it is interesting that natural  
21 uranium is actually more radioactive than depleted  
22 uranium.

23 And so what I was curious about is, since  
24 this natural uranium is actually going to be getting  
25 hotter and hotter over time, just as the depleted

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1 uranium is, that the background radiation in Utah will  
2 be increasing, and if that went into the calculations  
3 to determine what the dose limits would be for the  
4 depleted uranium.

5 MR. ESH: The natural uranium is not  
6 generally going to be getting hotter. It is close -- in  
7 many cases, close to what is called secular  
8 equilibrium, so it -- because it's been around so long  
9 in the earth, it reaches a state where -- it is basically  
10 kind of a steady state type of value.

11 So background radiation values can and do  
12 fluctuate, but they especially fluctuate due to changes  
13 and atmospheric conditions, where radon can change from  
14 day to night and from season, for instance. And Radon  
15 contributes anywhere from, say, 140 to 200 millirems  
16 of, say, like the 300 millirems that you're getting from  
17 natural-type sources. So it can fluctuate quite a bit.

18 So the comment about the depleted uranium,  
19 the natural uranium on a specific activity basis, can  
20 be more radioactive than the depleted uranium,  
21 especially the fresh depleted uranium before all the  
22 things go into it. But the issue is that the depleted  
23 uranium is much more concentrated on a gram per gram  
24 of material basis. So the depleted uranium is almost  
25 pure uranium. Of course, it has oxygen, if it is

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1 converted to oxygen, or fluoride if it is the US-6 form.

2 But depleted uranium can be up to 80 weight  
3 percent uranium, whereas the uranium in the  
4 environment, in the yard, wherever you live, might be  
5 two to three parts per million. So you are talking like  
6 800,000 parts per million versus two to three parts per  
7 million. There is a much bigger driving force for  
8 effects from the depleted uranium than from most  
9 natural uranium.

10 There are some parts in the world that have  
11 very high concentrations of natural uranium. Such as  
12 in Canada, they have mines that have tens of weight  
13 percent, many tens of weight percent natural uranium.  
14 Some of those mines need to be mined robotically,  
15 though, because of high-radiation doses inside of them  
16 from those concentrations of natural radiation.

17 MR. CAMERON: Okay. Yes?

18 RICHARD: Okay, yes.

19 MR. CAMERON: So I would just like to  
20 comment that I think that the idea to use either the  
21 61.55 waste classification or the site-specific  
22 analysis is an idea that I like. I think that it allows  
23 leeway for local circumstances, as well as for the NRC's  
24 general approach to waste.

25 And I would also like to add that I just

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1 did a couple of background calculations for depleted  
2 uranium at secular equilibrium. Assuming that I have  
3 my numbers right, which I would be happy to go over with  
4 you at the end of this, I found that it has about 38.7  
5 curies per meter cubed of transuranic, and 51 and a half  
6 meters cubed of other isotopes, which falls well within  
7 the limits of the 61.5 limit for Class A waste.

8 MR. ESH: Right, I can look at them with  
9 you, but in general, the concentrated depleted uranium  
10 would be above the ten nanocuries per gram value that  
11 is found in the current 10 CFR 61.55 waste  
12 classification table. So it works out to be more than  
13 that. So the issue for depleted uranium becomes, you  
14 can dispose of some quantity of concentrated material,  
15 and it would be below Class A. If you classify it the  
16 same way that waste were classified back in the early  
17 1980s when those tables were developed. If you have  
18 large quantities of it, though, technically, it is  
19 above Class A.

20 RICHARD: Okay.

21 MR. CAMERON: Okay. We have someone here  
22 and someone back there, and let's go to this gentleman  
23 in the back first. And just, please, introduce  
24 yourself.

25 BOB ARCHIBALD: Yes. My name is Bob

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1 Archibald. I want to stay with the classification  
2 questions for just a minute. Is there a reason that  
3 depleted uranium is classified as Class A waste by  
4 default? Is there a reason behind that?

