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Title: 10 CFR Part 61: Site-Specific Analysis for
Demonstrating Compliance with Subpart C
Performance Objectives

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

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4 PUBLIC MEETING ON PROPOSED RULEMAKING

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6 10 CFR PART 61: SITE-SPECIFIC ANALYSIS FOR

7 DEMONSTRATING COMPLIANCE WITH SUBPART C

8 PERFORMANCE OBJECTIVES

9 + + + + +

10 WEDNESDAY, MAY 18, 2011

11 + + + + +

12 The meeting was held at the Legacy Hotel and
13 Meeting Centre, 1775 Rockville Pike, Rockville, MD, at
14 8:30 a.m., George Smith and Brett Leslie, Co-
15 Facilitators, presiding.

16 SPEAKERS:

17 GEORGE SMITH, NRC/Region I, Co-Facilitator

18 BRETT LESLIE, NRC/NMSS, Co-Facilitator

19 LARRY W. CAMPER, NRC/FSME, Director, Division of Waste
20 Management and Environmental Protection

21 ANDREW CARRERA, NRC/DILR

22 DAVID ESH, NRC/FSME, Division of Waste Management and
23 Environmental Protection

24 PRIYA YADAV, NRC/FSME, Project Manager, Division of
25 Waste Management and Environmental Protection

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1 ATTENDEES:

2 MICHELLE ALBERT, NRC/OGC

3 SARAH ANDERSON, FM Pubs

4 JERRY BONANNO, NEI*

5 ANNA BRADFORD, NRC

6 WARD BRUNKOW, URENCO

7 TISON CAMPBELL, NRC/OGC

8 JAMES DANNA, NRC/DILR

9 GINGER DICKERT, Savannah River Remediation

10 WILLIAM DORNSIFE, Waste Control Specialists

11 LISA EDWARDS, EPRI

12 THOMAS ENGLAND, DOE Savannah River

13 ELIZABETH FORNASH, DOE*

14 JOHN GREEVES, JTG Associates

15 CHRIS GROSSMAN, NRC/FSME*

16 DEBBIE JACKSON, NRC/DILR

17 RICH JAVATI, Pennsylvania Department of Environmental
18 Protection*

19 SUSAN JENKINS, State of South Carolina*

20 JIM KENNEDY, NRC/FSME

21 MICHAEL KLEBE, State of Illinois*

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23 LISA LONDON, NRC/OGC

24 RUSTY LUNDBERG, Utah Division of Radiation Control*

25 THOMAS MAGETTE, Energy Solutions

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1 ATTENDEES: (cont.)

2 ANDREW MAUER, NEI

3 SEAN McCANDLESS, Energy Solutions

4 DAVID McINTYRE, NRC/PAO

5 CHRIS McKENNEY, NRC/FSME

6 JUAN MONTESINOS, NRC/DILR

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8 MAUREEN O'DELL, DOE*

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10 LISA PHILLIPS, DOE

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13 DAN SCHULTHEISZ, EPA*

14 ROGER SEITZ, Savannah River National Laboratory*

15 DAN SHRUM, Energy Solutions

16 DANNY SMITH, DOE*

17 GREGORY SUBER, NRC/FSME*

18 LINDA SUTTORA, DOE

19 REBECCA TADESSE, NRC

20 JEAN TREHAFANEL, NRC/FSME

21 LIZ WOODRUFF, Snake River Alliance*

22

23 *Present via telephone

24

25

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Larry Camper/FSME

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P R O C E E D I N G S

(8:35 a.m.)

1
2
3 MR. SMITH: Good morning, everyone. I'm
4 George Smith from US NRC in King of Prussia Region I.

5 I'd like to welcome everyone to the 10 CFR Part 61
6 public meeting for the proposed rule text revision.

7 We're going to start off the meeting by
8 allowing everyone at the table to introduce
9 themselves. And, also, I'd like to remind you, make
10 sure you turn the other microphones on when you speak.

11 MR. CARRERA: Good morning and welcome.
12 My name is Andrew Carrera, and I work in the
13 Rulemaking Branch. I'm also the Project Manager,
14 Rulemaking Project Manager for this Part 61. Thank
15 you.

16 DR. ESH: Hi, I'm David Esh. I work in
17 the Performance Assessment Branch, and I do a lot of
18 the work, like help develop rule text and associated
19 guidance, those sorts of things.

20 MS. YADAV: Hi, my name is Priya Yadav.
21 I'm a Project Manager in the Division of Waste
22 Management and Environmental Protection.

23 MR. SMITH: Okay. Thank you very much.

24 We'd like to find out who's on the --- who
25 has called in on the meeting, and to make sure you can

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1 actually hear us.

2 (Telephone introductions off-mic.)

3 MR. SMITH: Okay. We'd like to remind you,
4 if you've called in to place your local bridge on
5 mute.

6 Okay. This meeting today is intended to
7 inform the stakeholders of the current status of the
8 NRC activity, and to solicit public comments.

9 Also, before I continue, I'd like to say
10 Brett Leslie is in the back. He's also the Co-
11 Facilitator. You will see him at the lunch break.
12 And, also, he has the mic, so if you can, if you can
13 wait until Brett comes around with the mic if you're
14 going to speak so those on the bridge can hear you.
15 Also, we have the meeting being recorded by Kayla, so
16 if you can speak into the mic so Kayla (the court
17 reporter) can record your comments.

18 Okay. A point of emphasis for the agenda.
19 I just want to make sure everyone knows that the --
20 from 10:45 to 12 noon the comments that we'll be
21 soliciting will be in reference to the rule text. And
22 then from 1 to 4:15 the comments that we'll be
23 soliciting will be from the day's presentation on the
24 period of performance.

25 So, before we go on, we do have some

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1 comment cards. So, while we are soliciting the
2 comments, we'll utilize the comment cards to call upon
3 you. Then you can wait for the mic. If there's
4 anyone else that would like to have comments, just let
5 us know.

6 Also, for those who have called in, we'll
7 give you an opportunity to let us know if you're going
8 to provide comments. We'll first do the comments here
9 in the room, and then we'll go to those who have
10 called in.

11 Now, I'd like to go over the ground rules.
12 As you know, for all facilitators we like to have
13 ground rules for the meeting. And the ground rules
14 are in hope that -- I'm sorry. Do you have anything?

