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**NUCLEAR REGULATORY COMMISSION**

Title:                   Public Meeting to Discuss 10 CFR Part 61:  
                              Low-Level Radioactive Waste Regulatory  
                              Management Issues

Docket Number:   (N/A)

Location:           Bethesda, Maryland

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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PUBLIC MEETING

TO DISCUSS 10 CFR PART 61:  
LOW-LEVEL RADIOACTIVE WASTE  
REGULATORY MANAGEMENT ISSUES

+ + + + +

THURSDAY,

JULY 19, 2012

+ + + + +

The public meeting was held at the  
Bethesda North Marriott Hotel & Conference Center,  
Salons G & H, at 8:00 a.m., CHIP CAMERON,  
Facilitator,  
presiding.

PANEL MEMBERS PRESENT:

CHIP CAMERON, Facilitator

Topic 1: Time of Compliance/Foreseeable Future:

MICK APTED, INTERA

PAUL BLACK, Neptune and Company

DAVE ESH, NRC/FSME

RUSTY LUNDBERG, State of Utah

TIM McCARTIN, NRC/NMSS

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1 ROB RECHARD, Sandia National Laboratories\*

2 LINDA SUTTORA, DOE/EM

3 Topic 2: Waste Acceptance Criteria:

4 BRAD BROUSSARD, State of Texas

5 JHON CARILLI, US DOE/NNSA/Nevada Site Office

6 CHRIS GROSSMAN, NRC/FSME

7 DAVID KOCHER, SENES Oak Ridge, Inc.

8 JOHN LePERE, WMG, Inc.

9 TOM MAGETTE, EnergySolutions

10 JOHN TAUXE, Neptune and Company

11 Topic 3: Public Policy:

12 RALPH ANDERSEN, Nuclear Energy Institute

13 LISA EDWARDS, EPRI

14 EARL FORDHAM, Low-Level Waste (LLW) Forum

15 ED MAHER, Health Physics Society\*

16 ARJUN MAKHIJANI, Institute for Energy and

17 Environmental Research

18 JENNIFER OPILA, Conference of Radiation Control

19 Program Directors (CRCPD)

20 CHRISTOPHER THOMAS, HEAL Utah

21

22

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1     PRESENT:

2     BOBY ABU-EID, NRC/FSME

3     OLEMEKU ALEDAN, NRC/FSME

4     GEORGE ALEXANDER, NRC/FSME

5     MIGUEL AZAR, Exelon Corporation\*

6     SVEN BADER, Areva\*

7     CYNTHIA BARR, NRC/FSME

8     JERRY BONANNO, NEI\*

9     DORIS BRADSHAW, Military Toxics Project\*

10    STEPHANIE BROCK, State of Kentucky\*

11    WARD BRUNKOW, URENCO USA

12    TED BUCKNER, Southeast Compact\*

13    TISON CAMPBELL, NRC/OGC

14    LARRY CAMPER, NRC/FSME

15    MARK CARVER, Entergy\*

16    S.Y. CHEN, ANL\*

17    TOM CLEMENTS, Friends of the Earth\*

18    FRANK COCINA, US DOE/NNSA/GTRI

19    SUSAN CORBETT, Sierra Club Nuclear Issues Action

20            Team\*

21    CARLOS CORREDER, US DOE

22    BILLY COX, EPRI

23    ABIGAIL CUTHBERTSON, DOE/NNSA/Office of Global Threat

24            Reduction

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8 ARNOLD EDELMAN, DOE/EM\*  
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11 HENRY ERBES, DOE/EM\*  
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16 ELIZABETH FOLTZ, State of Kentucky\*  
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4     JOHN GREEVES, JTG Consulting

5     HARRY GREGORY, South Carolina Sierra Club\*

6     KAREN HADDEN, SEED Coalition\*

7     JAMES HANLEY, EPA\*

8     RICHARD HARPER, NRC/OGC

9     ANN P. HARRIS, We The People, Inc. of the U.S.\*

10    WILLIE HARRIS, Exelon Corporation\*

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16    BRIAN WOOD, New York University

17    MARK YEAGER, South Carolina Department of Health and

18            Environmental Control (SCDHEC)\*

19    MICHAEL ZITTLE, Oregon State University\*

20    MING ZHU, DOE/EM\*

21    \*Participating via telephone/webinar

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

(8:11 a.m.)

FACILITATOR OPENING COMMENTS

MR. CAMERON: If we could get everybody to come in and take their seats, we'll get started. Good morning, everyone.

(Whereupon, there was a chorus of "Good morning.")

MR. CAMERON: At least we know everybody is awake out here, right?

I wanted to welcome you to the public meeting on the development of an NRC rulemaking on the management of low-level radioactive waste. My name is Chip Cameron. And it's my pleasure to serve as your facilitator for today's meeting. And in that role, I'll try to help all of you to have a productive meeting today.

I just wanted to take a couple of minutes to talk about meeting process issues so that all of you will know what to expect today. And I wanted to tell you a little bit about the format for the meeting, just go over a couple of simple ground rules and give you an idea of what the agenda will be for today's meeting.

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1 In terms of format, the NRC is going to  
2 use a somewhat different format than has been used  
3 for our past meetings on this rulemaking. And we  
4 have three panels of experts today. And you can see  
5 our first panel is already up here. And we're going  
6 to go to them in a few minutes for introductions and  
7 discussion. But each panel will address a different  
8 issue, issues that the NRC felt were particularly  
9 critical for this rulemaking.

10 The first panel is going to be on time  
11 of compliance, second panel on waste acceptance  
12 criteria, and the third panel is on public policy  
13 issues related to this rulemaking.

14 The idea of the panels is to hopefully  
15 provide the NRC with a somewhat richer form of data  
16 than you usually get in other types of meetings where  
17 there are just individual comments going into the NRC  
18 staff. And panels offer an opportunity for a  
19 dialogue on the issues where each panelist not only  
20 gives their perspectives on the issues under  
21 discussion but, more importantly perhaps, they give  
22 their perspectives on what other people on the panel  
23 have said.

24 So the idea is to have a dialogue, to

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1 have a discussion. And each panel will have an NRC  
2 staff person at the table. Dave Esh is the NRC staff  
3 person for the time of compliance panel, who will tee  
4 up the issue forward for you.

5 Each panel also has been provided with a  
6 list of discussion questions on the topic. And the  
7 idea of the discussion questions is to stimulate  
8 discussion. We're not going to go rigidly through  
9 each question, but those will be put up on the screen  
10 for you. So you'll see those, and you'll know what  
11 they are.

12 And I'm going to have the panel. We're  
13 going to try to follow discussion threads so that we  
14 don't have a lot of unrelated monologues, what I call  
15 unrelated monologues. So I'm going to try to help  
16 the panel to follow those particular discussion  
17 threads.

18 In terms of ground rules, in terms of  
19 the panelists, when we get to the panel, I'm going to  
20 ask you to introduce yourself and to identify an  
21 issue that you think is particularly important on the  
22 topic that you're going to be discussing. And it  
23 could be one of the questions, one of the discussions  
24 questions, that had been provided, it could be a

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1 modified version of that, or it could be something  
2 completely different. But I want to make sure that  
3 we discuss what is important to you. And we'll start  
4 building an agenda with those introductions that you  
5 give.

6 And, as I mentioned, we will try to  
7 follow the discussion threads. And in order to keep  
8 things organized, I think, even though there's only a  
9 few of you, if you want to talk, if you could just  
10 turn your name up like that? And that's also going  
11 to help get what I call a clean transcript.

12 We do have our court reporter, Kayla,  
13 with us. And if we manage the discussion through the  
14 name tents, we'll usually hopefully have only one  
15 person speaking at a time and Kayla will know who  
16 that is.

17 And, as I mentioned, Dave Esh is here  
18 for the first panel. Chris Grossman is going to be  
19 with the waste acceptance panel when they get up  
20 here. And we're going to be having the panel build  
21 their own agenda with the help of the questions that  
22 have been provided. But I am also periodically  
23 during the discussion going to go to Dave or Chris  
24 and say, "Is there anything that you need to know

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1 that you haven't heard so far?"

2 The NRC is particularly concerned about  
3 the technical underpinnings on these topics, time of  
4 compliance, waste acceptance criteria. And there's  
5 not always a bright line between the technical  
6 underpinnings and what the NRC is calling the public  
7 policy issues. We have a public policy panel at the  
8 end of the day.

9 But I wanted to assure the panelists on  
10 the time of compliance and waste acceptance criteria  
11 panels that don't worry about straying or getting  
12 into what might be public policy issues. Let's have  
13 a discussion of what you think is important. And I  
14 will try to keep track of that so that the public  
15 policy panel, if they want to revisit those public  
16 policy issues that have been discussed in the first  
17 two panels, that's free game to go and talk to those  
18 particular issues. And I just wanted to make that  
19 clear to everybody.

20 Some issues that are brought up may not  
21 fit squarely into what the panel is talking about.  
22 So I'll just keep a list of those on a parking lot  
23 back there. And we'll come back and address those as  
24 necessary.

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1           Now, there are a lot of moving parts to  
2 this particular meeting, the three panels -- okay? --  
3 all of you in the audience. But we also have  
4 interested people coming in over the phone lines.  
5 And we also have people who are going to be joining  
6 us through a webinar. They're going to be looking at  
7 what's on the board online. They're going to be  
8 viewing this. And after each panel, we're going to  
9 have an opportunity for all of you in the audience,  
10 all of you on the phones, the internet to ask  
11 questions of the panel, to make comments. And so we  
12 will be trying to get to all of you.

13           And I just have to apologize in advance  
14 as a facilitator to all of you because I know we are  
15 not going to be able to get to everybody, audience,  
16 phone, whatever, who has a question or comment that  
17 is already going to be pretty tight to just get  
18 everything in on each panel. So apologies for that.

19           And keep in mind that I think Larry  
20 Camper in a few minutes will be talking about this,  
21 but you will have the ability to submit comments to  
22 the NRC. So if you don't get your question in or  
23 comment today, at least there is a vehicle for doing  
24 that.

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1 I would ask all of the panelists to be  
2 crisp and economical with their discussion and also  
3 all of you in the audience and on the phones and  
4 crisp and economical, which means short I guess, but,  
5 you know, it's hard to do in these things. But we  
6 can try. We can try to do that.

7 We do have a lead-off speaker that I'm  
8 going to introduce who is the Director of the  
9 Division of Waste Management and Environmental  
10 Protection at the NRC. And that is Mr. Larry Camper  
11 right here. Larry is going to give you an overview  
12 of the process, the process for this rulemaking, so  
13 you understand where this fits into what the NRC is  
14 doing.

15 We'll give you an opportunity to have a  
16 few questions for Larry, but I want to limit that to  
17 process issues because we're going to get into the  
18 substantive issues with the panel. And Larry usually  
19 when you see anything written with his name on it, it  
20 has CEP after it. That's probably a conversation you  
21 can have with Larry at the bar tonight after the  
22 meeting is over. I know he'll be glad to discuss  
23 that.

24 I just want to thank you all for being

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1 here, thank you for joining us on the phones. Larry,  
2 I'll leave it to you to take over.

3 NRC WELCOME & OVERVIEW/QUESTIONS

4 MR. CAMPER: Good morning. Can you hear  
5 me okay? Good? Sorry to have such distance between  
6 us first thing in the morning, but we'll try to close  
7 the gap during the day as it marches on. However,  
8 being behind the NRC shield may be a good thing  
9 because Dornsife told me he was in a bad mood today.  
10 So maybe the shield will help. It won't do a thing.  
11 Right, Bill?

12 Good morning. Thanks for being here. I  
13 should mention this is our third public meeting  
14 around the site-specific performance assessment  
15 rulemaking as well as a conversation about Part 61 in  
16 general, sometimes referred to as perhaps a  
17 comprehensive revision.

18 As I look out, I see a lot of friends  
19 and familiar faces, colleagues. Many of you have  
20 been in all of these meetings. Thank you again for  
21 being here. I see some new faces, which is always  
22 good.

23 I'll try to go through a few things just  
24 to kind of get everyone on the same level playing

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1 field so at least we have a current body of knowledge  
2 to facilitate our discussion today.

3 Chip went through the format. I think  
4 it's a very good format. In the previous two  
5 meetings, we had sort of presentations by the staff  
6 with opportunities for general discussion and input  
7 by the public. This involves three panels of experts  
8 with dialogue, opportunities built in. So we look  
9 forward to the input. And we know it is going to be  
10 a very useful day and will help us as we proceed on  
11 Part 61.

12 In terms of the site-specific analysis  
13 rulemaking, we are conducting a limited effort to  
14 amend 10 CFR Part 61. The idea here is to introduce  
15 into Part 61 a requirement to conduct a site-specific  
16 performance assessment. And the approach we are  
17 using we believe is consistent with the 1995 PRA  
18 policy statement issued by the Commission as  
19 probabilistic risk assessment for the record. And it  
20 grew out of SECY-10-08-0147, which grew out of  
21 direction from the Commission back in 2005, actually,  
22 2005-2006, to evaluate our regulatory structure with  
23 regards to the potential for disposal of large  
24 quantities of depleted uranium, which actually grew

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1 out of a Commission direction following the LES  
2 adjudicatory proceedings. So the staff developed a  
3 paper, the 08-0147; did a technical analysis around  
4 the disposal of large quantities of depleted uranium;  
5 shared some options with the Commission; and then  
6 received direction from the Commission in the staff  
7 requirements memorandum associated with that 08-0147.

8 The staff did provide and published back  
9 in I think November-December of last year some  
10 proposed language. It wasn't a proposed rule. It  
11 was the staff's thinking about language that could  
12 become embodied within a proposed rule.

13 And within that language, we put it out  
14 as an opportunity to provide the public with  
15 additional input. And so, in doing that, it was very  
16 interesting because the staff's approach at that time  
17 included using a 20,000-year period of compliance  
18 within a two-tiered approach and then to evaluate  
19 beyond 20,000 years up to peak dose.

20 The 20,000-year number we felt had a  
21 very valid scientific basis. And we can answer that  
22 question further if you have an interest at this  
23 stage of the game. I won't belabor it now, but we  
24 thought it had a very valid scientific basis.

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1           However, the Commission decided to  
2 provide the staff with some additional direction in  
3 January of this year. And, with that additional  
4 direction, as we will talk more about during the day,  
5 the 20,000-year proposed by the staff in its draft  
6 preliminary language went away. It was pretty clear  
7 the Commission was giving us some policy direction  
8 and wanted to pursue a different pathway. We'll talk  
9 about those directions in more detail today. So the  
10 20,000 years went away. We're not going to discuss  
11 it anymore other than to just serve as background at  
12 this moment in time to get everybody thinking about  
13 how we got where we are.

14           Also in the staff's preliminary draft  
15 rule language, we did bring to bear in 61.42 a  
16 500-millirem total effective dose equivalent limited  
17 to an intruder. Part 61 today has no limit dose  
18 limit for the intruder. It was contained within the  
19 draft environmental impact statement for Part 61 but  
20 did not make it to the final environmental impact  
21 statement. And the environmental impact statement at  
22 that time actually served as a regulatory impact  
23 analysis that we would refer to today.

24           There were some other changes that the

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1 staff imposed in that language. For example, there  
2 were some changes to the concept section in 61.7 as  
3 well as some other necessary conforming changes.

4 I mentioned an additional Commission  
5 direction. There were four assignments that the  
6 Commission gave us. You see those here. And the  
7 Commission asked us to specifically go seek  
8 stakeholder input around these four specific  
9 directions. Those directions were to seek  
10 flexibility to use the current International  
11 Commission on Radiological Protection in ICRP dose  
12 methodologies that can be done today and is done via  
13 an amendment request to use a two-tiered approach or  
14 evaluate a two-tiered approach, tier 1 having a  
15 compliance period covering a reasonably foreseeable  
16 future and tier 2 a longer period based on site  
17 characteristics and peak dose to a designated  
18 receptor that is not viewed as being a priori; in  
19 other words, it would be not across the board. It  
20 would be on a site-specific basis considering site-  
21 specific criteria.

22 Flexibility to establish site-specific  
23 waste acceptance criteria based on the results of the  
24 site's performance assessment and intruder

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1 assessment, that as a practical matter in the staff  
2 view introduces an "or" pathway within the Part 61  
3 regulations, the possibility of an "or" pathway to  
4 use either the waste classification tables or a waste  
5 acceptance criteria approach and to seek a balance  
6 between the federal and state government in terms of  
7 alignment and flexibility. There was a desire to see  
8 alignment around the basic safety requirements that  
9 would be needed in a performance assessment as well  
10 as providing flexibility to the agreement states for  
11 implementation.

12           Ultimately, of course, that will play  
13 itself out in the compatibility assignment that gets  
14 associated with the rule that we'll publish next  
15 summer. And there's a process, of course, for doing  
16 that which is well-established.

17           This particular slide shows you the  
18 interactions that we have had thus far around this  
19 Part 61 effort. We did have a meeting in March  
20 following the WM symposium meeting, WM-12 in Phoenix.  
21 We thought that was a good opportunity because there  
22 were a lot of the practitioners who were attending  
23 that meeting. And it afforded an opportunity to draw  
24 upon that particular group of people.

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1           There was the low-level waste spring  
2 forum meeting in San Francisco, which was a very  
3 fruitful discussion. We also provided a presentation  
4 at the CRCPD OAS annual meeting in Orlando, a good  
5 opportunity to communicate with our state colleagues,  
6 our fellow regulators in the states.

7           We had a public meeting on the 15th of  
8 May in Dallas, Texas. It was the second public  
9 meeting. We decided to have it in Texas because of  
10 the new facility, the WCS facility, in Andrews,  
11 Texas.

12           We also participated in the EPRI annual  
13 meeting in Tucson and provided a day-long workshop  
14 opportunity for the EPRI participants to provide  
15 input. That was a significant utility because these  
16 are the practitioners. These are the folks that are  
17 putting the waste in the cans every day. And so they  
18 obviously have a valuable perspective to provide.

19           Then last, but not least, is our third  
20 public meeting here today in Rockville as we try to  
21 wind down our interactions with the public at this  
22 moment in time around this particular rulemaking  
23 effort.

24           Some take-aways along the way from the

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1 meetings that we have had -- and this is information  
2 that I am providing in the basic sense. This is not  
3 any foregone conclusion or opinion by the staff, but  
4 it's what we have heard. So we are just playing back  
5 some of the key take-aways we have heard in these  
6 meetings.

7           There was a sense that there needs to be  
8 a Part 61 rulemaking crosswalk. And what that means  
9 as a practical matter is there were a lot of changes  
10 proposed in the staff's draft preliminary language.  
11 And, yet, you also got specific Commission direction  
12 to evaluate those four points that I shared with you  
13 a moment ago.

14           So the idea was, well, what survived?  
15 You had the specific direction to evaluate four of  
16 the things. Did the rest of it survive? And so what  
17 we did was to post on the website the language that  
18 was in the staff's preliminary draft language that  
19 did survive. For example, the 500-millirem intruder  
20 dose survived. The other changes that were being  
21 proposed by the staff did survive. We received no  
22 information or direction from the Commission that was  
23 contrary to the other contents and in the proposed  
24 staff language.

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1           And then also it helps to facilitate a  
2 comparison between the existing Part 61 and the  
3 changes that may take place or are under  
4 consideration at least. There was a sense that there  
5 needed to be expanded coordination with the agreement  
6 states. We have been doing that.

7           We have had conference calls with the  
8 agreement states. Rusty Lundberg from the State of  
9 Utah, of course, is here today on the first panel.  
10 And so we have been interfacing more with our  
11 colleagues from the agreement states. And maybe  
12 during the course of the discussions today, some of  
13 the agreement states' views will be factored into the  
14 dialogue that we have here today.

15           There were several instances in both of  
16 the previous two public meetings and, actually, also  
17 in the meeting that we had last year in October in  
18 Albuquerque, which was dealing with the staff's  
19 ongoing work to update the branch technical position  
20 on concentration averaging, that there wasn't a need  
21 to pursue SECY-10-0165 at this time.

22           And, just to refresh everybody's memory,  
23 10-0165 is a paper that dealt with the possible  
24 comprehensive revision to Part 61. And that paper

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1 contained five options. The general sense that has  
2 come up several times is you don't need to do that.  
3 If one looks at current Commission direction to do  
4 the site-specific performance assessment rulemaking,  
5 if one looks at current Commission direction to risk-  
6 inform the waste classification tables, there is no  
7 need to do or consider any further a comprehensive  
8 revision to Part 61.

9 Some other things that came up were the  
10 suggestion that we may want to update the waste  
11 classification tables in 61.55 as part of this  
12 rulemaking effort. We may want to extend the  
13 duration of institutional controls from the current  
14 100 years in Part 61 to 300 years as part of this  
15 rulemaking effort to revisit Part 20, appendix G,  
16 which is the requirement for the completion of the  
17 shipping manifest for disposal low-level waste.  
18 There is an issue involving the so-called phantom  
19 four isotopes with carbon-14, tritium, tech-99, and  
20 iodine-129 that probably will end up being  
21 over-reported as a result of that existing  
22 requirement. And the idea here was again deal with  
23 that issue as part of this ongoing rulemaking effort.

24 GTCC, disposal of greater than Class C

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1 waste, I think most of you probably understand where  
2 we are in terms of the Department of Energy,  
3 currently developing its environmental impact  
4 statement around the disposal of greater than Class C  
5 waste, but there was a sense that this was an  
6 opportunity to do something about developing that  
7 regulatory criteria as part of this rulemaking and  
8 then, last but not least, when it's low-activity  
9 waste disposal, that's known by many things, BRC,  
10 below-regulatory concern, sometimes it has been  
11 referred to; lower-end concentrations; low-activity  
12 waste, but the idea is there is an amount of  
13 low-activity waste at the lower end of Class A, which  
14 has no floor that might be treated differently. And  
15 perhaps this rulemaking is an opportunity to deal  
16 with that issue as well, which has bounced around for  
17 years.

18 In terms of other take-aways, there was  
19 some concern expressed by at least one or two  
20 stakeholders that the NRC is not consistent with  
21 current federal radiation guidance that's in Report  
22 13 dated 1999. And it really accounts for how do you  
23 account for risk? Do you account for it in terms of  
24 health risk versus a dose-based approach?

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1           There was a preference for seeing the  
2           availability of draft rule text and guidance being  
3           together. We put out the draft language that I  
4           talked about before. And the issue is when we put  
5           out the language, if we put out the language, again,  
6           would guidance be available so that it could be  
7           looked at completely?

8           There was a sense by some that there  
9           needs to be a separate regulatory treatment for the  
10          disposal of depleted uranium having separate and  
11          distinct disposal criteria around depleted uranium.  
12          And then there was also some interest expressed in  
13          conducting or considering the manner in which the  
14          Department of Energy conducts their performance  
15          assessments under their order 435.1.

16          And we were to have a DOE representative  
17          here. Oh, yes. Linda's here. Very good. So we  
18          have DOE on the panel. I was looking for Marty,  
19          Linda. And you'll do just fine. Thank you. We have  
20          DOE on our first panel. So we took that particular  
21          concern to heart. And we have had a lot of dialogue  
22          with our colleagues at DOE. We will continue to do  
23          so as we go through this process.

24          In terms of today's focus, Chip in his

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1 opening comments pointed out that the process today  
2 is to use three expert panels focused upon particular  
3 topics that the staff really needs input on as we  
4 proceed to finalize the rule.

5 Time of compliance for low-level waste  
6 facilities, clearly not a simple topic. Is it 1,000  
7 years? Is it 10,000 years? Is it truly  
8 performance-based following the language that was in  
9 the Commission direction in identifying a reasonably  
10 foreseeable future on a state-by-state basis? What  
11 is the number? What is the number? Those are the  
12 three options that often get bantered about: 1,000  
13 years, which is consistent with the DOE approach;  
14 10,000 years, which is discussed in our NUREG-1573,  
15 which is the performance assessment document for  
16 low-level waste; or no number and let it be  
17 determined on a state basis but let it address the  
18 reasonably foreseeable future. We really do look for  
19 some valuable input on this particular question.  
20 It's a tough question.

21 Implementation of the waste acceptance  
22 criteria. We put together some questions. I think  
23 there are nine or ten questions around this topic.  
24 It's easy to say "add an "or" pathway for waste

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1 acceptance criteria". The devil is in the details.  
2 So we hope to get some input around those details and  
3 what kind of language might be necessary in Part 61  
4 if there were to be a provision for an alternate  
5 pathway involving a WAC or waste acceptance criteria.

6 Public policies issues related to Part  
7 61 revisions. How much of this should be in the  
8 rule? How much of it should be in guidance? What  
9 about compatibility? How important is it that there  
10 be a consistent approach across the United States in  
11 the conduct of performance assessments? Yet, the  
12 minute you ask that question, you also have to think  
13 about compatibility, which is a terribly important  
14 part of our ingrained regulatory process. So we look  
15 forward to some input and some dialogue around those  
16 kinds of questions on this particular subject.

17 In terms of next steps for the  
18 rulemaking, we had put out an FRN that calls for  
19 completion of input of public comments by 31 July.  
20 We have been getting some public comments. And so we  
21 look forward to getting that.

22 We are obligated to develop our  
23 regulatory basis document by September the 30th. So  
24 that's just around the corner.

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1           This is important. I think you'll want  
2 to know this. We are going to publish again in  
3 December the draft proposed rule language. The draft  
4 proposed rule language will be out again in December.

5           But you will see the language again  
6 because there are a number of changes that have taken  
7 place from what you saw before. The rulemaking  
8 package is due to the Commission in July of 2013.  
9 There will a public meeting following that  
10 information being provided to the Commission at that  
11 time. In that public meeting, we'll be able to talk  
12 about the proposed rule language as well as the  
13 guidance that accompanies that proposed rule.

14           We also have the Commission direction  
15 that is on our plate right now. Can you go to the  
16 next slide, Don?

17           THE OPERATOR: Are you ready for  
18 questions at this time

19           MR. CAMERON: No.

20           MR. CAMPER: We also have a Commission  
21 direction -- good?

22           MR. CAMERON: No. You're fine. I just  
23 wanted to tell our operator, Bridget, we're still  
24 discussing things here in Rockville. I'll give you a

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1 cue when we're going to go to the phones. Okay?

2 THE OPERATOR: Thank you.

3 MR. CAMPER: Okay. In terms of other  
4 Commission direction, one of the things that makes  
5 all of this very complicated is there are really a  
6 lot of moving parts going on at the same time. There  
7 are three other things I think that we will be  
8 mentioning so, again, we're all on the same sheet of  
9 music.

10 We do have direction from the Commission  
11 to budget for risk-informing the waste classification  
12 tables. The staff has always taken that assignment  
13 as if the Commission wanted to proceed to  
14 risk-informing the waste classification tables. We  
15 are currently budgeted for that process to commence  
16 in F.Y. '15. We estimate that it will probably take  
17 three to four years to do that. And it will be quite  
18 challenging.

19 We also have an assignment that came out  
20 of the same assignment, which was part of the SRM  
21 from 08-0147, to determine the classification of  
22 depleted uranium. And that also would commence in  
23 the F.Y. '15 time frame as well as taking the  
24 risk-informing the waste classification tables. And

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1 clearly that will be complicated. It will be  
2 controversial. And, again, we think it will take  
3 three to four years.

4 The important thing is that the site-  
5 specific rulemaking that we are working on today will  
6 ensure that depleted uranium is disposed of in a  
7 manner that is adequate to protect public health and  
8 safety, regardless of what class of waste it ends up  
9 being. It may remain Class A. I don't know about  
10 that. It may be something different. But,  
11 regardless, we'll be disposing of this material in a  
12 manner that is adequate to protect public health and  
13 safety. It is already happening and will certainly  
14 happen even more so as a result of the rule that we  
15 are here today to discuss.

16 We have a charge to seek stakeholder  
17 input on the SECY-10-0165. Again, that's the  
18 comprehensive revision to Part 61, if you will. The  
19 document contained five options. And we still have a  
20 charge from the Commission to seek input around that  
21 document. We are obligated at the moment to get back  
22 to the Commission in December around what we are  
23 hearing from stakeholders on that particular SECY.

24 The last point I would make on this

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1 particular slide is that we are considering some  
2 further communication with the Commission in the near  
3 term. We have not decided yet just what that vehicle  
4 would be. Would we prepare a SECY that might  
5 summarize what we have been hearing at all of these  
6 public meetings so far? Might we do a Commissioners'  
7 assistants' briefing? Might we do some combination  
8 of the two?

9 The point is this is the third public  
10 meeting around this topic. We have heard a lot of  
11 information. The staff does have an interest in  
12 showing that the Commission is currently aware of  
13 what we have been hearing. So we are at the moment  
14 considering further communication with the Commission  
15 before too much longer.

16 Next slide, Don. Last slide. I'll  
17 entertain questions in a moment, but I do want to  
18 make one final point. And that is regarding the  
19 phantom four, the carbon-14, the tritium, the  
20 tech-99, and the iodine-129, that is being addressed  
21 as part of this rulemaking, we have taken a good hard  
22 look at this topic. And we have actually gotten some  
23 further communication from EPRI around the fact that  
24 this could probably be handled via guidance.

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1           There is a document, NUREG/BR-0204, rev.  
2           2, dated 1998 that contains the information that is  
3           necessary to fill out the shipping manifest to  
4           satisfy the requirements in Appendix G of Part 20.  
5           And if you look in that document, you will find that  
6           there is specific information about those four  
7           isotopes being accounted for in the shipping  
8           manifest. We think that this can probably be handled  
9           best by guidance.

10           EPRI has already done some work around  
11           two of those isotopes, in particular, already. And  
12           so what we plan to do is hold a public workshop next  
13           year. We would like to get the concentration  
14           averaging BTP completed, which is due I think in  
15           October and then get this rule to the Commission in  
16           July. That would afford an opportunity, a good  
17           window of opportunity, to address this particular  
18           guidance document, this NUREG, and tackle this  
19           phantom four issue.

20           It is a challenging issue. And clearly  
21           it does impose a burden on the industry. I think it  
22           results in probably over-accounting for those four  
23           isotopes, which, of course, impacts the amount of  
24           material that can be disposed. And so we think it is

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1 worthwhile to have a workshop. And so we'll probably  
2 convene an expert panel type of workshop and provide  
3 an opportunity for the industry to work with us as we  
4 modify that guidance and tackle that particular  
5 problem.

6 So that's what I wanted to say to get us  
7 all thinking alike on the same sheet of music. I'll  
8 entertain any questions, Chip, that you might have.

9 MR. CAMERON: Okay. Let's see if there  
10 are questions on the process. And I'll bring this  
11 cordless to you. And please introduce yourself to  
12 us.

13 MR. GREEVES: Yes. John Greeves.  
14 Larry, on slide 8, you told us you wanted comments on  
15 compatibility, but on slide 9, you told us you  
16 weren't going to identify what the compatibility  
17 level is on the December proposed rule language.

18 So I think we have enjoyed looking at  
19 the proposed language, but I would urge you to give  
20 us a sense of what the compatibility is, especially  
21 the performance objectives. I'm sure some of us --  
22 you know, without that compatibility language, I'm  
23 not quite sure how our comments are going to be  
24 instructive. This is a process.

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1 I would urge the Commission to consider  
2 giving us insight as to what the compatibility level  
3 is on any proposed ruling language that's put out.

4 MR. CAMPER: Yes. That's a good point,  
5 John. It's really a process issue. I mean, we  
6 welcome any comments you want to provide by the 31  
7 July date or comments today, for that matter, about  
8 compatibility are fine. And certainly the staff will  
9 review all of the information, and we'll take it into  
10 consideration. And we'll certainly share it with the  
11 working group that is on this rule that will  
12 ultimately -- there is a process that we have for  
13 deciding what compatibility level will be assigned.

14 From a process standpoint, that  
15 compatibility level will not be assigned by the time  
16 we provide the draft preliminary rule language  
17 because that's not consistent with the process.

18 But any comments about compatibility are  
19 something we will share with the working group that  
20 will go about the process of deciding compatibility  
21 being assigned.

22 MR. GREEVES: Thank you.

23 MR. CAMERON: Thank you.

24 MR. CAMPER: Thanks, John. Good point.

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1 MR. CAMERON: Janet?

2 MS. SCHLUETER: Janet Schlueter, NEI.  
3 Another process clarification. I apologize if you  
4 stated this. I didn't pick up on it. The reg basis  
5 development this September, is that actually a  
6 document that would be put out for public comment at  
7 that time?

8 MR. CAMPER: Regulatory basis, tech  
9 basis documents are not put out for comment as a  
10 matter of process. So it would not. We don't intend  
11 to publish that for comment yet.

12 MS. SCHLUETER: Okay. I think  
13 occasionally they are.

14 And then when you put your draft  
15 proposed rulemaking out in December, is that simply  
16 to give us, stakeholders, visibility of it or will we  
17 --

18 MR. CAMPER: No. We're going to afford  
19 an opportunity for a 30-day public comment period.

20 MS. SCHLUETER: We will have a --

21 MR. CAMPER: Let me just address that  
22 because that is a great question. And I am glad you  
23 asked it, Janet. The idea is because there will have  
24 been substantial change in the language from what we

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1 shared with the public previously, we think it is  
2 important to put it out there again, don't have to,  
3 but we think it is worthwhile to do so. We want to  
4 afford an opportunity for a 30-day public comment  
5 period.

6 Now, any time you do this, you run the  
7 risk of that. We have a schedule. And the  
8 Commission has been fairly adamant that it wants to  
9 see this proposed rule by July of next year.

10 Any time you put out preliminary draft  
11 language and you afford the opportunity for comment,  
12 you know, you have opened the door. You have. And  
13 that's okay because, on one hand, we want the public  
14 to see the information and we want the public to  
15 provide us with some comments.

16 You run the risk. You do. You run the  
17 risk of compromising your schedule somewhat. We hope  
18 that it doesn't do that, but there will be a 30-day  
19 public comment period.

20 MR. CAMERON: Okay. We're going to take  
21 two more here in the audience. And then we will test  
22 the phones out. Jennifer?

23 MS. OPILA: I'm Jennifer Opila with  
24 CRCPD. I'm going to tell you right now that we are

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1 going to wish for more than 30 days of comment  
2 period. I know you guys are on a tough schedule, but  
3 30 days for the states is very hard for us,  
4 especially if you look at it from the perspective of  
5 CRCPD and OAS that has to actually go out to all of  
6 the states, try to gather the comments, try to put  
7 them all in one document, and give them to you so  
8 that they are useful to you. And so 30 days is not a  
9 lot of time to get that done.

10 MR. CAMPER: I would not have expected  
11 that.

12 (Laughter.)

13 MR. CAMERON: Bill?

14 MR. CAMPER: Yes. Thank you. We  
15 understand. That's where we'll start.

16 MR. DORNIFE: Larry, I'm particularly  
17 interested in -- Bill Dornife, Waste Control  
18 Specialists -- particularly interested in the new  
19 approach on the phantom four.

20 MR. CAMPER: On which one, sir?

21 MR. DORNIFE: Phantom four.

22 MR. CAMPER: Okay.

23 MR. DORNIFE: And, you know, just to  
24 give you some real-life data, we have a manifest for

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1 waste that we are going to be disposing of in the  
2 near future that we found out from the original  
3 generator that it was an MDL measurement but was not  
4 reported on the manifest that went through the  
5 processor as MDL. So it appears on our manifest as a  
6 real piece of data. And it makes the waste Class C  
7 based on that phantom data, which I think is kind of  
8 outrageous.

9 Now, a couple of questions. First of  
10 all, you know, it would be nice if you could  
11 accelerate the process for dealing with those  
12 radionuclides because I think there are some fairly  
13 simple quick-term solutions, like when you do your  
14 waste audits, you could look at what utilities are  
15 using as MDLs and provide some more standards in  
16 terms of what they need to use because we have seen  
17 five orders of magnitude difference in MDLs from  
18 various utilities.

19 And also what are the options for  
20 grandfathering once the waste is disposed of? I  
21 think we want to make sure that we can make those  
22 inventories go away.

23 MR. CAMERON: And I'm going to put the  
24 phantom four in the parking lot, important issue Bill

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1 was raising that sorts of gets to process, but I  
2 think we will have a discussion of that substantive  
3 point sometime today.

4 MR. CAMPER: Yes. Thank you, Chip.

5 I would only say, Bill, we will take  
6 this accelerated point under consideration.

7 MR. CAMERON: Bridget, let's see if  
8 there's anybody on the phones who has a process  
9 question for Larry.

10 THE OPERATOR: Thank you. Once again,  
11 on the phone lines if you have questions, please  
12 press \*1 on your touch-tone phone. Please remember  
13 to record your name when prompted. And, again,  
14 that's \*1 if you have questions or comments. We will  
15 just wait one moment here to see if you have a  
16 response. Thank you.

17 We have a response from Jim Lieberman.  
18 Your line is open.

19 MR. CAMERON: Okay. Jim Lieberman.  
20 Jim?

21 MR. LIEBERMAN: Yes. So, Larry, as to  
22 the compatibility issue, you mentioned the working  
23 group. My question is, who owns the decision of  
24 compatibility: the working group or the Commission?

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1 And if it is the Commission, is the staff going to  
2 provide a recommendation to the Commission on its  
3 views on compatibility?

4 MR. CAMPER: Well, Jim, the process is  
5 that a working group consisting of NRC staff and  
6 agreement state staff goes about assigning what  
7 compatibility is pertinent to. And it can be  
8 different compatibilities for different parts of the  
9 regulation. So the working group makes its  
10 recommendations that get embodied within the language  
11 that's proposed to the Commission, but the Commission  
12 ultimately decides what the compatibility level will  
13 be.

14 I don't envision the staff necessarily  
15 making recommendations about what we think the  
16 compatibility should be because the process is that  
17 the working group will determine.

18 And we interface with the working group.  
19 We have meetings with the working group. We have an  
20 executive steering committee that meets and oversees  
21 the process of this rule. We will certainly share  
22 our views, but the working group following the  
23 process will determine what compatibility level is  
24 assigned. Then the Commission will take it under

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1 consideration. But the Commission has the final  
2 decision always.

3 MR. CAMERON: Okay. Thank you, Larry.  
4 And thanks, Jim. Bridget, is there anybody else?

5 THE OPERATOR: I'm showing no further  
6 questions.

7 MR. CAMERON: Okay. Well, let's go to  
8 our panels, than.

9 MR. CAMPER: Great.

10 MR. CAMERON: Thank you, Larry.

11 MR. CAMPER: Thank you very much. And I  
12 look forward to your input today. Thank you.

13 TOPIC 1: TIME OF COMPLIANCE/FORESEEABLE FUTURE

14 MR. CAMERON: Okay. Our first panel is  
15 going to address the issue of time of compliance.  
16 And I'm going to ask each of them to introduce  
17 themselves and also to note any issues that they  
18 think are issues that are critical to them.

19 And, Don, are we going to put the  
20 questions up? Okay. So, you see, these are  
21 questions that were given to the panel to sort of  
22 stimulate their thinking. But they're going to  
23 figure out what we want to talk about.

24 We are going to go for introductions and

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1 get their ideas on this. And we're going to start  
2 with Linda Suttora from the Department of Energy.  
3 And then we're just going to go this way on the  
4 panel.

5 We do have one of our panelists on the  
6 phone: Rob Rechar. Rob, are you with us?

7 MR. RECHARD: Yes, I am. Can you hear  
8 me?

9 MR. CAMERON: Absolutely.

10 MR. RECHARD: Thank you. I am here.

11 MR. CAMERON: I'm sorry. Everybody was  
12 just blown out of the room on that one. So we can  
13 hear you. Good. We're going to go through the  
14 people here in Washington. And then I'll go to you  
15 for your introduction. Okay?

16 MR. RECHARD: Thank you.

17 MR. CAMERON: All right. Linda?

18 MS. SUTTORA: Yes. Linda Suttora. I  
19 work at the U.S. Department of Energy in the Office  
20 of Environmental Management. My organization is the  
21 responsible organization for overseeing DOE disposal  
22 of waste at DOE sites.

23 The point that I want clarified with the  
24 rulemaking with Part 61, if you're going to pick up a

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1 site-specific performance assessment concept in Part  
2 61, I would like it to be very consistent with what  
3 DOE also uses so that we don't have this two system  
4 across the country continuing. And the concept is  
5 that a PA is not a prediction, but it's the  
6 reasonable expectation of whether we'll meet  
7 performance objectives in the future.

8 And it's a much broader issue. As you  
9 have seen with the WAC conversation this afternoon  
10 and other things, you use the PA for multiple  
11 purposes, not for one purpose. So it's not a  
12 prediction.

13 MR. CAMERON: Okay. And that just gives  
14 me an opportunity to say that as you have your  
15 discussion panel, if you could provide rationales for  
16 what your positions are, too, for example, on a  
17 consistency with DOE issue that we'll discuss, you  
18 might get into whether there are differences between  
19 the DOE regime and the NRC regime that would lead you  
20 to establish different standards.

21 Dave?

22 INTRODUCTION

23 MR. ESH: Hi. David Esh. I'm with the  
24 Division of Waste Management and Environmental

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1 Protection. I'm a Senior Systems Performance  
2 Analyst. Basically my role on this panel is going to  
3 be one where I am mainly a listener. I will ask  
4 questions to kind of pull the string on things. But  
5 this panel of experts is here to provide us  
6 information.

7 A couple of my main functions are to  
8 write large portions of the regulatory basis document  
9 and the draft rule text. So this meeting will  
10 provide input to that.

11 I have to say I haven't started any  
12 revised rule language, but I have started the  
13 regulatory basis document. Because that data is  
14 coming fairly soon, it had to be started much  
15 earlier.

16 Nonetheless, this input from the panel I  
17 view as very important. And I hope the panel feels  
18 free to debate with one another. And the input will  
19 be factored in with the previous two meetings that we  
20 had equally. We are not going to bias the input by  
21 the panel compared to the other sources of input that  
22 we had.

23 I do want to thank all of the panelists  
24 for taking time out to come and share their views

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1 today. I know there is prep work involved in this  
2 sort of thing, too. You're not just showing up and  
3 talking. So that was important for me to note.

4 One of my main questions is kind of  
5 similar to Linda's in that I am always left with what  
6 is the role of performance assessment or technical  
7 analysis? How much should we be relying on that?  
8 Should we use other types of requirements or  
9 limitations to achieve what we are trying to achieve?