5 MR. ESH: Right. The reason is -- it is  
6 kind of a historical reason, but when 10 CFR 61 was being  
7 developed in the early 1980s, they had to estimate what  
8 they thought the waste streams were going to be that  
9 would go into commercial low-level waste facility, they  
10 being the NRC, me, but I was playing little league in  
11 early 1980s.

12 So the analysis was done, the intruder type  
13 of analyses, and then we call it an inverse calculation  
14 to develop what the concentrations would be that would  
15 result in a 500 millirems. Well, they didn't  
16 anticipate large amounts of uranium going into  
17 commercial low-level waste facilities, so, therefore,  
18 uranium was not placed on the waste classification  
19 tables. Actually, it was initially, so it was  
20 calculated initially. If you look at draft CRF for  
21 Part 61, there was value for uranium placed on the  
22 table, but when regulation moved to the final one, that  
23 value was removed from the table because they got  
24 comments from a variety of people, like we are  
25 getting -- not that we've received in this meeting

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1 today, but in the public comment process, people said,  
2 "Hey, why do you have a value for uranium in there if  
3 you're not anticipating a large amount of uranium to  
4 go into the facilities?"

5 So the value was removed from the table.  
6 So the student from BYU, you can look at those  
7 documents, or I can point you to them, and you can see  
8 what value is in the tables and the one regulation.

9 BOB ARCHIBALD: The follow-up question  
10 is, what is it that we would -- you and me would likely  
11 learn should you follow up and there be a formal  
12 classification process for uranium? Would that then  
13 take into consideration the concentrations that  
14 are -- that exist in the high volumes?

15 MR. ESH: Right.

16 BOB ARCHIBALD: Unexpectedly high volumes  
17 of depleted uranium? Can you help us understand what  
18 would likely go into the formal classification process?

19 MR. ESH: Yes, it would. It would try to  
20 take into account the quantities, volumes, and the  
21 radiological composition of not just the depleted  
22 uranium but other waste streams that you work with, at  
23 this time, were anticipating could be deposited of in a  
24 low-level waste facility.

25 And so maybe there would be the potential

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1 for other isotopes to be added to the table if they were  
2 present in those waste streams, and they could result  
3 in a dose or risk impact. So that would be the type  
4 of analyses that is done.

5 Now, part of the debate is, once the  
6 utility is doing that, if in the proposed regulation,  
7 somebody can do the site-specific analyses and  
8 determine the concentrations of the types of waste that  
9 they are taking, they are effectively doing that  
10 analysis. It is just a matter of who is doing it. The  
11 licensee in that case would be doing it. If we did it,  
12 it would be regulator who would be doing it, and there  
13 would be one set of values.

14 Now, personally, I thought about it, and  
15 I think we could do some things that were maybe a little  
16 more complicated but a little more smarter. We could  
17 make something that would not just be a single table  
18 but maybe different tables that apply to different  
19 environmental conditions, for instance, or some sort  
20 of scaling factor that you could use based on the  
21 quantity of material you had to classify your waste.  
22 There might be something more complicated we could do  
23 than just make a table with some new isotopes in it.

24 But as Drew indicated in his comments, that  
25 is part of the direction the commission gave us to look

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1 at that in the future action, but you're free to comment  
2 on it in this rulemaking. It is just a matter of, we  
3 felt that -- for the public stakeholders to fully  
4 comment on that issue, you have to see where this ends  
5 up, because you might be happy where it ends up or you  
6 might be unhappy where it ends up; and, therefore, that  
7 is a really important issue to you. But you are still  
8 free to, based on how you understand things now, to make  
9 comments on that area.

10 MR. CAMERON: Chris, do you have a quick  
11 comment?

12 MR. MCKENNEY: Yes. And the point of that  
13 is, it is basically preliminary comments right now, on  
14 that issue right now, because we have all intention  
15 right now of going out and gathering comments after the  
16 final rule is actually published, at some point after  
17 the final rule, this final rule is published, to then  
18 go out and ask "Should we do the waste classification  
19 thing" based on what the final rule was.