15 DR. LESLIE: George, we're having a little
16 trouble with the webinar right now, so I think we need
17 to wait for just a minute as Antoinette figures out if
18 we can get them in.

19 MR. SMITH: Okay.

20 DR. LESLIE: Okay. Good enough.

21 MR. SMITH: So, those who have called in,
22 I don't know if you've heard Brett, but we're going to
23 hold the meeting for a couple of minutes to get the
24 webinar on line.

25 (Whereupon, the proceedings went off the

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1 record at 8:40:00 a.m., and went back on the record at
2 8:48:20 a.m.)

3 MR. SMITH: Okay. My name is George
4 Smith. I'm from NRC Region I in King of Prussia.
5 I'll be one of your Co-Facilitators, and Brett Leslie
6 is here in headquarters, and he will also be one of
7 the Co-Facilitators.

8 We're going to go ahead and start the
9 meeting. We're still trying to get the webinar up.

10 Again, for those -- we had one response
11 for those on the bridge that would like to provide
12 comments. And for those who came later on the bridge,
13 just to let you know, when you provide comments, from
14 10:45 to 12, those comments would be in reference to
15 the rule text. And the 1 p.m. to 4:15 comments would
16 be from the day's presentation on the period of
17 performance.

18 We've had the presenters to present their
19 name. We'll go over the ground rules, and then we'll
20 get the meeting started.

21 Again, the ground rules are mainly to aid
22 in the meeting in order -- we hope to enhance the
23 meeting. The first rule, respect for our participants.

24 And, basically, we like for all participants in a
25 meeting to be able to get their point out, allow the

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1 briefers to provide the information, and for those
2 participants who'd like to ask questions, allow you to
3 be heard.

4 We also have Kayla, who is transcribing
5 the meeting, so we'd like Kayla to be able to hear the
6 information that's being presented at the meeting.
7 Also, we'd ask you to wait for the mics to come
8 around. Brett will bring the mic around for you, if
9 you can speak into the mic, and we'll get the
10 information.

11 We're going to start off after the
12 presentations. We'll limit the feedback from the
13 stakeholders to about five minutes at this point, and
14 we'll go from that point, as far as allowing more
15 time.

16 Also, as far as respect for the
17 participants, we'd ask not to engage in sidebar
18 conversations while we're speaking in the meeting,
19 again, so everyone can be heard, and we can -- Kayla
20 can get her information.

21 We also would ask you to put your cell
22 phones on the courtesy mode and, basically, silence or
23 vibrate.

24 Now, we will be using the parking lot
25 during the meeting. You'll see Brett or I up at the

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1 parking lot, and we'll try to capture information that
2 we may have to come back for clarification with one of
3 the meeting participants.

4 Okay. Brett, do you have anything else?
5 Okay. Thank you very much. We're going to go ahead
6 and start the meeting, and we're going to start it off
7 with Larry. You're going to start? Larry?

8 MR. CAMPER: Sorry. Good morning,
9 everybody. Thank you for being here. This is one of
10 several public meetings that we've had around topics
11 associated with Part 61 in our regulations.

12 There's a lot going on these days, and
13 I'll touch upon some of that during my remarks, but I
14 want to start out by thanking all of you for being
15 here, and for being active during the day, as I know
16 you will be. I look around the room and see many
17 familiar faces. I know they aren't shrinking violets,
18 so we look for your input. For those of you who are
19 fairly new to the process, we welcome your input, as
20 well.

21 I want to thank the staff in front of you
22 for the work they're going to do today. I want to
23 thank our facilitators in advance, of course, our
24 court reporter, and Antoinette, who is the young lady
25 at the back of the room. An awful lot of work goes

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1 into making these things happen, and I greatly
2 appreciate the efforts of all the staff and the
3 facilitators for the work you're going to do, have
4 done, and will do. And, of course, for all your
5 participation today. Next slide.

6 Okay. Just by bit of background, I think
7 most of you are familiar with this, but so that we're
8 all on the same level playing field, when Part 61 was
9 created back in the late '70s, and went into effect, I
10 think, in 1982, there was a set of conditions that
11 were analyzed by the staff at that time. And a
12 regulatory part for the disposal of low-level waste in
13 the United States was embodied within our Part 61.

14 At that time, there were 37 waste streams
15 that involved 24 radionuclides that were analyzed by
16 the NRC staff. There were certain defined volumes of
17 rad waste and concentrations of radioactive waste that
18 were assumed in the analysis that went into play at
19 that time.

20 One significant parameter that was
21 considered at the time, but ultimately did not make
22 its way into Part 61 was uranium and, in particular,
23 depleted uranium, the disposal of depleted uranium.
24 At that time, the quantities of material that were
25 considered to be disposed were minimal, indeed, by

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1 comparison to what has actually happened over time,
2 and certainly the challenges that we face today. And
3 that is one of the cornerstones of why we are
4 conducting this particular rulemaking process, and
5 we'll talk more about the parameters of that
6 rulemaking process today.

7 Many of the assumptions have changed.
8 Uranium enrichment, of course, has come back on the
9 scene in terms of commercial uranium enrichment.
10 There's large quantities of depleted uranium (DU) to
11 be disposed of by the Department of Energy from
12 stockpiles currently at Paducah and Portsmouth. The
13 staff talked about this at great length in our SECY-
14 08-0147, which we produced in 2008, of course.

15 DOE use of commercial low-level
16 facilities, the notion of the idea of commercial spent
17 nuclear fuel has gained traction. We currently have a
18 regulatory initiative underway at the NRC looking at
19 that issue much more closely. And then there have
20 been significant changes in the ways in which the
21 nuclear power industry, in particular, has managed its
22 waste; on one hand, tremendous reductions in waste
23 volume over the past 30 years, and the emergence of
24 the possibility of using a concept known as blending.

25 Next slide, please.

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1 The Low-Level Waste Program at the NRC is,
2 ironically, in a monitoring mode. A decision was made
3 in our organization several years ago by the
4 Commission, given that we had received no applications
5 for low-level waste sites, that we would go into a
6 monitoring mode, if you will. And the staff was
7 reduced in size accordingly. But we have hardly been
8 in a monitoring mode in the last three or four years
9 in policy space.

10 In fact, as an organization we face many
11 challenges in policy space. And we work diligently to
12 try to address these issues, to address them in
13 current terms while also looking ahead as to whether
14 or not any potential changes should be made to Part 61
15 at large.