10 So if you think of existing current Part  
11 61, it did not just rely on technical analysis. It  
12 has a technical analysis component, but it has  
13 regulator-derived concentration limits as well as  
14 other requirements, such as disposal depth  
15 requirements.

16 So there were multiple things you can do  
17 to try to protect public health and safety. My main  
18 question is, how much should we be relying just on  
19 the technical analysis or should it be supplemented  
20 with other things, other more practical things, to  
21 deal with the uncertainties, especially with the  
22 disposal of long-lived waste?

23 MR. CAMERON: Thank you very much,  
24 David. Mick?

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1 MR. APTED: Mick Apted. I'm with a  
2 company called INTERA. I'm a bit of the joker on the  
3 deck I think perhaps today this morning because my  
4 real main focus has been in the areas of high-level  
5 waste and spent fuel disposal, background really in  
6 geochemistry, chemistry, engineered barriers, and  
7 sort of systems analysis, rolling all of that type of  
8 information into a sort of an overall how well the  
9 system meets compliance targets, possibly also part  
10 of being the joker in the deck.

11 I work very much internationally. I  
12 work for a number of both regulatory programs in  
13 Europe, in Asia as well, so have been exposed to  
14 their approaches in terms of how they're doing with  
15 low-level waste issues.

16 My particular maybe theme or key  
17 question today for myself will be this two-tiered  
18 approach. I am glad to see that. You see that as a  
19 rather common basis in many, many countries. I think  
20 that is a constructive forward-looking way to go  
21 about this.

22 I think there will be debates about what  
23 is short because short is different to a mechanical  
24 engineer versus a geochemist versus a farmer. So the

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1 issue partly is where are these transitions and, in  
2 the longer-term, what are the other type of metrics,  
3 perhaps other than dose, that we might be using to  
4 look at overall safety and eventually all programs,  
5 all regulators eventually, need to be able to address  
6 this issue of peak consequence, not necessarily peak  
7 dose but the common question that comes up that they  
8 will need to answer to general public stakeholders is  
9 okay. But what might be happening at very longer  
10 times in terms of what might be the peak impact of  
11 this type of disposal?

12 MR. CAMERON: Thank you, Mick. And  
13 Rusty, Rusty Lundberg?

14 MR. LUNDBERG: Thank you. Good morning.  
15 My name is Rusty Lundberg. I am with the State of  
16 Utah in the Department of Environmental Quality and  
17 the Director of the Division of Radiation Control.

18 I guess as we look at this in terms of  
19 my role as a regulator and obviously as one of the  
20 four states for a current low-level radioactive waste  
21 disposal facility outside the jurisdiction and  
22 stewardship of the DOE-specific types of low-level  
23 radioactive waste.

24 I want to put this in kind of a context

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1 probably of three important factors from us,  
2 particularly, first of all, from the State of Utah  
3 and, maybe by extension, with some of the other side  
4 states.

5 So specifically for Utah would be the  
6 fact that we have in place a statutory provision that  
7 is well-known regarding the prohibition of the  
8 disposal of Class B and Class C waste. So we're  
9 uniquely restricted to Class A waste only. So in  
10 that context, what happens in terms of future changes  
11 in terms of the construct of waste classification has  
12 a real significance of importance to us, for one.

13 The second part would be in terms of two  
14 rules that have been put in place by our Radiation  
15 Control Board, one specifically addressing the  
16 disposal of depleted uranium, high concentrations of  
17 depleted uranium.

18 And second to that is somewhat of a  
19 companion rule. And that is certain criteria or  
20 triggers that are now in place in the State of Utah  
21 that would require additional performance assessments  
22 related to certain waste streams. So in the context  
23 of those administrative rules and then also the  
24 statutory prohibition, those three things are fairly

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1 important for us as a state and a host for a  
2 currently operational waste disposal facility for  
3 low-level radioactive waste.

4 And then I guess the other part to this  
5 in terms of just being on this panel and knowing that  
6 three other states have an interest in cited states  
7 as well, that by extension, they're looking at so you  
8 have interests and concerns that are specific and  
9 unique to each of these cited states and, in  
10 addition, things that might be common or allow for  
11 flexibility to account for those unique measures.

12 So I think that there is a unique and a  
13 very complex balance that we face, both as individual  
14 states and then, secondly, as a group of hosted or  
15 cited states.

16 MR. CAMERON: Okay. Thank you. Thank  
17 you very much, Rusty. Tim McCartin?

18 MR. McCARTIN: Hello. I'm Tim McCartin  
19 from the NRC. I'm with the High-Level Waste Program.  
20 And, actually, I began my career at NRC in 1981 as  
21 the initial staff to develop a capability for doing  
22 performance assessment for geologic disposal at the  
23 Commission. And I have been doing it ever since.

24 I was the technical lead for development

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1 of the regulations for Yucca Mountain and the  
2 technical lead for review of the Yucca Mountain, the  
3 DOE's Yucca Mountain, application with respect to  
4 compliance with the dose limits.

5 Along the way, I did have about four or  
6 five years where I was part of the initial  
7 performance assessment working group in NMSS that did  
8 low-level waste assessment. So I have some  
9 understanding of low-level waste.

10 In terms of important points for the  
11 discussion today, I think in my mind from a  
12 performance assessment person and from a regulator's  
13 setting regulations, the time of compliance should  
14 never be a way to censor useful information to both  
15 the regulator in making a decision and the  
16 stakeholders. However, let me be very clear. That  
17 does not mean you do a peak dose calculation  
18 necessarily.

19 The time of compliance is a way of  
20 setting how you are going to use the information and  
21 in what context. And I believe at least a two-tiered  
22 approach in my mind makes sense that at a shorter  
23 period of time, you would do a dose assessment and  
24 compare it to a quantitative limit, but then at later

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1 times, you would look to see that you are at least  
2 aware of possible evolutions and, as some people have  
3 classified, is there some huge impact out there that  
4 we aren't aware of with the shorter compliance period  
5 calculation? And I think I would like to separate  
6 those two sources of information.

7 And I believe as you go out further in  
8 time, one must factor in the societal aspect of why  
9 you are doing this calculation, what it means, and  
10 what this information means. And I think, as anyone  
11 can attest to, if you're out in hundreds of thousands  
12 of years, it is highly questionable what a dose  
13 number out there means and what value you compare it  
14 to.

15 There is information you can get from a  
16 performance assessment, but I think you do that very  
17 carefully. Where that line is I guess my bias is  
18 that I think it is somewhere between 1 and 10,000 a  
19 year. So it is a reasonable time that would test the  
20 facility, be protective of future generations, and  
21 meaningful for doing those types of calculations.  
22 Beyond that, you are looking, is there something  
23 catastrophic out there that we're not aware of?

24 The only other thing I would like to

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1 bring up, that it hit me when Larry was talking. And  
2 if there's one thing I learned through all of the  
3 development of the Yucca Mountain regulations is  
4 whenever a regulator uses terminology, it should be  
5 clear and it should be helpful to understand the  
6 safety decision.

7 And I will say there was terminology in  
8 our generic regulations. And may I just say  
9 substantially complete containment was used in the  
10 generic high-level waste rule. It seems like a good  
11 term.

12 We spent years trying to define it,  
13 never got to the resolution, never helped safety in  
14 any form. There are other things there. And, with  
15 all due respect to the Commission, "reasonably  
16 foreseeable future," I don't know that that means. I  
17 don't know how it would help safety. But I do know  
18 if it turned up in a regulation, you would spend  
19 years debating it. And I think it would have very  
20 little impact on safety.

21 And, at least from my experience, I  
22 would advise against those kinds of things. If  
23 you're going to use terminology, is it clear? How  
24 does it help you get to a safety decision? If it

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1 doesn't, I would not use the terminology, but that's  
2 --

3 MR. CAMERON: Okay. And I put that in  
4 the parking lot: clear terminology. And I think we  
5 are going to get to the discussion of the specific  
6 phrase, which is "reasonably foreseeable future."  
7 Okay.

8 MR. ESH: You mean we're not going to  
9 define that today, Tim?

10 (Laughter.)

11 MR. CAMERON: Okay.

12 MR. McCARTIN: You could give it 100  
13 different definitions.

14 MR. CAMERON: That sounded a little  
15 facetious. Okay. Thank you, David.

16 MR. BLACK: Paul Black with Neptune and  
17 Company; from about 1995-96 worked on performance  
18 assessments initially for DOE and more recently  
19 NRC-based. We have also worked on the EPA regs for  
20 performance assessments. So we have got a long  
21 history with performance assessment and have taken up  
22 some of these issues more recently with EPRI as well.

23 So another set of regulations that we  
24 have done work under is CERCLA and RCRA. And I think

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1 that there is some need to consider how different  
2 regulations approach issues and institutional control  
3 and compliance periods, how they address them and why  
4 somehow in the rad world we are doing things so  
5 differently. So I think that is worth some  
6 consideration.

7 When we talk about rads as we do at the  
8 moment, I think the two-tiered system is worthwhile,  
9 dose assessments. Tim and I met this morning. And I  
10 think he stole my thunder on all of that.

11 Dose assessments should not be done out  
12 to hundreds of thousands and millions of years into  
13 the future. They are meaningless that far out.

14 How that impacts at time of compliance I  
15 think that there are other factors that need to be  
16 brought in. I think time of compliance should be  
17 driven socioeconomically. I think that should be  
18 site-specific.

19 If we want some examples of what I mean  
20 by that, then look at southern New Mexico versus  
21 Nevada, for example, where the societies there have  
22 very different views on what they consider to be  
23 reasonable. So I think time of compliance is a site-  
24 specific and socioeconomic issue. And so economics

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1 needs to be brought into the equation.

2 In terms of dealing with a two-tiered  
3 system, I am comfortable with the idea that a dose  
4 assessment is done for some period of time, probably  
5 not very long, partly because of socioeconomic  
6 issues. But, again, it's site-specific.

7 I think the issue of impacts -- and  
8 maybe I would rather call them perturbations to the  
9 system -- in the long-term future, that needs to be  
10 addressed. It needs to be understood. But what I  
11 would rather see is that we bring that into some form  
12 of decision analysis framework so that now we can  
13 evaluate dose on one side and balance that with what  
14 is going on in the long term in evaluating those  
15 perturbations and what do we think we want to do  
16 about them.

17 An effect if you roll that into a  
18 decision analysis and you bring essentially economics  
19 into the whole equation, then we can make a  
20 risk-informed decision that takes into account  
21 economics, environment, and society. And what that  
22 sounds like to me is dealing with life cycle analysis  
23 and sustainability analysis. And that's the type of  
24 thing that we should be doing in the PA industry.

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1 MR. CAMERON: Thank you very much, Paul.

2 And just before we go to Rob for his  
3 introduction, just let me see if I am on the right  
4 track here. When you are talking about decision  
5 analysis and that brings in the socioeconomic, the  
6 environmental, societal, David, is that an example of  
7 one of the things when you talked about the role of  
8 performance assessment, other components, other  
9 methodologies that need to be looked at? Paul's  
10 example, is that a good example of the types of  
11 things you were thinking about?

12 MR. ESH: It is an example. It wasn't  
13 necessarily one that I was thinking of, partly  
14 because we are trying to look at this from a  
15 limited-scope rulemaking effort. And bringing in the  
16 socioeconomic and decision analysis view I think  
17 would be a bigger delta from the current regulation  
18 than what we were anticipating, not to say that it  
19 doesn't add value or you shouldn't. It would just be  
20 a bigger delta I think.

21 MR. CAMERON: Okay. But if the  
22 agreement states had flexibility, they might be able  
23 to --

24 MR. ESH: Right. I mean, you have to

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1 start talking about things like the validity of  
2 discount rates over very long periods of time. And  
3 all that sort of stuff starts coming into play when  
4 you want to apply those approaches.

5 Just like there are strong opinions  
6 about time of compliance, there are very strong  
7 opinions about the long-term economic analysis.

8 MR. CAMERON: Okay. All right. Well,  
9 we'll get into a discussion of this.

10 But let's go to our last final panelist:  
11 Rob Rechar. Rob, could you just introduce us and  
12 give us an idea of what a burning issue might be for  
13 you?

14 MR. RECHARD: Thank you. Yes, I shall.  
15 Just as an introduction to me, I am a risk analyst at  
16 Sandia National Lab. I have worked on performance  
17 assessments for high-level waste since about 1988.  
18 First I was involved with the WIPP project, which has  
19 a 10,000-year time period. And then since 2000, I  
20 have been working on the proposed Yucca Mountain  
21 depository that had a million-year compliance period.

22 I have not worked in high-level waste,  
23 and I am not really supported by NRC. I obviously do  
24 not represent Sandia's view point on the time of

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1 compliance, but what I bring to this discussion is a  
2 high-level waste perspective that has dealt with very  
3 long periods, compliance periods.

4           What do I think is the most important  
5 issue? I think, really, I am going to put it in  
6 quotes as the time of uncertainty, the treatment  
7 uncertainty. What I mean by that is how are we going  
8 to focus the calculation on the overall arching  
9 depths and depths. I want sort of to see how do we  
10 describe the strategy to be used for dealing with  
11 depths. And I will give the example of dealing with  
12 the climate change. What will be the focus?

13           I think that as we start looking at what  
14 is the treatment uncertainty of what we see that we  
15 want to be the focus of our analysis. This is an  
16 alternate way and perhaps more direct way to deal  
17 with the time of the compliance.

18           In a lot of ways when we talk about time  
19 of compliance, it is a way for the regulator to tell  
20 the licensee what is of regulatory interest to them.  
21 So if we do not use time of compliance, we need to go  
22 back to looking at what are the things that we want  
23 to focus on during the calculation.

24           Time of compliance tells you, well, are

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1 you going to deal with climate change, for instance.  
2 And if you do not have a date that is set, for  
3 instance, at a 2,000 years time period, then maybe  
4 another way to look at it is to say we want you to  
5 evaluate what you think are important climate changes  
6 that might occur.

7 I think that is an issue that I would  
8 think needs to be discussed to help a licensee know  
9 what to focus his analysis on because otherwise you  
10 have a whole slew of depths. What I mean by  
11 "depths," for the audience, is features, events, and  
12 processes that potentially can affect the depository.  
13 But we need to have those focused. We need to have  
14 guidance from the regulator to focus the areas that  
15 he or she is interested in on for the analysis so  
16 that stops.

17 That is all I have to say at the moment,  
18 but I look forward to a very interesting discussion.

19 MR. CAMERON: Okay. Thanks. Thanks,  
20 Rob. And if I am forgetful that you are on the  
21 phone, just holler. Okay? Get my attention during  
22 the discussion.

23 So I think all of you have put out some  
24 provocative great issues for discussion. And perhaps

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1 the best place to start would be with the whole two-  
2 tiered system -- Mick expressed that pretty well --  
3 and talk about that and the time period. That is  
4 going to lead us into consistency, obviously, I think  
5 with the Department of Energy.

6 I think that the role of performance  
7 assessment and what else should be looked at -- and  
8 Paul's mention of decision analysis and perhaps Rob's  
9 issue of how to deal with uncertainty, things like  
10 climate change, might all tie into one discussion  
11 topic.

12 And, Tim, balance of useful information  
13 for time of compliance, two different purposes, not  
14 necessarily peak dose, I think that that all is going  
15 to come into the discussion of the two-tiered system.

16 So why don't we start there? Mick, do  
17 you want to start us off on this?

18 PANEL DISCUSSIONS

19 MR. APTED: I'll just start it off. And  
20 I think everyone will chime in. I think there is a  
21 lot of consistency perhaps already on the panel,  
22 listening to Linda's idea and advocacy of  
23 consistency.

24 It seems to me if we just sort of sliced

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1 the time, there's certainly an initial period and  
2 institutional control. And we can talk about that.  
3 We can talk about some subsequent period, maybe out  
4 to 1,000 years. I'm not sure I agree with Tim's idea  
5 of 10,000 years or some sort of dose.

6 I see the environmentalists' foreseeable  
7 future. As far as I have seen, that has come out of  
8 the Finnish regulations, where they were among the  
9 first to do a very early sort of multi-tier approach  
10 from dose to a flux. And then eventually at very  
11 long times, they talk about comparison against  
12 natural background, radiation, and so on, equivalent  
13 radiation that would be arising from the rocks that  
14 were removed to put the waste in. So, I mean, there  
15 are examples from other countries on this for both  
16 high-level and in this case particularly low-level  
17 waste as well.

18 The question, then, I have maybe to some  
19 of the other people would be after a dose initial  
20 period, what should be the approach of the metric or  
21 is it flux or what would be this longer-term analysis  
22 where we're looking at impacts, perturbations, to use  
23 Paul's phrase? And is there any sort of cutoff?

24 You might worry at very long times you

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1 start bringing in new scenarios. It is not just  
2 climate change. That is a worthwhile one, I think,  
3 to look at, but if you get up to hundreds of  
4 thousands of years, you might be looking at uplift or  
5 subsidence or deep incision by erosion or something.  
6 Is that where we want to go as we really extend very  
7 long time scales for the time of compliance?

8 MR. CAMERON: Okay. Thank you, Mick. I  
9 think that may be a useful framework to use for this  
10 discussion. I just want to be clear. In terms of a  
11 multi-tier, did you identify three tiers; in other  
12 words, the institutional control, the time of  
13 compliance, and then the longer-term period or did I  
14 --

15 MR. APTED: I think the institutional  
16 control isn't -- there are no releases I think by  
17 definition during that time or there is agreement of  
18 some sort of containment within a facility for that  
19 period of 100 or I guess there now is a tendency more  
20 maybe to 300 years.

21 MR. ESH: I mean, there could be  
22 releases, but the assumption is that people are  
23 present, monitoring, and they can take --

24 MR. APTED: Action.

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1 MR. ESH: -- action to remediate if you  
2 did get a release during that time period.

3 MR. CAMERON: Okay. Let's use Mick's  
4 framework as a starting point and see if there is  
5 agreement on at least the basic framework. And the  
6 devil may be in the details on that, but let's go  
7 into that discussion. And he did talk about that  
8 longer period. What do you consider? How do you do  
9 that? Is there a cutoff, brought in the idea that  
10 Rob was concerned about climate change?

11 So let's start there and see where we  
12 go. Tim?

13 MR. McCARTIN: Yes. If we are just  
14 focusing on what would you do with this longer time  
15 frame, which is potentially on the order of hundreds  
16 of thousands of years, maybe longer, I would still go  
17 back to the idea of what are you going to use this  
18 information for? What are you trying to learn from a  
19 regulator? How might you use this information making  
20 your decision and describing how it's safe?

21 And I think, in part, I go back to, is  
22 there something out there that would have a  
23 significant impact on society in the future that,  
24 gee, everyone should know that this is a possibility?

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1 And I think I could still see doing a dose  
2 calculation, but I would do it in a stylized way.

3 And I think the regulator should provide  
4 some idea of what kind of calculation you would do  
5 and what it would look like because if you are going  
6 out to those kinds of time frames, you are going  
7 through Ice Ages. You know, there is just a myriad  
8 of things. And detailed analyses of everything that  
9 might happen, I don't know how a regulator views  
10 that. You just have to make a safety decision that  
11 this is a reasonable thing to do.

12 I think there are calculations that one  
13 could explore in terms of, like I said, a stylized  
14 calculation that would give a sense of what might  
15 happen. And that's where I would I think -- when you  
16 start talking about these very long time frames, you  
17 need to do certain things.

18 MR. ESH: Is stylized calculation  
19 anything like substantially complete containment?

20 (Laughter.)

21 MR. McCARTIN: No, no. Stylized  
22 calculation in the sense that if you look at what we  
23 did in 10 CFR Part 63, we needed to go beyond 10,000  
24 years. And there were certain things that were

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1 specified by either EPA or ourselves in terms of here  
2 is what the calculation looks like. And I think if  
3 you're going to ask someone to go that far out in  
4 time with a calculation, you do have to provide  
5 constraints as a regulator. Otherwise it is like  
6 substantially complete containment. Everyone is  
7 going to have their own view of what needs to be in  
8 that calculation.

9 MR. CAMERON: Could you just restate --  
10 we are going to go to Dave and Rusty and Paul and  
11 check in with Rob, but could you just state again the  
12 significant impact test? In other words, you are  
13 going to go to this longer period to see if there is  
14 a significant impact in terms of what for the  
15 regulator to consider in making the decision now?

16 MR. McCARTIN: Correct. And I think for  
17 me, I would say it is easiest to think of it in terms  
18 of a dose. But you are talking about doses that  
19 would be rather large, comparable to background doses  
20 presently in the U.S. at certain places, things of  
21 that -- if I was looking at a dose, you know, I would  
22 want to see that and how widespread is it.

23 MR. CAMERON: Okay.

24 MR. McCARTIN: I mean, is society making

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1 large changes to their way of life because of this?

2 MR. CAMERON: Okay. Good. Thank you.  
3 Thank you, Tim. Tim is focusing on that last period,  
4 but anything in this framework that Mick originally  
5 laid out is free game now. So let's just continue  
6 the discussion.

7 MR. McCARTIN: Well, in that sense, if I  
8 could just talk to the first part, I would say why  
9 10,000 years? I think from the viewpoint of -- and  
10 EPA articulated this when they did their generic  
11 standard for 10,000 years. It's a time period that  
12 encourages a developer to do some reasonable  
13 engineering and design that would help them. If you  
14 go beyond that, obviously what kind of engineering  
15 can you do and whether it is 10,000 years or a little  
16 bit shorter?

17 But I think the concept is you would  
18 want to have something that would encourage a  
19 developer to do a good design, rather than if it's  
20 too long, they just throw up their hands and "I can't  
21 do anything." And so I think there is a practical  
22 aspect of that. And for geologic systems, 1,000  
23 years is awful short for a geologic system.

24 MR. CAMERON: Okay. So you are

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1 basically saying that the time of compliance period,  
2 10,000 -- okay. Let's go to Dave and Rusty and Paul  
3 and then come back to see if Linda and Mick have  
4 anything. But we'll go to Rob also. Dave?

5 MR. ESH: Yes. Just first a comment  
6 based on what Tim was describing. I think that's  
7 fairly consistent or very consistent with the  
8 existing regulation, which uses a calculation to  
9 supply information to the decision-makers. And then  
10 it has some other things in place to try to mitigate  
11 the impact of uncertainties.

12 So using the regulatory-derived  
13 concentrations that are based on a stylized scenario  
14 is a way to mitigate the uncertainty associated with  
15 the societal changes and everything else.

16 In deriving those concentrations, NRC  
17 also looked at things like exposed waste scenarios.  
18 So what happens if the facility experiences high  
19 erosion that we didn't anticipate? There are  
20 stability requirements in the regulation to try to  
21 ensure that you do not have erosion, but when they  
22 derived the regulatory requirements, they considered  
23 that as part of the technical basis. So I think  
24 there is a lot of validity in that.

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1 My question for Tim is the stylized  
2 scenario aspect, if we're moving forward in this  
3 approach to allow a site-specific analysis and site-  
4 specific intruder analysis, would you put that in the  
5 regulation or would you put that in guidance? You  
6 know, how much regulatory constraint would you put on  
7 the technical analysis is the bottom line question?  
8 I have to write regulatory language. And that would  
9 be useful input to know where you see that line  
10 should be drawn.

11 MR. McCARTIN: I would want to at least  
12 look at the types of low-level waste being disposed  
13 of and the hazards that one might see in the long  
14 term. And if they were significant enough, I would  
15 put it in the regulation versus putting it in the  
16 guidance. But I think you want to be -- if one truly  
17 wants that information you put in the regulation,  
18 guidance isn't that useful.

19 MR. CAMERON: Okay. Thanks. Rusty?  
20 Then Paul.

21 MR. LUNDBERG: Yes. To kind of amplify  
22 this a little bit from our standpoint as a state  
23 regulator, I think that we are always very sensitive  
24 and more inclined to be aware of the public interest

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1 and concerns and not to say that what we have just  
2 described does not do that, but we tend to be on the  
3 ground level more to where we hear that more often,  
4 we are expected by the public to account for things  
5 that, even though there is a long term and very high  
6 uncertainty in terms of what you want to do from a  
7 technical standpoint and foundation and moving from  
8 what you know technically and then going beyond with  
9 what we're talking about with such a long distant  
10 time horizon on the two-tiered approach and then to  
11 still maintain that public confidence, we always hear  
12 that if it's that uncertain, then you always err to  
13 being more conservative and being more protective.

14 And I understand that, well that is the  
15 question. How do you determine something and be able  
16 to be confident enough that you are doing and  
17 accomplishing that level of protection?

18 I think one thing that we have done as  
19 we have evaluated this, particularly in reference to  
20 disposal of concentrated depleted uranium waste  
21 stream sources, is the fact that you do have another  
22 factor here playing into that, that waste stream.  
23 And that is the in-growth of the daughter products.

24 As we have evaluated that specifically

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1 and how that may impact our view of things, I think  
2 it does raise some significant concerns. And I think  
3 it defines better that time envelope of the first  
4 10,000 years. There are significant changes in that  
5 particular waste stream and at least near-surface  
6 disposal in the concern for protection as you look at  
7 that in-growth within that 10,000-year time horizon.  
8 Beyond that, it continues and grows even more so.

9 So, even though the uncertainty of tying  
10 it to an exposure or dose specifically, you still  
11 raise those concerns in the public's view and as a  
12 regulated entity and one that wants to take those  
13 public interests and concerns into consideration and  
14 respect those. I think that they do have a  
15 significant play particularly. So my underscoring  
16 here is the fact that I think one way you would look  
17 at this from a more technical standpoint, at least  
18 focusing on depleted uranium, you look at the  
19 in-growth.

20 MR. CAMERON: Okay. And I know that the  
21 public policy panel is going to directly address the  
22 whole idea of public confidence that you are bringing  
23 up. In other words, that is something that has to be  
24 plugged in when you set the regulations.

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1           And, Rusty, in terms of how your state  
2 considered public confidence in terms of the initial  
3 period, what did you arrive at?

4           MR. LUNDBERG:   Yes.   Our current rule  
5 for depleted uranium addresses this in terms of a  
6 minimum requirement, 10,000 years.   That would be  
7 more of a quantitative analysis in that time horizon.  
8 Beyond that, you're looking at perhaps more of a  
9 qualitative analysis beyond that.

10           But, again, that has been on the table  
11 in discussions before.   I think we have just put it  
12 in rule to solidify again comments that we received  
13 and interests of all of those comments

14           MR. CAMERON:   Okay.   And just two other  
15 questions, just to make sure we can see where you are  
16 compared to what has been said.   When you say,  
17 "quantitative analysis," is that equivalent to the  
18 term "time of compliance"?

19           And when you think about what Tim said  
20 about significant impact, is that something that fits  
21 within your qualitative analysis?

22           MR. LUNDBERG:   I think to a certain  
23 extent, it does, but, again, because of the  
24 difficulty here and the complexities, you still want,

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1 the public expects answers in the same level of  
2 confidence in the near horizon as it does in the  
3 long-term horizon. And, as we try to address that,  
4 relying upon what you see in that shorter time  
5 horizon, particularly for things -- and, again, I'm  
6 focusing on depleted uranium as an example here.

7 I think that is one way in which you can  
8 look at a waste stream-specific and then be concerned  
9 about a longer time horizon because you do know some  
10 things about that in terms of its technical aspects  
11 of in-growth again.

12 MR. CAMERON: Okay. Thank you. And  
13 Paul?

14 MR. BLACK: We've been around a lot.  
15 I'll try and track back some. I'll try and track  
16 back to some things. The idea of having a dose  
17 metric beyond the time of compliance, I understand  
18 what Tim says. If you put stylized scenarios out  
19 there, one of the issues that I have with a lot of  
20 what we do comes back to the idea of I don't know if  
21 you guys do but I do sometimes go to a party, go to a  
22 bunch of friends and acquaintances. Ask me what do I  
23 do for a living? And when you try to explain this,  
24 it isn't easy. And a lot of it isn't easy because we

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1 haven't made it easy. We have convoluted the whole  
2 process far too much.

3 And we can get to trying to something  
4 that you could explain when you're out with a group  
5 or friends or acquaintances. Then maybe we have more  
6 chance. So trying to explain to somebody that I am  
7 doing a dose assessment for DU at Clive two million  
8 years into the future, where does that sit with the  
9 public, really? What sense does that make? I don't  
10 see that it makes any sense at all.

11 I think that you can potentially explain  
12 that, you know, we have disposed of a bunch of DUs,  
13 got some other radionuclides in there, and we're  
14 looking at what is going on into the long distant  
15 future, what impacts that might have. It's going to  
16 dispose over time. How is that going to happen?  
17 Maybe you can look at concentrations. I could  
18 imagine going that far if you want to quantify  
19 something.

20 In terms of the idea of quantification  
21 -- and this goes back to something Tim said in his  
22 introduction about terminology that we use. So there  
23 is some regulation that says that I am going to do a  
24 quantitative analysis up until 10,000 years. And

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1 then it's going to be qualitative after that with  
2 simulations.

3           So it's not qualitative. It's  
4 quantitative. And I think we need to be clear when  
5 we write a regulation or a guidance exactly what  
6 we're doing. I don't think -- and Tim's concern was  
7 talking about the foreseeable future. We haven't  
8 defined it. I think we need to get away from using  
9 terms like "qualitative" as well when we're actually  
10 trying to make a decision. We actually need to start  
11 explaining how we are going to quantify this and make  
12 that decision.

13           So the two-tier approach. We're going  
14 to a lot of different things here. The two-tier  
15 approach, I'll go back again to we're looking at  
16 perturbations, major ones. I think we can do a dose  
17 assessment for some period of time.

18           I think there are other guidance-related  
19 documents out there that talk about dealing with dose  
20 assessments for maybe a few hundred years. I think  
21 that is probably reasonable. It is hard to project  
22 out what society is going to be doing beyond that.  
23 Technology is undoubtedly going to change. Probably  
24 many of you have kids as well. How often do you

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1 explain to them that when you were in college, I  
2 couldn't call home because I didn't have a cell  
3 phone?

4 Technology has changed so rapidly in the  
5 last decade to think that it won't change a lot more  
6 in the near future I think makes no sense. It  
7 clearly is going to change. And we need to allow for  
8 that and not be thinking that we should be doing  
9 these types of analyses that have economic,  
10 environment, and social basis. We shouldn't be doing  
11 them out for longer than a few hundred years other  
12 than looking at major perturbations, major  
13 perturbations for somewhere like Clive.

14 Lake Bonneville might come back. For  
15 Los Alamos, maybe we have got erosion that exposes  
16 the waste on those mesa cliff faces. And Yucca  
17 Mountain, maybe you've got volcanism to consider.  
18 For each of our sites, there are different  
19 considerations where there are major perturbations.

20 So now we can talk about those  
21 perturbations and what the consequences are probably  
22 without spending a massive amount of money on  
23 extremely detailed faith in the transport and dose  
24 modeling. It's not needed. What we need to know is

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1 a general understanding of what the consequences are  
2 and then what do we want to do about those  
3 consequences. Is there anything we want to do about  
4 those consequences? Well, that's a societal  
5 decision.

6 Explain what is going on and try to  
7 address that with your group of stakeholders. This  
8 should be a stakeholder involvement problem. And  
9 decide this is what is going on, what do we want to  
10 do about it? Do we want to pay for it now? Do we  
11 want to trust future generations to deal with this?

12 I mean, Dave mentioned in response to  
13 what I said earlier this idea of this brings  
14 discounting factors into play, discount rates into  
15 play. Yes, it does. But those discount rates need  
16 to be thought of along the same lines of what climate  
17 change policy looks like now.

18 I mean, at the moment, our country has  
19 decided to not put an awful lot of resources into  
20 addressing climate change. That's because  
21 essentially mathematically they have put a high  
22 discount rate on this. And what they have said is,  
23 instead of dealing with it now, we are willing to let  
24 people deal with it 10 years from now or 50 years

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1 from now, when we know more.

2 This isn't that black and white. I  
3 realize some things are happening now. But it is a  
4 matter of when do you want to actually put all of  
5 your resources into solving a problem? Do we think  
6 we should solve every aspect of this problem now?  
7 There are intergenerational equity issues that are  
8 really related to what sort of discount rate you want  
9 to use? That is what it really boils down to.

10 If you use a very high discount rate  
11 from a policy perspective, what you are really saying  
12 is we are going to push most of this decision off 10  
13 years, 50 years, 100 years, maybe 1,000 years. If  
14 you use a very small discount rate, you are saying  
15 we're going to treat everybody equally over time. If  
16 you use zero, you are treating everybody equally over  
17 time. We don't do that as a society. We have never  
18 done it. I don't think we ever will.

19 I think that we will trust future  
20 generations to be able to deal with some issues  
21 better than we do, partly because technology will  
22 change. Society will change. We need to give them  
23 the chance to deal with that. We can deal with some  
24 of it but not all of it. Don't expect us to --

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1 MR. CAMERON: Okay. Very, very, very,  
2 very articulate on these. Just one question for you  
3 to make sure on how this ties in with other things  
4 that are being said. When you raised the public  
5 confidence issue in the context of you need to be  
6 able to explain this and it doesn't seem like a bunch  
7 of mumbo-jumbo, so to speak, because you lose  
8 credibility there, are you saying that the time that  
9 you would use the dose assessment, this initial  
10 period would be much shorter than the 10,000 years?  
11 And what do you think about the other factors? Like  
12 Tim said, 10,000 years is good because that would  
13 encourage the developer to design a good system? And  
14 I think you have heard other factors.

15 How do you consider those types of  
16 things and just confirm that the initial period that  
17 you are talking about would be a much shorter period  
18 than we have heard from some of the others?

19 MR. BLACK: I think the issue is that  
20 where you do a dose assessment. And, actually, you  
21 asked earlier if Mick was suggesting that we have  
22 three tiers, instead of two. I think, really, the  
23 issue is, how do you evaluate the system into the  
24 future? I think the dose assessment if that is what

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1 the time of compliance refers to should be quite  
2 short.

3 How you evaluate other issues could go  
4 out to dealing with climate change and what you think  
5 the impacts of it are. But there is also an issue  
6 there of it is a societal decision of do we care. Is  
7 it something we want to take care of? Do we want to  
8 actually address it by doing something about it now?  
9 That is the engineering perspective that you can  
10 bring in at that point, no matter what perturbation  
11 that you are talking about? Do you want to address  
12 that from an engineering perspective now?

13 If you structure all of this in terms of  
14 essentially what I would call a decision analysis --  
15 other people might call it different things -- in  
16 some ways, this is risk and liability management into  
17 the future or you can call it a cost-benefit  
18 analysis. Whatever you want to call it, it is  
19 putting a structure together on things that this  
20 industry has been thinking about for a long time.

21 You can read a lot of guidance from a  
22 lot of different organizations. There are a lot of  
23 really good thoughts out there. And we tend to --  
24 again, in a meeting like this, we are talking about

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1       them again.

2                   What I haven't seen before is a  
3 structure that allows you to pull all of that  
4 together and evaluate it holistically in an  
5 integrated fashion. If you look at some other  
6 environmental programs, that is happening. It is  
7 happening at EPA in the world of sustainability. It  
8 is happening in climate change. But it is not  
9 happening here, where we are still focused a lot I  
10 think on fate and transport modeling and calculating  
11 concentrations in doses, instead of maybe looking at  
12 a bigger picture of how do we deal with the decision  
13 context here?

14                   The decision context goes beyond PA and  
15 time of compliance. The decision context is also one  
16 of -- I mean, we're disposing of radioactive waste or  
17 nuclear waste. Why? Where does that come from? I  
18 mean, the harder we make it to dispose of radioactive  
19 waste, what we are really saying is we do not want  
20 industries that are creating radioactive waste. So  
21 that is a big issue here.

22                   There are different industries that we  
23 could consider from this perspective. There are  
24 nuclear weapons. Well, there might be a lot of us

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1 who don't want them. But we have legacy waste still  
2 that has to be dealt with. There are nuclear power  
3 plants. There is nuclear medicine. We need disposal  
4 options if we want any of those.

5 So if we make this difficult to dispose  
6 of waste, in effect, what we are saying in a decision  
7 context is we don't want that industries. Is that  
8 really where we are as a society?

9 MR. CAMERON: Okay. And we're building  
10 on what each other is saying here. And Paul is  
11 taking us to another level. And I want to get the  
12 input of all of you based on what he said and also  
13 want to see what Linda has to say in terms of the  
14 consistency issue.

15 Let me ask. Rob, maybe it is a good  
16 time to go to you, Rob, to see what your comment has  
17 been on the dialogue so far. And I keep looking at  
18 the ceiling like you are up there somewhere, but --

19 MR. RECHARD: Thank you.

20 MR. CAMERON: Okay.

21 MR. RECHARD: Thank you for letting me  
22 join in.

23 You covered many, many topics. And so  
24 it is going to be hard to go over them and get my

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1 points across. But one of the things that was  
2 mentioned as we started this off is, is a two-tiered  
3 system good or a three-tiered system good?

4 I think that we have seen what the  
5 European community has done. And they have  
6 approached it this way. The United States tried that  
7 approach initially with Yucca Mountain in the sense  
8 that we were going to have a 10,000-year calculation  
9 and then do a quantitative calculation, but it was  
10 going to be in EIS space. That was changed in the  
11 remand.

12 I think that that is something that we  
13 need to be aware of in the United States, as opposed  
14 to what is going on in Europe in the sense that as a  
15 society, we often do not want to have as much a  
16 negotiated approach to the disposal of waste as the  
17 Europeans and the Asians might be more comfortable  
18 with. And so while they are able to have a  
19 two-tiered approach that is much more qualitative in  
20 the second tier, often in the United States we have a  
21 much more contentious approach to looking at these  
22 issues. And it becomes much more difficult to look  
23 at having a very preformed second tier that is just  
24 wide open and does not have much guidance.

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1 I think that when we were dealing with  
2 Yucca Mountain, it was very helpful to have the  
3 regulator decide what he was interested in that  
4 second tier. And that is what we have sort of pushed  
5 toward calling the stylized calculation.

6 It became a way for the regulator to  
7 say, "I am interested in these aspects." He said, "I  
8 am interested in this aspect for seismic. I do not  
9 expect you to look at faults that are away from the  
10 repository that might cause a fat path. I only want  
11 you to look at what is going to happen at the  
12 repository itself." Those were the kinds of things  
13 that I think helped focus the licensees' efforts and,  
14 yet, are realistically look at how we deal with this  
15 issue in the United States and that we want to have a  
16 quantitative work and some information provided in a  
17 legal setting so that people are aware of it, as  
18 opposed to having a negotiated approach.

19 One of the things that the Blue Ribbon  
20 Commission on High-Level Waste recommended is to have  
21 a more negotiated approach to all aspects of the  
22 deciding and not only what are some of the issues  
23 that are going to be discussed, what are going to be  
24 some of the concerns?

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1           However, in all of those cases, there is  
2 going to be a desire to have consistency because the  
3 public is going to look to the regulator, in this  
4 case the NRC, to say, "Well, what are the basics that  
5 we need to deal with?"

6           There are many things that we can  
7 negotiate, but what are sort of the fundamentals that  
8 we are going to deal with. And I think that that is  
9 where we, the American public, would be a little bit  
10 more comfortable with having some consistency across  
11 the country in terms of low-level waste. And they  
12 might very well accept a two-tiered system, but they  
13 would want -- I would imagine that the approach that  
14 we have been working through with high-level waste  
15 can guide the thinking in the low-level waste area.  
16 People are much more comfortable with a stylized  
17 calculation in this latest period.

18           So I would sort of push a two-tiered  
19 system. I also recommend that from the experience of  
20 the high-level waste community, that you are going to  
21 need stylized calculations. It is going to have to  
22 be much more quantitative than maybe Paul is  
23 indicating. I think that that is more of what the  
24 American society expects from its regulators. And so

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1 I think that that is something that we are going to  
2 have to deal with.

3 I think that when you start dealing with  
4 stylized calculations, you have the opportunity to  
5 say, "What am I going to deal with? How am I going  
6 to deal with erosion? What do I want to look for  
7 with an erosion issue?"

8 And the issue that I mentioned earlier,  
9 "How do you want to have the licensee look at climate  
10 change?" And that is the kind of guidance that you  
11 can put into the regulation.

12 Now, I think Dave had a very good point.  
13 What belongs in the regulation? And what belongs in  
14 the guidance? And it is important that the  
15 regulation have some specific guidelines. I think  
16 that the NRC was very good in the high-level waste  
17 regulation to give those parameters in the regulation  
18 in relationship to seismic, volcanism, climate,  
19 corrosion of materials.

20 And I would not categorize it as  
21 over-prescriptive, but I would say that they were  
22 very good at defining the boundaries of what they  
23 were really looking at. They were not interested in  
24 a fault far away from the repository that caused a

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1 fat path. They mostly wanted to evaluate what was  
2 going on in the repository. That was where they  
3 limited their regulatory language.

4 And so, Dave, if you wanted to say,  
5 well, these stylized calculations, I think it is  
6 important that you put boundaries on the calculations  
7 in the regulation itself. You can then become much  
8 more lax to provide some options in your guidance  
9 document as to how you might want to look at that,  
10 some of these issues.

11 But I think that from the experience of  
12 high-level waste, it was very helpful with putting  
13 some boundaries on that stylized calculation.

14 MR. CAMERON: Okay. Thank you. Thank  
15 you, Rob, for touching on all of those points. And  
16 we're going to go to Mick Apted in a minute to talk.  
17 I think he's probably going to talk to some of the  
18 things that you mentioned as well as what the other  
19 panelists mentioned.

20 We're going to go to Linda and Dave Esh  
21 before we do that. Then we'll come back to Tim  
22 McCartin. But you used the term "negotiated  
23 approach." I checked with Paul Black offline here  
24 that the negotiated approach would be an idea,

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1 concept that captures what he was talking about  
2 should be done after that fairly short dose  
3 assessment period. And, Paul, let me come back to  
4 you. If I didn't characterize that correctly, let me  
5 know.

6 And we keep hearing the term, the phrase  
7 "stylized." And maybe when we get to Dave Esh,  
8 maybe, Dave, you could put that in terms that even a  
9 facilitator can understand. Okay. Thank you.

10 (Laughter.)

11 MR. CAMERON: Linda?

12 MS. SUTTORA: Yes. I had put my tent up  
13 before, but Paul actually stated almost every point I  
14 had. So I'm not going to say anything now. Thank  
15 you, Paul.