20 So this is not your only bite at the apple  
21 on this issue because, again, you see the rule that is  
22 proposed. You don't see the final rule. So any  
23 comments right now are based on your implication of how  
24 the final rule might show up. But we want to get your  
25 comments and you have a chance to provide comment after

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1 the final rule is out there, too.

2 MR. CAMERON: Okay. Let's go back there.

3 JULIE MCCALL: I am Julie McCall. I am  
4 pretty sure I know less about this than anybody here.  
5 So a couple months ago, Governor Herbert made the  
6 comment about how he had a hunch that depleted uranium  
7 is hotter than Class A waste. So just look at Barnwell,  
8 South Carolina, A, B, and C waste, and I have a friend  
9 there that tells me there is some question about whether  
10 or not that facility could handle D.U. in such a way  
11 that protects the public health, so can you help us  
12 believe that the depleted uranium is not hotter than  
13 Class A; does that make sense?

14 MR. ESH: Right, I think it makes sense.  
15 From my technical perspective, the depleted uranium  
16 is -- if you follow the regulation as it is written right  
17 now, it falls into a default clause. So the legal  
18 interpretation is that it is Class A. The technical  
19 interpretation is it is not Class A in the large  
20 quantities because if you have just too many curies of  
21 material per unit volume, it puts you over that ten  
22 nanocuries per gram value that defines Class A waste,  
23 or long-lived alpha-emitting radionuclide.

24 The table written right now is only  
25 long-lived transuranic alpha-emitting radionuclide

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1 and uranium is not transuranic. If you remove the word  
2 transuranic out of there, then, you know, that is how  
3 I am getting from A to B. So, yes, I don't know if I  
4 answered your question, but, you know --

5 MR. CAMERON: Okay. We have one more  
6 question, comment here, and then we will see if anybody  
7 on the phones have something. Then there is an other  
8 category, if anybody had something, and we will get to  
9 Matt. There is another other category, and then  
10 there's quick piece on the red guide, and then we will  
11 go to our senior official, Drew Persinko, to close us  
12 out. So that's the preview of what is going to happen.  
13 Introduce yourself please.

14 CURT HARRIS: My name is Curt Harris. I  
15 am a PhD candidate, mechanical engineering at Utah  
16 State University. I guess I represent our ANS Group,  
17 as well.

18 Two questions, actually; first one should  
19 equated with less radioactive and natural uranium, why  
20 don't we just scatter -- I assume it's cost ineffective  
21 but maybe you can comment on that.

22 MR. ESH: To answer that question is in our  
23 disposal approach, the philosophy is basically  
24 concentrate and contain, not disperse and dilute. So  
25 with this amount of material, this amount of uranium,

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1 you could be looking at large population doses if you  
2 just dispersed it all over even, though individual  
3 doses could potentially be low, depending on how much  
4 you disperse it.

5 But, you know, those sorts of strategies  
6 were applied in the past. There was ocean disposal of  
7 low-level radioactive waste. We don't apply those  
8 today. We try to use better engineering, and put  
9 things into place and keep it there. So that is just  
10 a short answer to the overall philosophy.

11 CURT HARRIS: That is all I was looking  
12 for. My second question, so maybe from my prospective,  
13 I have young -- I have two young kids. I am more  
14 concerned about the billions of tons of carbon dioxide  
15 then I am about nuclear waste, you know, a million tons.  
16 So I want to see nuclear energy expand, but then, you  
17 know -- but I want to see the waste stored safely, which  
18 I think you guys have done a great job of helping ensure,  
19 but at the same time if we add to the cost of the agency  
20 to the cost of the industry, you know, I am concerned.  
21 I think your next page is like 434 pages they have to  
22 go through, and, you know, understand. Is that too  
23 complicated? Too costly? Is that going to slow down  
24 nuclear growth or --

25 MR. ESH: Right. I mean, all of these

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1 things are a tradeoff between we all pay for it, so all  
2 of us that consume electricity, unless you have your  
3 own self-contained solar system or something like that,  
4 if you are using public utilities systems, and many of  
5 those, at about 20 percent of electricity in the US  
6 comes from nuclear, you know. The decision we make  
7 with respect to waste disposal, we pay for them in small  
8 increments, and so compared against the health impacts  
9 that you might generate from the decisions that you are  
10 making.