16 But there has been, of course, recently a
17 new disposal site that's received a license in the
18 State of Texas, and in the process of going through
19 some changes there that may, in fact, allow
20 importation of waste from outside of that particular
21 compact.

22 We did our Low-Level Waste Strategic
23 Assessment in 2007. We identified 20 items that
24 needed analysis in the low-level waste arena, of which
25 seven were identified as a high-priority item. And

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1 then, of course, there has been the movement by the
2 industry in terms of innovation to address the
3 challenge that we face in the United States today with
4 regards to disposal access for Class B and Class C
5 waste, a concept referred to as blending.

6 We have five initiatives going on today in
7 the low-level waste arena that touch Part 61. We have
8 an assignment before us now from the Commission to
9 risk-inform the waste classification tables in Section
10 61.55. This is an assignment that came out of the
11 Staff Requirement Memorandum that was associated with
12 SECY-08-0147, which was what we refer to as the
13 Depleted Uranium Paper. That initiative is currently
14 underway. I'll touch upon it just a little bit later
15 in some of my remarks.

16 We are updating our Concentration Branch
17 Technical Position. We had a public meeting in
18 February, and some of you here participated in that.
19 The BTP is a very important document used extensively
20 by the industry as it manages low-level waste. It
21 needs to be updated, and we're in the process of doing
22 that.

23 We are also revising the Volume Reduction
24 Policy Statement that was created in 1981. Just for
25 recall, that Volume Reduction Policy Statement focused

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1 upon just that, volume reduction. And volume
2 reduction has been done very well by the industry at
3 this point in time, I think it's fair to say.
4 However, there are other ways and tools, and
5 instruments involved with managing low-level waste.
6 So, what we're trying to do is update that policy
7 statement to reflect the current status of affairs
8 using all tools possible to safely manage low-level
9 rad waste.

10 We have the Part 61 site-specific
11 rulemaking, which is the subject of today's public
12 meeting, and we have a substantial ongoing public
13 outreach effort in connection with a SECY Paper
14 identified as 10-0165, and this is a paper that
15 identifies five options for looking more broadly at
16 Part 61.

17 In terms of the site-specific rulemaking
18 that we're going to be discussing today, the site-
19 specific analysis rulemaking, it will introduce an
20 explicit performance assessment requirement. It does
21 specify human intrusion calculations, and the staff
22 would provide technical guidance to support that
23 rulemaking should it, in fact, become a reality. Next
24 slide, please.

25 In terms of the meeting today, it's an

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1 opportunity for enhanced stakeholder feedback and
2 input regarding our proposed draft language at this
3 point in time. The staff is seeking early feedback on
4 the draft proposed rule text before the draft proposed
5 rule actually goes to the Commission. This is an extra
6 step in the process, if you will.

7 The Commission, when it gave us direction
8 on pretty much all of our assignments associated with
9 Part 61, there's a common thread that runs through
10 each of those directions to us, and that is to
11 maximize public input, seek stakeholder input. So,
12 this meeting today is an extraordinary meeting in the
13 sense that it's in addition to what we would normally
14 do.

15 So, with that in mind, we really want to
16 invite comment. We want to inform you as to what the
17 current thinking is by our staff with regards to
18 preliminary rule language. What you say today, and as
19 we analyze that commentary, may cause significant
20 changes in the contents of the proposed language.

21 We're going to consider all the comments.
22 We're not going to, specifically, answer every
23 comment. However, if changes come about as a result
24 of this meeting today, then the Statements of
25 Consideration in the proposed rule would reflect those

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1 changes that result from this meeting today.

2 I want to go straight to something that I
3 know is going to be a very interesting discussion this
4 afternoon. That's for period of performance. For
5 those of you who have read the language, and I suspect
6 most of you have, the staff is proposing a period of
7 performance that would be 20,000 years. That's a new
8 number. Any time you put a new number in play, you
9 can expect to hear about it. Some like it, some don't
10 like it, some are neutral about it, and so forth.
11 That's fine.

12 What we need is your input. And the
13 challenge that I would give you as you listen to our
14 presentation this afternoon around that subject, when
15 we have our discussion this afternoon around that
16 subject after you hear Dr. Esh's presentation about
17 it, is if not 20,000 years, then what and why?

18 We are dealing with a unique challenge
19 called depleted uranium. We've had two public meetings
20 already around this topic, one here in Washington, one
21 in Salt Lake City. We had two very good panels that
22 provided guidance to us. We had a lot of public
23 input. We have taken all that into consideration,
24 scratched our heads and looked at this technical
25 challenge with a great deal of thought. So, if it's

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1 not 20,000 years, what is it, and why, given the
2 challenge that we face. Next slide, please.

3 What you see here is a graphic that points
4 out a number of public outreach opportunities. I think
5 there are seven of them there that are in red. This
6 addresses four of the major initiatives that are going
7 on. The other one that's not depicted here is the
8 staff's charge to risk-inform the waste classification
9 tables of 61.55. And the reason that's not here is
10 because, at the moment, we do have that underway;
11 however, budget decisions have caused us to delay the
12 majority of the activity for that particular
13 initiative into the Fiscal Year 2013. But as we
14 proceed down the road and work on that more, we will
15 have public meetings around that particular topic, and
16 we'll put more information up about public
17 opportunities.

18 But these are the opportunities that you
19 see regarding the site-specific rulemaking analysis,
20 excuse me, the rulemaking requiring a site-specific
21 analysis, the subject of today's discussion, the
22 concentration averaging Branch Technical Position
23 (BTP), the Volume Reduction Policy Statement, and the
24 SECY-10-0165 which is looking at possible revisions to
25 Part 61.

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1 For those of you who are listening in, you
2 can't see the dates. We apologize for that. We
3 certainly will put this information out there and make
4 it publicly available. But identify several dates,
5 seven different times when there's opportunities for
6 public input.

7 As I said before, the Commission is
8 strongly interested in a lot of input from
9 stakeholders around Part 61. Part 61 has served us
10 well. It is adequate to protect public health and
11 safety, but it has been in place a long time, and a
12 number of things have changed since it first went into
13 existence, as I cited earlier. So, maximizing the
14 opportunity for input is terribly important.

15 So, I think with that, I'll stop. Again,
16 I will thank you all in advance for the comments that
17 you will make today, and I encourage you to actively
18 participate. I know that you will. And I thank the
19 staff again in advance for the presentations they're
20 going to make. I have, obviously, looked at the
21 slides several times, met with the staff several
22 times, and I think they're going to give you an
23 excellent overview of this proposed rule.