16 MR. ESH: I had a follow-up for Paul or  
17 for all the panel. So do you think there would be  
18 value in the Commission establishing a policy on  
19 intergenerational equity or transgenerational equity?

20 Because it seems to me we're talking  
21 about low-level waste, but we also have high-level  
22 waste. We have management of mill tailings. We have  
23 decommissioning sites. And if there was some sort of  
24 policy associated with that or some sort of process

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1 that you were using, just speaking off the top of my  
2 head, I don't see why it should be limited to  
3 low-level waste. That seems like something that  
4 would generically apply to any of those sorts of  
5 decisions. So I just wanted to hear your thoughts on  
6 that.

7 Then I have another comment.

8 MR. CAMERON: Okay. We'll come back to  
9 that. I just want to go to Mick on what we have been  
10 talking about before that. And Tim has a comment.  
11 And then let's go back to that question and then go  
12 to this other agenda item, which I think we have been  
13 talking about also, but just to put a finer point on  
14 Dave's issue of the role of performance assessment,  
15 what other types of analyses consideration should go  
16 into making these decisions.

17 MR. ESH: Yes. And as we go, I would  
18 just add that the general thought is we have talked  
19 about uncertainty. I think Rusty brought it up. And  
20 the public is concerned with that. And we have kind  
21 of beat around the bush here. But should you run  
22 headlong into uncertainty or should you think about,  
23 "Well, what are my ways to work around the  
24 uncertainty?"

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1           That's kind of what I am left with is I  
2 think this boils down to in low-level waste, our  
3 experience has been the short-lived radioactivity has  
4 been managed very well and very successfully. And  
5 then the current Part 61 that we have, when it was  
6 developed, the regulator derived concentrations for  
7 the long-lived components that are limited so that  
8 you don't get into these issues about long-term  
9 uncertainty.

10           Well, if you aren't going to set some  
11 sort of limits around those long-lived  
12 concentrations, then you naturally step into this  
13 problem about uncertainty. So that is the kind of  
14 discussion/debate we have been having, how you deal  
15 with this long-term uncertainty. Well, maybe there  
16 are different ways to deal with the long-term  
17 uncertainty.

18           MR. CAMERON: Okay.

19           MR. ESH: So that's something I really  
20 want to hear from the panel on.

21           MR. CAMERON: That's very good. Let's  
22 hear from Mick and then from Tim, who has had his  
23 tent up. And then let's go back to that issue of how  
24 you deal with uncertainty and also the issue of

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1 should the Commission have a policy statement on  
2 intergenerational equity?

3 I would be interested in hearing what  
4 Rusty has to think about that because keep in mind  
5 that all of this Rusty raised the point of the  
6 Commission needs to be very mindful of how whatever  
7 it does in this area, what impact that is going to  
8 have on existing state regulations on the disposal of  
9 low-level waste.

10 Mick?

11 MR. APTED: I'll try to be concise.  
12 First I'll pick up some of the things that Rusty and  
13 maybe Paul said. In my experience, again a very  
14 different society than the U.S., my idea of the  
15 public's concern is generally a couple of generations  
16 into the future, really how is it going to be  
17 constructed, are dirt piles going to be blowing in my  
18 back yard. You have some radiologic risk aspects of  
19 it, but that's what the institutional control I think  
20 period is partly to overcome in terms of what  
21 people's major concerns are.

22 I mean, I think Paul's comment, I've  
23 never run into anybody worried about doses out to a  
24 million years and so on coming from low-level waste.

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1 I mean, that brings me to the second point.

2 It seems in some ways if we could sort  
3 of separate out the depleted uranium arguments and  
4 concerns, it is a very unusual type of waste form  
5 leading to a very different type of behavior.

6 In this country, I mean, in 300 years, B  
7 waste looks like A waste. In 1,000 years, A waste  
8 looks like dirt. You know, maybe 98 percent of the  
9 activity is gone. And this even replies to the  
10 depleted uranium. The dose or the consequence of  
11 hazard that represents, even to the million years, is  
12 one-tenth of the ore that it came from.

13 We are going to be getting into  
14 regulation of this kind of hazard. It leads to  
15 should we be cleaning up existing natural radiation?

16 So I think it is a slippery slope  
17 looking at those kinds of concerns on something that  
18 really isn't that hazardous compared to a lot of  
19 existing radiologic hazards in the world.

20 The last thing on Paul's is I guess  
21 watch out what we wish for. You are obviously  
22 advocating the revolution. And that is a good thing  
23 to be talking about. But sometimes guillotines are  
24 brought out and so on. And heads will roll and so

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1 on.

2 So I think it is a wonderful thing to  
3 explore, but it is really a terra incognita type of  
4 thing in terms of what would be other implications of  
5 that as we start to overturn or a real new paradigm  
6 in regulatory approaches.

7 MR. CAMERON: And wait until you hear  
8 his colleague on the next panel talking about  
9 revolution when John gets up there.

10 Tim?

11 MR. McCARTIN: Yes. And I guess in  
12 terms of -- and I heard Paul make the statement. He  
13 might not have meant it this way, but we're being  
14 hard on the industry.

15 From an NRC's perspective, we want to  
16 make a good safety decision. And the information we  
17 need to make that decision we will ask for.

18 This is low-level waste. And, similar  
19 to what Mick was saying, you know, you are not doing  
20 a lot of effort to doing a very long-term assessment  
21 because most of this is short-lived, should die off  
22 very quickly. This is easy to do.

23 Now, if you have so much long-lived  
24 stuff that there is a lot of stuff going on, hundreds

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1 of thousands of years, well, I think we want to know  
2 that. And we need to see that.

3 But if you have quantities that are  
4 comparable to what other countries are disposing as  
5 in high-level waste repositories and we're doing a  
6 near-surface disposal here, well, I think the  
7 regulator needs to see what that means.

8 I always translate it to a dose  
9 assessment. And I recognize yes, what does it mean?  
10 I mean, the dose doesn't mean anything, but it gives  
11 you a measure how worried should I be.

12 And I recognize what people are going to  
13 be like and what other things, but it is a way to --  
14 if you are going to give me a concentration, you tell  
15 me, "Oh, five picocuries per cubic meter," is that a  
16 problem? I'm going to turn it into dose. That's  
17 when I'm going to find out his problem.

18 So the dose is just a convenient way to  
19 look at it in relationship to not only limits in the  
20 short term, but in the long term, you can compare it  
21 to other things that go on throughout the world, the  
22 U.S., et cetera. But I think in terms of where this  
23 is needed, I would say in most cases, if you go out  
24 longing, this is not a hard assessment because you

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1 have a lot of short-lived material. It only comes  
2 into play when you have large quantities of  
3 long-lived material.

4 And I think it is appropriate for the  
5 regulator and the stakeholders to have their eyes  
6 wide open. What does this mean to do that  
7 assessment?

8 MR. CAMERON: Okay. And, Dave, you want  
9 to put something out before I go to Paul?

10 MR. ESH: Yes. Well, just to follow up  
11 right on to what Tim said so it is in context, that  
12 is the problem and why we were trying to do these  
13 changes to the regulation as we are dealing with a  
14 very specific problem of potential disposal of large  
15 quantities of long-lived waste. So that's why we're  
16 here discussing it.

17 I agree with you in the traditional  
18 sense: normal problem, short-lived activity  
19 dominates. The long-lived activity is small. But  
20 that isn't the context necessarily.

21 The other issue -- and it is probably  
22 not for this panel discussion. Maybe it's for the  
23 public policy discussion. But many international  
24 programs I have -- or at least maybe not many but

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1 some have waste classification systems that I would  
2 argue are much smarter than the system that we have  
3 because they break the material into bins that allow  
4 them to set regulatory requirements appropriate for  
5 each of those bins.

6 In our system, we mix short and  
7 long-lived together. And then it creates challenges  
8 in developing regulatory requirements.

9 So I'll just put that out there. If you  
10 have thoughts on it, I would be happy to hear them.

11 MR. CAMERON: Okay. And I made a note  
12 of that. We do have our public policy panelists in  
13 the room. So we'll make sure we get their input on  
14 so-called "smart" waste classification systems.

15 I want to give Paul a chance to --

16 MS. SUTTORA: If I could just jump in  
17 for a second?

18 MR. CAMERON: Okay. Go ahead. Linda?  
19 Linda Suttora.

20 MS. SUTTORA: Just for context, what DOE  
21 does is does the long-term -- in fact, our guidance  
22 recommends going out to peak, which has not been  
23 recommended by this panel. But for the purposes of  
24 just understanding the system, gathering information,

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1 if it is a weirdly huge dose, way out in the future,  
2 then we want to know, even though there are huge  
3 uncertainties associated with that and the error bar  
4 is going to be massive, it gives us just an idea of,  
5 gee, do we want to bury it a little bit deeper? Do  
6 we want to have a different kind of engineered  
7 barrier? Do we want to have a different kind of cap  
8 that we play in? It's just information gathering.  
9 We don't intend it to be used for a regulatory  
10 concept or meeting performance objectives exactly but  
11 just for context.

12 Thank you.

13 MR. CAMERON: In terms of since we have  
14 you now, listening to the conversation I'm not sure  
15 how inconsistent some of the things that were said  
16 are with what you describe as the DOE approach. But  
17 from what you have heard, what would you have to say  
18 about consistency with DOE from some of the things  
19 you have heard from the other panelists?

20 MS. SUTTORA: Well, it seems to be  
21 generally flowing towards consistency with DOE. Now,  
22 we had commissioned the -- and I'll never get the  
23 name right -- NAPA. I'm not even going to try to  
24 make the -- National Academy of Public Administrators

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1 I think. Back in '97, we commissioned a report from  
2 them to say, what should we look for and time frames  
3 for time of compliance?

4 And they looked at the socioeconomics  
5 and the intergenerational equity. And they said our  
6 shorter-term should not be more than a couple of  
7 generations, which is a couple of hundred years.

8 We chose to be more conservative and  
9 look at 1,000 years and then also to -- we typically  
10 do like a hard core calculation, 1,000 years, 10, 20,  
11 peak, just to see what is happening. But we use  
12 1,000 years as our time of compliance.

13 And, again, that was to be more  
14 conservative than what NAPA recommended. So that is  
15 what I'm hearing. A couple of hundred really  
16 probably is the right number before you get into the  
17 uncertainties become so large that it doesn't make  
18 sense and we don't know what future generations are  
19 going to be like.

20 So 1,000 years is about right. And then  
21 again, it seems like everybody is going in the right  
22 direction of not trying to make a time of compliance  
23 out beyond that.

24 I understand the 10,000 years with the

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1 DU, although at some point, the hazard is not the  
2 rad. It is actually the chemical, more of a RCRA  
3 hazard, rather than a rad hazard, but that is further  
4 out I think in the 40,000-year time frame or so.

5 MR. CAMERON: Okay.

6 MS. SUTTORA: But anyway --

7 MR. CAMERON: That's very helpful.  
8 Thank you.

9 And we're going to go to Paul and Rusty.  
10 And, Rob, we're going to come back to you after we  
11 hear from Paul and Rusty. Okay?

12 MR. RECHARD: Thank you.

13 MR. CAMERON: All right. Paul?

14 MR. BLACK: Okay. I'll try this. So  
15 I'll address one thing you said about going out to  
16 peak dose. That is actually one of my concerns about  
17 doing dose assessment that far out into the future is  
18 we have started using this term "peak dose" as if  
19 dose is meaningful out there.

20 I have some problem with that,  
21 especially for something like DU when we are talking  
22 about an analysis out beyond two million years. I'd  
23 rather start talking about peak activity, instead of  
24 peak dose.

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1 Do you want to do those sorts of  
2 calculations? I'm quite comfortable that they are  
3 done. I just think talking about peak dose doesn't  
4 make sense. Peak activity, fine.

5 But, anyway, moving back to a few other  
6 things and mixed reference to a revolution, I'll  
7 quite happily back off of revolution and just say,  
8 "Yeah. We should have a shorter compliance period."

9 I mean, that seems like end of story to  
10 me, but we've got enough justification from it.  
11 There's enough other guidance. Linda just referenced  
12 NAPA. There are others as well. ICRP, they talk  
13 about the few hundred years for dose assessment. And  
14 if time of compliance is tied to the amount of time  
15 for which we are willing to do a dose assessment, it  
16 should be relatively short.

17 So let's go from there to consistency  
18 across regulations. Two somewhat different issues.  
19 One is we are disposing of radioactive waste in this  
20 country, low-level radioactive waste, under two  
21 completely different sets of regulations. Why?

22 What sense does that really make if  
23 you're trying to explain to the public that if this  
24 is defense-generated waste, then I am going to

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1 dispose of it under these regulations. And if it is  
2 other generated waste, it is going to be a different  
3 set of regulations.

4 And, yet, the receptors are all the  
5 same. The environment is the same. Why do we have  
6 two sets of regulations? And I realize that is a  
7 much more challenging issue from the perspective of  
8 change that we might want to effect into the future.  
9 We have two organizations. We have two different  
10 sets of regulations. But from the public perception  
11 perspective, I think that is probably confusing.

12 I think in general another consistency  
13 issue is let's talk about CERCLA and RCRA a little  
14 bit. They don't regulate radioactive waste, but they  
15 don't have times of compliance anything like this.  
16 And they don't have half-lives. Admittedly, they  
17 don't have in-growth either, which creates a problem  
18 in some cases. But, really, they are disposing of  
19 things that, at least through transport mechanisms,  
20 can get worse over time in some situations, no reason  
21 why they cannot.

22 But what are their times of compliance  
23 or institutional control periods that they look at?  
24 They're a heck of a lot shorter than we're looking at

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1 here, especially when we talk about time frames like  
2 10,000 years.

3 And, yet, we have sites like Los Alamos  
4 and Hanford on the DOE side that are trying to merge  
5 two sets of regulations that are so different because  
6 their sites fall under DOE and RCRA or DOE and  
7 CERCLA. And that becomes just a huge challenge.

8 How do you actually reconcile all of  
9 this? You can do the fate and transport modeling and  
10 then attach a regulation on the back end, but you are  
11 talking to the public again. How are you explaining  
12 what you are doing? Why do I have a time of  
13 compliance or whatever name you want to put on it for  
14 RCRA of 30 years and I'm going to talk about 1,000  
15 years or 10,000 years for DOE?

16 Well, part of the reason there is an  
17 unfortunate perception that I think that has been  
18 created over the last 50 years or so that  
19 radioactivity is bad. Well, quite honestly, mercury  
20 is bad. Arsenic is bad. And radioactivity is bad as  
21 well. But is it really worse to the point that we  
22 should have times of compliance that are so  
23 different? That is not necessarily an argument that  
24 we should be dropping to 30 years. Maybe it is an

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1 argument that CERCLA should be changing and  
2 increasing. The inconsistency is a problem.

3 And I find with some of what we do with  
4 thoughts -- well, you asked about intergenerational  
5 equity. I think that's where I was supposed to go.  
6 Right?

7 (Laughter.)

8 MR. CAMERON: I think you needed to  
9 respond to the revolution.

10 MR. BLACK: Well, I responded. Yes.

11 MR. CAMERON: You did.

12 MR. BLACK: I don't want to fall on a  
13 sword here. A thousand years is short. And shorter  
14 might be better, and that ends that discussion.

15 MR. CAMERON: Okay. Well, that's --

16 MR. BLACK: Dave asked about  
17 intergenerational equity in policy. And I think that  
18 would be a really good thing to do. Sorry.

19 MR. CAMERON: I guess the transcript  
20 should capture that there were groans from certain  
21 people on the panel.

22 (Laughter.)

23 MR. BLACK: Hey, Dave asked the  
24 question. I think that at the end of the day, it is

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1 a waste of time in a sense that you are going to get  
2 a lot of views from a lot of different people. And  
3 it covers the whole gamut. At the end of the day, I  
4 think that if you start tying intergenerational  
5 equity to the idea of how you deal with discounting  
6 to effect policy on what you are doing with this and  
7 other things, low-level waste and high-level waste  
8 probably come out in different places, they should.

9 But I think it is a reasonable thing to  
10 approach. And policy doesn't mean you have to put  
11 numbers in there. I think ultimately what we need is  
12 an approach to addressing the problems we are dealing  
13 with that deal with more than just the technical  
14 issue. And that's what PAs currently do is they  
15 address the technical issue.

16 And you can look at plenty of guidance  
17 from OMB. You can go back to the White House in 2001  
18 that basically said it's time to add value judgments  
19 to science-based decisions. And I think that's what  
20 we need to be doing.

21 MR. CAMERON: So the last part that you  
22 put in -- and this is a question for Dave Esh also,  
23 but I want to make sure we get Rusty on this thread  
24 we're on and hear from Rob. We started about ten

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1 minutes late. So we are going to keep going for ten  
2 minutes or so here. But if anybody wants to put  
3 their two cents in on intergenerational equity issue,  
4 that would be fine.

5 Paul, the last thing you said in the  
6 context of intergenerational equity, were you  
7 suggesting that there might be a broader policy, a  
8 better policy on performance assessment perhaps and  
9 what other things should be considered in comparison  
10 to performance or in addition to performance  
11 assessment? Because that's what I want to ask Dave  
12 Esh about.

13 MR. BLACK: Well, our discussion here is  
14 performance assessment. So I guess it applies here.  
15 But, I mean, in thinking about this over the last --  
16 since being asked to be on this panel and talking to  
17 other people, Roger Sykes at some point said  
18 something to me about intergenerational equity  
19 issues. And, again, the challenge is in dealing with  
20 them.

21 But what he said was we are unique in  
22 how far out into the future that we have to think  
23 about our problem. So there are very few other --  
24 well, what he was thinking is there are not really

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1 any other cases where we think this far into the  
2 future. And, as I research more, there is actually  
3 one. And it is fairly obviously if you stop and  
4 think about it. It's climate change. They're doing  
5 a lot more on this than we are.

6 I think that is worth looking at to see  
7 what is going on there. That doesn't mean there is  
8 full agreement there. There certainly isn't. And  
9 this is probably why we have got governments across  
10 the world that are taking very different approaches  
11 to dealing with climate change.

12 But I think it is worth taking a look at  
13 what is going on in another area where they are  
14 trying to deal with these issues and get some  
15 information from them and see how it impacts our also  
16 very long-term decision-making.

17 MR. CAMERON: Okay. Thank you.

18 We're going to go to Rusty. And then  
19 we're going to go to Rob and then to Dave and then  
20 see if we have any final comments. And then I think  
21 we'll take a break. And then we'll come back and  
22 hear from the audience and the phones. Rusty?

23 MR. LUNDBERG: Thank you, Chip. I'll  
24 honor your initial desire that we be crisp here and

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1 kind of concise.

2 I think as we look at all of this  
3 together, I think what Paul just said for me, I don't  
4 think that there is much a disconnect as maybe being  
5 expressed in terms of having more of a certainty  
6 built into what we know in terms of science and some  
7 of the technical aspects of this, but I will say that  
8 in-growth is one of the significant factors that we  
9 are arguing with. That is one of the realities of  
10 this.

11 Using the foundation that if you have  
12 enough information and, as Paul said, you need to add  
13 value to the scientific foundation that you are  
14 working from, I think what we're really talking about  
15 in my mind is that you're supplying the policy-makers  
16 with at least enough certainty that, even though it's  
17 a very long time horizon, at least they do want to  
18 step up and say that that amount of time is important  
19 enough. Even though it is beyond two generations, we  
20 want to be able to say the following or make the  
21 following policy decision about such a long-term  
22 concern.

23 And I think that to me if you look at it  
24 from that standpoint, there is less of a disconnect

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1 of having to try to decide something technically and  
2 does it work in this framework of intergenerational  
3 equity and those things. You were supplying the  
4 policy-makers and those decision-makers with at least  
5 the perspective and the view so that they can  
6 formulate that, that policy.

7 MR. CAMERON: Okay. Thanks. Thanks,  
8 Rusty, from a policy-maker also.

9 Rob, do you have some comment for us on  
10 the most recent discussion?

11 MR. RECHARD: Well, I had one question  
12 that I thought was interesting, the classification of  
13 waste. I think that that was something that Dave  
14 threw out on the table that was causing probably some  
15 trouble for him.

16 And I think that I will just remind the  
17 panel and the audience that, really, the  
18 classification of waste is a way for the United  
19 States to manage its waste. Lots of times it does  
20 not have the connection to its hazard that is often  
21 related to how we want to manage it.

22 The United States has a lot of  
23 radioactive waste. And so we have lots of different  
24 categories. A lot of other countries have a lot

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1 less. And so they are able to have a lot less  
2 categories.

3 I would agree with Dave's assessment  
4 that we have sort of ended up with a classification  
5 system for managing our waste that is difficult. And  
6 I think that where it comes out to make that change,  
7 we would have to involve a lot of the states because  
8 we have sort of made a very strong demarcation as to  
9 what is controlled by the states and/or at least is  
10 allowed to be controlled by the states, what the  
11 federal government maintains control over, which is  
12 high-level waste and greater than Class C waste.

13 And so that becomes a very big issue,  
14 very large issue. That is why probably we haven't  
15 been able to move into a much more -- maybe a more  
16 rational approach to managing our waste.

17 Dave asked a little bit about  
18 intergenerational equity. I think that, for the  
19 longest time, radiation disposal, radiation had to  
20 deal with intergenerational equity. In all of the  
21 other fields, we have not had to deal with it.

22 I think that Paul brought up a good  
23 point that climate is the first time that another  
24 area of issues in the world has started to have to

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1 deal with this intergenerational equity issue. And I  
2 think that it is just the name of the game in what we  
3 do with radiation that we are the ones that have  
4 dealt with intergenerational equity problems for the  
5 longest time. I think that the RCRA and CERCLA have  
6 been able to avoid that issue. Maybe as time goes on  
7 with this, society will be moving into looking at  
8 more consistency across those issues.

9 Dave's final thing was, how do I deal  
10 with uncertainty? I think that we sort of talk about  
11 that really using a stylized calculation, that that  
12 is how we deal with these open-ended calculations in  
13 the future, is really doing stylized calculations.  
14 In that case, the regulator is telling the licensee  
15 what he is interested in. That's all I have to say.

16 MR. CAMERON: Thank you. Thank you very  
17 much, Rob.

18 And, Dave, let's wind down with you at  
19 this point. And then we'll get to the break time.  
20 But go ahead.

21 MR. ESH: Yes. On the issue of the  
22 different requirements I think that Paul raised or  
23 maybe Linda spoke to, I think that we have to  
24 acknowledge that -- and he said, well, what's the

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1 difference? You're doing an analysis for each, same  
2 receptors, et cetera. We have different regulators  
3 -- okay? -- and different regulatory programs.

4 We have an agreement state program that  
5 if we used an approach identical to DOE where  
6 basically DOE headquarters I would describe -- and,  
7 Linda, correct me if I am wrong. They use their  
8 expertise for all of the performance assessments and  
9 analyses that come in. And they decide when you need  
10 to do something else based on what you are seeing  
11 after 1,000 years. Correct? You look at those  
12 results --

13 MS. SUTTORA: The headquarters doesn't  
14 make the decision. We accept the recommendation from  
15 the field offices.

16 MR. ESH: Okay. All right.

17 MS. SUTTORA: We do a yea or nay.

18 MR. ESH: But ultimately you have --

19 MS. SUTTORA: We have --

20 MR. ESH: There is an entity that has a  
21 decision-making power --

22 MS. SUTTORA: Yes.

23 MR. ESH: -- to ensure consistency in  
24 that process.

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1 MS. SUTTORA: Yes, absolutely.

2 MR. ESH: So what we would need if we  
3 were going to do that is the requirement in that  
4 second time frame would have to be written such that  
5 it would ensure that consistency within our agreement  
6 state program.

7 That's not to say it can't be done, but  
8 based on my experience with how things work in terms  
9 of regulations and agreement state programs, it would  
10 be exceedingly difficult because the path of least  
11 resistance is always found whenever you try those  
12 sorts of things. That would be the difference I  
13 would state or not to say that it can't be overcome,  
14 but it is a challenge that I would just put out  
15 there.

16 I wanted to circle back, then, with  
17 something I think that maybe Tim had said and was  
18 said earlier in the panel. I mean, the performance  
19 assessment is not a prediction of exactly what is  
20 going to happen. It is a tool to inform  
21 decision-makers. And sometimes the decisions are  
22 hard. And you cannot make a hard decision easy  
23 sometimes, even though they may want it to be.

24 We should ensure -- I think the standard

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1 should be that whatever we require, it should ensure  
2 transparency of information with the interested  
3 stakeholders. And I think Tim was maybe the one who  
4 said it should be long enough to ensure that you do  
5 effective designs or smart designs.

6 And in these problems, the issue is not  
7 the short-lived component. It's the long-lived  
8 component. So how do you put requirements down that  
9 ensure effective design for the long-lived component?  
10 That is the main issue from my viewpoint.

11 That can be achieved a lot of different  
12 ways. It can be achieved with analysis or other  
13 things. But I think the panel has done a good job of  
14 discussing all the inputs that go into that sort of  
15 decision. And we'll take the input and factor it in  
16 when we develop the regulatory basis and the draft  
17 rule language.

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

20 Any burning last issues anybody wants to  
21 talk about? Mick?

22 MR. APTED: Just two things. One I  
23 think there is probably not much disagreement,  
24 really, here. I mean, it's half a dozen of one. I

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1 mean, the very consistency I think is really what I  
2 have heard for the most part.

3 The second thing is -- and I don't know  
4 where it will come up, maybe a whole other meeting --  
5 I am a little disappointed we didn't get into the  
6 human intrusion because it seems to me the human  
7 intrusion stylized thing tends to drive a lot of  
8 these issues in low-level waste and time of  
9 compliance. But, anyway, that's a regret.

10 MR. CAMERON: Okay.

11 MR. BLACK: Maybe we can get into that  
12 one when we ask questions of the next group.

13 MR. APTED: Okay.

14 MR. CAMERON: Yes. I think there are  
15 going to be plenty of opportunities for that.

16 MR. APTED: All right.

17 MR. CAMERON: So I would just thank the  
18 panel. I mean, you did a great job. And you're not  
19 done yet. So we'll hold the applause. Okay?

20 We're going to take a 15-minute break.  
21 Say come back at 10:45. I have 10:38 on my watch or  
22 10:28. Sorry. And then we'll go to the public and  
23 the phones.

24 (Whereupon, the foregoing matter went

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1 off the record at 10:29 a.m. and went  
2 back on the record at 10:54 a.m.)

3 MR. CAMERON: Okay, everybody. We're  
4 going to get started. Just a few administrative  
5 announcements before we go to the audience, including  
6 the phone or internet audience. We did ask them to  
7 turn the temperature up.

8 (Applause.)

9 MR. CAMERON: And the people on the  
10 phones are having a little trouble hearing. So for  
11 the panelists now and future panels, just make sure  
12 you get the microphone closer to you.

13 And out at the table, there is a menu  
14 for the restaurant in here. I am talking about lunch  
15 now. We have an hour set aside for lunch. And I  
16 won't laugh when I say this, but the restaurant here  
17 said that they will get you served in four to seven  
18 minutes. I don't know what it is. I guess you get  
19 an apple.

20 And there is a menu for the restaurant  
21 out there. And on the back of it, there's a list of  
22 restaurants around here that you can go to. If you  
23 go to somewhere like McDonald's, for example, and you  
24 bring the food back, you have to eat it on the patio

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1 because if it's eaten inside, it interferes with the  
2 four to seven-minute time. But that's a joke anyway.

3 FACILITATED PUBLIC DISCUSSIONS

4 MR. CAMERON: Okay. We are going to  
5 start here in Rockville with the audience in terms of  
6 questions for the panel, observations so we can have  
7 a discussion. And then we are going to go to the  
8 people on the phones. And I'll try to mix it up so  
9 that we just don't go to the phones at the end. But  
10 we're going to start here.

11 I think I'm going to go to Billy Cox and  
12 then Tom Magette and Jhon Carilli. Did you want to  
13 go first? Okay. Well, we're going to have Jhon go  
14 first. Okay. We're going to have a mediation here  
15 about who goes first. Okay. And, Jhon, if you could  
16 just introduce yourself? Yes. Why don't you go  
17 here?

18 MR. CARILLI: Yes. My name is Jhon  
19 Carilli. I'm with the Department of Energy Off-Site  
20 Office. One of the things that I would like to say  
21 -- there are only a couple of points that I want to  
22 make.

23 I agree with and fully support Paul  
24 Black on his issue about making the time of

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1 compliance shorter. Now, at DOE, we use 1,000 years.  
2 And that's okay. I don't have a problem with 1,000  
3 years, but I do have a major problem going beyond  
4 that time frame.

5 Am I not close enough? Oh, I'm sorry.  
6 Can everyone hear me? Oh, now you can. Well, let me  
7 start over again.

8 (Laughter.)

9 MR. CARILLI: No. I support Paul Black  
10 on going for a time of compliance that's shorter.  
11 And 1,000 years I think is the right time frame,  
12 mainly because that is what DOE uses and has been  
13 using for quite some time.

14 But the problem with going in longer and  
15 longer time periods is you have got to take into  
16 consideration a lot more things like climate change.  
17 If you go into millions of years, you have got to  
18 take into account continental drift, I think. Nevada  
19 might actually be beach-front property.

20 And when you start talking about those  
21 things, one of the times I was talking about it, we  
22 were expecting a little bit more rain and stuff like  
23 that. And my regulator just didn't believe me. And  
24 I'm not talking about the regulator in the State of

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1 Nevada. I'm talking about the low-level waste review  
2 group, some of these peers of mine that I work with.  
3 They just absolutely laughed.

4 So when you start talking about these  
5 things into longer and longer time frames, people  
6 simply won't believe you. And that is the reason why  
7 I would really support a shorter time frame.

8 There is a question that Dave Esh  
9 brought up regarding policy-making and should we  
10 extend it to all radwaste. What I find interesting  
11 is the longest half-life radioisotope that we have  
12 out there is a low-level waste. And what is even  
13 more interesting about it, if you look at the current  
14 tables, it's a class A low-level waste. So when you  
15 are making a decision on low-level waste, you are  
16 impacting all of the radwaste that is out there.

17 Then I had a comment on peak versus dose  
18 and peak activity and dose activity. I agree with  
19 Dr. Black on that issue, too. When you start talking  
20 millions of years from now, you know, people are  
21 looking at this, as dose, as, "Hey, that's a real  
22 number we've got to be worried about." And then he  
23 talked about activity and stuff.

24 The fact is that a lot of our waste is

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1 buried underground. And a lot of that activity or  
2 dose that would be coming out is attenuated.

3 And so when you are talking about the  
4 long, long, long half-life of radioisotopes, I think  
5 the one that you are really worried about is what is  
6 getting out of the ground, which in some cases might  
7 be radon.

8 So those are my only comments on this.

9 MR. CAMERON: Okay. Thank you. Thank  
10 you very much, Jhon.

11 We're going to go to Billy Cox and then  
12 Tom Magette, Diane D'Arrigo, and Bill Dornsife, Lisa  
13 Edwards.

14 MR. COX: Billy Cox with EPRI, Electric  
15 Power Research Institute. I guess I kind of agree  
16 with -- I think Mick makes a very important point  
17 that we really need to make a distinction here  
18 between low-level waste as we know it and depleted  
19 uranium because they really are two different  
20 animals.

21 And in our analysis, when we look at  
22 low-level waste, we see peak doses for generic wet  
23 sites in the 400, maybe 450-millirem range that all  
24 occur within the institutional control period. In

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1 fact, the peaks occur within active institutional  
2 control periods.

3 And then when we look at dry sites, we  
4 see a peak dose of less than a millirem out at 1,000  
5 years. So why are we debating this? As Mick said,  
6 the doses are insignificant. And it seems like for  
7 time of compliance, beyond 1,000 years is almost  
8 absurd when you look at the actual risk and the doses  
9 that folks get.

10 I would make one other comment that when  
11 we start getting out into these really long  
12 compliance periods, I mean, people aren't going to be  
13 living there anyway because the glacier is going to  
14 be back.

15 I said when we start getting out into  
16 these ridiculously long time periods, people aren't  
17 going to be living there anyway because the glacier  
18 is going to be back.

19 MR. CAMERON: Okay. Thanks, Billy. And  
20 I just want to note for the panel that some people  
21 are going to be coming up. And they are just going  
22 to be giving comments. If you want to say anything  
23 in response, that's fine. Some people may be coming  
24 up and asking you questions your perspective on

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1 something. So it's sort of informal here.

2 MR. APTED: Chip?

3 MR. CAMERON: Yes, Mick?

4 MR. APTED: The first speaker I think  
5 was Jhon.

6 MR. CAMERON: Yes. And we've got to get  
7 the mikes close.

8 MR. APTED: All right. So I see the  
9 point of things greater than 1,000 years in terms of  
10 human time scale. People won't believe you. My  
11 worry if we do it less than 1,000 years, people may  
12 not trust us. And I think once you lose that trust  
13 in the system, especially of our regulator, it's game  
14 over.

15 So I think that's why we are looking at  
16 these longer periods of time because some people, not  
17 all people, will be concerned there. But there will  
18 be some people who will ask these what if questions.  
19 And I think the regulator needs to turn to the  
20 implementer and say, "What about those questions that  
21 will come up?"

22 MR. CAMERON: Thanks, Mick. And let's  
23 go to Tom, Tom Magette. And, Lee from Dominion, I  
24 know you want to make a comment. So I have you on

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1 the list. Tom Magette?

2 MR. MAGETTE: Hi. My name is Tom  
3 Magette with EnergySolutions. First of all, I would  
4 like to compliment the panel. I don't know that I've  
5 ever sat and listened to a panel discussion that made  
6 me work quite that hard ever in my life. I thought I  
7 wouldn't have to work until the panel that I was  
8 sitting on. So that was a bit of a surprise.

9 But I have a question for the panel,  
10 which, of course, will be preceded by a preamble, --

11 (Laughter.)

12 MR. MAGETTE: -- to no one's surprise.  
13 I am intrigued by Paul's suggestion that we need some  
14 sort of structure for the long-term decision. If you  
15 accept, which it sounds like most of the panel, if  
16 not all of the panel, does, a two-tiered approach,  
17 which I certainly concur with, and there is a longer  
18 period out to something, how we describe that is I  
19 think still a subject for debate, but if it's not a  
20 dose -- and I'm intrigued by the prospect that it  
21 wouldn't be a dose, but there still has to be some  
22 sort of structure.

23 My question is, what might that  
24 structure be -- that's the first part of the question

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1 -- if it's not dose? And I agree that the dose is  
2 not necessarily meaningful, but it's hard for me to  
3 envision a circumstance where a result is handed to a  
4 decision-maker without some metric because then she  
5 will turn to someone on her staff and say, "What does  
6 this activity mean?"

7 And there will be something constructed  
8 is my fear. And without some sort of guidance, there  
9 would be a wide, possibly unhelpful spectrum of what  
10 might be constructed.

11 However, on the other hand, I agree also  
12 that this notion of spending a lot of time and money  
13 on fate and transport for something that's really  
14 pretty fictitious seems not to be a good approach.  
15 And if the only reason we're doing it is because we  
16 think someone has to have it and it's no good, so  
17 we'll hold our noses and do it I find a little bit  
18 unhelpful as a scientist, almost offensive.

19 So the second part of the question is,  
20 can that be done? Is there ever going to be a  
21 decision made without some sort of I'll say dose  
22 metric? I'd like, actually, to hear each of the  
23 panelists give their opinion because I like to be  
24 pragmatic. And it would be nice for us to pursue a

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1 structure that is qualitative, to use a word you  
2 don't like, Paul.

3 I don't know how you get there and if  
4 it's possible. And if it's not possible, I would  
5 like to see us waste as little time as possible  
6 proving it's not possible if it's possible.

7 MR. CAMERON: Does everybody understand  
8 what Tom means by "structure"?

9 MR. MAGETTE: Some construct that says,  
10 "Here is what might happen at the end of this second  
11 time period. And here is why it is meaningful." But  
12 there were phrases used among panelists like "broad  
13 social implications."

14 I mean, you discussed this in some  
15 detail. I think you probably all have an idea of  
16 what you might talk about in lieu of a dose.

17 So my question really is, does it matter  
18 at the end of the day? Could we ever put something  
19 either in a reg or even in a statement of  
20 considerations that would accompany a reg or even in  
21 a guidance document that would really be useful and,  
22 if not, let us then hold our noses, construct our  
23 stylized scenario, and move on to something else?

24 MR. CAMERON: Let me ask Paul to start

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1 the description. You gave a description, Paul, of  
2 how this could be done, what would be considered,  
3 would it be possible to -- and I'm going to ask  
4 Rusty, a state regulator, also on this. Would it be  
5 possible to write something down in a regulation or a  
6 reg guide or the supplementary information to the  
7 rule that gives people an idea about what should be  
8 done and what the implications are?

9 MR. BLACK: I think writing something  
10 into a regulation, probably not. I think having a  
11 regulation that talks about metrics that we need to  
12 achieve within some time frame is possibly probably  
13 reasonable, but to me regulation should be simple and  
14 straightforward and say, "This is the job. This is  
15 what you need to get done." Guidance should then  
16 explain a process for how to do it. And I think in  
17 guidance here, we could deal with this.

18 I think there is plenty of work that has  
19 been done for other types of problems that deal with  
20 complex decision-making, complex environmental  
21 problems, and set up decision structures to try to  
22 deal with those problems.

23 And, really, it comes back a little bit  
24 to things that OMB published back in the '90s and,

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1 much to my surprise, the 2001 White House published  
2 as talk about adding value judgments to science-based  
3 decisions. What we're talking about is building  
4 decision analysis structures to do that.

5 "Decision analysis" might be my term.  
6 Like I said, the terminology is different depending  
7 on which groups you go to, but it's basically let's  
8 focus on what decisions we are trying to make here  
9 and build the decision models that we need to support  
10 that.

11 Now, a part of that decision model  
12 should be a dose assessment for some period of time.  
13 I think the period of time should be determined site  
14 specifically because I think it is a socioeconomic  
15 issue.

16 But that part of it would be built in as  
17 well. And then you would also build in the parts of  
18 perturbations or major perturbations later on and try  
19 to address that.

20 MR. CAMERON: Okay.

21 MR. BLACK: That is my view that can be  
22 done. There are structures out there that can be  
23 used to do it.

24 I think one other piece on that is I

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1 think it is a big stakeholder involvement issue. And  
2 so to build these decision structures needs to  
3 involve the different stakeholders that are  
4 interested in the problem.

5 MR. CAMERON: Okay. Thank you.

6 Does anybody else want to comment on  
7 that? Rusty, do you want to give us your view?

8 MR. LUNDBERG: Just quickly on that as  
9 well. I think it does raise the difficulty when you  
10 look at the potential of trying to memorialize  
11 something like this as complex, as difficult, and as  
12 uncertain in a rule, but that doesn't mean that it  
13 couldn't be done. It just takes a great deal of  
14 effort to get to that point. I'm not sure that we  
15 have enough information maybe to build upon that  
16 right now.

17 But the point I really want to make,  
18 though, is that I think, though, that there can be  
19 some semblance of a construct, to kind of answer your  
20 question, Tom, on this. And that is that you can  
21 provide enough of the considerations that are  
22 important for a decision-maker by outlining those.

23 For example, for a near-surface  
24 disposal, you would obviously want to inform them

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1 that the surface topography is subject to a lot of  
2 changes. Climate has been one of those that has been  
3 raised. You have other erosional or natural forces  
4 that come into play for surface concerns or  
5 near-surface concerns.

6 So I think that you can at least frame  
7 that as a construct for them to be aware of. It  
8 doesn't maybe actually say, "Here is A. Here is B.  
9 Here is C," but I think you can put together the kind  
10 of information or construct of considerations that  
11 are important.

12 MR. CAMERON: Okay. Thanks, Rusty.

13 Tim? And then we're going to go to  
14 Diane D'Arrigo after that.

15 MR. McCARTIN: Yes. For the long term,  
16 I think there is some information that can be  
17 calculated to help you understand the nature and the  
18 extent of the hazard. Whether there is an actual  
19 number, I am not necessarily in favor of that.

20 The closest I can think of what we did  
21 in high-level waste, at one time we have quantitative  
22 subsystem requirements to inform how barriers were  
23 behaving in the high-level waste repository. We  
24 removed all of those quantitative limits and asked

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1 for calculations to be done to give us the  
2 information that would inform us.

3 It was our subjective decision does that  
4 constitute local barriers? We defended it based on  
5 what we saw. And I think, in a similar way, you  
6 might not necessarily have a particular limit here,  
7 but what kind of information could be calculated to  
8 inform you of the nature of the hazard in a  
9 reasonable calculation?

10 Obviously you are not going to look at  
11 continental drift. I mean, there are a gazillion  
12 things that could happen, but I think you can  
13 constrain the calculation and do something  
14 reasonable. And you're looking at something that I  
15 think you could at least inform people that we would  
16 be looking for a significance in societal disruption  
17 that would be considered today very significant, as  
18 would be an issue that we would want to understand  
19 more about.

20 MR. CAMERON: Okay. Thank you, Tim.

21 Linda, before we get Diane up, you have  
22 a comment? Go ahead.

23 MS. SUTTORA: Yes. I just wanted to  
24 give another DOE example. And it's not a low-level

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1 waste disposal facility. It's a CERCLA disposal  
2 facility. And we are putting, of course, some  
3 low-level waste into that facility.

4 When we are talking site-specific  
5 determinations, one of the considerations is the site  
6 and the hydrogeology. We have this facility that is  
7 being placed over a non-potable water system, a very,  
8 very slow-moving groundwater system. I can't  
9 remember why it's non-potable, but I think it's  
10 high-salinity over bedrock. And when you have that  
11 situation, how many calculations do you want to do?

12 And that's where the decision-making  
13 framework is helpful because with CERCLA, you do  
14 that. You decide ahead of time what is important.  
15 Well, fate and transport of the contaminants. Well,  
16 we don't have any fate and transport of contaminants  
17 to a potable water supply. So unless you're looking  
18 at millennia, you're getting to the bedrock.

19 And so those are the kinds of constructs  
20 you look at under CERCLA. And there is no reason why  
21 we can't start drifting into putting them into this  
22 facility, these kinds of facilities.

23 MR. CAMERON: Thank you.

24 Diane?

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1 MS. D'ARRIGO: I'm Diane D'Arrigo with  
2 Nuclear Information and Resource Service. The whole  
3 10 CFR 61 regulation is being rewritten, as I  
4 understand. I don't really know how to request  
5 something that the public would like be incorporated.  
6 I'm looking at Dave because he is the guy who has got  
7 to do the actual writing.