11 And what we propose, or trying to propose,  
12 is regulatory requirements that we think will limit  
13 those health impacts, but at the same time, not create  
14 a lot of burden compared to what is done today for  
15 radioactive waste disposal. But today, people are  
16 doing these technical analyses, say for the analyses  
17 timeframe. The point is, it is just not defined in the  
18 regulation. So every agreement state can use a  
19 different value, and they have all used different  
20 values. And that is one of the comments we received  
21 earlier on is try to get some consistency between the  
22 different programs.

23 The guidance document is 434 pages, and I  
24 don't want you to quit your degree program and become  
25 a bartender, but that is kind of what we look at

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1 everyday. You know, I had a flight one time from  
2 Washington, D.C. to Las Vegas that I had to review a  
3 2,400-page document on -- during the flight, and I did  
4 some of it, albeit, pretty quickly. But the guy next  
5 to me on the plane said, "I never saw anybody read  
6 something as fast as that."

7 MR. CAMERON: Okay, thank you, Curt.  
8 Thank you, David. Matt.

9 MR. FERCHEN: Yeah. One thing I want to  
10 flag, then we will follow up in writing. I think it  
11 is getting late, and it is too much to get into it, but  
12 it follows up with what Mr. Garner asked about with the  
13 hybrid approach. I think the piece I am confused by  
14 is why the licensee gets to pick which approach. And  
15 then, as you know, Utah, between Rusty and Governor  
16 Herbert, has specifically and strongly said, "Look, we  
17 want to keep it. We want to keep that in place. That  
18 is our No. 1 priority."

19 And I am trying to balance the licensee  
20 gets to pick but the regulator wants to hang on to the  
21 table, the foundations of it. So there is a little  
22 uncertainty there.

23 MR. ESH: Well, I understand your comment.  
24 Chris might want to answer this. My quick answer is,  
25 I think state policies can still be applied if they have

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1 certain policies they want to apply, and the compacts  
2 can apply policies that they want to apply. So, I don't  
3 know. Chris, do you want to add to that?

4 MR. MCKENNEY: Yes. A point of  
5 clarification is the licensee applicant gets to  
6 propose; the regulator gets to decide, and that  
7 decision includes other outstanding issues that have  
8 to come into that decision, including the rules and the  
9 compact and the hosted interest. So how that gets  
10 implemented in the future, I mean, that is going to be  
11 probably a large discussion point. That is not  
12 completely clear how that will be activated in each of  
13 the sites. So that -- they still don't get to choose.  
14 They do have to propose and the regulator has to decide.

15 MR. ESH: And the other point is, this is  
16 with those areas of the regulation proposed at  
17 compatibility Class B, so if those were changed to a  
18 lower compatibility class, then the state could choose  
19 to do something more restrictive or even something  
20 completely different from the compatible class of  
21 those. But right now it is a B, and your assessment is  
22 correct. If you don't like it, you know, that would be  
23 an area you might want to comment on.

24 MR. FERCHEN: Finally, I know it is late  
25 and we are all ready to go, but I wanted to respond a

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1 little bit. You know, we certainly would strongly urge  
2 the commission to reclassify, and I think that what is  
3 lost in little bit of discussion of nanocuries, or  
4 whatever, is that any time there is conversation about  
5 classification, there are two things that are a piece  
6 of that; both implicitly and explicitly. One of those  
7 is the sheer hazard right now, and the other one is the  
8 duration of that.