24 So, with that, I'll stop and do you want
25 me to entertain any clarification questions, or do you

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1 want to proceed? Any questions of clarification?

2 Lovely. Welcome.

3 MR. SMITH: Again, for those on the line,
4 I'm George Smith, one of the Co-Facilitators. And,
5 again, just to emphasize, if you called in to make
6 sure you place your phone, your local bridge on mute.

7 And we're going to start the briefing. We'll start
8 with Priya. Okay.

9 MS. YADAV: Thanks, Larry, for that
10 introduction. I'd like to welcome you to the public
11 meeting for the site-specific analysis rulemaking. I
12 am Priya Yadav. I'm a Project Manager in the Division
13 of Waste Management Environmental Protection.

14 I'm going to give you a background
15 presentation today, just kind of how we go to where we
16 are today, and then I'll turn it over to Andy to give
17 you specifics on the proposed rule language. And then
18 after that, Dave will give a longer discussion on the
19 period of performance. Next slide, please.

20 This is an overview of my presentation.
21 I'll just give a little bit of background, talk about
22 our recent activities in this area, describe the
23 Regulatory Basis Document, and then talk a little bit
24 about the guidance document that we will be issuing in
25 conjunction with this rulemaking.

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1 As Larry touched on, the landscape for
2 low-level waste today is significantly different than
3 it was when the initial Part 61 was developed. These
4 are two of the major changes.

5 In the 1980s, the Department of Energy was
6 the primary generator of large quantities of DU.
7 There were no commercial sources of this waste stream
8 at that time, so only small quantities of DU were
9 included in the environmental documents associated
10 with Part 61.

11 Today, there are commercial uranium
12 enrichers, there's large quantities of DU being
13 generated by commercial generators, and the Department
14 of Energy is considering disposing of their DU at
15 sites, disposal facilities that are regulated by NRC
16 Agreement States.

17 The second change is with the closure of
18 the Barnwell (SC) site in 2008, lots of low-level
19 waste generators have no options for disposal for
20 their Class B and C waste, so industry has been
21 contemplating large-scale blending of waste to
22 increase their disposal options.

23 The Commission recognized that the
24 landscape is significantly changing, so they issued a
25 couple of directions for us to really look at existing

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1 regulations, and evaluate what we need to do. So,
2 during the Louisiana Energy Services (LES) hearings
3 for the National Enrichment Facility, they directed
4 staff to look at the depleted uranium issue, and just
5 consider whether these large quantities warrant
6 amending Part 61. Next slide.

7 Similarly, after Barnwell closed in 2008,
8 the Chairman issued a memorandum that staff should
9 really provide a clarification of our position on
10 blending, and look at whether or not we need to revise
11 regulations for the blending issue. Next slide.

12 So, staff's response to these directions
13 was to develop two Commission papers. The first was
14 in 2008, that's the DU SECY Paper 08-0147. That
15 provided a range of regulatory options that were
16 informed by a technical analysis. So, it was the
17 probabilistic screening model that we use to look at
18 the impacts of DU disposal.

19 And, similarly, in 2010 we wrote a SECY
20 Paper on blending, and that presented a range of
21 regulatory options to the Commission that looked at
22 policy, technical, and regulatory issues associated
23 with the blending issue.

24 The Commission directed us through Staff
25 Requirements Memorandums how to proceed on these two

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1 issues. On the DU front, they directed us to proceed
2 with a rulemaking to require a site-specific analysis
3 to demonstrate meeting performance objectives prior to
4 disposal of large quantities of DU. They directed the
5 staff to specify the criteria for the site-specific
6 analysis, and also to issue supporting guidance that
7 will assist licensees and Agreement State regulators
8 in both performing these performance assessments, and
9 reviewing these performance assessments.

10 Similarly, on the blending front, they
11 actually -- the Commission directed staff to
12 incorporate the blending issue along with it into the
13 DU rulemaking. So, the rulemaking that we're talking
14 about today, we're calling it the site-specific
15 analysis rulemaking. It covers both of these emerging
16 issues, DU and blending. Next slide.

17 To implement the direction in the Staff
18 Requirements Memorandums (SRMs), we've had some recent
19 activities. I think a lot of you participated in some
20 of these activities. In 2009, we had two workshops,
21 one in Bethesda, and one in Salt Lake City. And we
22 had roundtable discussions at each workshop that had a
23 variety of stakeholders. We had viewpoints from
24 generators like DOE and LES, from disposal facility
25 operators like Energy Solutions and Waste Control

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1 Specialists (or WCS). We had Agreement State
2 regulators from Texas, and Washington, and South
3 Carolina. We had professors from universities, and we
4 had public interest groups that participated, and we
5 really got a range of good discussion on a variety of
6 technical topics. Period of performance was one of
7 them. We also talked about radon generation. And
8 that was really our first input from all of you guys
9 that gave us a lot of feedback that helped us kick off
10 these rulemaking efforts that you'll see today.

11 At the end of the year in December, and
12 also in February 2010, we briefed the Advisory
13 Committee on Reactor Safeguards on the status of our
14 rulemaking efforts, and we received a letter from them
15 that just recommended that we continue our rulemaking
16 efforts to inform the regulations for disposal of DU
17 based on site-specific realistic performance
18 assessments. Next slide, please.

19 We heard one or two requests at the 2009
20 workshops, and these kind of drove our next two recent
21 activities. We had a request to issue some guidance
22 before we could issue our complete draft guidance
23 document, so we issued interim guidance in April 2010,
24 which was a letter, in the form of a letter to
25 Agreement States summarizing existing guidance that is

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1 relevant in reviewing performance assessments.

2 And then a second request that we got at
3 the workshops was to have more information on the
4 screening model that we included in our DU SECY Paper,
5 so Dave Esh and Chris Grossman led a public workshop
6 in June 2010 where participants got to ask more
7 questions on how to use the Goldsim computer code, and
8 details of the screening model that we used. Next
9 slide, please.

10 So, all these interactions informed our
11 first document in this rulemaking process, which is
12 called the Regulatory Basis. And what that is is
13 really staff's input on why we think regulations need
14 to be changed for Part 61. So, this document
15 describes the existing regulatory framework,
16 identifies any issues with the framework, and just
17 outlines our basis for changes that we're making in
18 Part 61. Summarizes the interactions that we had that
19 I just talked about, and then also considers some
20 alternatives.