8 But what we want -- and I've worked with  
9 members of the public around these proposed  
10 facilities and facilities for decades -- is a goal of  
11 isolating the waste, not clever calculations, totally  
12 justifiable by some means, that may mean higher  
13 amounts of radioactivity may legally leak out from  
14 these sites.

15 DOE's risk-based classification is real  
16 interesting, but how verifiable or enforceable is it?  
17 Who gets to ever really understand that? The people  
18 at DOE who do the calculations. And then that has  
19 not been something that has been real transparent or  
20 clear or understandable to those of us tracking that.  
21 And now to suggest that the Nuclear Regulatory  
22 Commission would go ahead and adopt something like  
23 that is distressing.

24 I would like to have a better

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1 understanding of how those calculations are enforced  
2 or verified and enforced. There are so many  
3 assumptions built in.

4 It was mentioned earlier -- okay. We're  
5 talking about 10 CFR 61.55, the A, B, C  
6 classifications. Yes, Class A has every radionuclide  
7 in the book in it. And, yet, it only requires 100  
8 years of institutional control. I know you have got  
9 another way of saying it as 100 years is the minimal  
10 institutional control required.

11 So I am not clear on what extending the  
12 100 to 300 is going to mean. Does that mean that the  
13 same things that were said about it can meet 100  
14 years will be said that now it can meet 300 years?  
15 And there are still going to be 25 millirems.

16 And then that's being changed to some  
17 other number because 10 CFR 20 is changing. So 10  
18 CFR 20. And then there is a recommendation here to  
19 adopt the latest international recommendations for  
20 dose calculations, that there are new ways that we  
21 are going to assess dose and the updating, the  
22 updating. And every time it has been updated before  
23 the allowable concentrations to the public, the  
24 majority of the radionuclides has gone up.

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1           So when the public looks at that and  
2 they say, "Oh, okay. It might be a different number  
3 of millirems because now it's effective  
4 dose-equivalent, but the number of the amount of  
5 strontium that's allowed" -- or maybe I'm not picking  
6 the right isotope, but for more than half of the  
7 isotopes, the allowable concentrations that may be  
8 released go up.

9           So updating doesn't necessarily mean  
10 progress from the perspective of us receptors. And,  
11 really, we should call us people and animals. Being  
12 called receptors is dehumanizing. And I would  
13 suggest that that be corrected in the documents. It  
14 is just very dehumanizing.

15           So the goal needs to be isolation. And  
16 on the long-term responsibility, the  
17 intergenerational, we know that the Native Americans  
18 have a tradition of protecting the Earth for the next  
19 seven generations. And these radionuclides are  
20 hazardous much longer, some of them, than the seven  
21 generations. So that would be at least a minimal  
22 thing that we ought to be doing.

23           A lot of this discussion is very  
24 frustrating because talking about how to truncate the

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1 regulations because it is not reasonable to go out  
2 that many years, but you are creating. You are  
3 allowing the licensing of radionuclides that last  
4 that long. And that is not considered part of the  
5 discussion.

6 Yet, there is the possibility of  
7 producing less of those radionuclides that we do have  
8 no ability to manage into the long term. And that  
9 needs to be factored in.

10 MR. CAMERON: Thank you. Thank you very  
11 much, Diane.

12 Linda, did you want to say something  
13 here?

14 MS. SUTTORA: Yes. Sure. In response,  
15 I just want to let you know that when we have a  
16 disposal facility, we have state regulators. They  
17 monitor around our facilities, and they monitor  
18 around our sites. And, as far as I know, most of  
19 that information is put on publicly available web  
20 pages and in annual reports. So that anybody has  
21 access to the data that they have received.

22 So it's not that we put these facilities  
23 in and then we're doing it behind closed doors. It's  
24 a very open process with our state regulators, even

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1 though the actual facility is self-regulated in how  
2 we manage that one little facility, but all the land  
3 around it is being regulated, both by DOE and by the  
4 state regulators.

5 And when we close the facility, it  
6 becomes a CERCLA site. So then it's the state and  
7 EPA and primarily EPA as the regulator for CERCLA.  
8 But the way the construct of these regulatory  
9 agreements is, it's both usually the state and EPA.

10 So when DOE closes a facility, we put a  
11 cover on it. It doesn't go away. We watch it  
12 forever.

13 And just before you talk, I just want to  
14 tell you when we do the 100-year institutional  
15 controls, what we're seeing is not that we're only  
16 going to control the facility for 100 years. It's  
17 the fact that we're going to make an assumption for  
18 our calculational purposes that something happens and  
19 we no longer are sitting there. So we're saying  
20 that, for at least a time period of 100 years or 300  
21 years or whatever it becomes for NRC's regulatory  
22 purposes, that is just an assumption we use. It's  
23 not anybody saying that's all we're going to be there  
24 for. It's just we had to come up with a number that

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1 said when you're doing your calculations, this is  
2 what you do.

3 So it has no validity other than we're  
4 trying to come up with a number of what we think.  
5 But since we think this government is going to be  
6 around another few hundred years, it is a good idea  
7 to say that we are going to maintain it and we are  
8 going to be checking for potholes or whatever on the  
9 top of the facility.

10 And one other thing was the ICRP dose  
11 calculations. That's just how the international  
12 community does these calculations of dose. And it's  
13 just as technologies get better and as computer  
14 modeling gets better, there are just improvements to  
15 be made. It doesn't increase or decrease anybody's  
16 dose. It's just how we calculate it. And it doesn't  
17 impact safety. It is what is incorporated into that  
18 dose calculation.

19 MS. D'ARRIGO: On the last point, what  
20 it does do is it could increase people's legal dose  
21 because it is increasing in 10 CFR 20, appendix B  
22 when the new standards were adopted and in the  
23 transport regs. The allowable concentrations went  
24 up. So that legalizes a higher dose to people or a

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1 higher release into the waterways or into the air.  
2 And so it does make a difference.

3 So the update is changing the dose  
4 number. Instead of saying it's however many  
5 millirems the old millirem definition, the new  
6 millirems effective dose-equivalent might be a lower  
7 number of millirems, but the amount of radioactivity  
8 to which people can be exposed or that may be  
9 released from the facility goes up.

10 MR. CAMERON: Thank you. Thank you,  
11 Diane.

12 Let's hear from Bill Dornsife and Lisa  
13 Edwards. And then let's go to the phones. And then  
14 we'll come back to those of you in the room. And we  
15 might be a little bit late for lunch, but I want to  
16 make sure that we hear from as many of you as  
17 possible. Bill Dornsife?

18 MR. DORNSIFE: Bill Dornsife, Waste  
19 Control Specialists. I enjoyed the mostly esoteric  
20 discussion you all had this morning. All you needed  
21 was a member of the clergy to talk about the moral  
22 issues of what you talked about.

23 MR. CAMERON: I thought that was  
24 Magette.

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1 (Laughter.)

2 MR. CAMERON: No, I'm sorry.

3 MR. DORNSIFE: Maybe Chip could have  
4 done that.

5 But I don't think you really answered  
6 any of the questions that we are struggling over. To  
7 me I think, at least for our site, it's fairly simple  
8 in terms of dealing with these issues. First of all,  
9 whether you want time of compliance, which I don't  
10 like, by the way, because compliance implies  
11 comparing measured data with regulatory requirements  
12 -- I like period of performance better.

13 But, anyway, you know, for our site, it  
14 doesn't matter because if you look at the various  
15 exposure scenarios that you have to look at from the  
16 entire spectrum of performance assessment -- we're  
17 not just talking now groundwater dose. We're talking  
18 about other kinds of exposure for the worker  
19 exposure, which is a performance assessment. For the  
20 accident exposure, for the intruder exposure, that is  
21 a function of the concentration of the waste.

22 And the intruder scenario is the only  
23 one that considers a decayed source term. The issue  
24 becomes how long should you decay it. I mean, if you

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1 have engineered barriers like we have and the  
2 critical radionuclide is cesium, can you take credit  
3 for the reinforced concrete? If you can, cesium all  
4 goes away and it's not a scenario for the drawer.

5 But the real important thing there --  
6 and I've heard nobody mention it -- is the  
7 assumptions you make for that intruder scenario. I  
8 mean, that is the key for a concentration-based  
9 scenario.

10 For the air pathway and the groundwater  
11 pathway, it is an inventory issue. And, you know,  
12 again, for our site, when you are looking at the air  
13 or groundwater pathway, all you ever see is the  
14 phantom four. And the phantom four is really not the  
15 manifest phantom four because the phantom four is  
16 chlorine-36 has crept in, which is not a class  
17 driver. So it never shows up in the manifest, but it  
18 is probably there. And it should be maybe considered  
19 of how you would estimate that.

20 That's the only thing that shows up. So  
21 we don't care what period of performance is. What  
22 we're concerned about is the peak dose and how that  
23 gets implemented into inventory levels.

24 And nobody mentioned that. You know,

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1 one of the key parts of the original performance  
2 assessment NRC guidance was you take these peak doses  
3 and convert them into inventory limits. And the  
4 problem is how you do that, you know, how you  
5 discount for very long peak doses, how you discount  
6 and how you essentially -- you know, what assumptions  
7 you use to develop an inventory limit.

8 You know, in our case, we think some  
9 unreasonable assumptions were made. And we're kind  
10 of stuck right now with what we feel aren't  
11 reasonable inventory limits that really don't make a  
12 whole lot of sense.

13 Another thing I quickly want to talk  
14 about is nobody mentioned probabilistic risk  
15 assessment. You know, Larry said it just came from  
16 the PRA, originally from the PRA. You know, it's  
17 birthless in PRA, but, you know, is the regulation or  
18 the guidance going to contain anything regarding the  
19 need to do a probabilistic risk assessment?

20 And, you know, I think that is kind of a  
21 two-edged sword because once you get in the  
22 probabilistic assessments, you have a whole bunch of  
23 additional arguments over what probability you put on  
24 the various scenarios.

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1           Who is going to agree on that? The  
2 public doesn't understand probabilistic risk  
3 assessments. And if you just probabilistic  
4 assessments, what is the compliance requirement?  
5 Ninety-five percent confidence level? What is it?

6           Finally, I think one of the things that  
7 the regulation, at least the draft regulation,  
8 addressed was the need to consider site  
9 characteristic changes. One of the reasons we feel  
10 so confident about our site and probabilistic risk  
11 assessment is the fact that we were required to look  
12 for 50,000 years into the future for changes in site  
13 characteristics.

14           Let's face it. Changes in site  
15 characteristics are going to be what drives your  
16 long-term PA probably more than anything. If you  
17 have erosion, if you have increases in rainfall, we  
18 had to assume double the rainfall in our PA.

19           However, we have no guidance of how to  
20 use that double rainfall in terms of establishing  
21 limits, inventory limits, or otherwise. So I think  
22 the issues are really -- to me, it's how you address  
23 peak doses, how they get implemented as inventory  
24 limits. You know, a lot of this other stuff is

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1 really not important.

2 MR. CAMERON: Thank you. Thank you,  
3 Bill. I would love to have a colloquy on these  
4 issues. So let's do it quickly.

5 MR. ESH: This is Dave from NRC. On the  
6 probabilistic issue, Bill, yes, the guidance will  
7 provide information on probabilistic analyses. Our  
8 approaches have always been not necessarily in  
9 low-level waste because the regulations are dated,  
10 but in some of the other programs that we work on and  
11 do similar types of analyses, that the licensee can  
12 do the type of analyses that they see fit that  
13 demonstrates that they meet the requirements.

14 So if they want to do conservative  
15 deterministic analyses, they can do conservative  
16 deterministic analyses. If they want to do  
17 probabilistic analyses, they can do that. So  
18 basically we don't say that you have to do one sort  
19 of approach.

20 If you do have a lot of uncertainties,  
21 though, there are definitely advantages to  
22 considering a probabilistic approach because of some  
23 of the complex interactions that occur among those  
24 uncertainties in the models that can occur depending

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1 how you built your models, of course.

2 And then the metric that we use when  
3 people do probabilistic analysis is usually the peak  
4 of the mean output as the metric that we consider.

5 MR. CAMERON: All right. Thanks.  
6 Thanks, Dave.

7 Yes, Paul?

8 MR. BLACK: Yes. I agree with Dave  
9 largely. There are real benefits to doing a  
10 probabilistic analysis. And part of what Dave is  
11 alluding to is the way we can perform sensitivity  
12 analyses. Sensitivity analyses on a deterministic  
13 model are often performed one variable at a time.  
14 It's about all you can do.

15 In a probabilistic analysis, you can  
16 look at it all simultaneously. It is a huge  
17 advantage. That is apart from the benefits of  
18 building probabilistic analyses into decision  
19 analysis structures that we are talking about in  
20 general here anyway.

21 I will go further, though. When DOE and  
22 NRC are talking about peak of the means, that to me  
23 is a strange metric to be using. I understand, at  
24 least I think I understand, where it came from. And

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1 the idea really is to protect people in the worst  
2 year at some point in the future. That means we are  
3 ignoring all other years. Why? I have never really  
4 understood that. It seems to me that we should be  
5 looking at what is going on over the course of time.

6 And one PA that we worked on at the  
7 Nevada test site in looking at various types of  
8 scenarios by which somebody could get exposed, well,  
9 if you think about the Nevada test site in some other  
10 locations that we have in our country for disposal of  
11 waste, we're talking about places where nobody has  
12 ever lived. There has never been anybody out there.

13 And so if you try to evaluate scenarios  
14 out into the future, in some of those years, if you  
15 want to simulate out into the future possible  
16 populations, some of those years there is zero dose.  
17 If all we look at is peak of the means, we never take  
18 any credit for anything like that. We essentially  
19 treat peak of the means the same as we do at Savannah  
20 River, the same as we do at Nevada test site. How  
21 does that make sense, really? I really struggle with  
22 it.

23 The population differences are so vast.  
24 And if you go back to why we have a lot of these

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1 facilities where they are, they are essentially  
2 decisions that our government made a long time ago  
3 that we are going to put these facilities where there  
4 are no people. And, yet, somehow we evaluate these  
5 as if there are going to be people there every year  
6 into the future and a lot of them. To me we would be  
7 better off with a different metric than that.

8 MR. CAMERON: Okay. Thanks.

9 Let's go to Lisa Edwards and check in  
10 with people on the phone. And then we have about six  
11 others here in the audience. I think we need to stop  
12 at noon. That puts us about a half-hour, 20 minutes  
13 behind, but we'll just have to live with that.

14 Go ahead.

15 MS. EDWARDS: Lisa Edwards with  
16 Electrical Power Research Institute. I really have  
17 two main points to make. The first related to the  
18 period of performance or time of compliance.

19 When EPRI looks at the inventory that  
20 exists now in the low-level waste disposal sites, 90  
21 percent of the activity that is being disposed of  
22 comes from commercial nuclear power plants. And at  
23 500 years after site closure, the remaining activity  
24 is grossly dominated by carbon-14 and TRU, which are

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1 basically going to be at that, whatever level they're  
2 at, for a very long period of time. And they're  
3 both, in both cases, with carbon-14 and the TRUs, at  
4 about 10 percent of the Class A limits. This is  
5 looking at the entire inventory.

6 So when I think about how this might  
7 play out in a regulatory space, I think, hmmm, at 500  
8 years, all your short-liveds are gone. This is with  
9 everything except for depleted uranium, right? And  
10 if you double that time period, you get to 1,000  
11 years, it matches what the DOE has. There is some  
12 uniformity there, which I think builds public  
13 confidence when the same hazard is managed in a very  
14 similar way.

15 And when I hear things like 10,000 years  
16 and 20,000 years for a period of compliance, I think  
17 it confuses the public. I think somebody said they  
18 don't believe you that you can project out to there.  
19 I agree with that.

20 And on a technical level, it is  
21 offensive to me because you can't calculate a dose at  
22 that time period because you don't know human  
23 activities. You don't know topography of the land,  
24 the pathways that are going to be there, et cetera.

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1           But I will go back to the original  
2 point. If the hazard -- the time of compliance  
3 should be based upon the hazard that is present. The  
4 bulk of the hazard here is coming from the nuclear  
5 power plants. And after five years, you are down to  
6 carbon-14 and TRUs, which are at 10 percent of the  
7 Class A limits. Therefore, I think a 1,000-year  
8 period of compliance is appropriate.

9           Now, DU may be a special case. And if  
10 it is a special case, then, rather than change all  
11 the rules to match this one single waste stream,  
12 let's have a set of rules that governs the general  
13 waste stream and makes special requirements if that  
14 waste stream has a particular set of characteristics  
15 that makes it very different than the rest of the  
16 waste being disposed of.

17           The second point that I would like to  
18 make is on intergenerational -- intragenerational --  
19 I think it is actually intergenerational equity. We  
20 hear those terms come up a lot.

21           The thing that confuses me about it a  
22 little bit is in those discussions, it appears to me  
23 that we ignore the fact that there are  
24 intergenerational equity issues present, whether

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1 disposal takes place or not.

2 So when we look at the disposal  
3 environment and what the impact of disposing of a  
4 certain waste stream might be for this generation  
5 versus whether another generation will be exposed  
6 1,000 years from now or 500 years from now, that is  
7 part of the argument.

8 But the other half of the argument is if  
9 you don't dispose of that waste. It isn't that that  
10 waste is no longer being generated or doesn't present  
11 a hazard in another environment. It does.

12 And we have kind of embraced that  
13 concept with Abby and with the sources that it is  
14 better to have it in a disposal environment for  
15 future generations.

16 So when EPRI does work, we look for the  
17 beneficial use of electricity. And the public is our  
18 ultimate stakeholder. And, consistent with NRC  
19 policy, we think disposal is the very best venue. So  
20 regulations that promote safe disposal, a greater  
21 amount of safe disposal of activity we think is in  
22 the better interest of the public, both for this  
23 generation and for future generations.

24 MR. CAMERON: Thank you. Thank you very

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1 much, Lisa.

2 Quick comment?

3 MR. LUNDBERG: Yes, just quick. Lisa,  
4 just so you know, that was my very point when I  
5 started is that we do have a separate rule addressing  
6 DU in Utah for that very reason that you are bringing  
7 up.

8 MR. CAMERON: Okay. Thank you, Rob.

9 Bridget, we are going to try to get a  
10 couple of people on that are on the phones. Can you  
11 give us the first one?

12 THE OPERATOR: If you would like to ask  
13 a question, please press \*1.

14 MR. CAMERON: Bridget has changed.

15 (Laughter.)

16 (Pause.)

17 MR. CAMERON: Okay. Let's come back  
18 here to Rockville. And we're going to go to, I guess  
19 it's, Lee Thomasson and then Arjun. And we have Dave  
20 Kocher back there and Dan and Christopher.

21 So let's get all of you on, starting  
22 with Lee. Okay. All right. Thank you, Lee. And  
23 there will be other opportunities throughout the  
24 afternoon. So Arjun?

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1 DR. MAKHIJANI: No surprise, I'm going  
2 to be a little contrarian. Arjun Makhijani.

3 I don't think two periods of performance  
4 are necessary. I don't think two periods of  
5 performance are necessary. This problem has arisen  
6 from what has just been discussed as trying to fit  
7 depleted uranium into, large amounts of depleted  
8 uranium into, a rule that was explicitly meant to  
9 exclude large amounts of depleted uranium when it was  
10 created.

11 And it's not the only waste that has  
12 that characteristic. You know, of course, as has  
13 just been mentioned, transuranic waste has very  
14 long-lived characteristics in carbon-14.

15 And I think if we can't calculate doses  
16 for the periods to which these wastes will remain  
17 risky in the future, then I know we have existing  
18 waste to deal with. But I don't support a repository  
19 because I think it's a good thing. I support a  
20 repository because it is less dangerous than leaving  
21 it forever on site.

22 For the same reason, I don't endorse  
23 creating more waste. You said, are we going to do  
24 without nuclear power? And I think we should. I

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1 don't think the idea of intergenerational equity that  
2 we can leave it to technological progress in the  
3 future as a sound one. Technological retrogression  
4 can also happen. And history demonstrates that  
5 technological retrogression happens. And then what?

6 So I would suggest a golden rule. We  
7 should not treat future generations to any lower  
8 standard than we treat ourselves, which means we have  
9 to calculate a dose. If you can't calculate a dose,  
10 tough. We should revisit it.

11 If we're going to do depleted uranium,  
12 you know, you can assume very low erosion. And, you  
13 know, we did it for the WCS site. And you can come  
14 up with a very low dose. You can assume higher  
15 erosion within the range of erosion parameters that  
16 are there for the WCS site and come up with doses of  
17 hundreds of rem for the same site, all with  
18 reasonable parameters.

19 And if that is the range, then we should  
20 take the worst case. I don't disagree with this idea  
21 of, you know, notional. But I would recommend that  
22 it should be a worst case calculation with upper  
23 limit reasonable parameters. And if you are coming  
24 out in la-la land for doses, hundreds of rem, you

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1 can't do that. And we already know we come out with  
2 hundreds of rem with depleted uranium. So we can't  
3 be doing shallow land barrier.

4 The DOE does more than 1,000 years, but  
5 what does DOE do with those calculations? Well, you  
6 look at the Hanford site and what DOE has done in its  
7 waste management EIS. And it calculated that  
8 groundwater contamination from plutonium would be  
9 hundreds of times to the drinking water limit and  
10 carbon-14 would be hundreds of times of the drinking  
11 water limit. And that was the peak dose. And it's  
12 still going to dump those wastes in the 200 area.

13 So it did this calculation. It came up  
14 with the result that should have been an acceptable  
15 model not only to the DOE but to its supervisor  
16 supposedly, the State of Washington and the EPA. And  
17 the State of Washington hasn't said anything much,  
18 even though the groundwater belongs to it. It is  
19 because there are \$2 billion that go to Hanford every  
20 year. It is very difficult to make that decision.  
21 And what we're doing is saying we are going to  
22 benefit ourselves. And that's the ethos of today.  
23 We're going to benefit ourselves and dump our future  
24 generations.

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1           This     has     to     become     completely  
2 unacceptable.   We have got to stop doing things in  
3 which we say it is okay to benefit ourselves and we  
4 are going to leave it to great technology and  
5 technological progress because we have iPhones today  
6 and we had land lines 30 years ago. This seems to me  
7 to be extremely shortsighted and selfish thinking  
8 that we ought to get rid of. And it's a central part  
9 of our environmental social justice problems.

10           (Laughter.)

11           MR. CAMERON: Thank you, Arjun.

12           Let's hear from Dave. And then we'll go  
13 over to Dan. Dave Kocher?

14           MR. KOCHER: David Kocher, SENES Oak  
15 Ridge. I was interested in the little bit of  
16 discussion earlier this morning about the  
17 institutional control period. I guess to me the  
18 institutional control period is an essential part of  
19 the multiple-barrier concept, which I believe has not  
20 yet been banished. I think that is still bedrock  
21 principle number one. So be a little careful about  
22 extending it way out in time.

23           A practical result of extending the  
24 period, institutional control period, to 300 years

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1 would be you could put all of the cobalt-60 in the  
2 world into a shallow trench, highly concentrated. I  
3 am not sure that is a good idea. So just be mindful  
4 of this. Another point was this whole time period.  
5 How long should we try to regulate something?

6 A way to look at this -- and I don't  
7 know exactly where it gets you -- is imagine we're  
8 sitting here today and somebody put something in the  
9 ground X years ago. What would we accept from what  
10 they did in the past? Would we be willing to say  
11 that before the year 1500 we didn't care what they  
12 did? I'm not sure that's a great way to look at it.

13 I tend to favor because we are using  
14 performance assessment and periods of performance as  
15 a tool for decision-making, I tend to favor a bit  
16 longer times. I opposed the DOE 1,000 years. I  
17 mean, I lost that fight, but I have lost many fights.

18 We need performance periods that are  
19 sufficiently long to encourage good sites and good  
20 designs. And my concern was that 1,000 years may not  
21 do the job. I could be wrong.

22 On the intergenerational equity, I had a  
23 private discussion with David Esh because I am not  
24 totally up to date here. I think that the IAEA's

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1 Waste Safety Convention basically forbids us from  
2 saying, you know, beyond 500 years, we don't care.  
3 And I think we signed that. And so I think we've got  
4 to be careful about some things that we are legally  
5 obligated to do.

6 MR. CAMERON: Okay. Thank you, David.

7 And David?

8 MR. ESH: Yes. In the joint convention  
9 on the safety of spent fuel management and the safety  
10 of radioactive waste management, which the U.S. did  
11 sign, the two relevant articles, I would note, say --  
12 this is article 6 -- "Strive to avoid actions whose  
13 reasonably foreseeable repercussions on future  
14 generations are greater than those accepted for the  
15 present generation." And the other one is number 7,  
16 "Attempt to prevent undue burdens from being placed  
17 on the generations of the future."

18 So, you know, it is taking what is in  
19 the literature called more of a weak anthropocentric  
20 approach, but there are other groups that take a  
21 strong approach, so like the OECD had a committee on  
22 radioactive waste, where they basically took a strong  
23 approach. They said, not that you should strive to  
24 protect and that sort of thing, but basically you

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1 should use the same safety requirements that you are  
2 putting on the current generation on the future  
3 generation.

4 So like on the numbers for time of  
5 compliance or period of performance, there is a  
6 diversity of views on the intergenerational equity  
7 issue.

8 MR. CAMERON: Thanks, Dave, for that  
9 clarification.

10 And Tim?

11 MR. McCARTIN: Just one perspective on  
12 that same thought is, regardless of what compliance  
13 period or period of performance is set -- and let's  
14 just, for sake of argument, say it's 10,000 years.  
15 If you look longer and you see something at 11,000  
16 years, you are going to look at it a lot differently  
17 than the impact you might see, that same impact if it  
18 occurs at, say, a million years.

19 And I think as you look, that is the  
20 part that is difficult for the whole subject. As you  
21 look out further in time, you have to weigh the fact  
22 that this is getting at these time scales when you  
23 are talking a million years. That is a very long  
24 time.

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1           And also just from the standpoint, as  
2 was raised, when you look back, yes, you would like  
3 to think people 20 years ago didn't do something in  
4 your back yard that really impacted you. You start  
5 going back. Well, did the pilgrims do something that  
6 really -- and, as you go back further and further in  
7 time, you expect less from the people further back.  
8 And I think that's part of the whole  
9 intergenerational equity thing that I think you can't  
10 get upset at what the pilgrims might have done.  
11 Maybe what someone did 20 years likewise, I think  
12 50,000 years from now I doubt if they're debating,  
13 boy, we're really upset with what people did 50,000  
14 years ago.

15           And how you weigh that, in what the best  
16 approach is, it is complicated.

17           MR. CAMERON: Okay. Thanks, Tim.

18           Let's go to Dan Shrum and then to  
19 Christopher Thomas. And then we're going to break  
20 for lunch. Dan?

21           MR. SHRUM: Hi. My name is Dan Shrum.  
22 I'm with EnergySolutions. Before I get on the  
23 compliance period, something was just mentioned that  
24 I have got to address. Taking the worst case

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1 scenario, just so you know, one in four people will  
2 get food poisoning this year. And probably one in  
3 four or five will be in an automobile accident. So  
4 based off those two statistics, you can't leave this  
5 room and you can't go get lunch. Okay? Well, that's  
6 just silly.

7 So taking the worst case scenario isn't  
8 going to get us anyplace. It can be evaluated. It  
9 can be looked at probabilistically. But just  
10 accepting the worst case scenario means we will never  
11 leave this room. And I would like to leave at some  
12 point, and I am really hungry.

13 Things were discussed. But one point  
14 that we kept hearing as we were listening in the back  
15 is this concept of an engineered system in geologic  
16 time. Mick brought it up, and Tim brought it up. My  
17 only point on the time of compliance, period of  
18 compliance, whatever that may be, is there is that  
19 balance between how are we going to weigh an  
20 engineered system and our belief as a group on how  
21 long that engineered system will last and these  
22 geologic time frames that we are also discussing.

23 Our concern is if we focus and have a  
24 really long time of compliance, we can't prove to you

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1 or to anybody that our systems, our engineered  
2 systems, will last that long. So we have got a  
3 problem there.

4 Now, if we say, "I am only going to look  
5 at it as long as I believe my engineered system will  
6 work," then we have got this other issue that we're  
7 not looking at it in a holistic approach. We're not  
8 capturing a peak concentration. I'm not going to  
9 ever say "peak dose" because Paul looks at me dirty  
10 when I do that. So that is the balance. I believe  
11 that's what Dave will have to address.

12 How do we combine those two? Where do  
13 those two things cross? A reasonable time where we  
14 trust our engineered systems and we can convince the  
15 public of that. And let's look out. And if those  
16 happen to fail or if these things happen, what is the  
17 worst thing that is going to happen if those systems  
18 fail and somewhere in there -- and if it's 1,000  
19 years, that's a good time frame. If it's something  
20 other than that, I think we can live with that.

21 But in the original paper that was  
22 written, this was discussed. Let's not lose sight of  
23 the fact that we have got to get those two things to  
24 cross. And then no one will be happy, but we can

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1 deal with it next.

2 MR. CAMERON: Okay. Thanks, Dan.

3 And Christopher?

4 MR. THOMAS: Just to make a couple of  
5 brief points because I am going to be on a panel  
6 later this afternoon. I just wanted to say that I am  
7 completely comfortable with a long period of  
8 compliance for a waste stream that has a long period  
9 of hazard. I mean, it just makes sense.

10 I have been totally opposed to the  
11 notion that the Commission now wants to impose a  
12 reasonable time frame on a hazard with an  
13 unreasonable risk, time frame of risk.

14 So the second thing is I am totally  
15 comfortable with the intruder scenario. I think that  
16 as long as you have got a near-surface disposal  
17 facility, there is a sort of a risk of intrusion and  
18 that calculating a dose to that intruder gives a  
19 thumbnail sketch to policy-makers and  
20 decision-makers, what kinds of risk could be faced at  
21 what kinds of times with what kinds of wastes that  
22 you're dealing with. And there is some conservatism  
23 to that, but I think there should be conservatism  
24 when we're talking about protecting the public

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1 health.

2 The last comment I wanted to make is to  
3 address something that Paul Black said, where he  
4 talked about maybe we should have a decision-making  
5 framework that weighs risks with benefits. The  
6 reason I don't think you can do that with nuclear  
7 power and nuclear waste in this country is that for  
8 the most part, the benefits and the risks are totally  
9 asymmetric.

10 In other words, the people that are  
11 enjoying the benefits of nuclear power are, in fact,  
12 usually not in the long term facing the risks of the  
13 nuclear waste because you have got Nevada that has  
14 been targeted for high-level waste, no commercial  
15 nuclear power plants; Utah taking most of the  
16 country's low-level nuclear power commercial waste,  
17 no commercial nuclear power plants.

18 So until those two things are put back  
19 together, the risks and the benefits, and they are no  
20 longer asymmetric, I don't think you can really have  
21 that calculation.

22 MR. CAMERON: Okay. Thank you very  
23 much, Christopher. And thank all of you who  
24 commented. And let's see if we can be back at 5 to

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1 1:00 and really keep it to an hour.

2 And a hand of applause for our panelists  
3 because I think they did a great job.

4 (Applause.)

5 (Whereupon, a luncheon recess was taken at 11:57  
6 a.m.)

7

8 A F T E R N O O N S E S S I O N

9 MR. CAMERON: On the record. Okay.  
10 We're going to start with Waste Acceptance Criteria  
11 panel. And obviously we're waiting for John. But I  
12 think maybe we'll start our introductions and  
13 identification of significant issues.

14 (Off the record comments.)

15 All right. We do not have anybody on  
16 the phone for this panel. So all our panelists are  
17 here. And it's the Waste Acceptance Criteria panel.  
18 And like Time of Compliance, we have some issues that  
19 we gave them, some questions for consideration.

20 And there are the panel names and their  
21 affiliations, they're going to introduce themselves.  
22 But here are the questions. And as I told the first  
23 panel we're going to try to build an agenda on what  
24 issues are important to you. So introduce yourself

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1 and say "I think this is the most important issue."  
2 And it could be one of those issues. If you want it  
3 can be something completely different. It can be a  
4 modified one.

5 But I think all of you as we saw with  
6 the Time of Compliance panel you'll all have some  
7 issue that you think we should -- that's important to  
8 address. Let's start with Brad.

9 Brad.

10 MR. BROUSSARD: Thanks, Chip. My name  
11 is Brad Broussard. I'm a Senior Health Physicist  
12 with Texas Commission on Environmental Quality. And  
13 I would like to thank the NRC for allowing me to  
14 participate in this panel and even more so thank them  
15 for not placing me on this morning's panel.

16 (Laughter.)

17 In Texas, what we've done as far as  
18 waste acceptance criteria is during the development  
19 of the license for the disposal site we had put  
20 conditions in there that related to waste acceptance.  
21 In addition, there's a statutory requirement that the  
22 State of Texas develop waste acceptance criteria for  
23 the disposal site. So recently we've expanded that  
24 and incorporated it into the license.

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1 I think and I know this may have come up  
2 in previous discussions about removal of the waste  
3 classification tables in lieu of doing site-specific  
4 assessment and development of waste acceptance  
5 criteria. I'm not sure that I support that. And  
6 that's not really one of the questions or topics, but  
7 it may be something that is open for discussion.

8 MR. CAMERON: Okay. And, John, we've  
9 just started. So that issue is it may not be an  
10 either or proposition. There may be some room to  
11 have waste classification tables and waste acceptance  
12 criteria.

13 MR. BROUSSARD: Right.

14 MR. CAMERON: Okay. Good. And Chris  
15 is our NRC resource.

16 Chris.

17 MR. GROSSMAN: Thank you, Chip. I'd  
18 like to reiterate the comments that Dave Esh made  
19 this morning. We want to thank all the panelists for  
20 your participation and the members of the public who  
21 are here. I think you're greatly going to help our  
22 effort.

23 I am working with Dave and others on  
24 developing the regulatory basis. And my piece of the

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1 puzzle is the waste flexibility for site-specific  
2 waste acceptance criteria.

3 For those who maybe aren't quite as  
4 familiar, Part 61 currently has what I'll call  
5 generic waste acceptance criteria through 61.55 and  
6 61.56. 61.55 is the waste classification system and  
7 that sets the acceptable concentrations for waste to  
8 be disposed. And then 61.56 and other requirements  
9 set to minimum technical requirements that sites must  
10 meet for safe disposal. The rule also allows a  
11 case-by-case exemption for other waste classification  
12 systems in 61.58.

13 And the Commission then has directed the  
14 staff in developing the rule to consider allowing  
15 flexibility to develop site-specific waste acceptance  
16 criteria based on the performance assessment and the  
17 intruder assessment. And they asked the staff to go  
18 out and seek or directed the staff to go out and seek  
19 stakeholder feedback and provide pros and cons for  
20 this approach.

21 So my interests in this effort are I  
22 have a few questions I think that kind of topped my  
23 list is (1) why should NRC provide flexibility. What  
24 regulatory problem are we trying to solve by adding

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1 this to the rule?

2 Then (2) and this is related is what are  
3 the advantages and disadvantages of the flexibility.

4 Three is how much flexibility should NRC  
5 provide for a site. Should there be minimum  
6 technical requirements that sites can go beyond or  
7 should the sites be able to set it?

8 And then the fourth one which will be  
9 mostly in terms of developing the rule language once  
10 we get through the regulatory basis is how to specify  
11 that flexibility. What's the appropriate level  
12 particularly in terms of what needs to be in  
13 regulation versus what needs to be in guidance? I  
14 think I said enough there.

15 MR. CAMERON: And, Chris, just so I make  
16 sure that I have that in terms of the flexibility  
17 would be provided by including waste acceptance  
18 criteria. Or can you just explain it?

19 MR. Grossman: The flexibility is how  
20 much flexibility should sites have in specifying and  
21 setting up waste acceptance criteria waste acceptance  
22 criteria. Should there be things that the rules  
23 specifies or should it be very general  
24 performance-based and let the sites determine what

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1 those criteria are?

2 MR. CAMERON: All right. Thank you.

3 And I just want to remind everybody for  
4 our people on the phones if you could just make sure  
5 that you pull the microphone close to speak. And  
6 this is Dave Kocher.

7 MR. KOCHER: My name is David Kocher  
8 from SENES Oak Ridge. I have to confess right up  
9 front that I've been out of the waste business for  
10 more than ten years now. But I do have some  
11 institutional memory and knowledge of how we got into  
12 this mess in the first place which may or may not be  
13 useful.

14 A little about my personal experience.  
15 I worked at Oak Ridge National Lab for about 30 years  
16 and for the last ten years or so I was a member of  
17 performance assessment teams that did the PAs at two  
18 sites at Savannah River, the Z area and the E area,  
19 and two facilities in Oak Ridge, SAWSA (phonetic) 6  
20 which was built and a central waste disposal facility  
21 which was just a piece of paper.

22 During that period I was also the Oak  
23 Ridge representative to the Performance Assessment  
24 Task Team, the PATT, which was an EM construct. We

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1 were a little mini think tank that provided some  
2 input and guidance on performance assessment issues  
3 to DOE.

4 And I do think we had a considerable  
5 amount of influence in the development of Order  
6 435.1. I think a lot of the ideas that we generated  
7 from their way into that as something that I think we  
8 can be quite proud of.

9 I think the devil is always in the  
10 details. But I think DOE basically had the right  
11 idea about the way they went about using intruder  
12 dose assessments as a basis for decision and sort of  
13 the flexibility and the site specificity that they  
14 had which I think is basically a good thing.

15 I also had the honor and I say this  
16 honestly of participating in the workshop in Salt  
17 Lake City back in 2009 on the DU issue. And I got a  
18 lot more out of that than I think I imparted to  
19 anyone else. I certainly came away from that  
20 workshop -- Since DU is on the table today, I came  
21 away from that workshop pretty firmly convinced that  
22 DU is a different breed of cat. You may attach the  
23 low level waste to it, but it certainly doesn't look  
24 like a duck or quack like a duck or walk like a duck.

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1 It's something else.

2 And I don't think it would be totally  
3 out of bounds for NRC to consider the possible  
4 benefits of an entirely different set of rules for  
5 disposing of that stuff outside of Part 61. Because,  
6 remember, Part 61 is not a rule-making for low level  
7 waste disposal. It's a rule-making for near-surface  
8 disposal of radioactive waste.

9 Something else I would say about what  
10 I've done is in some of the packets of information  
11 that I read coming to this meeting, there was a  
12 discussion of the IAEA waste classification system  
13 and the advantages that it has over what we have in  
14 the U.S. And, of course, I could talk all afternoon  
15 because I've written and talked about this before  
16 about the problems of our classification system. But  
17 I would ask NRC not to overlook NCRP Report 139 on  
18 risk-based classification of radioactive and  
19 hazardous chemical waste. I'm proud to say that I  
20 wrote of that.

21 For purposes of this discussion, that  
22 report makes two essential points. Point one is what  
23 is the purpose of an intruder dose assessment at the  
24 end of the day. Stripped away of all the details and

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1 all of the complexities, the basic function of such  
2 an analysis is to determine what waste is acceptable  
3 for near-surface disposal and what waste is not.  
4 That's the basic function of this thing.

5 It has very little to do with  
6 calculating real doses to real people. You don't  
7 necessarily expect that these scenarios are going to  
8 happen at some time in the future. But it is a  
9 rational way of deciding what has to go to a  
10 repository or some intermediate facility and what is  
11 accepted for burial. And that's the function of the  
12 intruder analysis.

13 The other things that bedrock principle  
14 and NRC 139 which I fully understand the NRC doesn't  
15 want to touch with a ten-foot pole is that any  
16 rational system of waste disposal has an exempt class  
17 of waste. And enough said about that. I perfectly  
18 understand why NRC can't do this.

19 Burning issues on my table here I  
20 mentioned DU already. That requires some really good  
21 thought. And I guess I would emphasize that the  
22 whole business of determining waste acceptance  
23 criteria based on intruder dose assessments is not a  
24 hard problem. It's a not a hard problem. So don't

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1 make it too hard.

2           There are sensible scenarios. Every  
3 site will have a credible scenario of some kind.  
4 Even if the scenario is somebody comes in later and  
5 tries to put a waste disposal facility there because  
6 it's a good site, it's not a hard problem.

7           MR. CAMERON: Okay. I put that down as  
8 the agenda item. Also possible agenda item is the  
9 entirely new set of rules for depleted uranium rather  
10 than trying to fold that into this and make it more  
11 complicated.

12           John, please introduce yourself to us.

13           MR. LePERE: John LePere from WMG  
14 Incorporated. WMG is a nuclear engineering firm. It  
15 was founded basically on a software application that  
16 commercial utilities and some government utilities  
17 use to classify and manifest their waste. But we do  
18 package designs and we assist with radiological  
19 consulting. So it's a fairly wide breadth of  
20 services that we provide.

21           I guess what I bring to the table and  
22 not much else is about 30 years of practical  
23 nuts-and-bolts experience. I guess Larry referred to  
24 me earlier today as a practitioner. I'm the guy that

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1 helps people, helps our clients, get waste in the  
2 ground in a compliant fashion. That's what our  
3 company is about and that's what I know.

4 What I would like to see out of this and  
5 I also really appreciate the opportunity to be on  
6 this panel particularly sitting next to this guy is  
7 the opportunity to influence what goes on. I came  
8 into the business right around the time Part 61 was  
9 going into force. So I've kind of had the  
10 opportunity to grow up with it and see the good and  
11 the bad and the ugly.

12 And I really appreciate the opportunity  
13 to influence what changes get made. And what I'd  
14 like to see coming out of this is that we take a much  
15 better approach at recognizing and taking credit for  
16 the improvements in technology particularly in  
17 disposal that have occurred over the years. We've  
18 got a huge database of information to work with that  
19 wasn't necessarily available when Part 61 was first  
20 implemented. So I think we need to make use of that  
21 and have better risk-informed disposal.

22 MR. CAMERON: And from the standpoint  
23 perspective of a practitioner and tied to the better  
24 use of technology, is there an issue that you would

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1 like the panel to explore that's related to that  
2 practical aspect that would be in the rule or not in  
3 the rule?

4 MR. LePERE: I think some good strides  
5 were made with the changes that are being drafted to  
6 the branch technical position and I think the next  
7 obvious extension to that would be whatever changes  
8 we might put in Part 61 that start taking a better  
9 recognition of the improvement in technology.