9 And I want to point out a couple of things  
10 from the very part 61 document of the federal registry.  
11 You give some examples in the background part. There's  
12 a part that says, "For example, Class C waste may  
13 require greater depth" -- you know, I am going to skip  
14 a little part -- "To prevent inadvertent intrusion for  
15 500 years."

16 There's a part below that, that says, you  
17 know, "The commission also noted that containers should  
18 be designed to maintain identity over 300 years for  
19 approximately the time required for Class B waste to  
20 decay to innocuous levels."

21 So we have discussions about how C is for  
22 500, B is for 300, yet at the same time, we're supposed  
23 to wrap our head around the notion that waste hazard  
24 is for millions of years only. And so I think our  
25 biggest argument for why depleted uranium can't be

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1 treated as Class A waste is because of the sheer  
2 duration of the hazard.

3 It is not that it enters Utah today and is  
4 dramatically different than what the company already  
5 takes out. That is not true. No one request makes  
6 that argument. But when you are making a decision  
7 about long-term disposal, you have to think of  
8 duration. I think that has to be at the heart of  
9 what -- why the commission must reclassify it and should  
10 be a strong piece of that. So, thank you.

11 MR. CAMERON: And, Jeremy, does anybody on  
12 the phone have anything else to say?

13 PHONE OPERATOR JEREMY: Once again, if you  
14 would like to ask a question or make a comment, please  
15 press star one and record your name at the prompt. There  
16 are no questions or comments in the queue.

17 MR. CAMERON: Okay. Thanks, Jeremy.  
18 The other category, anybody have anything else they  
19 want to say tonight?

20 MR. GARNER: Mike Garner with the  
21 Northwest Compact. As part of the evaluation of the  
22 new rules, do you look on how it will impact future site  
23 developers?

24 MR. ESH: I am not sure if I have an answer  
25 to that, if we looked at how we developed -- how it would

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1 impact future sites. So we looked at existing sites  
2 and the cost to them. I think the cost to new sites  
3 would be similar. Of course, they would have to do the  
4 whole analyses, not just increment their analyses  
5 because, you know, say Washington, for instance, has  
6 existing analyses that compares it.

7 So it would be similar but we  
8 didn't -- actually, we did in the regulatory analysis.  
9 I think they added in the cost of some new sites, that  
10 they said over this time period, ten years or 20 years,  
11 we are going to guesstimate there might be "X" new  
12 sites, so, of course, for new sites would be "Y." So  
13 now my brain is clicking around, that is in regulatory  
14 analysis.

15 MR. GARNER: My concern isn't the cost.  
16 It is the public acceptance required for site  
17 development.

18 MR. ESH: Okay.

19 MR. CAMERON: Thanks for that, Mike. Do  
20 you want to talk a little bit about this 434-page  
21 document?

22 MR. ESH: Right. Real quick, you know, it  
23 is a part of our process. It doesn't provide  
24 regulatory requirements, but it does provide  
25 descriptions of approaches the staff would find

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1 acceptable if we were reviewing the materials for a  
2 low-level waste facility. And then whatever our  
3 agreement states does their licensing process for, say,  
4 a low-level waste disposal waste facility, NRC reviews  
5 the agreement states from time to time in what is called  
6 our in-prep process.

7 We will look at the guidance document that  
8 the agreement states may have used when they may have  
9 performed their review. They are not forced to use our  
10 guidance documents, but we do look to see that they  
11 have -- that they use some sort of guidance when they  
12 do their review. They can generate their own guidance  
13 documents if they would like.

14 So this is a 434-page document, 18 pages  
15 of references. We cover the use of other NRC guidance  
16 documents. They have a lot of example tables and  
17 figures. It's not just 434 pages of words. They have  
18 some useful appendixes stability analyses. The  
19 document number on NRC's document management system is  
20 found down here on the side. It is about 450 pages,  
21 and you have about 45 days left until July 24th. So  
22 if you want to read ten pages each day with your morning  
23 coffee, then you can make your comments on July 24th.