21 So, the regulatory -- sorry, next slide.
22 The Regulatory Basis has a few proposed changes, I'm
23 just going to quickly go over. The first two are to
24 revise the performance objectives. So, the first
25 change to the performance objective is to fix -- amend

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1 Section 61.41 to require licensees to conduct a site-
2 specific performance assessment prior to disposal of
3 all waste streams. And the analysis would be used to
4 identify if certain waste streams need to be
5 restricted or prohibited at specific sites.

6 The second change of the Regulatory Basis
7 identified is to modify Section 61.42 to specifically
8 require conducting an intruder assessment at the end
9 of a period of active institutional controls.

10 Additional changes identified in the
11 Regulatory Basis are just to reduce ambiguity, and
12 facilitate implementation of Part 61. So, these are
13 some changes that we're proposing to provide a period
14 of performance, which is actually feedback that we got
15 from the workshops, so that was good feedback that we
16 used.

17 Also, to provide a dose limit for the
18 Section 61.42 performance objective. And provide a
19 requirement for long-term analysis, and also make some
20 changes to the concept section, just to reduce
21 ambiguity and provide some clarity. Next slide.

22 The last thing I want to touch on is the
23 guidance document that we're working on in conjunction
24 with this proposed rule language. We plan -- we're
25 working on a document right now. We plan to be

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1 finished around mid-October to November time frame, so
2 sometime this fall we'll have it approved for public
3 comment.

4 We will issue it in the Federal Register,
5 in a different Federal Register than the proposed
6 rule, and it will have its own comment period. And we
7 see this guidance document as supplementing existing
8 guidance, so currently we have guidance in NUREG-1573,
9 which are the recommendations of the Performance
10 Assessment Working Group. And then, also, we have
11 NUREG-1854, which provides guidance for performance
12 assessment related to waste determinations.

13 So, we see this guidance document as kind
14 of filling in the gaps with those guidance documents,
15 but then also focusing on areas that are new, like
16 intruder assessments, so we have detailed sections on
17 the intruder assessment methodology, guidance on how
18 to do that; risk-informed, performance-based, how to
19 do -- use the period of performance in a risk-informed
20 manner, how to do an analysis beyond the compliance
21 period, we're calling that long-term analysis. How to
22 do site's ability analysis after closure of the
23 disposal site, and then also any special
24 considerations for the blended waste source term.

25 So, that's kind of just my summary of how

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1 we got to where we are today. And then I can turn it
2 over to Andy now.

3 MR. SMITH: I just want to announce that
4 the webinar is up. And I'll provide the participation
5 code again. It's 546376344. And for those who have
6 just joined the call, just called in, I'm George
7 Smith. I'm one of the Co-Facilitators for the meeting
8 today. And, again, someone else just called in. The
9 webinar information is 546376344. And we ask those
10 who called in to make sure that your local bridge is
11 on mute.

12 Okay. We'll turn it over to Andy now.

13 MR. CARRERA: Thank you, George. Thank
14 you, Priya. Good morning, everyone, and welcome. My
15 name is Andrew Carrera, and I work in the Office of
16 Federal and State Materials and Environmental
17 Management Programs in the Division of
18 Intergovernmental Liaison of Rulemaking. I'm also the
19 Project Manager for this Part 61 Site-Specific
20 Analysis. I'll refer to it as the Part 61 Rulemaking
21 for the duration of my presentation.

22 Today, we'll be providing you an overview
23 of the Part 61 preliminary proposed rule language. As
24 previously mentioned, the purpose of today's meeting
25 is to inform the stakeholders of the current status of

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1 the proposed rulemaking, and to invite stakeholders'
2 comments, or ask clarifying questions to formulate
3 your written comments on the preliminary proposed rule
4 language.

5 I'd like to reiterate that the NRC will
6 review and consider any comments received today.
7 However, the NRC will not formally respond or commit
8 to any comments. The Statements of Consideration of
9 the proposed rule may briefly discuss any substantial
10 changes made to the proposed rule language as a result
11 of comments received on this preliminary version
12 today. Next slide, please.

13 So, with the Commission's direction to
14 proceed forward with the Part 61 rulemaking as you've
15 heard in the previous two presentations, an
16 interdisciplinary rulemaking team was formed with
17 representatives from across different offices within
18 the NRC, as well as individuals who are representing
19 both the Organization of Agreement States, and the
20 CRCPD, and his name is Devane Clark from the great
21 State of Texas. And I would like to thank my
22 rulemaking team for your hard work and dedication.
23 Next slide, please.

24 So, the rulemaking team proceeded to move
25 forward in developing the objective and purposes of

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1 the rule to specify site-specific analysis
2 requirements to demonstrate compliance with
3 performance objectives in Part 61; and to strengthen
4 and clarify existing regulation to facilitate
5 implementation and to better align requirements with
6 the current health and safety standards. Next slide,
7 please.

8 And to achieve the objectives and
9 purposes, the rulemaking team proposed the following
10 approaches to the Part 61 rulemaking, and that is, it
11 has to be waste stream neutral, and it should contain
12 requirements for site-specific analysis.

13 Now, when they developed Part 61
14 regulation, the NRC considered potential doses to
15 offsite members of the public and inadvertent intruder
16 based on certain assumptions regarding the waste
17 stream likely to be found in the commercial low-level
18 waste disposal facility. And large quantities of
19 depleted uranium, blended waste, and other waste
20 streams were not included in the technical basis,
21 because they were not expected to be a major waste
22 stream for Part 61 facilities.

23 But numbers of these waste stream have
24 become candidates, as Priya has mentioned before, for
25 disposal at low-level waste disposal facilities. And

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1 the amendment proposed in this rulemaking will require
2 licensees to consider this new waste stream, and will
3 continue to insure that Part 61 performance objectives
4 are met.

5 The rulemaking team considered a number of
6 options in developing this proposed rule. In the end,
7 the rulemaking team decided that an amendment that
8 requires additional site-specific analysis for all of
9 the radionuclides that were not considered in the
10 development of Part 61 would be the most comprehensive
11 approach; and, hence, it's a waste stream neutral
12 approach.