10 I mean the way we dispose of waste now  
11 as opposed to the way we disposed of waste 30 years  
12 ago when I started is just drastically different.  
13 And we need to take credit for all of the technology  
14 that we use.

15 MR. CAMERON: Okay. Thanks, John. And  
16 I guess what I put it to the panel on that discussion  
17 would be what would you build into the rule that  
18 would recognize the use of better technology.

19 Thank you, John. Let's go to Tom  
20 Magette.

21 MR. MAGETTE: Thank you, Chip. My name  
22 is Tom Magette. I'm with Energy Solutions. We  
23 operate two of the low level radioactive waste  
24 disposal sites in this country. We also do

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1 decommissioning, packaging, processing of radwaste,  
2 transportation. So we're involved from the  
3 generation to the disposal of radioactive waste and  
4 have been for many years.

5 I would say that I am in favor of a  
6 system that allows you to generate waste acceptance  
7 criteria derived from a performance assessment. And  
8 as to the first bullet on the slide, the reason why I  
9 would favor that is because it is the single best  
10 thing that the Commission could do to truly risk  
11 inform this portion of its regulations.

12 I think it's also inextricably linked to  
13 the other three points that are included in the SRM  
14 that the Commission issued in January on this point.  
15 I think if you're going to have a PA-driven WAC then  
16 you have to have some known period of compliance in  
17 order to evaluate it against. So I certainly would  
18 favor a two-tiered approach that would also  
19 acknowledge that it's worth having a  
20 farther-outreaching period of performance as well.

21 I would disagree with the points that  
22 were made this morning. I think if you're going to  
23 have a period of compliance whether it might be  
24 driven by site-specific features or not is largely

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1 irrelevant. That is extremely relevant to other  
2 issues, but not necessarily period of compliance.  
3 Because I think if you have an unspecified period of  
4 compliance then you don't have a period of  
5 compliance.

6 So I think you need a number. We've  
7 talked a lot about the number this morning. I think  
8 1,000 years is a good number, but that was a  
9 different panel. So I won't really go into that.

10 I think that you have to deal with all  
11 four of those questions at the same time. I think if  
12 you're going to a PA-driven WAC then you should be  
13 doing a performance assessment that's based on the  
14 latest science. I think having a PA that allows you  
15 to use more current ICRP recommendations than what  
16 are currently contained in Part 61 which is the first  
17 point that the Commission raised in the SRM is also  
18 important.

19 And, finally as to the last point about  
20 the compatibility category, I think that the safety  
21 fundamentals that the Commission keyed on is  
22 important. I would suggest that as the Commission  
23 said back in the LES proceedings that in many ways  
24 really kicked all of this off that at the end of the

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1 day the most important thing for judging human health  
2 and safety are the performance objectives, Subpart C.  
3 And so if you're going to compare something with  
4 these performance objectives then you have to be able  
5 to do that in some sort of consistent, reliable way.

6 And so if the performance objectives are  
7 the ultimate measure of safety clearly, that's a  
8 safety fundamental. If what you're going to  
9 comparing with the performance objectives comes from  
10 the WAC that were generated by your PA, then that is  
11 equally important as a safety fundamental.

12 So it really is important to do that the  
13 same way everywhere which argues for a relatively  
14 high level of agreement state compatibility. I think  
15 those are also all very important. All four of those  
16 steps, as I said, linked and they're all an important  
17 part of the process.

18 A lot of other factors have come up  
19 across the course of these public meetings as Larry  
20 described this morning. Some I think are important  
21 and relevant. But none are more important than those  
22 four that are named in that SRM.

23 Another point that has come up is this  
24 notion of other rule-makings and what you might do

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1 next. I would submit that if this rule-making is  
2 done properly then there should be no more need for  
3 another rule- making relative to Part 61.

4 You don't need a separate rule-making to  
5 look at uranium anymore than you do a chlorine. You  
6 don't need a separate rule-making to look at updating  
7 the waste classifications tables because the waste  
8 classification tables are generic. They're based on  
9 a hypothetical waste stream at a generic hypothetical  
10 site.

11 If you have a site-specific analysis to  
12 look at the optimum loading at any given site, then  
13 having a new and improved version of the old, used  
14 generic thing doesn't really serve you any purpose.  
15 So I don't see any reason to have another rule-making  
16 after this one to accomplish some of those objectives  
17 which at the time they were written in various SRMs  
18 were unarguably valid.

19 And I would say one more thing as to  
20 that last point. In so doing I would like to quote  
21 from the Commission's Principles of Good Regulation  
22 which I'm sure most of the people in the room are  
23 familiar with, the fifth one being reliability which  
24 says and I quote "Regulation should be based on the

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1 best available knowledge from research and  
2 operational experience. Systems interactions,  
3 technological uncertainties and the diversity of  
4 licensees and regulatory activities must all be taken  
5 into account so that risks are maintained at an  
6 acceptably low level. Once established, regulation  
7 should be perceived to be reliable and not  
8 unjustifiably in a state of transition."

9 If you finish this rule-making and on  
10 the next day come out and say, "Now we're going to  
11 start on the next one," I can't think of anything  
12 that would more accurately represent an acceptable  
13 state of transition. Simply nothing will happen in  
14 response to this rule-making if every stakeholder  
15 believes it's only step A because they will want to  
16 know what step B is.

17 MR. CAMERON: Okay. Thank you.

18 MR. MAGETTE: Thank you.

19 MR. CAMERON: Thank you, Tom. And,  
20 Chris, just let me make sure that your statement,  
21 your issue, about flexibility really is the same  
22 issue that Tom identified in terms of the first issue  
23 on the questions.

24 And if, Don, you can put the questions

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1 up for us. Okay. Good.

2 Jhon Carilli.

3 (Off the record comments.)

4 MR. CARILLI: Yes. My name is Jhon  
5 CARILLI. I am the -- I work with the Department of  
6 Energy. I operate the Nevada National Security Site  
7 low level waste disposal facility. It's a regional  
8 facility for the Department of Energy.

9 I think I need to mention that we do  
10 have a waste acceptance criteria that is based upon a  
11 performance assessment. And it's not hard to develop  
12 such a program. I'm sorry. I mean it's not easy to  
13 develop such a program.

14 It works very well. But it's also not  
15 prohibitively hard to develop such a program. When  
16 you dispose of waste using a PA system, there's a lot  
17 that goes into that that makes that work including  
18 stakeholder involvement and participation.

19 The other thing that I'd like to mention  
20 -- I just lost my train of thought. But anyhow we  
21 actually use a PA-developed WAC system. Yes, I know  
22 what I wanted to mention. Tom took all the wind out  
23 of my sail. So it's just going to just a rerun of  
24 what was said earlier.

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1           With the PA system that looks at all the  
2 risks, that makes the risk assessment, there is an  
3 advantage to having that flexibility. And in the way  
4 that I'm looking at it is then you don't have to --  
5 Several people proposed having a separate rule-making  
6 for depleted uranium.

7           However, if you have a PA system, you  
8 run it through your modeling. You run it through  
9 your WAC. You run it through all those other  
10 documents that you make. And it can either go in  
11 your facility or it can't go in your facility. So  
12 there wouldn't be a need for another rule-making or a  
13 separate rule-making for depleted uranium. Even  
14 though it doesn't look like or act like regular low  
15 level waste when you run it through the PA system,  
16 you can find out whether or not you can shallow land  
17 bury it or not. So I think that's one big, huge  
18 advantage to having a site- specific waste acceptance  
19 program.

20           MR. CAMERON: Okay. And I think we're  
21 going to -- And I'm going to obviously let you --

22           MR. CARILLI: You're going to cut me  
23 off.

24           MR. CAMERON: -- go on. But I think

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1 we're starting, all of us, all of you, are starting  
2 to answer some of the questions now. And the first  
3 issue that seems to me that we're going to go to is  
4 that why should NRC provide flexibility. And you're  
5 beginning to answer that question which is good. And  
6 I think when we get to that first question let's go  
7 to you to talk about why provide flexibility.

8 But is that the big issue for you too is  
9 that first one up there which is "Why should NRC  
10 specify flexibility"? And you tied together  
11 beautifully the separate rule-making issue which will  
12 flow I think out of the why provide flexibility. And  
13 I think what I heard from you and Tom is that if you  
14 have the flexibility there that flexibility will  
15 allow for the consideration of any type of waste and  
16 you don't need a separate rule-making.

17 But with that go ahead, John.

18 MR. CARILLI: Well, let me answer part  
19 of a question you asked or maybe a whole question  
20 that you asked. When I look at the tables that the  
21 NRC uses, I have to let you know that I don't operate  
22 under that table. I operate under DOE 435.1. And  
23 when I look at the tables and I look at what I could  
24 do, I see there's huge advantages. So the only

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1 system I've ever really known is a PA system that  
2 drives your site- specific waste acceptance criteria.

3 I have not lived in the commercial world  
4 where they have to decide whether or not it's a Class  
5 A, Class B or Class C or Greater Than Class C. And I  
6 really like the DOE method of doing things because it  
7 gives -- you do look at specifically what that waste  
8 stream is going to do and how -- is it going to meet  
9 your performance assessment or not. I'm sorry. Not  
10 performance assessment. Performance objectives or  
11 not. Actually, I'm done.

12 MR. CAMERON: Okay. And on that last  
13 point if it fits into the discussion, are there  
14 differences between the environment, not natural  
15 environment, but the environment that DOE operates in  
16 from the environment that NRC agreement state  
17 licensees operate in that would lead you to treat the  
18 waste acceptance criteria differently. We'll see if  
19 that makes any sense at all.

20 And John.

21 MR. TAUXE: I'm John Tauxe. I'm with  
22 Neptune and Company. An environmental engineer. And  
23 I guess what I would -- Well, first, I'm really happy  
24 to be on the panel here.

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1           And what I bring to this is another kind  
2 of nuts and bolts experience. I don't have waste  
3 handling experience and that sort of thing. But the  
4 experience I have is nuts and bolts of performance  
5 assessment and of the many sites around the country I  
6 guess I've been involved in in perhaps one-third or  
7 one-half of them.

8           Got my start with the team that David  
9 Kocher and I were on at Oak Ridge working on  
10 performance assessment there. And then when I joined  
11 Neptune we had been getting into other ones. And  
12 Neptune turned me from being just a hydrogeologist  
13 modeler who enjoyed modeling for modeling sake to  
14 understanding why this is being done which is  
15 ultimately decision making. Modeling feeding into  
16 risk assessment feeding into decision making. That  
17 was good. It gave me a reason for being.

18           But in all this performance assessment  
19 work I've gotten into a lot of the intimate details  
20 of how a lot of different sites work. And what's  
21 fascinating to me is that maybe going into a site you  
22 think "Oh, I have a pretty good idea of how this  
23 thing is going to be. It's sort of like this other  
24 site. So let's start with that."

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1           And then as you build it out and you  
2 learn more and more about a site they are all so  
3 different.       And they all have different  
4 vulnerabilities, different strengths.   And I find  
5 that fascinating and I find that very important in  
6 this context that sites are so different that you  
7 really have to -- I mean the idea of a generic  
8 analysis is almost useless.   And it could be sort of  
9 a guideline of the things you might look at.   But it  
10 doesn't apply to any of the sites.

11           So the idea of having the generic  
12 analysis being a basis for regulation that I find  
13 perhaps less than useful because it doesn't apply to  
14 any of the sites.   And so it doesn't really help in a  
15 lot of decision making at a lot of the sites.

16           I'm all about site-specific performance  
17 assessment.   I don't say that because performance  
18 assessment is what I do and I want to do more of it.  
19 The reason I do performance assessment is that I  
20 believe that it really is a good approach for  
21 analyzing how the various sites work and ultimately  
22 for making intelligent decisions about (1) where  
23 waste could go that alternative of where different  
24 things could go and (2) for a given site what it can

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1 and cannot accept.

2 And those two things, there's a balance  
3 of stuff. And you have a sample of waste that really  
4 doesn't have the same fate at all the different sites  
5 except maybe in some very limited sense like the  
6 driller intruder. But even the driller intruder  
7 doesn't apply everywhere. There are sites where that  
8 is just a nonsensical scenario.

9 Anyway, I bring a perspective of seeing  
10 the sites as all very different entities and  
11 requiring different analyses. And they would all  
12 have very waste acceptance criteria.

13 So if there's something that's going to  
14 be uniform across the system, it has to be at the  
15 level of process, how one might go about determining  
16 waste acceptance criteria or something like that.  
17 But to come up with allowable concentrations of waste  
18 that could go here or there or there and make that  
19 the same across all sites flies in the face of  
20 reality of how these sites behave. Thank you.

21 MR. CAMERON: Okay. Thank you. And I  
22 think that ties into the first issue up there, too.  
23 So I think that we should start with that and the way  
24 that Chris formulated it is why provide flexibility

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1 to develop site-specific waste acceptance criteria,  
2 how much flexibility and how to incorporate that into  
3 regulation perhaps.

4 And we've heard from a number of you on  
5 that particular issue. And I thought a moment ago to  
6 see what John has to say. But I thought maybe we  
7 could start that discussion again and hear your same  
8 thoughts on that. Maybe start with Brad and I think  
9 that your comment about maybe you should still have  
10 waste classification tables you might tell us how  
11 that might fit into a flexible scheme.

12 And I guess I haven't heard anybody say  
13 that we shouldn't specify flexibility yet. But if  
14 you have any caveats on that please offer that at the  
15 same time.

16 And, Jhon, did you want to talk about  
17 the issue or did you want to say something before we  
18 get started?

19 MR. CARILLI: I can wait.

20 MR. CAMERON: Great. Brad.

21 MR. BROUSSARD: Based on what I'm  
22 hearing, it sounds like there's consensus at least  
23 from everything I've heard about allowing flexibility  
24 and development of WAC. And I guess to address the

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1 question of how much flexibility in my opinion I  
2 think you should allow enough flexibility to get you  
3 to the point where you're still meeting performance  
4 objectives and staying within the waste  
5 classification tables as they exist now with the  
6 exception of DU which is a different issue.

7 MR. CAMERON: Okay. And everybody  
8 remember that last part in terms of how much  
9 flexibility, too.

10 MR. BROUSSARD: Yes, let me add to that.  
11 I believe the approach that I would suggest is just  
12 general language in the rule that allows for  
13 flexibility based on site-specific performance  
14 assessments, site-specific characteristics.

15 MR. CAMERON: Okay. Let's go to Tom and  
16 Jhon.

17 Tom.

18 MR. MAGETTE: As to the amount of  
19 flexibility, I think ideally, Chris, you could say,  
20 you could throw away things like 61.56 or 61.52. But  
21 in theory we're still in this limited scope, this  
22 ever-expanding limited scope, rule-making. I think  
23 if you start tearing up Part 61 too much you really  
24 are beyond the bounds of anything that looks limited.

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1 And maybe we already are.

2 But I also don't think you have to do  
3 that. I don't think anybody is talking about  
4 changing whether or not we dispose of waste that are  
5 going to generate combustible gas or change the  
6 amount of liquid that we dispose of. I don't think  
7 anybody in the industry really wants to do that nor  
8 are we proposing that that's important.

9 In theory, you don't need that if you  
10 have a performance assessment that looks at the  
11 actual waste stream and the way you're disposing of  
12 it. But it's not really important and it's not  
13 necessary. So I would say don't spend a whole lot of  
14 time on that.

15 As to specifically how you would  
16 incorporate this into the rule, I would refer you to  
17 a letter I wrote the Commission last June in which I  
18 gave you a line- by-line markup of Section 61.2,  
19 61.7, 61.12 and 61.55 that shows how I would suggest  
20 you do it. I understand that's important for you  
21 when you get down to it that you have to do  
22 something.

23 But I think what you define waste  
24 acceptance criteria in 61.2 and then talk about how

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1 you would apply it and then have a specific callout  
2 in .55 in terms of what I would suggest is that it's  
3 an either or in terms of comparisons with the tables.  
4 That's what I'm talking about. And it's a fairly  
5 limited change. And you don't have to get into some  
6 of these other things that we talk about. That's how  
7 I would see it.

8 MR. CAMERON: Okay. And since we don't  
9 have the benefit of what you suggested in order to  
10 see if we can get some reaction in terms of the  
11 how-to, is there a conceptual nugget that you can  
12 give us that sums up the how-to so that people can  
13 try to respond to that?

14 MR. MAGETTE: Yes. I mean most of the  
15 references like 61.2 is just a definition. What is  
16 the waste acceptance criteria? You have to have some  
17 definition of that.

18 But the key is going to come in 55. And  
19 I think the fundamental key is that you have an  
20 alternative to using the tables which is as John  
21 Tauxe described something that's driven by a site-  
22 specific analysis. And that would then, as I said  
23 before, whatever you're talking about, whether it's  
24 the chlorine or tech-99 or some of these isotopes

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1 that have been problematic for a variety of reasons,  
2 whatever it is, you're looking at not just  
3 concentration but also loading, another topic that  
4 came out this morning and another topic that gets a  
5 lot of discussion when you go to ACRS. But the site  
6 loading would then be something that you would  
7 evaluate as part of the PA.

8 And so that's structurally I think the  
9 nugget. The key is that you have an alternative to  
10 the concentrations that are given in the tables.

11 MR. CAMERON: But the tables would still  
12 stay. And I guess a question in terms of what Brad  
13 said and for all of you at some point is why do you  
14 still need the tables? I mean would utility to the  
15 tables give you if you provide for the flexibility to  
16 do WAC based on the PA?

17 MR. MAGETTE: The tables are important  
18 for a couple of reasons. I mean one is they would  
19 establish some sort of benchmark of acceptability at  
20 any given site anywhere based on that generic  
21 analysis that was originally done.

22 Another element is that I think you  
23 would say since that is a minimum acceptable criteria  
24 that you wouldn't have a PA drive numbers that would

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1 be lower. So you wouldn't look for infinite  
2 racheting from another perspective.

3 And then the third thing that's  
4 important there is that Class C limit in the tables  
5 which defines a difference between state and compact  
6 responsibility and federal responsibility.

7 Would they still be useful in an every  
8 day sense? Not so much in my view. But would they  
9 still have a function and a reason to be in the  
10 regulation? Yes.

11 MR. CAMERON: Okay.

12 And, Brad, just quickly, is that the  
13 same type of reasoning that you were thinking of  
14 about why the classification tables should be kept?

15 MR. BROUSSARD: Yes.

16 Tom, thank you for explaining that  
17 further for me.

18 MR. CAMERON: Okay.

19 Let's go to Jhon Carilli.

20 MR. CARILLI: I told Tom that I want to  
21 use this one because I think Tom's going to be using  
22 that one a lot just because he's Tom.

23 MR. CAMERON: I don't understand all  
24 these references to this.

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1 MR. CARILLI: I like Tom a lot. Let's  
2 just put it that way. I don't want to put him on the  
3 hot spot or something.

4 Hey, the Department of Energy has  
5 enjoyed the flexibility of a performance-driven site-  
6 specific WAC. One of the things, let me get to the  
7 first question which is keep the tables or not keep  
8 the tables or whatever. I think you should keep the  
9 tables. I really do. I honestly believe you should  
10 keep the tables.

11 But then I also think that you should  
12 allow a site- specific waste acceptance and PA and  
13 all that other information that goes along with that  
14 and allow the disposal facility to make that  
15 decision. So you know keep the tables or do a site-  
16 specific waste acceptance criteria which I am going  
17 to call WAC from now on because it's easier to say.

18 Even when I have my site-specific waste  
19 acceptance criteria, there's a table in there that is  
20 very useful to me. And it's called the threshold  
21 limits. It's the Table E-1. I don't know how many  
22 people are familiar with our waste acceptance  
23 criteria.

24 But what happens is if you look in that

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1 table and your waste is below those limits that are  
2 listed in that table, it's pretty much a shoo-in that  
3 waste is very easy to dispose out at the Nevada  
4 National Security Site which I will probably make a  
5 mistake and call it the NTS because we called it that  
6 for a very long time. But if you're below those  
7 limits, you're automatically -- your waste is very  
8 easy to get into the disposal facility.

9 If you approach those limits or even  
10 exceed those limits, what that really tells us is we  
11 have to take a very careful look at this. Often  
12 times, we do what's called a special analysis to make  
13 sure that we analyze that waste, we add it to the  
14 inventory that's already there, theoretically add it  
15 to the inventory that's already there, and make sure  
16 that it either meets the performance objective or  
17 doesn't meet it. If it doesn't, then we have to do  
18 something different about that. And so that's a very  
19 enjoyable situation.

20 Another thing that DOE -- And I have to  
21 say I enjoy this situation by the way. Another  
22 situation that DOE has is we don't have classes of  
23 waste. We don't have Class A, Class B, Class C. We  
24 only have high level waste. We have transuranic

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1 waste. And we have low level waste. And that's  
2 everything. GTCC is a low level waste. And so when  
3 we get these waste streams even though they may be a  
4 Class B if it was disposed at an NRC-regulated  
5 facility, we look at it and it's a low level waste.  
6 And we have to analyze it against those different  
7 thresholds that I told you about or whether or not it  
8 meets our waste acceptance criteria.

9 That's a very, very enjoyable situation  
10 to be in because you're not ham -- Maybe I shouldn't  
11 use that word -- you're not hamstrung because the  
12 license is for a Class A facility only. We are a low  
13 level waste disposal facility and -- Am I talking  
14 loud enough? You keep holding your ear.

15 MR. CAMERON: No.

16 MR. CARILLI: Okay. I can't hear my own  
17 voice. So that's the reason why I'm asking that.

18 But we're a low level disposal facility  
19 and that's what we do. You have a low level waste.  
20 If it meets our acceptance criteria, you can send it  
21 to the NNSS.

22 Another thing about a WAC is the PA is  
23 not the only thing that impacts a WAC. With the  
24 Department of Energy, there are a huge number of

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1 documents that impact the WAC. For example, we have  
2 the PA. Everyone knows what that is. We have what's  
3 called a composite analysis. And then we have a  
4 maintenance plan and a closure plan and a monitoring  
5 plan that goes into it.

6 We also have something that's called the  
7 -- And all of that makes up what's called the  
8 disposal authorization statement. But there's also  
9 things that impact it like we're a nuclear facility.  
10 So we have a documented safety analysis that goes  
11 into it. We have nuclear criticality that goes into  
12 the waste acceptance criteria. We have all of these  
13 little documents and that's to name just a few of  
14 them. I mean that's not an inclusive list.

15 An impact to any one of those documents  
16 impacts all the others. If your documented safety  
17 analysis says you can't take X, all of a sudden your  
18 waste acceptance criteria is impacted. Your PA is  
19 impacted. Every one of those documents are all  
20 impacted.

21 I have the fortunate situation that I  
22 have a team that looks at waste being sent to the  
23 NNSS and they assess how all these things are going  
24 to be impacted. I know countries that have only one

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1 person that does all that. Fortunately, the one  
2 person I know that does that is one of the brightest  
3 men I've ever met in my life.

4 So there's a lot of things that go into  
5 it. It's not easy, but it's not overly, powerly,  
6 prohibitively difficult. It can work.

7 And it works quite well out at my  
8 facility in that when we analyzed whether or not we  
9 could take depleted uranium the answer was yes, we  
10 could. When we analyzed whether we could take a  
11 sealed source that had a substantial amount of  
12 activity on it the answer was yes, we could. That's  
13 the flexibility you get from a site-specific WAC.

14 MR. CAMERON: Okay. Thanks, Jhon.  
15 That's something for people to consider. And before  
16 we go to John and John, let me just check in with  
17 Chris to see if there's something you want to put in  
18 front of the panel that people could address.

19 And I just want to make a note, Don,  
20 what Jhon said about these other documents like the  
21 documented safety analysis. Is there an analogy to  
22 that in the commercial world? And, if not, should  
23 there be?

24 Chris.

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1 MR. GROSSMAN: I can let the state and  
2 the disposal facilities talk to that as well. But I  
3 think in general the international community has an  
4 approach that's called the safety case approach which  
5 includes the assessment. And I think in general  
6 though we don't use the terminology in the United  
7 States we generally have a similar kind of construct  
8 in the U.S. where your license application  
9 essentially becomes a safety case that includes your  
10 performance assessment and probably in the future an  
11 intruder assessment as well as other lines of  
12 defense. The institutional control requirements are  
13 another example of making that safety case. There  
14 are others as well.

15 The question I had maybe to expand on  
16 this flexibility; are there degrees of flexibility.  
17 And I heard Tom talk a little bit about the 61.56  
18 waste characteristic requirements and not having any  
19 objection to keeping those. I know that for Jhon  
20 CARILLI the DOE has also some minimum kind of --  
21 They're not prescriptive, but maybe less than risk-  
22 informed requirements that are written into DOE 435.1  
23 about types of characteristics that are precluded  
24 regardless of what you can demonstrate in your PA.

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1           If panelists want to talk about their  
2 views on those kind of requirements, that maybe some  
3 minimum technical requirements, that we may need to  
4 specify, we mentioned in a few previous meetings  
5 things like are there criticality kind of  
6 requirements. Or should we structure the WAC in such  
7 a way that we specify the types of considerations  
8 that may need to be included in a site-specific WAC,  
9 but maybe don't get to the certain level of detail of  
10 how those are addressed and leave that to the  
11 licensees to demonstrate.

12           Along those lines, another area would be  
13 with the institutional control period. Currently,  
14 61.59 requires that we assume that it doesn't last  
15 longer than 100 years. We've had comments at these  
16 public meetings about extending that possibly.

17           And if you move to a site-specific WAC,  
18 the tables are tied. That assumption is built into  
19 the tables. But for a site-specific WAC, it wouldn't  
20 necessarily have to be. You could allow flexibility  
21 on that as well. And I just want to gauge people's  
22 thinking on how flexible we should be in that regard  
23 and if we should stick with 100 years. Or if we need  
24 to consider others, leave it up to sites to justify

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1 and then provide financial assurance for. Those are  
2 the sorts of questions that we're dealing with.

3 MR. CAMERON: Okay. Thanks, Chris.

4 In addition to the discussion we're  
5 having around flexibility, the first question up  
6 there, and John and John, you had your tents up. Do  
7 you want to say something about that? But if you  
8 want to add anything on the amount of flexibility.  
9 And Chris gave an example about the institutional  
10 control period. If you do site-specific of WAC, how  
11 do you deal with the institutional control period?

12 But, with that, go ahead, John.

13 MR. TAUXE: I'm all about flexibility,  
14 probably to the point where I might get thrown out of  
15 the room. But as far as the 100 year thing for  
16 taking credit for institutional controls I think that  
17 is a site-specific criterion. Some sites are much  
18 more likely to hang on to institutional controls more  
19 than others.

20 Some have been lost already since the  
21 beginning of all this in 1943. Some sites have been  
22 lost and some of them are actually on DOE  
23 reservations, for example, and have still been lost.

24 In a practical sense, 100 years is

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1 something maybe to shoot for. But in some sites it's  
2 not going to make it that long. And in other sites  
3 it might be maintained much longer.

4 And then what might get me thrown out of  
5 the room is saying the ultimate flexibility is forget  
6 waste classification in the tables. Waste  
7 classification at all is irrelevant from the point of  
8 view of the ultimate performance assessment. I mean  
9 if you can accept DU at NNSS and you can run it  
10 through your performance assessment or maybe a site  
11 could accept some what is currently known as  
12 transuranic waste or even high level waste, yes,  
13 there have been agreements about things that should  
14 be in geologic disposal and all that. But from a  
15 performance assessment, you know, philosophical point  
16 of view, put whatever you want in there, see what the  
17 resulting risk is and if it's acceptable you go with  
18 it.

19 There's a lot of danger in doing that  
20 though. And I'll admit that because not all  
21 performance assessments are constructed to the same  
22 degree of quality I'll say. And it is possible to  
23 game the system. And so we have to have some kind of  
24 controls to protect against that. And maybe that's a

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1 place where guidance or I don't know about regulation  
2 can interject the degree to which performance  
3 assessment must work to ensure that the system isn't  
4 gamed or that things are getting through the cracks  
5 the way they shouldn't be.

6 When it comes to something like the  
7 classification tables in Part 61, I see that they  
8 have a purpose. That they are generic I think makes  
9 them less than useful. Perhaps there would be  
10 another way to construct them in a process sort of  
11 way. And then maybe each site would have its own  
12 table for perspective generators to consult.

13 I guess in a way that's what the WAC is.  
14 So if the WACs can be built -- And actually I like  
15 John's example of there are some minimal levels. If  
16 your waste meets this thing which is sort of like the  
17 minimal table thing, then, sure, we can accept it.  
18 No problem.

19 If it's above that, then we need to  
20 analyze it individually. And from a philosophical  
21 point of view, I would say, "You can analyze  
22 everything individually." But then that simply isn't  
23 practical on the ground for generators and for waste  
24 managers. It just really gets in the way of getting

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1 worked on.

2 So somewhere in between there's probably  
3 a lot of waste that could just be accepted without  
4 further analysis. And then there's the questionable  
5 stuff. Well, we have this particular strontium  
6 generator or something like here. Where can that go?  
7 What can we do with that? That piece may require a  
8 specific sort of analysis.

9 MR. CAMERON: You would still see --  
10 Based on what you just said, there would be a utility  
11 to the tables to do the type of sorting out that John  
12 mentioned.

13 MR. TAUXE: The tables in some form.  
14 I'm not sure that I like the tables having the  
15 numbers in them that they have now or numbers that  
16 are based on any analysis that then sets the  
17 regulation in time. That kind of goes against the  
18 idea that the regulation should be able to last a  
19 long time. Because then as we come up with better  
20 ways of arriving at those numbers or better  
21 information to feed into the process, then the  
22 numbers would change and you would have to go back  
23 and revise the regulation.

24 MR. CAMERON: Okay.

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1 MR. TAUXE: If there is some way we can  
2 do a process that would produce the table.

3 MR. CAMERON: So process tables new  
4 idea.

5 John, why don't you go ahead and then  
6 we'll go to Tom and John.

7 MR. LePERE: I guess maybe this is the  
8 area where I do actually bring some value to the  
9 panel. I'm going to take us for a little trip down  
10 memory lane. When Part 61 was implemented, we were  
11 also looking at the concept of a variety of compacts  
12 all over the country.

13 And two things were going on. Disposal  
14 facilities were getting waste that was grossly  
15 unacceptable for disposal. And the compacts were  
16 being formulated. So NRC needed to get some control  
17 in place and they had no idea where the facilities  
18 could end up.

19 So they had to come up -- and please  
20 anybody correct me if I'm misremembering -- with a  
21 set of rules that could be applied that could give  
22 the generators the ability to say "I've got this and  
23 that can go in the ground." "And I've got this and  
24 it can't go in the ground."

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1           That's where I think that we're at. And  
2 that's what I started with in terms of recognizing  
3 the advances in technology, in analysis, in  
4 packaging, in transportation and in disposal. And  
5 I'm exactly in agreement with you that having the  
6 tables gives me as the generator the ability to say  
7 "I've got this. It's an acceptable Class A waste.  
8 It's a Class B waste. It's a Class C waste,"  
9 whatever the case may be. "This is what I've got and  
10 I know it can go in the ground here, here or here."

11           It doesn't mean that this other thing  
12 that I've got that's a little bit different I can  
13 call Tom or call you and say, "What do you think?  
14 Can you take it?" Well, then you're only evaluating  
15 specific unique packages for acceptability for  
16 disposal as opposed to me having to call you every  
17 time I want to ship to you because that's not  
18 practical. That's not going to happen at least from  
19 a commercial site.

20           In a DOE facility, that's what you're  
21 about. You look at every waste you generate. You  
22 look at whether or not you can put it in the ground.  
23 I understand that. But that's very, very focused.  
24 Whereas, you've got 100 some commercial reactors

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1 calling Tom up every day and saying, "Hey, can you  
2 take this?"

3 So I think it is a combination of both.  
4 I think it's retention of the tables in some way,  
5 shape or form that sets a minimum acceptable standard  
6 for waste so that I can look at my waste and I can  
7 say, "Yes, I can send it."

8 And then beyond that provide that  
9 flexibility so that you're putting it in a concrete  
10 overpack and you're burying it 600 feet below the  
11 ground and putting three Sherman tanks on top of it.  
12 Whatever the case may be, you can take something  
13 that's unique, different, more problematic, but it  
14 will meet your standard. It will meet performance  
15 assessment.

16 And you will still provide protection to  
17 the general public because ultimately that's what  
18 we're about. I mean the concept of sealed sources.  
19 You can deal with significantly higher activities and  
20 sealed sources for a certain nuclides because they  
21 are a sealed source, because you provided that  
22 isolation.

23 The same concept is happening in  
24 disposal facilities now. And I think that we need to

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1 be able to take credit for that.

2 MR. CAMERON: And, John, since we have  
3 you talking right now on this sort of a leading  
4 question, in our discussion I put down how the rule  
5 recognized the advances in technology. Is using the  
6 site-specific waste acceptance criteria based on  
7 performance assessment going to inherently build in  
8 the consideration of new technologies?

9 MR. LePERE: I believe that it is  
10 because they will do a performance assessment based  
11 on how they do business at their facility at any  
12 given point in time.

13 MR. CAMERON: Okay.

14 MR. LePERE: And take credit for the  
15 additional controls and barriers that go into place.

16 MR. CAMERON: Thank you.

17 Tom and then we'll go to Jhon and Tom.

18 MR. MAGETTE: I would agree with just  
19 that last point. That's exactly right. And that  
20 also goes to Chris' flexibility question. You would  
21 account for those disposal techniques in your PA. So  
22 you wouldn't have to go back and rethink what was  
23 originally considered in terms of developing the  
24 tables.

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1 I think the tables that would be -- The  
2 WAC would go further than what you just said though,  
3 John, because I do think you didn't have a table that  
4 would be your WAC. And it wouldn't necessarily be  
5 that clean of a lookup table. Part 61.55, tables are  
6 not always that clean of a lookup table, too. They  
7 don't call me. They call Bret Rogers or one of the  
8 ten people that works for him. So we have a lot of  
9 people that get calls every day of the week. And the  
10 reason a lot of waste streams don't require a call  
11 every day of the week is not because they did so  
12 cleanly. It's because they've been analyzed and  
13 there's a scream there coming from a given power  
14 plant.

15 There's a lot that goes into determining  
16 whether or not it satisfies the tables which is why  
17 we have the BTP and why Christian and Jim have been  
18 working so hard on updating the BTP. I think you  
19 would have something comparable to that.

20 What we also proposed back in June is  
21 that it would be reviewed every five years. So you  
22 would have something that would be in place. You  
23 would some level of consistency to it, but it would  
24 certainly be subject to review and updating.

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1           As to some of the other flexibility  
2 questions, in terms of criticality, I don't know how  
3 far you want to go down that path vis à vis Part 70.  
4 And we already deal with that, but we deal with it in  
5 a different construct than Part 61. So I don't think  
6 we necessarily need to change that.

7           In terms of the period of institutional  
8 control, we've said that we think 100 years is  
9 something that could reasonably be extended. I think  
10 there is some pretty strong technical rationale for  
11 300 years. That strikes me as something that maybe  
12 is more site dependent and the notion that that could  
13 be a lower compatibility category sounds reasonable.

14           If the government entity is the one  
15 that's going to inherit that responsibility, then  
16 maybe it is something that should be up to an  
17 agreement state to determine if they want to apply  
18 that level of flexibility. So maybe it comes down to  
19 a revision to 61.59 that takes that into account.  
20 That would give some flexibility, but it would  
21 require those government agencies, not just the NRC,  
22 to weigh in and say, "Yes, we accept that burden that  
23 comes with that flexibility." That seems to me a  
24 reasonable approach.

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1 I don't think the longer institutional  
2 control period is unreasonable. I don't think we've  
3 lost any commercial low level waste disposal sites.  
4 Even if you look at DOE, you may not have properly  
5 characterized what you have on sites. I think you  
6 probably lost a lot of waste on production sites.  
7 That's another FSME problem altogether, but those are  
8 disposal sites.

9 And also mind you of institutional  
10 controls, you know, maintaining control. Now if you  
11 want to say that's maintaining inventory as well,  
12 then I suppose you could. And that might be a  
13 different level of importance that might be a  
14 different question. But institutional control has to  
15 do more with access. So we're not I don't believe  
16 talking about a Pit 9 kind of question here where  
17 once upon a time people were dumping stuff in a  
18 trench and they forgot what it was or maybe they  
19 didn't even care and didn't maintain records.

20 We certainly maintain a lot of records  
21 and I'm sure the other disposal sites do as well. So  
22 maintaining records in this day and age is simply a  
23 different matter than it was in the 50s or 60s or 70s  
24 or even in the early 80s when this regulation was

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1 written. So I don't think there's a problem with  
2 extending the period of institutional control. But  
3 here again others could weigh in on that.

4 Another part of the flexibility that's  
5 important is that if things do change when you're up  
6 to ICRP 133 or 303, then you're not rewriting a rule.  
7 You're not all getting together at the Bethesda North  
8 Marriott to talk about rewriting the rule. You could  
9 take that into account in the PA. And then you would  
10 have satisfied your own guidelines for good  
11 regulation in terms of being able to account for  
12 advances in science and research without having to  
13 rewrite a rule which I think would be a significant  
14 advantage both for the Commission and for the  
15 licensees and for the disposers. I think that's  
16 another important point about a flexibility.

17 The other thing about the review going  
18 back to the comment about reviewing a PA and making  
19 sure you have some, not just some but a high level of  
20 confidence in terms of what you're generating is that  
21 it does place a burden on the agreement states. And  
22 maybe that's something that should be thought more  
23 about. I think it's something that should be thought  
24 more about.

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1           Yet the NRC has the ability under its  
2 agreement state program to do reviews that it's asked  
3 to by the states. And that's controversial because  
4 of the relationship that the Commission has with the  
5 agreement states. But you could increase that level  
6 of formality. You wouldn't have to change anything  
7 in your rules. But that would be something that I  
8 could see being addressed in the statements of  
9 consideration for a rule like this. It more  
10 affirmatively acknowledges not only can we do this  
11 but we do have this resource. And we don't expect  
12 every agreement state to replicate what Chris  
13 Grossman and Chris McKenney and all those guys do.  
14 We'll weigh in and make ourselves available to do  
15 those reviews.

16           That would be something I believe that  
17 would be a reasonable way to accomplish the review.  
18 It would be a reasonable way to apply technical  
19 consistency to the reviews. It would be a reasonable  
20 way to increase public confidence in the quality of  
21 the reviews. It would be a good way to remove an  
22 unnecessary burden from the states for doing those  
23 reviews.

24           MR. CAMERON:     Okay.     Thank you, Tom.

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1 And I noted on the parking lot the idea of giving --  
2 the possibility of giving flexibility to agreement  
3 states to establish a longer institutional control  
4 time. Because I think our public policy panel might  
5 want to address that.

6 And I'm not picking on Tom here in what  
7 I'm going to say next which is you're all hearing  
8 people giving their opinions around the table. And  
9 it's great to agree if you agree with them and  
10 support that. But if something is said that you  
11 don't agree with I think it's important to the NRC to  
12 hear that you don't agree with something and provide  
13 the reason obviously why you don't agree with that.

14 Jhon and then we'll go to David.

15 MR. CARILLI: Thank you. Let me address  
16 your question about opinion as being expressed at the  
17 table. I don't really feel I'm expressing opinion.  
18 I feel I'm expressing what I actually do. I am  
19 actually living site-specific PA. And I have to tell  
20 you. It's a lot of fun.

21 MR. CAMERON: Listen. That's a really  
22 good point about opinion and fact. Okay.

23 MR. CARILLI: And I wasn't trying to jab  
24 or anything. Just so you know that.

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1 MR. CAMERON: Good.

2 MR. CARILLI: We talk about flexibility.  
3 One of the things that a site-specific PA allows our  
4 facility to do at the Department of Energy is we  
5 analyze, for example, a thorium waste stream that  
6 actually belonged to DOE. And it was a resource and  
7 they decided maybe we should bury it.

8 We did a site-specific PA on that and  
9 found out that if we buried it at a certain depth  
10 it's going to blow the PA. Or I'm sorry. It's going  
11 to blow the performance objectives. I apologize for  
12 that. It's going to blow the performance objectives.

13 So what we did is we dug it deeper.  
14 Theoretically, we analyzed it and found out that  
15 burying it deeper was the answer. And so we did.  
16 And we have other waste that's on top of that waste  
17 right now and it just helps satisfy all of those  
18 conditions of our performance objectives.

19 Regarding flexibility and institutional  
20 control, I like what Linda said earlier in the day  
21 that institutional control of 100 years was a number.  
22 Don't get too caught up in that number. We had to  
23 decide what would happen in case things fell apart.

24 In my case, we did a probabilistic

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1 analysis on whether or not institutional controls  
2 should be 100 years, a 1,000 years or whatever. And  
3 probabilistically, again probabilistically, it came  
4 out that we could probably operate our facility as  
5 the Department of Energy for 250 years. And then we  
6 started working with the rest of that which is going  
7 to be active institutional control and what's going  
8 to be passive institutional control.

9 But I really wouldn't get too caught up  
10 in that number. I don't really think it matters that  
11 much. Could be wrong. Probably am. But that's what  
12 I'm going to say.

13 A lot of people -- I was reading the  
14 transcripts from the last meeting and I remember  
15 someone saying or at least this is how I interpreted  
16 it that a site-specific WAC is difficult to  
17 understand and maybe our regulator won't be able to  
18 operate it properly and stuff like that.

19 I'm going to have to say I don't believe  
20 that at all either. Although we have a lot of  
21 initials following in our names like Ph.D. and D.E.  
22 P. And stuff like that, C.E.P., I'm sorry, Larry. I  
23 didn't mean to mess that up. We have all these  
24 things on there that follow our names.

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1           You're going to find out that our  
2 stakeholders are just as sophisticated as we are.  
3 And even though we eat, drink and breath this stuff,  
4 our stakeholders probably do the same thing, too.  
5 And we should not discount their ability to  
6 understand what we write down.

7           We are finding our stakeholders  
8 understand our WAC completely. In fact, if we kind  
9 of try and bend the rules which we have never tried  
10 to do, but if we try and bend the rules, our  
11 stakeholders are all over us, including our  
12 regulators.

13           We have stakeholder involvement when we  
14 develop our waste acceptance criteria. I enjoy a  
15 very, very wonderful world when it comes to this  
16 system.