24 MR. CAMERON: All right, thank you.  
25 Thank you very much, David. Thank all of you. Rusty,

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1 we will go to you for a final comment here.

2 MR. LUNDBERG: Again, Rusty Lundberg. As  
3 far as this guidance document, I haven't looked at it  
4 in depth yet, but does it relate somehow or draw on NUREG  
5 15-75?

6 MR. ESH: 15-73.

7 MR. LUNDBERG: 73?

8 MR. ESH: Right. It does draw on it some,  
9 and it does indicate, say, if there is information that  
10 is on the same topic as, say, NUREG 15-73, it will  
11 indicate where this should supplement it, or this would  
12 override it, basically. So there is a cross block  
13 between this and other NRC guidance documents, but as  
14 you are well aware, there are all sorts of NRC guidance  
15 documents on all sorts of topics.

16 We couldn't necessarily rewrite all of  
17 those at this stage, but something we discussed similar  
18 to our decommissioning, program whether we need to do  
19 a consolidated guidance for low-level waste at some  
20 point.

21 MR. CAMERON: Thank you, David, very good.  
22 Drew.

23 MR. PERSINKO: Thanks, Chip. Thanks,  
24 Dave. I want to thank all of you as well for all of your  
25 good questions and comments. Early on, I put up a slide

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1 with my representation about the objective of the  
2 meeting. I said three objectives. I said one is  
3 discuss the proposed revisions of the rule; one is to  
4 encourage submittal of comments; and I also said  
5 another one is that we would try to answer your  
6 questions as best we could, and also receive comments  
7 tonight that will be on the transcribed -- the  
8 transcription.

9 I think we have done all that. I think we  
10 have done all that quite well. So I just want to say  
11 I thank you very much. We had a good turnout. There  
12 were a wide variety of comments, and normally, I like  
13 to go over a couple of comments, just to refresh our  
14 memories a bit. Normally, I try to package them up and  
15 group them together, but they were kind of a lot of  
16 different areas, so I didn't really put them into bins  
17 and package them.

18 A few comments I will mention again, just  
19 to refresh our memories. Early on, Rusty stated that  
20 he would like us to consider what has already been done  
21 in Utah as we go forward with the finalization of the  
22 rule. That was an early comment that Rusty made, and  
23 we will do that. Let's see, there was also a  
24 comment -- I am not going to go over every comment, but  
25 a couple of them; one also that kind of caught my

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1 attention was there was a statement made by, I think,  
2 some -- that it appears -- this is just a paraphrase,  
3 it appears that the rule is really an opening of what  
4 can go into a disposal site, and that gave the  
5 impression that anything can go -- like it's  
6 willy-nilly what can go into a disposal site the way  
7 that question was stated, and I hope you got the  
8 conclusion now after Dave talked that it is not  
9 willy-nilly. There is a lot of thought and a lot of  
10 analysis and a lot of planning of what goes into what  
11 would be allowed into an acceptable disposal site,  
12 given all the analyses that Dave has presented. It is  
13 not just -- so I didn't want people to walk away  
14 thinking, well, rulemaking is basically just a  
15 willy-nilly approach as that one statement -- one could  
16 interpret that statement that way, so I just want to  
17 clear that up.

18 Dave talked about performance assessment  
19 as one of the analyses of determining whether a site  
20 is appropriate of accepting certain kinds of waste.  
21 Another statement that was made by Matt, I thought it  
22 was a good observation, he said we rely on technical  
23 analyses to the point where it is hard for maybe  
24 nontechnical public to understand the analyses. And  
25 that is true but is not just true in this field. It

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1 is true overall in any technical field. You know, you  
2 can point to other areas. You can point to the design  
3 of high-rise buildings for earthquake. You can point  
4 to design of whatever.

5 But, you know, as we progress in our  
6 technical understanding of issues and items, we expand  
7 the knowledge base, and we try to get -- do our analyses  
8 better and fine tune them and make them better. And  
9 so, they are very complicated. I mean, it is not that  
10 the most nontechnical members of the public really have  
11 trouble understanding that and not is in just this area;  
12 I am saying it is typical of all technical analyses.