13 The site-specific analysis, the NRC also
14 proposed amendment to Part 61 that would require low-
15 level waste disposal facilities to conduct site-
16 specific analysis to demonstrate compliance with
17 performance objectives in Part 61, which would enhance
18 safe disposal of low-level waste. And these analyses
19 will also identify any additional measures that would
20 be prudent to implement. And the site-specific
21 analysis performance assessment would be added to
22 Section 61.41, Intruder Assessment, which will be
23 added to Section 61.42, a new long-term analysis
24 requirement which would be added to a new proposed
25 Section 61.13(e), an updated analysis at facility

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1 closure which would be revised and added to Sections
2 61.28 and 61.52.

3 In addition, the NRC proposed other
4 amendments to current Part 61 regulations to reduce
5 ambiguity, facilitate implementation, and to better
6 align requirements for the current health and safety
7 standards. These include new definition and concepts,
8 as well as the use of total effective dose equivalent
9 or TEDE. Next slide, please.

10 Now, in the interest of time, I'll briefly
11 go over the changes in the preliminary proposed rule
12 language. Please note that the proposed text is in
13 bold font; however, it's kind of difficult to see it
14 here. I should have underlined it just to set it out a
15 little bit. However, I do have part of the briefing
16 presentation handout, a copy of the ~~strikeout and~~
17 underline preliminary proposed rule language,
18 ~~strikeout that old text and underline the newly added~~
19 proposed text. So, it's there for your reference, and
20 I will also put this on ADAMS in case you need it
21 later on, so you can look for it.

22 In site-specific analysis performance
23 assessment, Part 61 currently requires the licensee
24 and license applicants to prepare an analysis to
25 demonstrate that low-level waste disposal facility

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1 meets the requirement in Section 61.41, which insures
2 the protection of general population from the releases
3 of radioactivity.

4 This analysis is called Technical Analysis
5 instead of a performance assessment, and does not
6 contain period of performance associated with the
7 analysis. And the current Section 61.41 exists as a
8 single paragraph, and the proposed rule would split
9 the section into two subparagraphs, A and B. Specific
10 requirements for performance assessment would be added
11 to Subparagraph A, and specification for period of
12 performance to estimate peak annual dose up to 20,000
13 years would be added to Subparagraph B. This
14 Subparagraph B are new text, and 25 millirem total
15 effective dose would be new text in this case, as
16 well. Next slide, please.

17 For the intruder assessment, Part 61
18 currently does not require a licensee to perform
19 intruder dose assessment to demonstrate the compliance
20 with Section 61.42 performance objective for the
21 protection of inadvertent intruder.

22 Unlike requirements in Section 61.41,
23 which addresses protection of general population from
24 releases of radioactivity, no specific dose limit is
25 set in the performance objectives for technical

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1 requirement for protection of an inadvertent intruder.

2 Instead, the safety of an inadvertent intruder is
3 insured by the waste classification system, and the
4 disposal requirement imposed for each waste class.

5 The current Section 61.42, also it's a
6 single paragraph, and the proposed rule would split
7 the paragraph into two subsections, A and B. And
8 specific requirement for a license refer intruder
9 assessment with annual dose limit of 500 millirem TEDE
10 would be added to Subparagraph A. And this would be
11 new language right here. And specification for a
12 period of performance to estimate peak annual dose up
13 to 20,000 years would be added to Subparagraph B. And
14 Subparagraph B are all new text. Next slide, please.

15 Also, intruder assessment, we also are
16 recommending that the proposed rule would require
17 intruder assessments for Section 61.55(a)(6) waste, as
18 well. And the last sentence of this Section
19 61.55(a)(6) waste paragraph are new text. Next slide,
20 please.

21 Site-specific analysis and long-term
22 analysis. The NRC has determined that it would be
23 prudent to require additional long-term analysis to
24 insure that the waste streams significantly different
25 from those considered in Part 61 Technical Basis can

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1 be disposed of while still meeting the Subpart C
2 performance objectives.

3 The proposed long-term analysis, which
4 will be added to an all new Section 61.13(e)(1) and
5 (e)(2), will consider uncertainties associated with
6 the disposal of long-lived low-level waste streams,
7 and is needed to determine whether limitation on the
8 disposal of the waste streams at certain sites may be
9 needed to properly manage the disposal.

10 This analysis will be required to consider
11 peak annual dose that occur 20,000 years or more after
12 site closure. No dose limit would apply to these sort
13 of analysis. The analysis will need to be included as
14 an indication of the long-term performance of the land
15 disposal facility. I mentioned before, these are all
16 new text, proposed text. Next slide, please.

17 Updated analysis. Section 61.28 requires
18 licensee to submit an application for amendment
19 license for closure, and this application must include
20 a final revision, and specific details of the disposal
21 site closure plan. And Section 61.52 imposed
22 requirements for disposal facility operation and site
23 closure.

24 In the current, Sections 61.28 and 61.52
25 do not have requirement for updated site-specific

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1 analysis. The updated site-specific analysis
2 requirement is needed to provide greater assurance of
3 compliance with performance objectives of Subpart C,
4 and to enhance the safe disposal of low-level waste.

5 The updated site-specific analysis would
6 allow a regulatory agency to determine whether site
7 and design meets Subpart C performance objectives.
8 And the new text in 61.28(a)(2) would be the last --
9 part of the last sentence. And 61.52(a)(12) would be
10 an all new subparagraph. Next slide, please.

11 Other supporting changes. The NRC also
12 proposed additional amendments to current Part 61
13 regulation to facilitate implementation. These
14 supporting changes include definitions of intruder
15 assessment. Next slide, please.

16 Definition of long-lived waste, and
17 performance assessment. And these definitions will
18 serve to insure consistency in the application of the
19 objectives of the proposed rule. And all these
20 definitions are new definitions. Next slide, please.

21 Section 61.7 - Concepts. Other supporting
22 changes also include providing clarification to the
23 current concept of disposal facility. New language to
24 Section 61.7(a)(1) was added to affirm the alternative
25 methods of disposal can be approved on a case-by-case

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1 basis, and meet it. And that's conveyed in the last
2 sentence of the proposed Section 61.7(a). Next slide,
3 please.

4 Also in Section 61.7 Concepts, new
5 section, Section 61.7(b) was added to convey the
6 concept of performance assessment. Subparagraph 1
7 captures the features, events, and processes that can
8 improve the function of the waste disposal facility.
9 And Subparagraph 2 captures key technical parameters
10 to be evaluated in a performance assessment. And
11 these are new proposed text. Next slide, please.