17           Now, John, you were talking about and I  
18 mean John -- How do you say your last name?

19           MR. LePERE: LePere.

20           MR. CARILLI: LePere. I apologize. I  
21 pronounce it differently. But I apologize.

22           MR. LePERE: Most people do.

23           MR. CARILLI: And I would be wrong like  
24 you pronounce Jhon the way I spell it Jhon. But you

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1 asked about people giving calls to us. We still get  
2 those calls. We still get these calls "Can you take  
3 this?" And the answer -- You know, we get a lot of  
4 those calls.

5 I told you that we are able to take a  
6 sealed source. What I didn't tell you was it took a  
7 year to be able to take that sealed source. And it  
8 wasn't so much that it was technically not able to be  
9 buried out at the NNSS. It was our stakeholders'  
10 involvement. They wanted to understand what was the  
11 impact of that including our regulator. And so we  
12 went and we started analyzing this waste stream that  
13 we were taking from one of our generators.

14 The generator got frustrated. But in  
15 the end the stakeholders bought into the concept,  
16 bought into our site-specific performance assessment,  
17 bought into the fact that it met our waste acceptance  
18 criteria and said, "Okay. We're no longer worried  
19 about this." Now that generator is able to send us  
20 more types of that waste without much problem with  
21 it.

22 The WAC. The WAC is not something that  
23 you can develop and then use it as a doorstep. The  
24 WAC is a living document. It is being developed all

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1 the time. Our waste acceptance criteria is now in  
2 revision 9.1 which probably means it went through  
3 about 15 different iterations to get to the point  
4 where it is now. So you can't have it just sitting  
5 there being idle. It is constantly being worked on.

6 And then Tom brought up the fact about  
7 the PA review that they think that it should be  
8 reviewed every five years. We originally wrote our  
9 PA and we were talking about maybe not reviewed every  
10 five years, but maybe even revised every five years.  
11 It turns out sometimes it was required and sometimes  
12 it wasn't.

13 However, with the Department of Energy,  
14 we look at our PA every year. And we have to justify  
15 that the assumptions in that performance assessment  
16 are still valid. And we send it to our peer review  
17 which is our regulator, the Low Level Waste Federal  
18 Review Group and they all look at the PA. We give it  
19 to other people to look it over and make sure that it  
20 makes sense. If it doesn't make sense, they send us  
21 back questions and we say, "Yes, this is how we would  
22 answer that question and it's still valid."

23 Our manager buys into it. I have to  
24 convince my manager that the performance assessment

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1 is still valid. And I learned from a co-worker that  
2 if you can't explain something to somebody so that  
3 they can understand it that means you don't  
4 understand it.

5 And from that point on I am able to talk  
6 to my manager. And if I can explain it so that he  
7 can understand it -- not saying my manager is less  
8 intelligent or anything -- and signs off on it, that  
9 means I understand my PA as well. And that means my  
10 community and my stakeholder is going to understand  
11 it, too.

12 I believe that's all the points I had  
13 down on my paper. So I'm empty at this moment.

14 MR. CAMERON: Okay. Thank you, Jhon.  
15 And we're going to go to David now. And, Chris, I  
16 want you to be thinking about what else you might  
17 need to hear from people because we are close to the  
18 time when we're going to take a break and then come  
19 back and allow the audience involves on this. But,  
20 David, go ahead.

21 MR. KOCHER: A couple of quick comments,  
22 one on the matter of the institutional control  
23 period. I spoke to this at the microphone this  
24 morning.

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1 I guess if I were the NRC I would not  
2 change this unless there were an evident need to do  
3 so. If it ain't broke, don't fix it. You'd have to  
4 demonstrate to me that there's a serious impediment  
5 to waste disposal that 100 years is a serious barrier  
6 to disposing of waste in order to change that.

7 Anybody here live in Spring Valley?

8 MR. CAMERON: This is in the District of  
9 Columbia.

10 MR. KOCHER: Yes. That's less than a  
11 hundred year problem. Of course, it's a different  
12 situation. It's arsenic in the soil due to a  
13 chemical weapons operation in World War I. I'm a  
14 native of Bethesda by the way.

15 The other point is I want to just say a  
16 little bit more about what I see as an advantage of  
17 the Department of Energy system about the site-  
18 specific analysis and as distinct from the Table  
19 1-Table 2. Table 1-Table 2 focuses on acceptability  
20 of waste on a package-by-package basis. And that  
21 doesn't always have in clear view what the totality  
22 of the site is going to look like at the end of the  
23 day when you close it.

24 The real advantage of the DOE system is

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1 that it basically sets its WAC based on what the  
2 intruder is going to see when he arrives on the site  
3 sometime in the future. You can account for things  
4 like uncontaminated soil between trenches and the  
5 different locations that things are. It encourages a  
6 site- specific waste acceptance system based on the  
7 totality of disposals of the site as opposed to a  
8 package-by- package basis.

9 I mean the good news about the  
10 package-by-package basis is at the end of the day  
11 you're probably quite conservative in the amount --  
12 you probably actually put into the ground a lot less  
13 than you could if you wanted to. But I still see it  
14 as an advantage in the DOE system that you  
15 essentially assess what the site looks like when a  
16 hypothetical intruder shows up later on. And I think  
17 that's a real advantage.

18 MR. CAMERON: Okay. Thanks, Dave.

19 Chris, any further questions for the  
20 panel and then we'll see if we get response to that  
21 and hear what else people have to say before 2:30  
22 p.m.

23 MR. GROSSMAN: Yes. I think one Tom may  
24 have touched on was the BTP and characterization of

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1 the waste. I'd like to hear the panel's thoughts on  
2 does anything need to be specified in the regulation  
3 regarding waste characterization.

4 How would you envision that being  
5 handled under a site-specific WAC? The BTP may not  
6 apply because it's somewhat tied to the waste  
7 classification system. And so would sites need to  
8 develop their own BTP for their waste acceptance  
9 criteria? I'd just like to hear the states and the  
10 panelists' thoughts on that.

11 MR. CAMERON: Okay.

12 Let's go to John. And, John, put on the  
13 table whatever you were going to say and if you have  
14 anything to add on that last question about waste  
15 characterization.

16 MR. TAUXE: Okay. Yes, first, Dave  
17 mentioned that one of the good things about having a  
18 package-by- package thing is that you end up with  
19 less waste in the site than maybe you could have.  
20 But that's a two- edged sword.

21 Something that one has to recognize is  
22 that waste disposal sites don't grow on trees and  
23 they're very hard to come by. And if you consider  
24 them a national resource in that we have a bunch of

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1 waste that has to get dealt with. Irrespective of  
2 whether we agree with how that waste was produced or  
3 whether we should produce more, there's plenty that  
4 has to find a home even just today.

5 So there's a limited resources out  
6 there. Citing a new site is very difficult. And I  
7 just say all that that I think we should try to make  
8 as efficient use of the sites that we have as we can.  
9 And so we really don't want to underutilize them. In  
10 the sense of efficiency, you want to use them at  
11 their maximum capacity so that you don't have to try  
12 to open more and contaminate more land than you would  
13 otherwise have to.

14 Anyway, so as far as waste  
15 characteristics and characterization, there is the  
16 obvious stuff like there should be quality assurance  
17 behind it and proper labeling and criticality is an  
18 issue and those things. And I don't have any  
19 argument with any of that. I don't have any argument  
20 with any of this.

21 But as far as other characterization, I  
22 guess from a performance assessment point of view if  
23 there are characteristics of the waste that could be  
24 taken advantage of in developing a performance

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1 assessment, some kind of treatment or something that  
2 has it in a certain form that would be less likely to  
3 leech out or something like that, something that  
4 would be useful in a performance assessment, that  
5 would be something good to have characterized.

6 And another sort of side issue of this  
7 was brought up this morning with respect to the NUREG  
8 brochure 0204 which defines how you are to report on  
9 a manifest the phantom four radionuclides that are  
10 identified in 10 CFR 20 and the lower limits of  
11 detection and that sort of thing. And I think that  
12 deserves some more attention.

13 I'd like to see that brochure completely  
14 rewritten partly because it's very poorly written  
15 just from a writer's standpoint. But also it should  
16 be revised to provide some sort of guidance about how  
17 one might report lower levels of detection more  
18 properly so that in the same name of efficiency of  
19 the site we're not filling up sites with phantom  
20 radionuclides so we know actually what is in the  
21 site.

22 And that comes into waste  
23 characterization in a way. So I think that's a part  
24 that's been missing here is how to deal with those

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1 particular radionuclides and that particular NUREG.

2 MR. CAMERON: Okay. Thanks, John.

3 We're going to go to Tom and Jhon and  
4 over to John LePere. And I think that's going to  
5 take us to the end of the panel certainly given --

6 MR. MAGETTE: Given that I have the  
7 microphone in front of me now. I beat you to it.

8 MR. CAMERON: But I'm including Jhon in  
9 that, too.

10 MR. CARILLI: Oh really.

11 MR. CAMERON: I mean you're not alone.

12 MR. MAGETTE: It's going to take the  
13 rest of the afternoon if we just have to keep  
14 listening to Jhon tell us how happy he is doing his  
15 job which frankly I find a little bit hard to believe  
16 that you could be that happy if you made Abbey wait a  
17 year to dispose of one of her sources. But that's  
18 another matter altogether.

19 As to Chris' question, I think you may  
20 recall at the BTP workshop about a year and a half  
21 ago there were comments made that we don't need the  
22 BTP, that this is a waste of time. We should just do  
23 away with the BTP. I don't think that was really the  
24 prevailing wisdom of the day.

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1           But there were quite a few comments that  
2           said, "That may not be true today, but it may become  
3           true if you do have a site-specific revision to Part  
4           61." But you need that clarification today to be  
5           able to implement what's in the tables.

6           Like I said a while ago, the tables are  
7           not as much of a look-up as people think they are  
8           because there's not very much homogeneity in any of  
9           those waste streams. So you need some approach.

10          But if you're specifically accounting  
11          for the disposal methods and the packages and looking  
12          at the site inventory and then looking at the site  
13          disposal system as opposed to the package, I do think  
14          probably the BTP is not applicable in the context of  
15          the PA- driven WAC. I would say you don't need it.

16          MR. CAMERON: Okay. Now that's a pretty  
17          clear statement on that.

18          Jhon and then we'll go to John.

19          MR. CARILLI: I have a couple of  
20          comments on some things. I really can't talk about  
21          the BTP because I don't live in that world. But I do  
22          live in a world that has a lot of flexibility to it.  
23          And you asked earlier how much flexibility she could  
24          give and I have to say I can't go as far as John

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1 Tauxe went because you'd throw us out of the room.  
2 But I am in total agreement with that that we give as  
3 much flexibility as possible because you'll find out  
4 that -- I believe you'll find out that it's cheaper  
5 to operate that way for the disposal facility. Let  
6 them make the decisions and so on and so forth.

7 And I don't really know what's going on  
8 in the commercial world. But in my world we're  
9 burying a lot of legacy waste. And at first when you  
10 started burying the legacy waste you got the stuff  
11 that was really easy. You cherry-picked out the easy  
12 stuff.

13 Well, right now, we're getting to the  
14 point where it's getting harder and harder. We're  
15 getting those very difficult waste streams. I had a  
16 waste stream that was proposed to me that if I didn't  
17 have the EPA helping me I had no solution to that.  
18 Absolutely no solution. Fortunately, the EPA was  
19 working with DOE in solving that problem.

20 As far as the maximum capacity of  
21 burying waste and I agree with John is that we should  
22 look at our waste facilities whether they're  
23 commercial or DOE as assets, resources, because there  
24 are so few of them. And when you look at them that

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1 way you treat them a whole lot differently.

2 The best way to use a facility to its  
3 maximum capacity in my opinion is a site-specific WAC  
4 and a performance assessment because then you could  
5 say "Okay. Here's what our performance objective is.  
6 When we are fully closed and turn it over to whoever,  
7 legacy management or the states or whoever is going  
8 to run those, that you are at that performance  
9 objective for the 1,000 years compliance or the  
10 10,000 year compliance or whatever so that you use  
11 your facility to the best way that it can be used.

12 If you have this facility and you wind  
13 up closing it and you only use 50 percent of the  
14 capacity, you've got a problem. You've really wasted  
15 a lot of money. You've wasted a lot of people's  
16 time. So you should use your facility to its maximum  
17 extent. And I believe the PA and the site-specific  
18 waste acceptance criteria you would do that.

19 MR. CAMERON: Okay. Thank you. Thank  
20 you, Jhon.

21 And John.

22 MR. LePERE: Okay. My first impulse was  
23 to disagree with Tom, but then I thought about it a  
24 little bit. Actually, the BTP provides a mechanism

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1 right now to do individual performance assessments on  
2 a container-by- container basis.

3 Now I will agree as I said after I  
4 thought about it that if you've got the ability to do  
5 that at the site then that's fine. But right now  
6 it's providing at least primarily on the commercial  
7 side generators with a means to get rid of waste that  
8 might not otherwise be acceptable for disposal and  
9 it's allowing us to maximize loading on containers so  
10 that we are utilizing the facility to the extent that  
11 we practically can.

12 So I think it is a useful tool right  
13 now. You may be right. It may -- If we go to a full  
14 performance assessment on a site-by-site basis, it  
15 may become unnecessarily at some point in the future.  
16 But I do think it's a useful tool right now.

17 MR. CAMERON: And I just want the record  
18 to show that Tom Magette agrees with what John was  
19 saying.

20 Okay. Well, great discussion. And  
21 we're going to have some more discussion when we come  
22 back from the break when we hear from the audience  
23 and the people on the phone. So let's come back at  
24 2:45 p.m. I have 2:27 p.m. So that gives you a

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1 little bit over 15 minutes. Off the record.

2 (Whereupon, the proceedings went off the  
3 record at 2:28 p.m. and resumed at 2:47 p.m.)

4 MR. CAMERON: Okay. Welcome back. We're  
5 going to go to the audience and the phones and the  
6 Internet.

7 Okay, welcome back. We did say that we  
8 were going to have questions that might have been  
9 posed through the webinar. And we do have one, and I  
10 want to take care of it now. And it may be -- I'm not  
11 sure it's for the NRC attorneys or whomever, but at  
12 least we can -- pardon me?

13 (Off mic comment.)

14 MR. CAMERON: Oh, okay, Chris can take  
15 this one. Let me read it. Waste is defined by Section  
16 61.55 as in effect January 26, 1983 -- oops, I'm  
17 starting ■-- okay.

18 Low-Level Radioactive Waste Policy  
19 Amendments Act 1985 makes states either by themselves  
20 or in cooperation with other states responsible for  
21 providing disposal for low-level radioactive waste  
22 generated within the state that contains Class A, B,  
23 or C radioactive waste as defined by Section 61.55.  
24 How does -- can you scroll it up a little bit, Don,

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1 the gray part.

2 PARTICIPANT: It's in the blue.

3 MR. CAMERON: Oh.

4 PARTICIPANT: Yes, I was wondering why  
5 you were doing that.

6 (Laughter.)

7 PARTICIPANT: He's doing it the hard way.

8 PARTICIPANT: It's in the blue part.

9 MR. CAMERON: Okay. I should quit while  
10 I'm ahead. Okay. How does changing 61.55 affect the  
11 statutory responsibility? Can a compact disposal  
12 facility establish a WAC that precludes the disposal  
13 of a specific waste stream that a state is  
14 responsible for providing disposal for?

15 Chris, any comment?

16 MR. GROSSMAN: Can we go back to that,  
17 Don, actually, so I can -- if I need to.

18 My understanding is that the Policy Act  
19 ties to the classification table of a certain date,  
20 so even if we allow the flexibility for site-specific  
21 WAC, the state -- the dividing line between state  
22 responsibility and federal responsibility would  
23 remain. And I think even -- and I'm not proposing  
24 that the Commission is talking about doing this, even

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1 if we strip the table out of the rule, that division  
2 would still be tied to the tables on that date, so  
3 they would still exist somewhere out there in terms  
4 of defining state and federal responsibility.

5 MR. CAMERON: Okay. Does that -- do you  
6 think that takes care of it?

7 MR. GROSSMAN: I believe so, yes.

8 MR. CAMERON: Okay.

9 MR. KOCHER: That's a problem, that's a  
10 real problem.

11 MR. CAMERON: Well, let's hold on. Let's  
12 not everybody talk at once here. You heard the  
13 explanation from Chris. David, do you have something  
14 on that?

15 MR. KOCHER: Yes, that's a legal hurdle.  
16 I mean, in principle the law would have to be changed  
17 to allow the Class C limit to be a very fuzzy line.

18 MR. CAMERON: Okay. And let's go to Lisa  
19 Edwards, and then we're going to go to Tyson from the  
20 Office of General Counsel.

21 MS. EDWARDS: Kind of a different take on  
22 this question is let's say somebody developed a Class  
23 A low-level waste site, and licensed it but said they  
24 only wanted dry active waste, so any resins or wet

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1 wastes that were still defined as Class A waste they  
2 wanted to prohibit, could that be done in this site-  
3 specific waste?

4 MR. CAMERON: Okay, we're going to go to  
5 -- Tyson, introduce yourself.

6 MR. CAMPBELL: My name is Tyson Campbell.  
7 I'm an attorney with the Office of the General  
8 Counsel. What Chris said is correct. The Low-Level  
9 Radioactive Waste Policy Amendments Act of 1985  
10 assigns responsibility for waste disposal based upon  
11 the tables as they existed in January of 1983. And  
12 it's very clear in the Act that that is how you  
13 assign responsibility. Any changes the NRC makes to  
14 the tables today would not change the statute. In  
15 order for that to happen, you'd have to go to  
16 Congress.

17 MR. CAMERON: Okay, so I'll leave it to  
18 all of you to think about what the implications of  
19 that are. And thank you out there whoever posed that  
20 question, and I would just say that written comments  
21 are being accepted on this. And if you differ with  
22 the explanations that were offered, please write in  
23 to the NRC. Larry, did you want to say anything?

24 MR. CAMPER: Thank you, Chip. I just

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1 wanted to clarify that under this particular rule  
2 making that we're discussing there is no modification  
3 of the classification tables. Rather, there is the --  
4 supposedly including an "or" pathway, and this rule  
5 making does not address modifying the waste  
6 classification tables. Okay? What's under discussion  
7 is the possibility of adding an "or" pathway to Part  
8 61.

9 MR. CAMERON: An optional pathway --

10 MR. CAMPER: An optional pathway for  
11 disposal by meeting a Waste Acceptance Criteria based  
12 upon a site- specific form of assessment. However,  
13 this is a good example of what I was alluding to in  
14 my comments this morning as to the degree which the  
15 staff will have to be very explicit and clear in the  
16 language that brings that provision into being.

17 MR. CAMERON: Okay, thanks. Chris, you're  
18 done, right? Or did you have something else? Okay.  
19 Bridget, are you with us? Do we have an operator on  
20 the phone? I thought I'd see if anybody on the phones  
21 wanted to talk before we came back to the audience.

22 OPERATOR: This is the operator. One  
23 moment, we do have someone queuing up.

24 MR. CAMERON: Okay.

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1 OPERATOR: If you queued up to ask a  
2 question your line is now open.

3 MR. KLEBE: Okay, so are you ready for me  
4 to ask?

5 MR. CAMERON: Welcome, we can hear you.  
6 You're going to have speak up a little bit, and  
7 please introduce yourself.

8 MR. KLEBE: Okay. Hi, Chip, this is Mike  
9 Klebe, State of Illinois.

10 MR. CAMERON: Hi, Mike.

11 MR. KLEBE: I was the one that put in  
12 that webinar question.

13 MR. CAMERON: Oh, good.

14 MR. KLEBE: And the reason I asked about  
15 the waste classification system is because I thought  
16 I was hearing some discussion earlier about maybe  
17 changing that. But you didn't address the second  
18 question I had, and that is whether or not compact  
19 facility could create a Waste Acceptance Criteria  
20 that precluded a specific waste stream that the state  
21 was responsible for providing disposal for.

22 MR. CAMERON: Thanks, Mike. Yes, that was  
23 the second question, and the important question.  
24 Chris?

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1 MR. GROSSMAN: Obviously, there's a lot  
2 of details to be worked out on how the final rule  
3 will come out, but I could envision if a site went  
4 down the site-specific waste acceptance path,  
5 depending on the quality of the site and so forth  
6 there could be a limit set up that's more restrictive  
7 than the current classification tables.

8 MR. CAMERON: Okay. Mike, does that  
9 answer your question?

10 MR. KLEBE: It answers the question. I  
11 don't necessarily like the answer.

12 (Laughter.)

13 MR. CAMERON: Right, right, that's a  
14 different story all together.

15 MR. KLEBE: But, I mean, states have the  
16 statutory responsibility to provide for the disposal  
17 of low-level radioactive waste generated within  
18 their states, so to me it seems like you have to make  
19 sure that a -- developed which there are compact  
20 facilities in the United States can't have a Waste  
21 Acceptance Criteria that's going to -- those waste  
22 streams.

23 MR. CAMERON: I think that this is going  
24 to be food for thought for the NRC staff, including

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1 the Office of General Counsel staff, so it's good  
2 that you put it on the table. And if you want to  
3 elaborate on it in a comment on this particular stage  
4 of development of the rule making, I think that that  
5 would be useful for the NRC to think about all of the  
6 implications of this.

7 And we do have a couple of other  
8 panelists who are going to talk -- respond to this,  
9 and one is Dave Kocher. We'll go to Dave, and then  
10 we'll go to Tom Magette. Dave.

11 MR. KOCHER: Yes. An issue I'd like to  
12 raise that hasn't come up with about this alternative  
13 to the Table I and Table II concerns the 100  
14 nanocuries per gram for transuranics.

15 I understand completely that the term  
16 "transuranic waste" has no meaning in the world of  
17 NRC, but I think you're going to have to tread,  
18 because of all the precedents with WIPP and the  
19 enabling legislation for that facility, you're going  
20 to have to tread very carefully to allow routine  
21 disposals of greater than 100 nanocuries per gram at  
22 your sites. That's a thorny issue that I really think  
23 you've got to be careful about.

24 MR. CAMERON: Okay. Thanks, Dave. Tom?

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1 MR. MAGETTE: Thanks, Chip. I was just  
2 going to say that I think one way to address the  
3 point that Chris made would be to write into the  
4 regulation that because the tables as they exist  
5 provide a baseline, a generic baseline that's been  
6 demonstrated to be safe at any site, that you  
7 couldn't be more restrictive than those tables. That  
8 would be something that you could address in the  
9 regulation, so that would address the comment.

10 MR. CAMERON: Okay, and Dave.

11 MR. ESH: Yes. I just want to add to that  
12 that the -- you have to understand what goes into  
13 generating the table values. And the table values are  
14 built on specific assumptions and specific  
15 conditions. That doesn't mean when you do a site-  
16 specific analysis that it's going to result in all  
17 higher values. Some could go up, some could go down.  
18 It depends on the specific conditions and analyses.  
19 So, whereas, you'll hear it's commonly stated, which  
20 then it seems to get some belief of truth behind it  
21 that it's based on a humid site; therefore, it's very  
22 conservative. Well, the part that is deriving the  
23 waste classification tables is an intruder assessment  
24 that isn't including the water pathway. It's

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1 including the resuspension of soil, inhalation, some  
2 other pathways that tend to be much larger at an arid  
3 site than they are at a humid site. So, I would just  
4 caution people from reading too much into the  
5 explicit numbers in the table, and thinking that when  
6 you move to the site-specific analysis approach, or  
7 this WAC approach, that it's going to always make  
8 things better. It very well may not.

9 MR. CAMERON: Okay. Thank you, Dave, and  
10 thanks, Mike. Quick addition, Tom?

11 MR. MAGETTE: Yes, just to what Dave  
12 said, none of which I disagree with. As a matter of  
13 fact, we're doing a PA or have done a PA right now  
14 which has nuclides that show up as being more  
15 restrictive than the tables. So, it's certainly --  
16 now, that's a PA that's under review, so my comment  
17 was a step that I think the NRC could take which  
18 would address the comment. But what you've stated  
19 hypothetically, David, is undoubtedly true, because  
20 we have that exact result ourselves at Clive.

21 MR. CAMERON: Okay. Operator, do we have  
22 anybody else?

23 OPERATOR: Yes, our next caller is Jim  
24 Lieberman. That line is now open.

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1 MR. LIEBERMAN: Okay. I have a comment as  
2 to considering the WAC approach versus the current  
3 table approach. I think NRC should give consideration  
4 to how the NRC evaluates waste incident to  
5 reprocessing where it does not rely on the  
6 concentration values in the table, but rather does a  
7 performance assessment to determine whether the  
8 performance objectives of Part 61 are met, protecting  
9 the public health and safety.

10 MR. CAMERON: Thanks, Jim. People were  
11 nodding their heads in agreement about considering  
12 that, so thank you for that comment. Operator,  
13 anybody else?

14 OPERATOR: At this time I have no  
15 additional questions in the queue.

16 MR. CAMERON: Okay, great. Thank you very  
17 much. We're going to go back here to Rockville, and  
18 we're going to hear from Billy Cox.

19 MR. COX: Billy Cox, Electric Power  
20 Research Institute. I guess I would go to Chris'  
21 initial question of why provide for flexibility? And  
22 it kind of comes down to something that David said,  
23 although I think that we have a slightly different  
24 perspective on it. Storage -- disposal is preferred

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1 over storage. And a lot of people are having to store  
2 B&C waste right now.

3 And, quite honestly, with the inventory  
4 issues at WCS, the storage problem isn't going to go  
5 away any time soon. We could conceivably have  
6 licensees that if things don't change, we could have  
7 licensees that are storing waste for four years. So,  
8 there is a disposal problem. So, why provide  
9 flexibility? You took my notes away, Chip.

10 MR. CAMERON: You mean you can actually  
11 read this?

12 MR. COX: I flipped it back on you, yes.  
13 Why provide flexibility? Yes, the 61 tables were  
14 designed for a generic site. They grew out of a four  
15 region regional assessment and kind of got  
16 conglomerated into one, but we have sites in this  
17 country that some of those nuclides don't matter. You  
18 could not even use those in a site-specific  
19 performance assessment because they don't matter. You  
20 know, the ones that David talked about that are  
21 inhalation hazards from an intruder standpoint do  
22 matter, but mobile nuclides in a dry site don't  
23 really matter, so there is a reason to provide  
24 flexibility.

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1 I'm not convinced that doing totally  
2 away with the tables would be the right thing to do.  
3 In the interest of providing stability for the folks  
4 that -- from a business perspective, for the  
5 generators. They need some rules to play by, some  
6 minimum rules to play by, so they need something to  
7 start with. You need to be able to decide whether you  
8 can dispose of it, or whether you can classify it.  
9 And if all you had was site-specific performance  
10 assessments you'd kind of be -- although much safer,  
11 you'd kind of be in the same situation that you were  
12 in before we had 61, whereas you had to find out who  
13 could take what you generated. You wouldn't have any  
14 limits to work against any more, so that could pose a  
15 problem. So, I think there are some reasons for  
16 minimal rules.

17 The other reason why I think that we  
18 need to provide flexibility, I think it comes down to  
19 the charge of risk-informing the regulations. It's --  
20 I can't say that I agree with Tom as yet, if we do  
21 these four things. I think that Part 61 still needs  
22 work to truly risk-inform it, because until we move  
23 away from deterministic intruder scenarios and add  
24 probability, it's not risk-informed. And until we use

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1 newer dose factors in the tables with respect to the  
2 folks that count curies, until you apply all the  
3 parameters in the performance assessment and  
4 appropriate dose factor that's based on the most  
5 updated and recent science, it's not truly  
6 risk-informed.

7 So, I think we have a bit of work to do  
8 here and I think we have a lot of issues. I'm not  
9 sure how it will all wash out in the end, but I do  
10 think that site-specific performance assessments are  
11 not a bad idea. I shudder to think that they could be  
12 more restrictive than the tables, and I don't think  
13 that we should do away with the tables. And I guess,  
14 ultimately, I think the tables should be updated with  
15 newer dose factors. And we have a lot of research to  
16 support those thoughts.

17 MR. CAMERON: Okay. Thanks, Billy. We  
18 have a number of people who want to comment. And I'm  
19 going to get --

20 MR. GROSSMAN: Chip. I'm sorry, I don't  
21 mean to interrupt.

22 MR. CAMERON: Go ahead.

23 MR. GROSSMAN: Actually, this is a great  
24 example, I think, of why I asked the question about

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1 why we should do this. And as folks make their  
2 written comments to the NRC, if there are data sets  
3 like that about waste that is being stored instead of  
4 disposal, that's information I'd like to bring to the  
5 Commission in the rule making package. So, to the  
6 extent that you can provide that data to us, that  
7 would be helpful, I think.

8 MR. CAMERON: And let's do this now  
9 before we go to others, but let's here Jhon, you  
10 wanted to respond to something that Billy said, and  
11 then we're put a question on the table for all of  
12 you.

13 MR. CARILLI: Actually, it's not so much  
14 a response to what Billy said, it's more of agreement  
15 with what Billy has said. If the Department of Energy  
16 -- now, this is an opinion, and it's the gospel  
17 according to Jhon Carilli, but if the Department of  
18 Energy was restricted to the tables, I'm not sure  
19 that some of the facilities that we have would be  
20 able to be closed like Rocky Flats and Fernald. They  
21 might have had to move all that waste somewhere else  
22 and store it. But because of the flexibility of the  
23 site-specific PA, and Waste Acceptance Criteria, I  
24 believe that really benefitted the Department of

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1 Energy in reaching its clean up goals as much as it  
2 has to this point.

3 MR. CAMERON: Okay. Thanks, Jhon. The one  
4 question that -- Diane D'Arrigo had a question about  
5 -- and I'm going to ask if Chris or someone might  
6 summarize this because we had a discussion of it.  
7 What are the advantages of using site-specific waste  
8 --

9 MS. D'ARRIGO: I wanted to know what's  
10 the practical advantage for having an alternative to  
11 10 CFR 61.55.

12 MR. CAMERON: Chris, do you want to try  
13 to take a crack at just summarizing what you heard,  
14 what you think?

15 MR. GROSSMAN: Well, based on the  
16 comments we've heard at the meetings and so forth, I  
17 think we're looking at things like, as John Tauxe  
18 suggested, resource utilization. If you look at these  
19 facilities as resources, you may be able to increase  
20 the capacity of waste that's disposed of in them, use  
21 them more effectively.

22 Tom hit on the risk-informed performance  
23 based. The Commission has had a longstanding policy  
24 on moving in that direction, so looking at bringing

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1 more of the risk information to these analyses  
2 instead of relying on generic analysis I'd say would  
3 be the two main points that I've heard. And if I've  
4 missed, I need to pore over the transcripts of these  
5 meetings in more detail, but if I've missed anything,  
6 people are welcome to --

7 MR. CAMERON: Okay. There's always an  
8 opportunity to talk to people after the meeting,  
9 also, so if we can shed more light on this for Diane,  
10 please do so. Let's move through all the people who  
11 want to talk at this point. Ralph, did you to talk on  
12 this specific point? Okay. Let's get you on and then  
13 we'll go back to the lineup, so to speak.

14 MR. ANDERSEN: In regard to Diane's  
15 question, I'd suggest also that reliance on a site-  
16 specific analysis allows one to ultimately have a  
17 more optimal site in regards to site selection,  
18 selection of design features, selection of disposal  
19 methodology and so forth. I mean, this is the issue  
20 we ran into in considering deep geologic repository,  
21 is the more you rely on a site-specific evaluation  
22 the more you move away from the implied generic  
23 assumptions that are associated with the waste  
24 classification table. And it really does serve as an

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1       impediment, not a fatal flaw but just an impediment  
2       to properly crediting the specific features of the  
3       site design and the site selection, and so forth. So,  
4       there is very definitely a safety benefit to using a  
5       site-specific assessment. And one of your  
6       Commissioners can articulate that much better than I  
7       can.

8                   MR. CAMERON: Okay. Thanks, Ralph. Mick.

9                   MR. APTED: I'm next?

10                  MR. CAMERON: Yes, please.

11                  MR. APTED: We're going to really change  
12       the -- Mick Apted with INTERA. This morning our panel  
13       got a little bit beat up, maybe quite rightly, about  
14       semantics, and terms, and people's preference for how  
15       things should be stated. But I think words are  
16       important in certain concepts, so this is my gripe or  
17       my semantical question really built off what Ralph  
18       just said.

19                  You     keep     saying     "site-specific"  
20       whatever, characteristics and so on. To me, a site is  
21       the topography, it's the rocks, it's geohydrology.  
22       And there's multiple barriers, the engineered part of  
23       it. And there's the human system. They all are  
24       degrading and changing over time. Really what you

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1 mean is concept-specific in terms of these waste  
2 acceptance characteristics, not site-specific. I  
3 think the rest of the world would look at that and  
4 say oh, they're talking about the rocks, and what  
5 about the barriers or the other things that would be  
6 part of that disposal system? So, again, it's more of  
7 a semantical gripe, but I -- my own preference, as I  
8 said, site-specific, that's too narrow a  
9 terminology, in my view.

10 MR. CAMERON: Thank you, Mick. And David?

11 MR. KOCHER: How about facility-specific?  
12 That's what we're doing.

13 (Off microphone comment.)

14 MR. KOCHER: No, a facility is a  
15 structure as well as what people are doing, because  
16 you can have different types of facilities at the  
17 same site. This is not unheard of.

18 MR. CAMERON: Okay. Thanks, David. Ed  
19 Regnier.

20 MR. REGNIER: I think the first webinar  
21 question addressed the point I wanted to raise.

22 MR. CAMERON: Okay. And, Lisa, do you  
23 want -- you can use this if you want.

24 MS. EDWARDS: So, my comment is just for

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1 the panel, in general. I was kind of hoping that I  
2 would hear the conversation moves towards what kind  
3 of guidance the NRC could provide to a site that  
4 wanted to do a site- specific performance assessment.  
5 So, for instance, if a new -- a compact was going to  
6 consider building a new site, the NRC may have  
7 guidance that says here are the five intruder  
8 scenarios, or the 10 intruder scenarios that should  
9 be considered. And here's the criteria you could use  
10 to determine if those scenarios are applicable or not  
11 applicable to your site. Or maybe someone in the past  
12 has said that two meters cover and stability was  
13 equal to 300 years, or five meters of cover and  
14 stability was equal to 500 years of isolation. But  
15 there is no guidance for what does a concrete barrier  
16 do for you, or what does some other kind of  
17 engineered barrier like the RIP-RAP, or however you  
18 say that, I can never get that. What is that worth?  
19 Depending upon how many inches or feet you have of  
20 each. And I think for there to be some uniformity in  
21 terms of how those different things are considered,  
22 the NRC could provide guidance that way. And I would  
23 have liked to have heard the panel comment on that.

24 MR. COX: This is Billy Cox again from

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1 EPRI. I did have one thing that I -- one correction  
2 that I wanted to make, at least I think it's a  
3 correction from a comment on the panel.

4 The Part 61 tables established  
5 concentrations for an area that would be excavated by  
6 an inadvertent intruder. It was the branch technical  
7 position that took it to the container level.

8 MR. CAMERON: Okay. Thanks, Billy. And on  
9 the point of guidance, I think Larry indicated that  
10 there's going to be a whole meeting on the  
11 development of guidance. But, John, do you want to  
12 add something in regard to what Lisa said?

13 MR. TAUXE: Yes, I can address that. I  
14 think that would be good to have that kind of  
15 guidance. And, actually, most of that already exists  
16 in NRC's performance assessment methodology,  
17 NUREG-1573 I believe it is. Now, that was in 2000.  
18 That's already sounding old, you know, but it's all  
19 quite still relevant. And tune into the workshop  
20 that's happening in late August on features, events,  
21 and processes, and conceptual site models, and that's  
22 where you start. If you've got a site or a potential  
23 site and you want to start building a performance  
24 assessment for it, you start out with learning about

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1 the features, events, processes, and I would add  
2 human scenarios for that site. And then turn that  
3 into a conceptual model, and if you are still looking  
4 okay, then start building that into a computer model,  
5 something like that. So that could, perhaps, be part  
6 of the guidance that might accompany 61, or NRC could  
7 take the performance assessment methodology and maybe  
8 dust it off a little bit, or maybe they don't really  
9 need to, just say -- point to that and say we still  
10 like this. This would be our guidance for how you  
11 might go about doing that, if you want to make a  
12 site-specific or whatever new terminology we might  
13 come up with, a specific PA.

14 MR. CAMERON: Okay.

15 MR. TAUXE: I would endorse that  
16 methodology. I think that's good. And what's  
17 interesting is that, for example, State of Texas has  
18 a very similar document that's been sitting in draft  
19 form for many years, and is an excellent starting  
20 point. But I guess as long as it's draft it's not  
21 enforceable, so I encourage you guys to go ahead and  
22 get --

23 MR. BROUSSARD: Yes. I think it pretty  
24 much mirrors 1573 for the most part. And I think it

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1 was intention for it to remain draft for this very  
2 purpose. But it's still a useful document.

3 MR. CAMERON: Okay. Chris, comment on  
4 this and then we're going to go to Linda Suttora.

5 MR. GROSSMAN: I think any time that you  
6 move toward a performance-based regulation the  
7 guidance becomes critical to insure uniformity of  
8 application. And it's something that we had begun  
9 working on under the previous iteration of this rule  
10 making, updating performance assessment methodology,  
11 modernizing it is the terminology we've been using to  
12 include things like effects analysis or modern  
13 scenario analysis techniques.

14 We've also been taking a look at the  
15 intruder assessment because that was to be kind of a  
16 new requirement in Part 61, and will likely continue  
17 forward based on the Commission's direction. They  
18 included that as one of the items, so there will be  
19 guidance on that, and we'll be developing that, and  
20 talking with the public about that guidance.

21 MR. CAMERON: John, quick comment?

22 MR. TAUXE: Yes, just I'd add quickly, I  
23 forgot to address that, and Lisa mentioned oh, maybe  
24 you could have a list of intruders to choose from. If

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1 it's an extensive list then that's possible, but I  
2 would argue against deciding ahead of time what  
3 intruders might apply here, or there, or everywhere  
4 because sites are different enough that one site's  
5 intruder is another site's no never mind.

6 MR. CAMERON: Okay. We're going to go  
7 Earl Fordham and then John Greeves, and Bill  
8 Dornsife, and then Christopher. Earl, do you want to  
9 come up here, whatever your choice.

10 MR. FORDHAM: Earl Fordham, State of  
11 Washington. Thank you for discussing the waste  
12 acceptance criteria. Having been a site inspector for  
13 12 years, I get to live and breathe it a lot, so I've  
14 got some ideas here for you. As far as Chris, the one  
15 thing I haven't heard too much other -- topic other  
16 than from Tom was compatibility. The Agreement States  
17 are going to want to have maximum flexibility there.  
18 That's not to say that you won't end up with a couple  
19 of Cat A's and maybe a Cat B type thing.

20 I can't really envision any  
21 transboundary issues with waste. You're either going  
22 to send something there, or you're going to send  
23 something there, or something there. It's not like  
24 it's going to go from there, to there, to there where

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1 it has to be equivalent.

2 So, the institutional controls, I think  
3 the rule right now is something to the effect of  
4 does not exceed 100 years. I would keep that "does  
5 not exceed" in there, and then you can figure out  
6 whatever X is going to be. And, Tom, maybe you ought  
7 to get 300 years past Rusty. No way and shape can I  
8 get 300 years past the Hanford stakeholders. They're  
9 lucky if we're going to get 30 years.

10 ICRP methodology, wholeheartedly. You  
11 know, when we started our PA back in '96 I think it  
12 was, very first thing we did was call the NRC and get  
13 permission to use the 60 Series and 70 Series. By all  
14 means, figure out how to put it in rule and give them  
15 the max flexibility.

16 The catch there is don't make them go  
17 back and tweak it every five years, every time ICRP  
18 comes out with something different. Now, if they're  
19 going to tweak the main document substantially,  
20 whatever that methodology is used in, then go ahead  
21 and bring it up to date, but every time they come out  
22 with a new methodology, don't make them go back and  
23 do it because it doesn't change that much. And dose  
24 conversion factors are not changing substantially any

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1 more.

2 Tables versus performance objectives. I  
3 think you heard a lot of it. The history that I've  
4 got there is when we did the Trojan reactor vessel we  
5 didn't use the tables at all. We went back and looked  
6 at the tables after we looked at the four performance  
7 objectives and said yes, we met them. The tables are  
8 good for about 95 percent of the waste streams out  
9 there. You've got some others in there that are not  
10 going to make it very well in the tables, so you have  
11 to revert back, so give them the flexibility to do  
12 both.

13 I see the sited states, and I haven't  
14 talked to any of them, so I may be getting out on a  
15 limb that's going to get cut off here, but the main  
16 idea there is, I think what they're talking about is  
17 that they'll update the numbers in the table, and  
18 then put it out. The problem I still see, though, is  
19 that from experience as a site inspector, history  
20 tells me where a very marginal percentage of the  
21 Class A limit with the waste that is coming in. And I  
22 can't speak for Clive or WCS or anything, but even  
23 Class B, very small percentage. Which is kind of  
24 interesting because Department of Energy right across

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1 the -- just down the road from me a couple of miles  
2 can take Class B unstabilized cesium and put it  
3 straight into the ground uncontainerized, so that  
4 makes it -- I really want their PA. So, that really  
5 helps.

6 The scenarios idea I think is critical.  
7 You know, come up with what is going to be there. You  
8 know, we went through an Environmental Impact  
9 Statement, our state it's called CEPA, national would  
10 be called NEPA, and the public told us what kind of  
11 actual scenarios to look at. So, involve your  
12 stakeholders in this regard. And I go back to the  
13 mighty issue of state compatibility with the NRC.  
14 Keep it flexible. Thanks, Chris.

15 MR. CAMERON: Thanks, Earl. And I think  
16 our next panel is going to get into that in more  
17 detail. Linda, did you have a comment?

18 MS. SUTTORA: Yes, actually I did. I  
19 wanted to encourage that going towards a WAC basis  
20 for accepting waste at a facility does not preclude  
21 all the other things that go along with it. The way  
22 that DOE does it is not only do you have the  
23 performance assessment which helps you establish your  
24 WAC, but then we have this very carefully defined

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1 continuous improvement program. So, we have a  
2 maintenance program that -- and the monitoring  
3 program which feed -- it's a feedback loop. So, you  
4 might be very comfortable with your WAC, but we have  
5 continuous research that goes on about the site about  
6 the hydro geology, and if new information becomes  
7 available based on that research it may modify your  
8 WAC, and it might be the screws down and say you know  
9 what, you probably shouldn't be disposing of that  
10 kind of waste any more in that facility, and you  
11 should fix it. And either move that waste around, or  
12 not add new of that any more. It might modify it.  
13 Now, I haven't seen it happen but it doesn't preclude  
14 that from happening.