13 Dave said something to the effect of that  
14 is why the farmer is here, to chase away the foxes.  
15 Well, that is sort of true. I mean, that is one of the  
16 reasons that regulatory agencies exist, like the NRC and  
17 other regulatory agencies, is because we do have a lot  
18 of people with variety of expertise who do understand  
19 those kind of documents and are able to regulate based  
20 on our understanding of the document.

21 So I just wanted to mention that that is  
22 unfortunate that we can't put something so technical  
23 to -- for members of the public, but that is the desire.  
24 It is a trick, a trick for the technical people to try  
25 to explain to nontechnical members of the public a very

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1 technical subject, which is really what Dave was doing  
2 tonight as he was speaking.

3 Let me see, another comment; we also had  
4 a lot of comments tonight in the data category. We had  
5 a lot of comments throughout the evening about  
6 classifications between uranium. There was a lot of  
7 discussion about depleted uranium. So there was one  
8 grouping of comments that I guess we could make that  
9 had to do with surrounding depleted uranium and the  
10 characteristics of the depleted uranium.

11 So those were the comments and the  
12 questions that kind of jumped off the page at me. So  
13 first of all, let me also -- I want to, I want to -- I  
14 think Dave did a really nice job, you know, explaining  
15 the rule. He took a very complicated subject and tried  
16 to explain it at a level that everybody could  
17 understand, whether you are technical or not. Now, I  
18 think he did a good job at that, but I guess it is up  
19 to you whether he did or he didn't, but I think he did,  
20 and so that is good. I think he has a knack of doing  
21 that kind of explanation.

22 Also at the beginning, I said in is our 7th  
23 and final public meeting, so Dave did most of the  
24 presentations of those seven. I think he missed two,  
25 I think, maybe. So I think, you know, if you want to

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1 talk about somebody who may be happy that the Part 61  
2 meetings are over, I think Mr. Esh over there, Dr. Esh  
3 might be one of them. So Dave had to stand to do what  
4 he did tonight five times. So congratulations to Dave.

5 So where do we go from here? Path forward;  
6 as I said in my opening remarks, please submit your  
7 comments. We -- as Steve, said the comment period  
8 closes on July 24th, I think he said. We did hear  
9 tonight that some people, some stakeholders, plan to  
10 request an extension of that, and we will look at the  
11 extension and consider it when we receive it.

12 So the normal process for rulemaking now  
13 is we review the comment, we bin them, try to group them  
14 so we can respond to comments as in groups, rather than  
15 one by one because there is usually quite a few  
16 comments. So we will look at the comments. We will bin  
17 them. We will respond to them. Then we will work with  
18 the commission to draft up a final rule and work with  
19 the commission to finalize the rule.

20 So I do want to thank everybody for  
21 attending. I especially want to thank the students  
22 from Brigham Young and University of Utah. It is  
23 always nice to have students in an audience.

24 SPEAKER: Utah State.

25 MR. PERSINKO: Oh, Utah State, excuse me.

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1 I apologize for that faux pas. Thank you very much.  
2 Always nice to have students in the audience because  
3 remember, all of us people up here, we were your seat  
4 at one time. So thank you very much.

5 MR. CAMERON: Just one clarification is  
6 that because all the comments that came in were on the  
7 record, you have received the request for extension.  
8 Okay?

9 MR. PERSINKO: Correct, that is right.

10 MR. CAMERON: But I it may be written  
11 comment but you have --

12 MR. PERSINKO: I think that is right, you  
13 are right.

14 MR. CAMERON: Thank you.

15 MR. PERSINKO: Do you have anything more?

16 MR. CAMERON: I think that is good.

17 MR. PERSINKO: Thank you very much. We  
18 will conclude the meeting.

19 (The meeting was concluded at 9:31 p.m.)  
20  
21  
22

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