12 Also, in Section 61.7, in Paragraph
13 (c)(2), the concept like stability of long-lived waste
14 may be more uncertain and require more robust
15 technical evaluation was added to Paragraph (c)(2).
16 And the new text will start from here, as well as in
17 Paragraph (c)(5). Next slide, please.

18 Also, in Section 61.7, Concept, new
19 Paragraph (c)(6) was added to capture the concept of
20 enhanced control for limitation at a particular land
21 disposal facility to provide reasonable assurance that
22 waste will not present an unacceptable hazard over the
23 compliance period. And Section 61.7(c)(6) are all new
24 proposed text. Next slide, please.

25 Section 61.7(c)(7), this is a new

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1 paragraph, and it was added to convey the concept of
2 intruder assessment, and captures key technical
3 parameters to be evaluated in this assessment. And,
4 like I mentioned, it's all new text, as well. Next
5 slide, please.

6 Other supporting changes to Section 61.13
7 would include additional information to Paragraph A on
8 the technical analysis of performance assessment that
9 captures key technical parameters to be evaluated in a
10 performance assessment. And previously, we do have
11 61.13(a); however, these new text were added to that
12 section, and the old text would be started from here.

13 Next slide, please.

14 In Paragraph B on the technical analysis
15 of an intruder assessment captures the dose limit set
16 forth in Section 61.42. And new text will start from
17 here and down. Next slide, please.

18 So, Priya mentioned regulatory basis stage
19 where we solicit public comments at two public
20 meetings and develop a regulatory basis. We are now
21 in the proposed rulemaking stage, and today's meeting
22 -- as Larry mentioned, today's meeting is for enhanced
23 public participation.

24 The stakeholders will also have another
25 opportunity to comment on this proposed rule language

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1 when it's formally published as a proposed rule in
2 accordance with the provisions of the Administrative
3 Procedure Act. And the NRC will formally respond to
4 any of those comments in a Statement of Consideration
5 in the final rule. And the next step would be the
6 final rule, which would take about a year after
7 publication of a proposed rule.

8 And that concludes my presentation on the
9 changes of preliminary proposed rule language, and I
10 thank you for your time. I look forward to receive
11 your comments, or answer any clarifying questions that
12 you may have in this afternoon's session. Thank you.

13 DR. ESH: Good morning all of you. I'm
14 pleased to see all of you here, and that you've taken
15 the time to come and give us some feedback. And all
16 of you, it sounds like go to meetings up and running
17 now, and I think that's a very great technology to get
18 more involvement in the things that we're doing.

19 I'm David Esh. I work in the Performance
20 Assessment Branch of the Division of Waste Management
21 and Environmental Protection, and I'm going to talk
22 today about the proposed period of performance for
23 low-level waste disposal.

24 The terminology, there's different
25 terminology that's been used, the period of

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1 performance, time of compliance, compliance period,
2 performance period, it's all kind of used
3 interchangeably in the literature. I'm going to use
4 period of performance, but in the end when we get to
5 our recommendation I'll explain what we mean by
6 different phases of the approach we're recommending.
7 Next slide, please.

8 I believe most of the information on this
9 slide was covered by Priya and Andy. The main thing
10 I'd like to point out is the middle bullet, the public
11 workshops in 2009. And we heard during those
12 workshops very clearly that people thought we should
13 specify a period of performance in the regulations.
14 So, that's what we went about doing, and that's what
15 I'm going to hopefully give you a lot of detail on
16 today to help you formulate your comments when the
17 proposed materials come out this fall. All right.
18 Next slide, please.

19 The period of performance is one many
20 important elements in a safety evaluation of low-level
21 waste, but not the only one. A lot is involved in the
22 regulation, and a lot is involved in determining
23 whether low-level waste disposal can be done safely.

24 In the U.S., different approaches are
25 used, and also internationally. Right now, all of our

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1 commercial low-level waste disposal occurs in
2 Agreement States. The regulation does not specify a
3 period of performance, so there's flexibility in
4 interpreting what period of performance, or compliance
5 period you should assign in the analysis.

6 We have very diverse views among
7 stakeholders, both within NRC and external to NRC. I
8 went back to the transcripts that we had from the
9 meetings in 2009, and tried to classify the views that
10 were expressed in there, and they truly are very
11 diverse. They span a very broad range.

12 We had opinions expressed from 10,000
13 years is ridiculously too long, to the only thing that
14 you can do is go to peak dose, which in the case of a
15 material like depleted uranium, might be a couple of
16 million years. And then probably if you wanted to say
17 what was the most likely response, the most likely
18 response was a non-response, so non-committal was
19 probably the most likely response you saw in those
20 transcripts. Next slide, please.

21 Some background from NRC. We have talked
22 about this subject within NRC, and some of our
23 stakeholders since as early as 1994. Originally, most
24 of that discussion was done in the context of our
25 high-level waste program. Our Advisory Committee on

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1 Nuclear Waste discussed the period of performance on
2 numerous occasions for what you may do for high-level
3 waste.

4 Remember around that time, the National
5 Academy of Sciences was looking at the issue, and they
6 -- a report from them came out, so there was kind of a
7 heightened period of activity around period of
8 performance. And they, basically, said for geologic
9 disposal, you don't have a strong reason for cutting
10 off the period of performance at some period of time,
11 such as 10,000 years that was proposed at the time.
12 There's no reason why for a geologic system that has
13 some inherent stability to it you can't evaluate
14 longer periods of time.

15 So, ultimately, what happened is in high-
16 level waste space, for Yucca Mountain, specifically,
17 not for Part 60 which applies to any geologic disposal
18 of waste, but for Part 63, the disposal of high-level
19 waste at Yucca Mountain, they ended up with,
20 basically, a two-phase compliance period. So, a
21 10,000-year period, followed by up to a million year
22 period, and two different dose limits for those two
23 periods.

24 The Commission has given us direction, as
25 far as I can tell, only in SRM-96-103, where at the

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1 time we had a Performance Assessment Working Group
2 referenced in the bottom bullet that was looking at
3 this issue, and also providing overall guidance on how
4 to do performance assessment for low-level waste
5 disposal. And they had discussed a 10,000-year period
6 for period of performance, or a 10,000-year compliance
7 period.