15 But I just want to say that it's not  
16 just the WAC, and it's not just the PA, but there is  
17 the PA maintenance, there's a composite analysis, and  
18 that is to take into account all the other sources  
19 nearby and continuously do research on that. And then  
20 there's the monitoring program where you're  
21 continuously monitoring underneath the waste. And if  
22 you get hits, then you might have to change  
23 something. You might have to add some new groundwater  
24 barrier walls, or whatever it is. We -- DOE doesn't

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1 just throw the waste in there and then just watch it.  
2 It's a very seriously confined program of watching  
3 and carefully monitoring how you place the waste and  
4 tracking that. Thanks.

5 MR. CAMERON: Thank you, Linda. And  
6 that's the type of thing that John was also talking  
7 about with safety analysis and all that stuff.

8 MR. CAMERON: Do you, and, Tom, you want  
9 to say something.

10 MR. CARILLI: Yes, very, very short for  
11 me. I don't know what Tom is going to say, but I know  
12 what I'm going to say.

13 MR. CAMERON: Go ahead.

14 MR. CARILLI: You know, we were talking  
15 about institutional controls, and the gentleman from  
16 the State of Washington came up. And during the break  
17 Ed Regnier and I were talking about institutional  
18 control, so if I steal your wind out of your sail  
19 please forgive me. But one of the things -- you  
20 know, I told you that 300 years, 100 years, it  
21 doesn't really matter to me and stuff like that,  
22 because we're doing this period of compliance at  
23 1,000 years, so whether you have active institutional  
24 control for 100 years, and 900 of passive, or 300

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1 active and 700 of passive, it still requires a  
2 compliance period.

3 But there's even more to that, is that  
4 we have to live according to DOE Order 50 -- I'm  
5 sorry, I almost said the old number, 458.1, which  
6 says that DOE is going to own this facility as long  
7 as we're a country, and a wonderful country at that.  
8 But DOE is going to own this facility -- I met that  
9 sincerely, guys. I've been to other countries, okay.  
10 But DOE is going to own this facility in perpetuity,  
11 or until we are able to release it according to that  
12 Order 458.1. So, that's why I really wasn't all that  
13 concerned with 100 years or 300 years. DOE is going  
14 to own it for a long time.

15 MR. CAMERON: Great. And, Tom, if you  
16 could just refrain from doing a travel log because  
17 you've been stirred on by Jhon --

18 MR. MAGETTE: I think it's a wonderful  
19 country, too. Let me just get that out.

20 MR. CAMERON: Okay, you want to get that  
21 out.

22 MR. MAGETTE: I don't want to be trumped  
23 in patriotism here.

24 MR. CAMERON: Okay.

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1           MR. MAGETTE: I would like to respond to  
2 a couple of things. One is this notion of scenarios  
3 and guidance. As I'm often prone to say, there's  
4 guidance and then there's guidance. The BTP is a part  
5 of every license of every low-level waste disposal  
6 site in this country. The BTP is a license  
7 restriction. You may have a problem that, Mr. NRC, as  
8 guidance, but it's not treated like guidance. I  
9 wouldn't want to see the same thing with scenarios,  
10 and if it's truly a -- I like the idea of a checklist  
11 like John described. I like the idea of some guidance  
12 there for uniformity. I just think you need to be  
13 very clear that it is, in fact, a checklist;  
14 otherwise, you'll be applying it everywhere no matter  
15 what. It's just the way things evolve, so that's a  
16 cautionary note.

17           And I'd like to comment on transboundary  
18 impacts. I think if you have four cited regions,  
19 three of which liberally allow exported waste outside  
20 of their compacts to other disposal sites, and one of  
21 which, the newest of which has the ability to allow  
22 that even though they haven't really dealt with that  
23 in a lot of detail yet, and you have generators in  
24 all 50 states, and you have at least two sites that

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1 are willing to take any imported waste from any other  
2 compact region, I think you have transboundary  
3 impacts. So, I would respectfully disagree that  
4 there's not a decision there, or an alternative there  
5 that kicks into the Commission's Agreement State  
6 compatibility categories in terms of transboundary  
7 impact.

8 So, the thing that we've been talking  
9 about most on this panel in terms of an alternative  
10 for a pay driven WAC, I think would have to be a high  
11 level of compatibility. And I think that would be  
12 consistent with the direction the Commission gave,  
13 because I think, as I said before, that ties to the  
14 performance objectives which are currently a very  
15 restrictive compatibility category, then it would  
16 have to be the same.

17 MR. CAMERON: Okay, thanks, Tom. We're  
18 going to go to John Greeves, and Bill Dornsife, and  
19 Christopher Thomas. And then we're going to get our  
20 next panel up. And, John, do you want to use that  
21 mic?

22 MR. GREEVES: I just want to include  
23 something you actually didn't have in your questions.  
24 The panel this morning did a good job of time at

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1 compliance. But as Chris and Dave know, the  
2 regulators, the premium is -- we're looking for  
3 something, we have to have safety. It needs to be  
4 implementable.

5 Unfortunately, you go too far in these  
6 things and you're not able to implement them  
7 properly. And it also needs to be clear, whichever  
8 part you're working on. So, the -- I like this  
9 morning's panel in the sense that I sensed an  
10 alignment about the two tier system. Generally, I  
11 don't see any debate about that in the room. The  
12 Commission, in fact, sent that down. I read it as  
13 they said look for a two tier system. And I think  
14 this helps you for the WAC, because you really are  
15 going to have to come up with some inventory limits.  
16 That's what you're stretching for.

17 And I look at the two tiers as a system.  
18 Some people are looking at Tier One in isolation.  
19 They're not in isolation, it's a system. You've got  
20 to look at actually both of them. Tier One, once you  
21 set a time of compliance, is going to take care of  
22 the workhorse. Lisa said it this morning, after 500  
23 years the real risk is pretty much reduced. You've  
24 got the long lived nuclides. So, Tier One, call it

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1 1,000 years, people know how to do that assessment  
2 and how to come up with a WAC for that. It's going to  
3 take care of a lot of the -- a vast majority of the  
4 risk. But as Rusty Lundberg told us this morning, you  
5 still have to look at these long lived nuclides, and  
6 that's the system, the Tier Two captures what Rusty  
7 is worried about. You've got address this long lived  
8 issue, and it's got uncertainties, as Tim McCartin  
9 talked about it, others talked about it this morning.  
10 They're very large. You can do those calculations,  
11 but you need to have a method. I think the rule has  
12 to say something about how to put together that Tier  
13 Two methodology. And one approach is a stylized  
14 analysis.

15           Tim McCartin knows it well. He did it  
16 for high-level waste. I think it can be done for  
17 low-level waste, but you need that second tier to  
18 address the long lived nuclides, DU, Tech-99, iodine,  
19 chlorine-36. You need a stylized approach to do that.  
20 You need to make sure society in these very long  
21 times is protected from catastrophic events. And I  
22 think there's a way to do that, but the way to do it,  
23 you don't want to come up with an unbounded  
24 speculation of scenarios to do that. So, avoid

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1 societal disruption out in these long period time  
2 frames.

3 I think you guys can do this in Part 61,  
4 but product, again, has to be, obviously, safe. Knit  
5 these two tiers together, because that's where you  
6 get the safety for the short-term and the long-term,  
7 has to be clear enough so it can be understood by  
8 lots of people, and it has to be implementable. So,  
9 that's my appeal. I think these are actually topics  
10 that are going to fall to the policy panel of how  
11 they're going to use what you talked about, what the  
12 first panel talked about, and put enough of it in a  
13 regulation to actually be safe, clear, and  
14 implementable. So, I'll stop there.

15 MR. CAMERON: Thank you very much, John.  
16 And let's have Bill Dornsife. Bill, do you still --  
17 do you want to talk to us?

18 MR. DORNSIFE: That was a rhetorical  
19 question, right?

20 MR. CAMERON: Right. And then we'll go to  
21 Christopher Thomas.

22 MR. DORNSIFE: Bill Dornsife, Waste  
23 Control Specialist. You know, I think this WAC panel,  
24 although they did a good job addressing this

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1 flexibility issue, I don't see -- I think looking on  
2 the flip side of Mike Klebe's comment, I don't see  
3 any site operator wanting to do a site-specific waste  
4 acceptance criteria that reduces what they can take.  
5 And, obviously, the system is in place and everybody  
6 agrees we're not going to change the law. You know, a  
7 state isn't going to say okay, site operator, we'll  
8 retract our state law and let you take anything you  
9 want based on your performance assessment. So, I  
10 don't see why we're even discussing this issue. You  
11 know, it's dead on arrival. Okay? It just can't be  
12 implemented. It has no use.

13 I think one of the things Lisa said is  
14 -- I think would be very helpful is to have -- just  
15 look at the issue of intruder barriers. Intruder  
16 barriers can deal with this 100-year institutional  
17 control issue. If you can say okay, if I have an  
18 intruder barrier with this much reinforced concrete,  
19 and it's stable for three to five hundred years, I  
20 don't have to worry about a driller intruder  
21 scenario. You know, a driller won't drill through  
22 there, and that's something you can do. That would be  
23 more helpful than changing the 100 years, because  
24 that's one of the lynchpins in Part 61.

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1           Lastly, I am totally confused now about  
2 DU. I mean, we're saying we're going to develop a new  
3 rule for DU. What is this rule going to do about DU  
4 or not? Is it going to address DU, and how are we  
5 going to address DU?

6           MR. CAMERON: Thanks, Bill. Thank you  
7 very much. And, Christopher, let's hear from you, and  
8 then we are getting a little short on time so after  
9 Christopher we're going to bring the other panel up,  
10 and put their names up there, too.

11           MR. THOMAS: Thanks. Just want to briefly  
12 address two concerns I have with the WAC approach. I  
13 think the first is that the State of Utah has banned  
14 B&C waste. And this WAC approach seems to squarely  
15 open the door for waste streams that the state  
16 legislature has banned, so I think that that should  
17 be addressed head on. And, obviously, from my  
18 perspective we would never want to see that state ban  
19 eroded or sidestepped in any way. And our thousands  
20 of supporters, I think, and probably most of the  
21 State of Utah feels pretty strongly about that.

22           The second thing is that the WAC  
23 approach bothers me because it seems to be really  
24 driven by the needs of the moment. In other words,

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1 Jhon talks about how much he loves his job, and I  
2 think that's great. And he says well, there's a waste  
3 stream and our WAC says maybe we couldn't accept it,  
4 or it's over the limit, but then gee whiz, we do some  
5 analysis and it looks like actually it could come  
6 here.

7 That bothers me a lot. I think it erodes  
8 public confidence in the process in a way that just  
9 having a firm limit that you can look at in a table  
10 and say well, is it above the limit or is it below  
11 the limit? I think that's more verifiable and creates  
12 more trust in some ways than this other approach,  
13 which seems more -- too flexible, if I can say that.

14 MR. CAMERON: Thank you, Christopher. And

15 MR. CARILLI: I'm going to need to  
16 respond to that.

17 MR. CAMERON: Go ahead.

18 MR. CARILLI: Okay. Yes, I absolutely  
19 have to respond to that, Christopher. We have found  
20 -- now, about Utah banning B&C waste, not even going  
21 to touch that, not even going to come close to that.  
22 But about the WAC lacking trust of the stakeholders,  
23 I have found it's exactly the opposite. They are  
24 involved with it. They are involved with our waste

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1 streams. And I never said that it -- we have a table  
2 that's called the threshold table, and if you have a  
3 waste that comes in and it's below that, it's pretty  
4 much in. But we assess that in our PA, as well. It is  
5 assessed.

6           When you approach those limits we need  
7 to take a closer look at that. It didn't say that  
8 it's above or below. If we find something that's  
9 above after doing our PA analysis, it's not coming  
10 there. It's flat out not coming there. But if we look  
11 at it and we say okay, what is going on, and we  
12 analyze the system that we have to make sure that  
13 we're not busting those performance objectives; in  
14 other words, going above those performance  
15 objectives, then that waste is acceptable to come to  
16 that site for disposal. But it's not -- that table is  
17 not if you're above this, you can't come here. That  
18 table is there to make sure that we take a real good  
19 look to make sure that our performance objectives are  
20 always being met.

21           And, again, our stakeholders are  
22 involved in looking at our waste streams. We have --  
23 our regulator actually said on the panel when they  
24 submit a waste for disposal out at the Nevada NNSS,

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1 okay? When they submit that, we actually have three  
2 regulators from the State of Nevada that sit on that  
3 panel and review that waste stream to make sure that  
4 we're doing what we're saying we're doing. Okay? So,  
5 stakeholder involvement is not diminished by the WAC,  
6 it's enhanced. It's improved. We get their  
7 involvement on it.

8 MR. CAMERON: Okay, thanks Jhon. Linda?

9 MS. SUTTORA: Yes, just a little  
10 clarification. Sometimes in our WACs we have waste  
11 form, so we even have like the size of the piece of  
12 waste going into the facility. And sometimes it's  
13 just a little bit bigger than we put in our WAC, like  
14 a larger piece of contaminated equipment than we  
15 anticipated, so there's no more rad in it, but it's  
16 just different looking than we had ever anticipated  
17 when we wrote our WAC. So, it's just bigger and it  
18 doesn't impact the performance objective. So, it's  
19 not -- when he was talking about all that stuff  
20 before, he was talking about it's just different than  
21 we had in the WAC, so we had to analyze it and make  
22 sure it didn't blow the performance objectives. If it  
23 blows the performance objectives, it doesn't go.

24 MR. MAGETTE: Chip, while you're reaching

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1 for the microphone, if I could just say one last  
2 thing to preserve my record of always getting the  
3 last word in when Bill talks. I think that goes to --  
4 that comment goes to part of what I was saying  
5 earlier, which I don't -- it's another reason not to  
6 have a follow-on rule. I mean, why do you have a rule  
7 that was to address depleted uranium so that you can  
8 then have another rule to address depleted uranium.  
9 But what the intent was going back to the very  
10 beginning of this process, the site-specific  
11 assessment rule making was to require a site-specific  
12 performance assessment to look at waste streams that  
13 might otherwise have somehow not been adequately  
14 addressed in the development of the tables. I don't  
15 see anything about what's been talked about today  
16 that would not accomplish that objective, so I think  
17 that's what's being done about DU. And it makes  
18 complete and perfect sense.

19 MR. CAMERON: So, you and Dornsife are in  
20 agreement?

21 MR. MAGETTE: As always.

22 MR. CAMERON: Okay. I think that's a  
23 fitting note to end on.

24 (Off microphone comment.)

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1 MR. CAMERON: Okay, go ahead. Please  
2 introduce yourself.

3 MR. JANATI: Rich Janati, Pennsylvania.  
4 How resource intensive is it? Is it practical? I  
5 guess, the reason I'm asking is that for commercial  
6 waste disposal facility, and the number of waste  
7 streams, and number of shipments. How practical is it  
8 to consider this option?

9 MR. CARILLI: Okay. I assume when you  
10 were asking, if you could ask Jhon Carilli that,  
11 you're not talking John Tauxe or John --

12 MR. JANATI: No, I'm asking --

13 MR. CARILLI: Okay, that's -- how  
14 resource intensive. I will have to say that I have  
15 the benefit of a lot of resources at my hand. Okay?  
16 But we're accepting waste from a lot of different  
17 sources, and we're not only accepting waste that has,  
18 let's say -- I want to avoid one of the phantom  
19 four. Cesium, I don't think that's one of the phantom  
20 four. We're not only taking waste that has cesium, we  
21 may have waste that has cobalt in it. We may have  
22 waste that has all kinds of stuff. We have mixed  
23 waste that we're taking, all of the things, so we're  
24 a really unusual facility.

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1 I think the smaller the -- your waste  
2 isotopes that you're taking in, the less resources  
3 you might need. But in my case, I have a lot of  
4 resources. I have an entire audit team that looks at  
5 that. I have a nuclear criticality team that looks at  
6 that. I have a PA team which is an excellent team,  
7 and so on and so forth. Who else do I have? And then  
8 we NDEP, our stakeholders that are sitting on that  
9 team. I'm trying to figure who else, don't want to  
10 miss anyone. Oh, yes, we have our disposal -- our  
11 documented safety analysis team that's on there, so  
12 it's a big team. It's not a decision -- I mean, we  
13 would fill -- if we took these tables and doubled  
14 them and put them together we would fill that table  
15 with just the people that look at the waste stream.

16 And I want you to understand, it's not  
17 just the big ones that look like they're approaching  
18 our threshold limits, it's every single waste stream.  
19 Even if that waste stream has a slight change in it,  
20 for example, as Linda brought up, the size was  
21 different than what we were expecting. It is  
22 re-reviewed by that entire team.

23 MR. CAMERON: Okay. Thank you, Jhon. I  
24 think that gives you good answer to that. And let me

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1 -- let's give our panel -- a great panel.

2 (Applause.)

3 MR. CAMERON: And we're going to bring  
4 the Public Policy Panel up now. And just let me  
5 remind everybody that there are evaluation forms out  
6 on the desk outside to evaluate what you think about  
7 the NRC meeting. Hopefully, that will improve our  
8 process. And they're called feedback forms, but  
9 they're evaluation forms. And you can sit wherever  
10 you want. Well, I guess you sit where your name tags  
11 are.

12 Take a break to go to the restroom, walk  
13 around, come back in about five minutes. Okay? And  
14 we'll get started.

15 (Whereupon, the proceedings went off the  
16 record at 3:46:32 p.m., and went back on the record  
17 at 3:51:07 p.m.)

18 MR. CAMERON: Okay, great. Lisa is back,  
19 Ralph is back, we're ready to go. And we just need to  
20 -- can you tell him to go back in the audience  
21 please, Lisa. Thank you.

22 MS. EDWARDS: You, obviously, haven't  
23 supervised Billy.

24 MR. CAMERON: All right. We'll do the

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1 same thing as the other panels. Please introduce  
2 yourself, and if you have a critically -- what you  
3 think is an important issue, we'll build the agenda  
4 from there. And, Don, can you put the -- here's the  
5 -- yes, those are the topics, and we've been talking  
6 around a lot of these issues or directly to them in  
7 terms of public confidence. And there's one bullet on  
8 here about when you look at the waste acceptance  
9 criteria, site-specific, when you look at doing  
10 that, what's the impact on public acceptance,  
11 credibility, public confidence? We have talked a  
12 little bit about compatibility. That's up there.  
13 There are some other things here in terms of after  
14 the NRC does this rule making, or before the rule  
15 making is done there might be some needed support to  
16 the Agreement States from the NRC to go out there and  
17 be there in terms of a public forum. But, again,  
18 what's an important issue to you, and it can be one  
19 of these, modification or whatever. And I think I'll  
20 just start with Lisa.

21 MS. EDWARDS: Thanks, Chip. Really glad  
22 to be here, and all the participation. I am Lisa  
23 Edwards. I'm the Manager -- I manage chemistry,  
24 low-level waste radiation management in the

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1 Radiological Environmental Protection Programs at the  
2 Electric Power Research Institute. I might say EPRI  
3 in the future.

4 I've been with EPRI for six years.  
5 Before that, I was at commercial nuclear power plants  
6 for about 18 years, so that means I bring with me a  
7 lot of hands on experience with waste generation,  
8 handling, and disposal.

9 As an aside, I am also a private citizen  
10 in a community with neighbors, and a state and fellow  
11 citizens that I care about. I'm a mother of four, and  
12 hopefully one of those four children will produce a  
13 grandchild for me in the reasonably foreseeable  
14 future.

15 (Laughter.)

16 MS. EDWARDS: That is a very --

17 MR. CAMERON: Well, you can be sure that  
18 this rule making will still be going on.

19 (Laughter.)

20 MS. EDWARDS: I don't know. At the rate  
21 my kids are going, it could be longer. So, kind of  
22 all those different hats inform my perspectives. And  
23 when I thought about this panel and being on the  
24 Public Policy, normally I would be more on a science

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1 kind of driven panel. But from a public policy  
2 standpoint, my first approach is it needs to be safe.  
3 These are the values that I use to guide a response  
4 to any issue that might come up.

5 Second is, our research at EPRI, we  
6 consider the public our final stakeholders, and our  
7 mission is to do research related to the beneficial  
8 use of electricity. In our view, like I said before,  
9 consistent with the NRC policy, is that as long as it  
10 is safe, a regulation or a regulatory structure that  
11 facilitates disposal is preferable. We think that is  
12 a better benefit for the public. Maintaining  
13 unnecessary or increasing unnecessary or technically  
14 unjustified burdens related to disposal does not  
15 increase the benefit to the public.

16 And site-specific waste performance  
17 criteria or waste acceptance criteria that's site-  
18 specific. The benefit I believe that comes from that  
19 is that the science -- the public is able to benefit  
20 from the last science, so right now our structure  
21 goes back to ICRP2. That's an outdated science, and  
22 it does not provide the public with the best benefit.  
23 And it may in some cases say that the higher activity  
24 results in the same dose. The dose is what is

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1 impacting the public, so it's appropriate for the  
2 public to benefit from that new science.

3           Likewise, if the new science says if you  
4 want to meet that dose objective you need to have  
5 less activity, the public should benefit from that,  
6 as well. And I think the public benefits from a site-  
7 specific waste acceptance criteria because it  
8 maximizes the use of the asset. And I think enough  
9 people talked about that, I don't have to elaborate  
10 on it greatly. But there is a limit to the amount of  
11 disposal space currently available. No one is rushing  
12 to the chalkboards to design a new or license a new  
13 disposal facility, so it is in the best interest of  
14 our society to maximize the use of that asset. And if  
15 a waste acceptance criteria that's specific to that  
16 site allows a better use, then that's a benefit to  
17 the public.

18           MR. CAMERON: Great, thank you. Thank you  
19 very much, Lisa. And we'll go to Christopher.

20           MR. THOMAS: My name is Christopher  
21 Thomas. I'm the Executive Director of HEAL Utah.  
22 We're a non-profit public interest advocacy  
23 organization. We've been around 10 years. We have  
24 thousands of supporters across the State of Utah, and

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1 I just want to start out by listing some of my top  
2 concerns. And then we'll have a discussion that flows  
3 from that, but one of the things that's risen to the  
4 top of my list of concerns today is that people keep  
5 saying well, there's a limited number of disposal  
6 sites; therefore, we should maximize the use of those  
7 sites.

8 Well, if you think about it, that runs  
9 directly contrary to the idea of the Low-Level Waste  
10 Policy Act passed by Congress, where basically  
11 governors came to the federal government and they  
12 said we're becoming the dumping ground for the whole  
13 country. We don't think that's fair. So, then there  
14 was a policy framework put in place that said, you  
15 know, there should be an equitable policy. So, I  
16 agree with Lisa that whatever we come up with should  
17 be safe, but I think it should also be fair.

18 And the thing that -- my top concern is  
19 that this whole agenda of creating the WAC option  
20 seems to be designed to get around Utah's statutorily  
21 enacted ban on hotter Class B and C waste. I think  
22 that's a huge problem, and it's something that I  
23 haven't heard very many people really talk about or  
24 address.

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1           And if the NRC is basically going to  
2 adopt a position or a policy that says it's -- we  
3 don't want to see additional sites creates;  
4 therefore, we want to take the waste streams that are  
5 out there and put them in the sites that exist, then  
6 maybe we need to have that conversation, and have it  
7 more directly than doing it through this regulatory  
8 proceeding.

9           So, let just now -- that's an  
10 overarching concern, but let me talk about some other  
11 concerns about the WAC approach as I see it. I think  
12 it puts too much of the nuke waste disposal decision  
13 in the hands of the company that stands to benefit  
14 from receiving from the waste and disposing of it.  
15 And I think that modern PAs are incredibly complex. I  
16 have some exposure to Neptune and the analysis they  
17 did for EnergySolutions on large amounts of depleted  
18 uranium. And as I understand it, you know, there's  
19 thousands of variables, they're changing along  
20 different parameters. Some of the variables are  
21 linked together, and they're changing together in  
22 certain ways. That's a really difficult thing to get  
23 a handle on, and to try to review and say yes,  
24 everything was done correctly. So, I think if you're

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1 going to do that kind of analysis, there's some  
2 benefit to doing, one, that's watched by lots of  
3 smart people who can all look at it and say yes,  
4 we've got pretty good confidence that it was done the  
5 right way, rather than doing it at many different  
6 sites.

7 I think another thing that I don't want  
8 to see happen is that the WAC -- basically, any time  
9 a waste stream arrives that doesn't seem to fit the  
10 prior limits, then the analysis is redone in a way  
11 that says actually, you can go over this threshold of  
12 this concentration and, actually, it still does meet  
13 the performance objective. I just don't think that's  
14 a good way to set these kinds of limits and policies,  
15 because it seems too driven by the needs of the  
16 moment rather than good public policy.

17 I think some have said at least  
18 previously that the classification system that we  
19 have now is overly conservative. And, honestly, I  
20 don't think that's a problem. I think it's great. I  
21 think conservatism should be a goal of the public  
22 policy, and I think it's one that instills trust and  
23 public confidence in the process, so I don't see  
24 relaxing conservatism as a problem.

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1 I guess as we talk about this, I'd love  
2 to hear maybe NEI or EPRI talk about kind of what is  
3 the goal with this proposed change in the rules. I  
4 mean, is it to allow easier licensing and opening of  
5 additional disposal sites, or is it really to try to  
6 -- I mean, I guess what I'm hearing over and over  
7 again is that it's really not to do that. The goal is  
8 really to take the existing sites like Utah and put  
9 more waste in there that can't currently go in there.  
10 So, I guess if that's the answer, I guess that's the  
11 answer, and one that we certainly have a big problem  
12 with.

13 And I guess, also -- I mean, I re-looked  
14 at NRC's mission last night, and as I read it, it had  
15 to do with protecting the public and the environment.  
16 So, from that perspective I think a more conservative  
17 approach would be just as agreeable to the NRC as a  
18 less conservative approach. If the goal is safety,  
19 then I think it's great and appropriate to have a  
20 more conservative standard because it does instill  
21 more public confidence and trust.

22 And I think it's just -- it's really  
23 important that anything that be done out of the  
24 context of this rule making preserve the ability of

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1 host states like Utah to limit what kinds of waste  
2 come in there. I think if you basically have a  
3 situation where the NRC rule supersedes what Utah's  
4 done and makes the state takes waste that otherwise  
5 it would not have taken; boy, I just think that sets  
6 a precedent where no other state is going to want to  
7 open a disposal site because they'll say well, gee,  
8 look what happened over here. Utah took all the --  
9 you know, like 98 percent of the commercial nuclear  
10 low-level waste for all these years. They didn't want  
11 to take these two classes, and suddenly they were  
12 forced to, so safer not to open any disposal site at  
13 all. I mean, I think that's a really important policy  
14 consideration that has ramifications for a long time.  
15 And I'll leave my comments there.

16 MR. CAMERON: Okay. Just let me ask you  
17 one question, Christopher, to clarify this; is that I  
18 think a lot of your comments go to the public  
19 confidence item, and whether the site-specific waste  
20 acceptance criteria really promotes public  
21 confidence. And you're talking about a conservative  
22 approach, sort of juxtaposing that to the WAC. And I  
23 just want to make sure, can you tell us what type of  
24 conservative -- what is a conservative approach to

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1 you? Is that the -- just the existing waste  
2 classification tables or what?

3 MR. THOMAS: Well, for instance, I think  
4 looking at a time of compliance commensurate with the  
5 hazard of the waste that you're looking at is a  
6 conservative approach, and a good approach. And I  
7 would see any approach that would say well, yes, we  
8 got depleted uranium. It's dangerous over millions of  
9 years but we're only going to look at it for 300  
10 years. I would say that's not conservative.

11 I think that one of the challenges --  
12 one of the concerns I have with these WACs is that  
13 you can just play with these assumptions, and refine  
14 them and refine them until you can kind of show that  
15 the system or the waste stream meets the performance  
16 objectives. So, I don't know, that just -- that  
17 doesn't seem like a good way to build public trust  
18 and confidence.

19 MR. CAMERON: Okay. And the reason I ask,  
20 that's good you put that out there because I think  
21 people on the panel may want to respond and say that  
22 well, the waste acceptance criteria really can be  
23 conservative, or viewed as conservative, and could  
24 promote public confidence. So, I think they need to

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1 know what the comparison is there.

2 And I should note that we do have one  
3 member of the panel who is on the phone. Ed Maher,  
4 are you on the phone?

5 MR. MAHER: Yes, I am.

6 MR. CAMERON: Okay, good. We're going to  
7 get to you in a few minutes for your introduction.  
8 Okay? I'm glad you're there. And let's go to Earl,  
9 Earl Fordham.

10 MR. FORDHAM: Good afternoon. My name is  
11 Earl Fordham. I'm the Regional Director for the  
12 Washington State Department of Health Office of  
13 Radiation Protection. I oversee our waste management  
14 folks that license the disposal site at U.S. Ecology.  
15 We've had several opportunities over the last several  
16 years to get out in front of the public and try to,  
17 as you say, build public trust and confidence. Some  
18 have been successful, some of them haven't been quite  
19 as successful as we would like.

20 More recently, we've been involved, or I  
21 have been in the revision that the NRC is doing on  
22 the Branch Technical Position, and there are changes  
23 coming out in that document, also, that we're  
24 probably going to ask the NRC when we actually get

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1 the final to come on out and hold a public meeting in  
2 the local area. The reason for that is primarily  
3 we're already looking at some of the increases in  
4 sealed sources that are going to be allowed there,  
5 the idea of cesium. They're going to increase, so  
6 we'll probably be sending maybe Larry, or somebody a  
7 letter saying when this thing comes out, please come  
8 out and help us out here.

9 One of the things that we would like to  
10 do in that regard, too, is instead of being kind of  
11 what we look at as perhaps behind the eight ball. You  
12 know, what we did there is we were behind the eight  
13 ball on several public concerns, is to get out before  
14 rule making starts and actually start -- when you go  
15 out and do -- I suspect the federal government does  
16 the same thing that states do in the environmental  
17 CEPA actions is they go out to the public to scope  
18 out their ideas.

19 I would say the NRC has done a great job  
20 here in helping us out, the sited states in scoping  
21 this out but I don't know how much we've done as far  
22 as getting out to the public. Obviously, our task by  
23 our state constitution is health and safety, and we  
24 treat that was our number one priority. However, that

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1 sometimes does not include getting the public there,  
2 so that's why it's good to hear some of these public  
3 concerns issues.

4 One of them that we're definitely out in  
5 front of right now, and it's really showing some  
6 fruitfulness here is for you that all remember  
7 Fukushima, the tsunami debris is washing ashore on  
8 the western United States, and we have already been  
9 out there. I mean, this is an idea that maybe others  
10 can learn from, is that if you're out there in front  
11 of the game you build public trust and confidence,  
12 and they're more willing to go along with you on this  
13 and help you out in doing this. We routinely get  
14 calls.

15 Very quickly to kind of close here is  
16 that we did go out and when we did our Trojan Reactor  
17 Vessel disposal 10 years ago, but we were accused  
18 since we were coming out after-the-fact of doing what  
19 they called D&D, we decided and defended instead of  
20 getting out in front.

21 MR. CAMERON: Okay. Thank you, Earl. And  
22 Ralph.

23 MR. ANDERSEN: My name is Ralph Andersen.  
24 I'm the Senior Director for Radiation Safety and

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1 Environmental Protection at the Nuclear Energy  
2 Institute. By profession, I'm a health physicist and  
3 that usually sets my mind set for looking at some of  
4 these issues. I'd just like to offer three points and  
5 then I'd like to just make kind of a general comment.

6 Our perspective is that the NRC should  
7 pursue a rule making to produce a more risk-informed  
8 and performance-based regulation. Our thinking goes  
9 back to the strategic review done by the NRC, and the  
10 idea that the rule would benefit from such an  
11 activity. We suggest that the rule making effort,  
12 however, should be aligned with the envisioned Part  
13 20 rule making that will be undertaken by the NRC.  
14 And we also think that it should be aligned with the  
15 overall effort by the agency to improve the  
16 risk-informed and performance-based aspects of its  
17 regulation that are articulated in the report issued  
18 by the task group chaired by Chairman Apostolakis.

19 I would mention that doing such an  
20 alignment would have the effect of this rule making  
21 being undertaken over a much more extended time frame  
22 than the very abbreviated time frame that seems to be  
23 envisioned.

24 To a certain extent, I think the tail is

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1 wagging the dog. In our view, this isn't about the  
2 site in Utah exclusively, nor is this about solving  
3 the depleted uranium issue. It's really a much larger  
4 undertaking to simply produce a risk-informed and  
5 performance based regulation.

6 The Commission believes in its  
7 statements that undertaking that kind of effort  
8 enhances protection of public health and safety. We  
9 agree with that. That's why we are so supportive of  
10 this. It also has the effect of optimizing and  
11 balancing cost and safety benefit. And we believe  
12 that that's a very essential part of responsible  
13 regulation.

14 The second point I would make is that I  
15 really think the process should better integrate the  
16 states as partners in the process. In our view, and  
17 we've said this in a number of forums, state agencies  
18 aren't stakeholders. State agencies are  
19 co-regulators. They are not members of the public,  
20 and I think their role should be substantially  
21 different than being treated as a stakeholder.

22 I was struck by some of the comments  
23 this morning in which it appears that the states want  
24 to request more time for review and comment. Other

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1 rule makings that I'm familiar with that will have to  
2 be implemented by the states, the states were  
3 integrated on the front end of the process so they  
4 really weren't hostage to time periods, so I would  
5 hardly endorse that they be involved particularly in  
6 this area because it's actually the states that are  
7 licensing and regulating low-level waste disposal  
8 facilities, and they bring a tremendous expertise and  
9 experience to the issue to make sure that we end up  
10 not only with an effective rule for insuring safety,  
11 but a rule that can actually be implemented.

12 Thirdly, I would make the point that we  
13 think that this process should emphasize flexibility  
14 and implementation. In terms of compatibility issues,  
15 certainly the rule would have an absolute standard,  
16 the performance objectives which falls under  
17 Compatibility Category A, but we think in terms of  
18 describing a method for demonstrating compliance with  
19 the standard, that's where the NRC should describe a  
20 method that is acceptable, that the NRC should also  
21 allow that other methods can be proposed and  
22 approved. We think that's the necessary flexibility.

23 And then finally in terms of acceptance  
24 criteria we think it's appropriate to maintain a

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1 waste classification table that establishes generic  
2 criteria, but at the same time we think that the  
3 concept that is in 61.58 that allows submittal of  
4 other options and other criteria to be made even  
5 somewhat more flexible, and basically empower the  
6 states to be able to utilize waste acceptance  
7 criteria as the alternative to those values in the  
8 waste classification table. I'll comment that there's  
9 an analog to that in license termination in which  
10 there are generic criteria that are called screening  
11 criteria, but then licensees are certainly welcome to  
12 use MARSSIM, I don't want to go through the acronym,  
13 to develop site-specific acceptance criteria for  
14 terminating license. This has been used very  
15 effectively and successfully. Thank you.

16 MR. CAMERON: Thanks, Ralph. And Arjun.

17 DR. MAKHIJANI: Thank you, glad to be  
18 here. My name is Arjun Makhijani. I'm President of  
19 the Institute for Energy and Environmental Research.  
20 I've been doing work on -- technical work on waste  
21 issues and waste classification issues for a lot of  
22 years. I believe it was my expert testimony before  
23 the NRC in the LES licensing case that brought the  
24 issue of depleted uranium to the fore when the NRC

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1 agreed with us that it wasn't -- it was low-level  
2 waste but that it needed some kind of determination  
3 for what was going to happen to large quantities of  
4 depleted uranium during the New Mexico uranium  
5 enrichment licensing case.

6 I think the idea of changing 10 CFR 61  
7 to accommodate depleted uranium is wrong. We've -- or  
8 long-lived wastes in large quantities like depleted  
9 uranium where there's recycled uranium from  
10 Department of Energy facilities, the kind that was  
11 headed to Utah last year or the year before, or  
12 similar kinds of waste.

13 The existing rule is -- well, you know,  
14 the classification system isn't very satisfactory,  
15 but the existing rule would be greatly degraded by  
16 providing a parallel way to dispose of waste in the  
17 tables that are there. I think you're not remedying a  
18 problem, you're just creating a new problem.

19 I'll give you two examples of -- I have  
20 almost no confidence in the way official performance  
21 assessments are done, not because they're always  
22 wrong, they're not, but because I have not been able  
23 to get absurd results attended to, including those  
24 pointed out under oath and testimony, even though

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1 they have stood uncontradicted for many years. And I  
2 have come across these same kinds of problems in  
3 performance assessments of various kinds.

4 In the Utah case, the NRC said that a  
5 certain document that was at the foundation of  
6 licensing of that site was technically sound, and I  
7 testified that there were results like disposing of  
8 more uranium than the weight of the earth per gram of  
9 Utah soil, and that has stood there for eight years.  
10 I wrote to Utah. I called this to the attention in  
11 forums like this, in the corridors with an NRC  
12 Commissioner, under oath as expert testimony, and  
13 again today. And I've been promised again today that  
14 I'll get a response. Now, you've got a founding  
15 licensing document that's a performance assessment  
16 that's got -- maybe I do my arithmetic wrong, but no,  
17 it is not wrong. I did not do it wrong. I have  
18 checked it many times, and it stood uncontradicted  
19 for eight years. There'd be more plutonium than was  
20 ever made that's proposed to be disposed of in a gram  
21 of Texas soil, not in WCS. This was a DOE facility.

22 Now, if I'm the only one who is pointing  
23 these things out and can't get them remedied, how are  
24 we going to have -- what is the basis of saying that

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1 we can do risk-informed assessments? I think  
2 Christopher's idea, Christopher Thomas' idea that we  
3 should have -- we have had one proceeding. It was a  
4 pretty good proceeding. It resulted in a rule. We've  
5 got certain dose limits, we've got acceptance  
6 criteria in the form of concentration limits, and we  
7 find that the rule has certain gaps, some of which in  
8 regard to depleted uranium were accepted, were  
9 acknowledged in the Environmental Impact Statement.  
10 We're leaving this gap because we don't anticipate  
11 depleted uranium to be disposed of in large  
12 quantities. And that situation has changed.

13 I think depleted uranium needs to be  
14 disposed of in deep facilities. There's no mystery  
15 about this. These proceedings are, in fact,  
16 unnecessary. It's been shown by Sandia studies and a  
17 number -- all the official studies that have been  
18 done, except the one that was put on the table in  
19 this proceeding some time back which assumed zero  
20 erosion, showed that under reasonable erosion  
21 assumptions you're going to get doses of hundreds of  
22 rem, hundreds of rem, not millirem at peak times, and  
23 peak times are 9,000 years, 10,000 years, 20,000  
24 years, 30,000 years, within the realm of what we've

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1 been talking about here, not one million years. And  
2 we're still talking about it.

3 The National Academy of Sciences has  
4 said that apart from nomenclature, depleted uranium  
5 is like transuranic waste, more than 100 nanocuries  
6 per gram, and should be treated like that. And we  
7 have -- we're still sitting talking about it even  
8 though the right answer for depleted uranium disposal  
9 is in a deep geologic repository just like  
10 transuranic waste.

11 You could argue that transuranic waste  
12 should also be disposed of in shallow land burial.  
13 Are we going to revisit that? And say if we have  
14 reprocessing -- I'm afraid that that's where we're  
15 headed. That we have reprocessing, and we have a lot  
16 of plutonium contaminated waste, that we're going to  
17 dispose of several hundred nanocuries per gram of  
18 plutonium.

19 I believe that the exception for  
20 depleted uranium which is very exemplary that was  
21 created in the 1980s was created not because the  
22 concentration of depleted uranium is a problem, which  
23 it is, but because the total quantity that we're  
24 talking about really creates the large dose. Because

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1 when you have a very large amount of uranium that  
2 would be exposed through erosion or in a humid area,  
3 obviously, you'll get large doses in water, you're  
4 going to have a problem.

5 And I think a separate rule talking  
6 about we don't have uranium, we don't have radium, we  
7 don't have thorium-230, we don't have thorium-232,  
8 there's a whole lot of radionuclides that need to be  
9 disposed of in large amounts because, unfortunately,  
10 they were taken out of the ground for whatever  
11 reason, and they need to be disposed of. And I think  
12 the -- for me, the performance assessment that needs  
13 to be done has already been done. And the fact that  
14 we're talking about performance assessment in  
15 relation to depleted uranium and other radionuclides  
16 like depleted uranium is simply a way of getting  
17 around the rule.

18 Let me talk about science-based a little  
19 bit. I've said this before. I want to say it in this  
20 forum. There's nothing different in regard to the  
21 more recent ICRP than ICRP2 in the essential ways  
22 that ICRP2, we have organ doses today. I would hate  
23 to see the organ dose element of Subpart C in 10 CFR  
24 61 abandoned. Organ doses are actually the foundation

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1 of effective dose. You can't calculate effective dose  
2 equivalent without organ doses. There's absolutely  
3 nothing modern to say we're going to assign the  
4 various organs of the body a certain weighting factor  
5 and calculate an effective dose. In fact, weighting  
6 factors introduce an element of -- another element of  
7 uncertainty in how this is implemented because  
8 weighting factors have changed a lot over the years.  
9 You know, we don't agree on how much the lung should  
10 be, and how much the breast should be, and how much  
11 the gonads should be, and so on. We keep changing  
12 these things around.

13 MR. CAMERON: And, Arjun, I think why  
14 don't we get some of this out in dialogue so that you  
15 guys can talk with one another about some of this.

16 DR. MAKHIJANI: Look, I wanted to be on a  
17 technical panel. I didn't think we were going to have  
18 a forum like this. Let me say some things that need  
19 to be said. We don't need two time limits as I  
20 already have said. We don't need a new low-level  
21 waste rule. We already have one. We really should  
22 properly be talking about disposing of long-lived  
23 radionuclides and deep disposal, and we're not  
24 talking about it. All we're talking about is allowing

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1 shallow land burial of radionuclides that should not  
2 go to shallow land burial. Depleted uranium is not  
3 going to be like uranium ore. It is pure uranium.  
4 Uranium ore is usually less than 1 percent  
5 concentration, and usually bound up in rocks, and  
6 usually very deep. And surface concentrations are two  
7 picocuries and four picocuries per gram, and not 400  
8 nanocuries per gram.

9 We're talking in different realms, and  
10 to be comparing things like as was done this morning  
11 somehow, that we got uranium ubiquitously everywhere  
12 and are we going to talk about getting rid of natural  
13 uranium is ridiculous. We're talking about completely  
14 different things. And, okay, I will wind up -- let me  
15 make two short points and then I'll stop.

16 To be comparing what we're doing to each  
17 other with what Mother Nature is doing to us is not  
18 right. Mother Nature will kill us one day. You know,  
19 it's part of being born. We're all going to die, but  
20 if your neighbor came up to you and said let me punch  
21 you in the nose because Mother Nature is going to  
22 kill you one day, would you think that was sensible,  
23 even though it's a much smaller dose?

24 Now, let's get rational here. We're not

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1 talking in the realm of common sense. My last point  
2 is about something that I found very disturbing that  
3 was said this morning about Nevada, that Yucca  
4 Mountain was selected because there was nobody there.

5           There's a treaty there in 1863 between  
6 the Shoshones and the Government of the United  
7 States, which the Shoshones, many of them at least  
8 believe to this day was violated. I can't pretend to  
9 speak for them, but I have some knowledge of this  
10 issue because I have spoken to many of them about  
11 this issue in the past. And to say there was nobody  
12 there is really -- well, I'm not going to use the  
13 word that should properly be used about how -- what  
14 happened to Native Americans in this country because  
15 it was seen as an empty land. But to talk about that  
16 kind of thing in this context, that Yucca Mountain  
17 was selected because nobody was there, and being  
18 talking about performance assessments, and being  
19 putting waste for hundreds of thousands of years  
20 shows that, you know, at least if we're not  
21 respectful of the existing generations and being  
22 aware of environmental justice questions, how can we  
23 pretend to be aware of environmental justice  
24 questions across thousands of generations?

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1 MR. CAMERON: Okay.

2 DR. MAKHIJANI: I don't understand it. I  
3 think we're in the wrong arena, because --

4 MR. CAMERON: All right, Arjun. I think  
5 we need to go on.

6 DR. MAKHIJANI: We have -- one more  
7 sentence. I have participated with you, Chip, many  
8 times in forums like this. I always agree to come  
9 even though what I said is generally not responded  
10 to; although technically well founded. And I have  
11 promised you all if I technically make a mistake I  
12 will publicly publish a correction; and yet, I come  
13 because I respect the public participation process.  
14 But really if public participation means that you  
15 have some kind of a show and people come and say  
16 their peace, and never get a proper response  
17 technically, and you never see that in the substance,  
18 and we have been saying this stuff should go into a  
19 repository, then really public participation, we're  
20 better off without it because it is just a show, and  
21 does not have the substance that I think it was  
22 supposed to have. Just like NEPA, you make your  
23 comments to NEPA and it is decide and defend. It's  
24 not being attended to in the way it was supposed to

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1 be done.

2 I think this rule making should be  
3 abandoned, and a new rule for the kinds of waste that  
4 are not in 10 CFR 61 should be started. Thank you.  
5 I'm sorry I've held forth, but this holding forth is  
6 a problem that was created by not responding to  
7 comments, and technical work that has been done since  
8 1995.

9 MR. CAMERON: Yes. Arjun, people are  
10 listening to you, and you did hold forth and made  
11 your concerns very clear. And we just need to go to  
12 Jennifer, and then Ed.

13 DR. MAKHIJANI: I've done it before.

14 MR. CAMERON: And then I have two agenda  
15 items that we might be able to address, not in any  
16 sort of detail. And that's not Arjun or anybody's  
17 fault. Okay? It's just that we had a lot of things to  
18 discuss and we're running late. But, Jennifer, go  
19 ahead.

20 MS. OPILA: Hello, everyone. My name is  
21 Jennifer Opila. I work for the State of Colorado. I  
22 oversee the Radioactive Materials Program in  
23 Colorado. We don't have a low-level waste site in our  
24 state, so I just do this for fun. I am here

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1 representing the Conference of Radiation Control  
2 Program Directors in my capacity as the Chairperson  
3 for the E5 Committee on Low-Level Waste for that  
4 organization.

5 CRCPD is -- basically represents all of  
6 the states, Agreement States, non-Agreement States,  
7 and we thank you, Ralph -- yes, we like to think of  
8 ourselves as co-regulators, especially in the area of  
9 low-level waste.

10 I want to clarify one comment that I  
11 made earlier today regarding the states and their  
12 process in the NRC rule making. And I'm sorry if I  
13 miss -- if I wasn't clear, but the Agreement States  
14 do have a person at the table in the working group  
15 that develops the rule language for not only this  
16 rule, but for all of the rules that NRC makes. What I  
17 was talking about this morning was that once a draft  
18 proposed rule would come out then the opportunity for  
19 the rest of the states to comment would only be for  
20 those 30 days. But I didn't mean to say that NRC  
21 works in a vacuum without Agreement State  
22 participation when they develop rules, because that  
23 is not true. And in this case, I have to give the NRC  
24 credit. They have been ■ - - and the BTP, they have

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1 really gone out of their way, so thank you to Larry  
2 and his staff for that.

3           Compatibility has come up so many times  
4 all day long, it's come up through this whole rule  
5 making. It's a very interesting question with this  
6 situation, because as everyone said, the Agreement  
7 States are the primary regulators for these  
8 facilities.

9           Additionally, there's a lot of things  
10 that we've talked about today that's been talked  
11 about through this rule making that's already in  
12 licenses that are operating today. Performance  
13 assessments have already been done, waste acceptance  
14 criterion are already there. Obviously, there will  
15 need to be some kind of grandfathering provisions. I  
16 think that was in the last proposed rule for some of  
17 these items, so I just wanted to bring that up, that  
18 that will have to be a consideration.

19           And the states understand that in the  
20 area of health and safety, we understand there needs  
21 to be a high level of compatibility. We see that  
22 probably the performance objectives -- having a high  
23 level of compatibility with the performance  
24 objectives seems to make sense, but we would like to

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1 have flexibility. As I think Earl has stated earlier  
2 regarding -- as much flexibility as we can regarding  
3 things such as using the waste acceptance criteria.

4 I just have two other little points that  
5 I wanted to put in. Earlier today Larry mentioned,  
6 and I think it was also mentioned in the last panel  
7 about having very low-level waste or exempt levels of  
8 waste, or a low activity waste -- this would be very,  
9 very helpful to the states. And I think it would also  
10 be very helpful to just -- to the country's resources  
11 which we talked about a lot today, that these  
12 low-level waste sites are very precious resources.  
13 And there's no reason to fill them up with this stuff  
14 that's at a very, very low concentration but  
15 sometimes in a high volume. So, I know it's a huge  
16 can of worms but if the NRC one day could take that  
17 on, that would be awesome.

18 And public health, I want to reiterate  
19 what Earl has said about we sometimes do need -- we  
20 need NRC's help to talk to our public about these  
21 very complex technical issues, so thank you to the  
22 NRC for volunteering that.

23 MR. CAMERON: Okay. And thank you,  
24 Jennifer. Ed, are you still with us?

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1 MR. MAHER: I sure am.

2 MR. CAMERON: Why don't you introduce  
3 yourself to us and tell us a little bit about what  
4 your concerns are.

5 MR. MAHER: You bet. My name is Ed Maher,  
6 and I'm the immediate past president of the Health  
7 Physics Society. Health Physics Society for those who  
8 aren't familiar with us is a professional society of  
9 about 5,500 professionals who concern themselves with  
10 radiation safety. And we did submit comments back on  
11 the request on February 22nd. I will kind of hit the  
12 highlights of this. I know we're running short, but I  
13 think there's a couple of items I want to mention,  
14 particularly ones that were brought up that seem to  
15 be somewhat controversial.

16 We strongly do support the use of the  
17 risk-informed performance approach for management of  
18 low-level- waste. We think that allows the  
19 flexibility without excessive overly restrictive  
20 requirements.

21 Now, I'd like to address -- I think  
22 Christopher said it, I think Arjun may have also  
23 mentioned it, that the current waste classification  
24 scheme is conservative, and it is quite conservative,

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1 and that it has served its purpose. And that going to  
2 a waste acceptance criteria will degrade public  
3 confidence. And I'd like to speak to that because one  
4 thing that tables do is locks you into doing things a  
5 certain way. And when you use the waste  
6 classification system that we have now, which I don't  
7 believe serves us very well because it's not directly  
8 related to health and risk, but when you use a system  
9 like that that locks you into a certain way of doing  
10 things, you disinvest those who build engineering  
11 barriers, construction methods, canisters to do it  
12 better, to build a better mousetrap, because it's not  
13 worth their time doing it because you can't apply it  
14 because you're not within a certain limit or  
15 concentration in a table. So, we would like to see  
16 the current classification system being taken out,  
17 and we do believe that a replacement system similar  
18 to the NCRP 139 report like was mentioned before,  
19 also the IAEA Safety Series I, which is more of a  
20 health risk linked classification system, has merit  
21 still. And we could use that certainly at the  
22 generator level, that would be useful information to  
23 use that table. And then at some point if it is  
24 believed that the engineering technology has improved

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1 to a point that if you're outside those limits that's  
2 a waste acceptance criteria performance assessment,  
3 it should be able to be used so we can incorporate  
4 some of these improved or emerging engineering  
5 controls for these sites.

6 So, we do believe the two tier -- we do  
7 believe the two parts of this out of the five  
8 criteria, or the five options discussed under the  
9 SECY, that we change our classification to something  
10 that's already -- the NTFE has proposed or IAEA, and  
11 also we do go forward with performance assessment  
12 waste acceptance classification.

13 Regarding the compatibility between the  
14 states and the feds, we believe to the extent  
15 possible that we support consistent radiation  
16 standards, and that the Agreement States and NRC  
17 ought to be speaking frequently and together to come  
18 up with something that's pretty close. They don't  
19 have to be lock step, but I think a consensus of  
20 methodology, and we'd like to see the DOE get into  
21 that, as well, but that's like asking for world  
22 peace, you know. But we do believe consistency to the  
23 extent possible. If you look at all the 50 states  
24 generating waste, you have all these people that have

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1 -- the shippers, and the manifest people, and the  
2 waste handlers and brokers who have to know all the  
3 different regulations. It just really makes it very  
4 complicated, and probably adds unnecessary expense to  
5 waste shipment.

6           Regarding the use of ICRP methodologies,  
7 we do endorse that. We would go further to say that  
8 the methodologies by the NCRP and also the ICRP, in  
9 particular, the dose methodology of ICRP, Publication  
10 103 ought to be used on the dosimetry. We ought to  
11 use the best available technology on it.

12           MR. CAMERON: Thank you, Ed. All of you  
13 have made some important points that the NRC and  
14 everybody else in the room needed to hear. In terms  
15 of having a discussion on some issues, I think that  
16 there are two issues that we might be able to have a  
17 discussion about. I think the let's get the NRC out  
18 there to help the Agreement States, and do that early  
19 on, I don't think we need to have a discussion on  
20 that. I think that that point has been heard. Amen.  
21 Is that -- okay, amen.

22           But I'm thinking that you've heard from  
23 Christopher, and you can gather from the types of  
24 things that Arjun has said, that this whole issue of

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1 our site-specific waste acceptance criteria, how do  
2 they promote public confidence. We need something  
3 more conservative. Perhaps we could hear from Lisa,  
4 and Earl, and Ralph, and Jennifer. We've heard from  
5 Arjun and Christopher on this, and Ed.

6 What can you say to us about waste  
7 acceptance criteria, and conservatism, and public  
8 confidence? Lisa, do you have some things that you  
9 could offer on that? You said a little bit about it,  
10 but I think that's one issue. And the other issue is  
11 compatibility that we can talk about. So, let's do  
12 the public confidence and the use of site-specific  
13 waste acceptance criteria.

14 MS. EDWARDS: Well, I guess -- I'm not  
15 sure this is a direct answer to your question, Chip.  
16 I'm going to focus a little bit instead on the  
17 comment that Christopher made. It surprised me that  
18 your interpretation of my comments was that I just  
19 wanted to not have any more disposal sites, and cram  
20 as much into Utah as possible.

21 I think it's entirely up to the State of  
22 Utah how they utilize their disposal facility. Just  
23 like in my own state, I think it's entirely up to  
24 Texas how we use or utilize the disposal facility

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1 that we're siting for the B&C waste you guys don't  
2 want.

3 But that being said, our research is  
4 really more about from a broader sense how can you  
5 site a disposal site whether it's an existing one  
6 that you decide to take a different approach with, or  
7 whether it's a new one. Because today there may not  
8 be a new disposal site on the chalkboard, but some  
9 day there will. And having a set of criteria that  
10 looks at the specifics of that site makes more sense  
11 to me.

12 And as more of a science-based person,  
13 when I go to a meeting and they tell me the criteria  
14 here use a conglomeration of attributes from around  
15 the country, most of which do not actually exist at  
16 this site, be that conservative or non-conservative  
17 it makes me question the judgment of the entire  
18 scheme. Because I say well, if you're at a dry arid  
19 site and you're using humid site characteristics,  
20 that may be conservative this time, but what other  
21 thing do I need to look at to see if you're using a  
22 characteristic that's non-conservative. So, for me in  
23 discussions like that the more consistent the  
24 characteristics are with the actual site, the more

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1 alignment that's there, that gives me more confidence  
2 on a technical basis.

3 All of this, though, whether we use a  
4 generic set of criteria or site-specific waste  
5 acceptance criteria, I think it's all about the  
6 communication. The D&D approach is bad. Right? It  
7 makes you look --

8 MR. CAMERON: This is decide, announce,  
9 defend. Is that what you mean?

10 MS. EDWARDS: Yes, decide and defend.

11 MR. CAMERON: Okay, bad. All right.

12 MS. EDWARDS: Rather, having a public  
13 discussion about why you're choosing the attributes  
14 as you're going along, and involving them to give  
15 people an opportunity to understand the science that  
16 is being used, I think is a more credible approach.

17 It is true some people won't understand  
18 the information that's being provided, but it is  
19 incumbent upon us as the technical leads to try to  
20 put that technical information in a form that is  
21 consumable to the public. But it doesn't alleviate  
22 our responsibility to make sure that what we're  
23 saying is technically based and not emotionally  
24 based.

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1 MR. CAMERON: Okay, thank you. And,  
2 again, I'm touching base with what Christopher and  
3 Arjun said in regard to the site-specific WAC. And  
4 one of Arjun's comments was that this is just a way  
5 to allow for the disposal of waste that wouldn't be  
6 allowed under the existing rule, or that the  
7 performance assessments can come up with absurd  
8 results, and in Arjun's example one that was never  
9 responded to in terms of whoever the people were who  
10 were supposed to respond to it. And Christopher  
11 raised the equity in distribution of sites, but in  
12 the context of would this rule making basically  
13 overrule the will of the people of Utah. Okay, that  
14 certain types of waste can't be disposed of in Utah.  
15 And I know there's plenty of people out here in the  
16 audience who have spoken, who have been on the panels  
17 who would want to respond and say well, we still  
18 believe that this is conservative and will promote  
19 public confidence because we heard all that. But we  
20 have our panel up here, and give you guys a shot at  
21 this, and we heard from Lisa in terms of science.

22 Earl, what would you say to some of the  
23 concerns that we heard from Christopher and Arjun?

24 MR. FORDHAM: Well, dealing with the

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1 site-specific waste acceptance criteria, generally  
2 the -- we have stayed with the NRC codified waste  
3 acceptance criteria, whether it be the tables in  
4 61.55, or characteristics in 56. The only time I can  
5 think of that we've actually strayed from that was in  
6 '95, they issued the BTP in concentration averaging,  
7 and they had -- help me out here, Chris, was it 3.9  
8 disposal of large components, reactor components? And  
9 we used that paragraph to allow disposal of the  
10 Trojan Reactor Vessel in tact.

11 And this is kind of going back to the  
12 inter generational thing. We did go and have, Gary,  
13 was it two or three public meeting? Three, wasn't it?  
14 Yes, we have one in Richland, which is -- our public  
15 was very much for it. I mean, it's work. It's Hanford  
16 work, very good. The folks in the White Salmon area  
17 of the Columbia River were concerned and they said  
18 how does this meet the waste class tables? We said  
19 well, we've done a technical evaluation report that  
20 showed that it met the performance objectives and,  
21 additionally, it also met the waste class table. So,  
22 Portland was where we got accused of D&D. And it was  
23 kind of interesting in that regard where it was a  
24 party who had brought in that was not trusting at

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1 all. We were Hanford, we're bad, so we were trying to  
2 work with the group there to try to come up with it,  
3 how to work through that issue.

4           Some of the other kind of interesting  
5 things just off the wall here when you talk about  
6 site specific waste acceptance criteria, and I don't  
7 know if other groups have seen this, is being -- and  
8 I think Susan may be the one that sees this more, if  
9 anything, in South Carolina being so close to a  
10 Department of Energy site, sorry, Susan, is that we  
11 have this argument continually between the NRC's idea  
12 that they don't like liners in their trenches  
13 preventing a bathtub effect, you know, and down the  
14 street they use liners. I mean literally, Energy has  
15 stopped doing unlined trenches.

16           MR. CAMERON: Well, Earl, let me just ask  
17 you in summary so that we can go on to Ralph, and to  
18 Jennifer. You ran into credibility problems using the  
19 existing approach.

20           MR. FORDHAM: Correct.

21           MR. CAMERON: So, do you think that site-  
22 specific waste acceptance criteria is going to  
23 exacerbate credibility problems, or is it all in how  
24 transparent --

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1 MR. FORDHAM: I think it's a transparency  
2 issue.

3 MR. CAMERON: -- and open it is, that no  
4 matter what you use, that's the key.

5 MR. FORDHAM: Very true. I think  
6 transparency is the key.

7 MR. CAMERON: Okay.

8 MR. FORDHAM: Before we would adopt some  
9 sort of a site-specific WAC, we would be out there.  
10 And we have quite a list of folks that are interested  
11 in getting involved with this, so that would be the  
12 key.

13 MR. CAMERON: Okay. Well, if you don't  
14 mind I'm going to go on to Ralph, and Jennifer, and  
15 Ed. Ralph, you get the drift of our discussion? What  
16 do you have to say on it?

17 MR. ANDERSEN: I'd just like to offer a  
18 couple of points. One is just a direct invitation.  
19 Being from NEI and we seem to be seen as the  
20 spearhead for the nuclear energy industry, we  
21 actually have members from a lot of different  
22 organizations well beyond that. Rather than convey,  
23 as I have heard today and in other meetings what we  
24 think, I'd rather you just ask me because most often

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1 the words that are put in my mouth or the mouth of my  
2 colleagues are actually not our words, so that would  
3 be one thing that would help the conversation. I  
4 accord you the respect of representing your state,  
5 and I listen closely to what you say, or to what  
6 Arjun says, or to others, so that's one thing that  
7 would always would help the conversation. We all need  
8 to work together to break down the stereotyping that  
9 I think we tend to do.

10 The second thing is I don't think we've  
11 done a very good job across the board of explaining  
12 the benefits of risk-informed, and I think it's been  
13 grossly misunderstood. For those of us that are  
14 engaged in it, we have a firm belief that it enhances  
15 safety. That's why we're so excited about it. And yet  
16 we've not seem to have to be able to convey that in a  
17 way that is understandable and convincing to others.

18 Locking in on very anciently derived  
19 tables using very rudimentary methods may create the  
20 appearance of conservatism, but over time what we  
21 found in a lot of areas to do with safety is it  
22 actually overlooks very important safety factors that  
23 then make their appearance with very unexpected  
24 consequences in the future. That argument could be

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1 made about some of the very notable accidents that  
2 have occurred over the years where people have kind  
3 of locked on. Ed Maher made comments to that effect  
4 so I'd just like to reinforce that.

5 So, a big challenge that I see is to  
6 further explain how going to risk informed  
7 approaches, not to the exclusion of defense-in-depth  
8 that arises out of deterministic evaluations, but to  
9 complement that. That's why we call risk-informed,  
10 it's not risk-based, it's risk-informed. We learn  
11 more and apply what we learn. That's what I think we  
12 need to work on.

13 MR. CAMERON: And when you say -- I  
14 wanted to ask you this before. When you talk about  
15 risk-informed, is the site-specific waste, site-  
16 specific WAC, performance assessment, is that --  
17 that's equivalent to a risk-informed approach?

18 MR. ANDERSEN: Yes, it's taking advantage  
19 of -- in general, I think we believe it's taking  
20 advantage of probabilistic risk assessment methods to  
21 better help you appreciate the value that is provided  
22 by each and every safety feature so that you focus on  
23 the things that are really important to safety rather  
24 than the things that provide a nice stylistic

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1 approach to say yea or nay. Makes decision making  
2 much more difficult but you come out with a better  
3 result.

4 MR. CAMERON: Okay, good. I think you're  
5 addressing some of the issues that Christopher and  
6 Arjun had. And I have a question for Arjun and  
7 Christopher when we hear from Jennifer and Ed.  
8 Jennifer?

9 MS. OPILA: I don't think I really have  
10 anything to add. I think I would agree that  
11 transparency is the way that you get to public  
12 acceptance.

13 MR. CAMERON: Okay, thank you. And, Ed,  
14 you know what we're discussing. Is there anything  
15 that you can offer to Christopher and Arjun on this  
16 new type of approach that would make them feel more  
17 comfortable with it?

18 MR. MAHER: Well, what I heard them say  
19 is that there's the potential to game the system  
20 here. And, yes, there is probably under a WAC a  
21 greater ability to do something that maybe you  
22 shouldn't by manipulating the numbers and all that.  
23 That's kind of what I heard. But, again, I'll go back  
24 to -- that gets back to the confidence you have in

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1 your regulators at the Agreement State and NRC level.  
2 And I have a high degree of confidence that they'll  
3 do the right thing, but I'm concerned that the -- if  
4 you don't do WAC, you just go by tables, then you're  
5 not going to incorporate the best available  
6 technology at the time. And that will enhance health  
7 and safety in the end.

8 So, it gets down to a question of  
9 confidence in the regulator. Will the regulator be  
10 able to say whoa, whoa, this is not an appropriate  
11 analysis, and I think they can.

12 MR. CAMERON: Okay. Thank you, Ed. Go  
13 ahead, Christopher. And the question I had for Arjun  
14 is, Arjun, when we talked in preparation for this you  
15 were saying that you really believed in a  
16 risk-informed and performance-based approach but it  
17 had to -- it wasn't being applied, it wasn't being  
18 implemented correctly. And I guess I want to get your  
19 opinion on this whole risk-informed,  
20 performance-based approach.

21 MR. THOMAS: Sure.

22 MR. CAMERON: Christopher.

23 MR. THOMAS: Yes, I just wanted to  
24 respond to a couple of things. One, Ralph, I didn't

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1 mean to put words in your mouth, and I apologize. I  
2 guess I was more responding to the fact that as I  
3 kept hearing the words resource, national resource,  
4 and we need to maximize its use, just realizing what  
5 that entailed for the State of Utah, and the fact  
6 that Utah spent a lot of time and energy trying to  
7 erect some limits on the kinds of nuclear risks that  
8 we would face as a state, so I wasn't meaning to  
9 direct that to you. And I was trying to ask a  
10 question, is that the strategy or the priority?

11 I think the issue that I think Ed just  
12 brought up over the phone is an important one, and it  
13 has to do with trust. And I'll tell you, there are  
14 just a lot of features of this process that have  
15 degraded and lead me not to trust the process in  
16 general. You know, I think chief among those is maybe  
17 going back to some of what Arjun said, which is that  
18 it appears from many perspectives that trying to  
19 squeeze depleted uranium into the near surface  
20 disposal framework just doesn't make any sense. It  
21 was done as a matter of expediency, and the fact that  
22 there's a large quantity to deal with rather than  
23 good sound principles.

24 And I think any assessment that says

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1 that the probability of erosion of the barrier over  
2 tens of thousands of years is zero, that doesn't  
3 leave me to feel confident and trustful of the  
4 situation. I think it's sometimes easy to -- in the  
5 PA to say well, maybe there will be no receptors, or  
6 maybe there will be nobody who goes on the site. And  
7 those kinds of decisions or things that have been  
8 done in the past have led me to be pretty skeptical  
9 about putting all this flexibility in the hands of  
10 the individual licensees to demonstrate that this or  
11 that objective is going to be met.

12 MR. CAMERON: Okay. And that's another  
13 issue that you brought up before about why this  
14 approach was suspect because it might put too much  
15 discretion in the hands of the licensee.

16 I want to turn to Arjun to get his take  
17 on risk- informed, performance-based, and I think  
18 we'll try to finish up. There is a couple of people  
19 in the audience, I just want to see if they have  
20 something that is -- that can make people feel more  
21 comfortable about this. But, Arjun, go ahead.

22 DR. MAKHIJANI: Yes. You know, when we  
23 talk about risk we're basically talking about cancer  
24 risk. And the essentials of cancer risk are specified

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1 in Subpart C.

2 So far as performance is concerned to  
3 see whether that risk goal can be met, I gave the  
4 example of depleted uranium which none of the other  
5 respondents other than Christopher even referred to  
6 or mentioned as the basis for my saying that the way  
7 it's being done is wrong, often wrong, or doesn't  
8 actually insight any confidence in me. And I gave  
9 specific examples that nobody actually addressed,  
10 that suppose -- you don't have to assume that what I  
11 said is -- you don't have to agree that what I said  
12 is true, but for the sake of argument if what I said  
13 is true, that every performance that has been done  
14 for depleted uranium shallow land disposal, except  
15 the one that was done by the NRC at the start of this  
16 whole round showed that the doses would be far in  
17 excess of the risk that we're willing to agree is  
18 reasonable in the context of the low-level waste  
19 rule. I don't agree that any neighbor-imposed risk  
20 gratuitously are necessarily good, but that's a  
21 different question.

22 The only way that that NRC assessment  
23 could say yes, shallow land disposal is okay is by  
24 assuming zero risk, and jettisoning organ doses. If

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1 you put organ doses back into that calculation, I  
2 haven't actually run the model, but I think you'll  
3 find that the 25 millirem organ dose limit would not  
4 have been met. And we have organ doses in there, so I  
5 regard this whole going to performance-based,  
6 performance assessment and risk-informed, and so on,  
7 and talk about modern science as a way of getting rid  
8 of organ doses which for the radionuclides in  
9 question, depleted uranium, radium, thorium, so on,  
10 reprocessing waste, plutonium would greatly increase  
11 the allowable concentrations of waste for the same  
12 dose because we're getting rid of the target organs,  
13 the bones, red marrow.

14 So, this exercise to me is no longer  
15 legitimate because the performance assessments that  
16 have been done have demonstrated that the kinds of  
17 waste that we're talking about should not be disposed  
18 of in shallow land burial, and the time to talk about  
19 performance assessments about these kinds of waste is  
20 already finished. The assessment is done, and the  
21 answer should have been no, you can't do this. And  
22 the fact that we're talking about risk-informed  
23 performance-based in the context of things like  
24 depleted uranium from enrichment plants is -- to me

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1 show that it's an illegitimate exercise that really  
2 is setting aside performance assessments and saying  
3 okay, we didn't get the answer we wanted so we're  
4 going to get a different answer.

5 If you look at the number of performance  
6 assessments that were done for Yucca Mountain and how  
7 many different answers that came, how many times the  
8 rules were set aside to say okay, we don't like that  
9 one, we're going to do a new one. And then eventually  
10 you can get a new one that was satisfactory enough,  
11 so we just changed the rules. The NRC changed its  
12 rules, and then the EPA changed its rules. And then,  
13 of course, the whole thing -- then we say we don't  
14 have public confidence. Well, how can you get public  
15 confidence when you're moving the goal post?

16 And what I regard as happening here is  
17 moving the goal post. It's not about risk-informed  
18 and performance assessment because those risks have  
19 already been specified in Subpart C, and the  
20 performance has already been done, and nobody at this  
21 panel other than Christopher and me are even willing  
22 to say have the performance assessment done, have you  
23 read the Sandia reports, have you read the paper  
24 published by the NRC and agree that zero erosion rate

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1 over one million years is reasonable?

2 Well, you know, we have to get real in  
3 terms of how we're proceeding under the guise of  
4 something that is seemingly scientific and  
5 risk-informed. I think the words are fine, but the  
6 process to which it's being applied clearly does not  
7 reflect that we are being risk-informed and  
8 performance-based --

9 MR. CAMERON: Arjun, I'm going to --

10 DR. MAKHIJANI: I don't have any  
11 confidence in it.

12 MR. CAMERON: Okay. I'm going to try to  
13 get a couple of people from the audience who were on  
14 the panel beginning with Paul Black to perhaps say  
15 some things not in a rebuttal mode, but things that  
16 might make Christopher and Arjun more comfortable.  
17 And I don't mean to make you change your opinion --

18 DR. MAKHIJANI: My air conditioning is  
19 repaired so I'm fine. I'll be comfortable.

20 MR. CAMERON: Okay. All right. But I'm  
21 just going to get a couple of people's take on this,  
22 and briefly. We do have Larry Camper scheduled to  
23 give us a little bit of a sum up. And, unfortunately,  
24 the contract for this room is up, and we can stay

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1 until 5:15. But go ahead, Paul, can you --

2 MR. BLACK: Well, I think maybe make a  
3 few comments, and maybe try to clarify one thing. But  
4 we might need to talk about it afterwards, I'm not  
5 sure. But our view on risk-informed, probabilistic  
6 risk assessment. From our perspective what needs to  
7 be done here and what really helps with transparency  
8 is when you build models you build them based on what  
9 you think. And I realize all models are wrong. You  
10 just hope some are useful, but you build it based on  
11 your best understanding of the system. That way  
12 you've got a starting point that you can talk about  
13 with people. If you don't do that, you're in trouble  
14 immediately. So, when I hear people talk about  
15 conservatism, what worries me and what we've seen too  
16 much in the past is conservatism in the models.

17 I have no issue if somebody wants to  
18 make a conservative decision. That's fine, but it's  
19 better to do that based on something that you think  
20 you believe in, that you can explain in the models.  
21 So, the models should be probabilistic risk  
22 assessment models built on the best information that  
23 you have, and the best understanding that you have.

24 In our experience, it is far easier to

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1 explain models like that than it is explaining  
2 convoluted conservatism that's built into those  
3 models. So, with that starting point, if you've done  
4 a probabilistic risk assessment at the back end of  
5 it, you have probability distributions on the output.

6 If somebody wants to make a conservative  
7 decision based on that output that's fine. That's a  
8 completely different issue that's outside the realm  
9 of the science, and is playing now into the policy  
10 instead. That's a decision that the stakeholders,  
11 regulators, et cetera should be making together,  
12 where on that curve do you want to make a decision?  
13 That also plays into how you should set up your waste  
14 acceptance criteria. So, the modeling should not be  
15 conservative, how people make the decision is up to  
16 them.

17 One other comment on that. The  
18 conservatism you've talked about, Arjun, with the --

19 DR. MAKHIJANI: I didn't talk about  
20 conservatism.

21 MR. BLACK: I'm going to paraphrase here,  
22 I think, sorry. And you can correct me.

23 DR. MAKHIJANI: Well, I didn't talk about  
24 conservatism. I didn't refer to conservatism.

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1 MR. BLACK: The issue you talked about  
2 then with the PA at Clive, that PA was -- you've said  
3 in here that you haven't seen a PA other than NRC's  
4 one where DU passed the limits.

5 DR. MAKHIJANI: I think you're not  
6 listening. Sorry.

7 MR. BLACK: Okay.

8 DR. MAKHIJANI: It's okay.

9 MR. CAMERON: Okay. We're going to get  
10 some comments here, but thank you. Thank you, Paul.  
11 Tom.

12 MR. MAGETTE: This is Tom Magette.  
13 Thanks, Chip. I just wanted to say a couple of things  
14 about conservatism, as well. I don't believe  
15 unlimited conservatism is good public policy, because  
16 I don't believe it leads to either a better  
17 understanding or increased public confidence, or  
18 better protection of human health and safety.

19 Paul just touched on some of it, but an  
20 example is one that we've heard about here today  
21 where if we do a model that assumes that the entire  
22 volume of Clive contains depleted uranium, and then  
23 we calculate an activity from that as a way of being  
24 conservative, what we then get told is that we've

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1 assumed absurdly, and unknowingly, and incorrectly,  
2 that we think that more depleted uranium than the  
3 mass of the earth makes sense. Well, of course we  
4 don't think that makes sense, as I've said before,  
5 Arjun. But what we did was a conservative model that  
6 looked at a bounding kind of analysis.

7           It's not really very helpful. It's not  
8 very illuminating, and that's not what we want. What  
9 we want is something more like what Paul described  
10 where you take your best effort. And, also, those  
11 efforts are not as fluid, I think, as we have been  
12 led to believe.

13           If you have a model, Christopher, that  
14 you just tweaked every time you didn't like the  
15 answer that would be pretty bad. No one is proposing  
16 that. That's not what DOE does. Linda gave you a good  
17 example of where they do accept a variance to a  
18 model. And, frankly, in the non-rad world, variances  
19 to those kind of models are common in the RCRA world.  
20 You look at reasons why you might make a variance.  
21 They happen all the time.

22           You know, we get put through the ringer  
23 for even talking about the concept, so nobody wants a  
24 WAC that changes every day, or changes because you

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1 don't like the answer, and no one is proposing that.

2 MR. CAMERON: Okay, thank you. Tim, do  
3 you want to give us a perspective from your  
4 experience on this? Tim McCartin.

5 MR. McCARTIN: Yes, Tim McCartin, NRC.  
6 From the standpoint of risk-informed  
7 performance-based, many at the Commission would say  
8 the regulations for Yucca Mountain are the most  
9 risk-informed performance-based regulations at the  
10 Commission. Being involved in that from the beginning  
11 there's a couple of things I'll say in terms of the  
12 NRC values.

13 No one ever said we either need to make  
14 it hard or easy for anything with respect to Yucca  
15 Mountain. It was about we need to have the right  
16 requirements for the right reasons, and that was  
17 public health and safety and protection of the  
18 environment. And that was our focus completely. But  
19 one has to be aware as a regulator when you put  
20 requirements out there it causes actions by a  
21 licensee. There's a finite amount of resources,  
22 money. You want to make sure you're looking at the  
23 right things for the right reasons, and that was the  
24 focus of doing the Yucca Mountain regulations

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1 risk-informed performance-based.

2 We changed some things. I believe we  
3 have a better regulation. And from the standpoint of  
4 just standing back as an NRC employee, the  
5 regulations re-revised were originally done in the  
6 late '70s, 1980s. Science and information changes,  
7 regulations should change consistent with the  
8 science, et cetera.

9 I would maintain, and it's not a topic  
10 for discussion here, but I believe the regulations  
11 for high-level waste disposal absolutely got more  
12 stringent for Yucca Mountain. You won't read that in  
13 the newspapers. I believe I can prove it, but that's  
14 the perspective we have. We did it for a safety  
15 reason, and I think everything I've heard at NRC in  
16 30 years, I've never heard anyone suggest we do it  
17 any other way but what do you need for safety. But  
18 you have to recognize there is a cost for everything  
19 you require.

20 I'll make a funny statement. You could  
21 stop all traffic accidents by having people drive  
22 five miles an hour. Well, there are some  
23 repercussions for asking people to drive five miles  
24 an hour everywhere, and I know that's absurd, and

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1 you're not suggesting that. But I think as a public  
2 servant you have to recognize requirements have  
3 ramifications, and you want to make sure you're  
4 doing, like I said, the right things for the right  
5 reasons.

6 MR. CAMERON: Okay. Brief comment, Diane,  
7 if you want, yes.

8 MS. D'ARRIGO: The Nuclear Regulatory  
9 Commission is not perceived by the public, nor is the  
10 nuclear industry as having a valid perception of what  
11 the risks of radiation are. In other words, my  
12 perception that of -- and I would say of many of the  
13 people with whom I work is that the NRC doesn't think  
14 radiation is as dangerous as I do, the nuclear  
15 industry doesn't think it's as dangerous as I do. So,  
16 asking me to trust risk-based standards when somebody  
17 whose assessment of risk is something I don't trust  
18 makes me very uncomfortable.

19 MR. CAMERON: Okay. And I guess the key  
20 is, is how to regulate and earn that trust. And I'm  
21 going to ask Larry to sum up. And I don't want to --  
22 I want to say let's have a hand of applause for this  
23 panel -- (Applause.)

24 MR. CAMERON: -- for putting some stark

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1 issues on the table for us. And I'm going to turn it  
2 over to Larry.

3 MR. CAMPER: Okay. Thank you, Chip. It's  
4 late, I'm tired, appreciate the efforts of this  
5 particular panel. I normally like to try to kind of  
6 touch upon sort of aha moments during the day, or  
7 highlights, but it's been -- I've got 11 pages of  
8 notes, and probably 40 major observations, so too  
9 late to do that. But what we will do is I'll get with  
10 the staff and we'll try to summarize key  
11 observations, major points. I will not pretend to say  
12 it will be all inclusive, and if we forget or  
13 overlook one or two, or misinterpret forgive us.  
14 There is a transcript. I strongly encourage you to  
15 review the transcript. The words are there verbatim.  
16 But we'll put something on the website soon, maybe  
17 the next couple of weeks or so that identifies these  
18 major observations that we made rather than try to go  
19 through it now.

20 Let me say again thank you to all the  
21 panelists, and all the commentators today. We find  
22 ourselves in an interesting situation. I mean, we're  
23 here to discuss a particular rule making that deals  
24 with the Nuclear Regulatory Commission requiring in

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1 Part 61 that operators of commercial low-level waste  
2 disposal facilities utilize a site-specific  
3 performance assessment. That is an additional  
4 requirement in Part 61.

5 Yes, it grew out of the issue of  
6 disposing in large quantities of depleted uranium,  
7 other waste streams that weren't evaluated at the  
8 time Part 61 was put into play, became a reality. But  
9 it is an additional regulatory requirement. That is  
10 what we're here to discuss.

11 What makes it very interesting, though,  
12 is at the same time that we're here really focusing  
13 upon a panel that is in a public meeting around that  
14 particular rule making, is what I got at this  
15 morning. We have multiple moving parts going on at  
16 the same time. We have this rule making, we have an  
17 assignment that I indicated we would start working on  
18 in FY '15 to risk- inform the waste classification  
19 scheme trying to bring to bear current ICRP  
20 methodology as the Commission directed us to do. We  
21 also have an assignment as part of that to look at  
22 the classification of depleted uranium. We have  
23 before us, also, an assignment to go out and gather  
24 stakeholder input around 10-0165 which was the

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1 comprehensive look at Part 61.

2 All the time that's going on we have  
3 been working on the concentration Branch Technical  
4 Position, concentration to everything Branch  
5 Technical Position. We also worked on modernizing the  
6 volume reduction policy statement.

7 I do apologize really for the fact that  
8 there's so much going on at the same time. And it's a  
9 little mind numbing really when you stop and think  
10 about it. Having said that, though, it's not a bad  
11 thing that all of its going on at the same time for  
12 the following reason. It allows us to have  
13 discussions just like we've been having today that  
14 are more holistic in nature.

15 It's okay that we take a look at Part 61  
16 more broadly, because out of that will come things  
17 that will inform the staff now for this particular  
18 rule making. It will inform what the public is aware  
19 of as you head into the public comment period around  
20 this particular rule making. And, yes, it will inform  
21 the work that staff has on its plate as we go down  
22 the road. So, it's challenging, it's taxing, but it's  
23 not all bad in the final analysis, I would suggest.

24 Interestingly enough, I think a couple

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1 of things that I will share. This interest in  
2 NUREG-0204 which is dealing with the shipping  
3 manifest, there's a lot of interest that's been  
4 expressed in that today. There was some interest  
5 expressed to me during side bars in the hallway, so  
6 as I said this morning we will take a look at what we  
7 might be able to do to speed up the time line for  
8 looking at that guidance document. And how we might  
9 deal with the phantom four in a little bit more  
10 timely manner. That seems to be of great interest.

11 Compatibility, clearly, compatibility is  
12 very important to the Agreement States. It always is,  
13 as Earl pointed out, it always is. And the working  
14 group that includes Agreement State representatives  
15 will derive for Commission consideration what the  
16 compatibility level is to be. The Commission  
17 ultimately has the final decision as to what  
18 compatibility it will assign, and not unlike Part 61  
19 today, I suspect there will be different levels of  
20 compatibility assigned with different parts of the  
21 rule language that results in this proposed rule.

22 And then, of course, there will be an  
23 ample opportunity for public comment about the level  
24 of compatibility that's assigned, as well as

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1 everything else.

2 A lot of discussion has taken place  
3 today around depleted uranium, and whether or not  
4 depleted uranium is being handled in the appropriate  
5 manner or not. The question of depleted uranium was  
6 put before the Commission in the staff analysis that  
7 was in 08-0147, and the Commission has directed the  
8 staff to proceed in a certain way. That particular  
9 manner does include this ongoing rule making that  
10 we're here to discuss today.

11 I am absolutely certain that as we  
12 continue this rulemaking, and as we put this proposed  
13 rule out for public comment next summer, dialogue  
14 will continue to be offered around the topic of  
15 depleted uranium. And then as we proceed down the  
16 road in the next few years to look at the  
17 classification of depleted uranium specifically, as  
18 the Commission directed us to do, when we also  
19 risk-inform the waste classification tables, it will  
20 continue to be a matter of considerable discussion.  
21 So, I don't think that the topic of how depleted  
22 uranium will ultimately be handled in regulatory  
23 sense is over. I suspect we'll be talking about this  
24 for some time to come, and that's good, that's part

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1 of the process.

2           So, let me again thank all the panelists  
3 today. You covered a lot of ground, you gave us a lot  
4 to think about. I again thank all the commentators,  
5 and I thank all of you for staying and listening.  
6 It's good that you're here, it's good that you're  
7 interested, and we'll do all we can to get the  
8 transcripts out promptly, and to get some idea of the  
9 key messages we heard today out on the website also  
10 in the next couple of weeks. Thank you very much.

11           (Whereupon, the proceedings went off the  
12 record at 5:15 p.m.)

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