8 The Commission, at that time, said, okay,
9 provide a basis, if you want to use 10,000 years,
10 provide a basis for stopping the analysis there. And
11 then there was a follow-up SECY Paper in 2000 where
12 the staff said we're not recommending to cut it off.
13 But then in NUREG-1573 they kind of did that, not
14 totally, but they, basically, analyzed, they developed
15 the test case simulations, and analyzed low-level
16 waste disposal, and they said okay, if we look at most
17 low-level waste disposal, it's dominated by short-
18 lived activity, and some long-lived activity.

19 If you set a 10,000-year compliance
20 period, that's going to capture all of the short-lived
21 activity that's essentially going to decay over that
22 period. And it's going to capture the more mobile
23 long-lived activity.

24 They did note that there are some things
25 that would stress that position, and one of those

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1 things was something like large quantities of uranium,
2 or depleted uranium, because it has characteristics
3 that are a little different, or a lot different than
4 traditional low-level waste.

5 So, what they ended up recommending for
6 that type of a material was to consider those long-
7 term impacts, but to put them in something like a Site
8 Environmental Assessment, where they can be better
9 judged in the overall context of the problem. Next
10 slide, please.

11 So, the general objectives that we sought
12 out to accomplish in our work was, we wanted to
13 provide protection to the present and future
14 generations. And the rub becomes how you define
15 protection of the future generations. Is that only
16 achieved by setting a dose limit similar to the
17 present generation, and extending that in perpetuity
18 consistent with the waste characteristics, or can you
19 achieve that in other ways, or should you achieve that
20 in other ways?

21 We also wanted to look at uncertainties,
22 and how uncertainties come into play, because the
23 uncertainties are diverse, and can be quite large. We
24 felt it was essential that longer term impacts are
25 communicated in whatever mechanism that may be.

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1 It's one thing to say well, we're going to
2 evaluate our low-level waste, and we have a compliance
3 period, but if there are things that extend out beyond
4 that compliance period, I think it's important to
5 communicate what those impacts may be to the best of
6 your ability to your stakeholders. And there's no
7 reason why this decision making process has to be
8 easy. You know, the decision makers might have
9 uncertain information, and they might have information
10 that's a little challenging to communicate to their
11 stakeholders, but there's no reason it has to be easy.

12 Ultimately, we do want to facilitate the
13 decision making process, because something that we
14 recommend that doesn't facilitate the decision making
15 process isn't going to be of much value.

16 Over long periods of time, all of these
17 considerations can be very complex, especially this
18 protection of the future generations. But there is a
19 bit of a misconception, I would say, that the
20 performance assessment is making the decision. The
21 performance assessment is not making the decision.
22 The performance assessment is a tool to provide
23 information to the decision makers.

24 And I think the IAEA (international Atomic
25 Energy Agency) takes this approach in their definition

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1 of a safety case. The safety case has many elements
2 to it, of which one of it is this technical analysis
3 that you perform. So, don't get lost in the weeds
4 that the performance assessment is telling me to do X,
5 Y, and Z, and the criteria, especially the period of
6 compliance, is the bottom line to whether I can do
7 this or not. It's not. It's information that you're
8 generating for the process that the decision makers
9 should use. Next slide, please.

10 I apologize. I let an acronym slip
11 through here. I don't like acronyms, but that's
12 Period of Performance Selection Process. So, we did a
13 literature review. We look in the U.S. and
14 internationally, and tried to see what do people
15 consider when they're trying to identify and select a
16 period of performance. And the items that I have
17 listed here are pretty much the scope of what people
18 consider.

19 The characteristics of the waste, which in
20 the case of low-level waste, and I'll show on the next
21 slide, is very diverse. And that creates a challenge.

22 The analysis framework is an important component, so
23 in low-level waste disposal it's not just how you've
24 selected and defined the period of performance, but
25 how that fits into your overall framework for insuring

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1 safety. And there are many elements to that framework
2 for insuring safety, from site characterization, to
3 monitoring, to institutional control of the facility.
4 It has many elements, not just a technical analysis of
5 the projected future impacts.

6 Uncertainties, I think, are very important
7 to talk about. In performance assessment space, or
8 technical analysis space, we generally focus on the
9 middle two here, natural and engineering. But there
10 are also over long periods of time these other two
11 sources of uncertainty, societal and technology. And
12 I have a conceptual figure I'll talk about in a few
13 slides here that just tries to get you thinking about
14 all these sources of uncertainty, and how they may
15 affect your problem.

16 And, ultimately, over long periods of
17 time, the problem becomes strongly impacted by socio-
18 economic considerations, so these are things like
19 transgenerational equity, and discounting, especially
20 discounting over long periods of time.

21 One thing that we hear when we've
22 discussed this with stakeholders is, some stakeholders
23 will express the opinion well, uncertainties are so
24 large you should pick a short compliance period. And,
25 for me, that argument doesn't fly. I mean, if you

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1 think about in your life and risks that you may have
2 in your life, I doubt that you're saying I'm going to
3 take Action X because I have large uncertainty, or I'm
4 going to take a risk because I have uncertainty.

5 In most cases, you want to reduce the
6 uncertainty, and make sure that you can manage that
7 risk. And, in this case, we also have to remember
8 where we are. Low-level waste is at the top of the
9 waste management pyramid or spectrum. Material that
10 can't safely be disposed of as low-level waste has
11 other options. They can be disposed of in a facility
12 that would take greater-than-Class C waste, or high-
13 level waste if those facilities, hopefully, get
14 developed some day.

15 It can also be disposed of in a more
16 advanced design of a low-level waste facility.
17 Existing facilities might not be able to handle
18 certain types of materials. That doesn't mean that
19 you can't design a facility to handle the material.
20 So, try to remember the context of where we are, where
21 low-level waste is in this waste management spectrum
22 that we have. Next slide, please.

23 So, some waste characteristics. It's
24 important, but it's only one element to the problem.
25 If we look at the figure on the left, we have activity

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1 ratio of traditional commercial low-level waste, and
2 this was using some data from Barnwell. And then we
3 have the activity ratio of, in this case, depleted
4 uranium, or one type of waste that may stress the
5 system.

6 Commercial low-level waste, the activity
7 drops off very rapidly, and by 1,000 years, you maybe
8 have a few tenths of a percent of the activity
9 remaining. For something like depleted uranium,
10 concentrated depleted uranium, the activity ratio
11 stays pretty flat with what you put in, and then you
12 get the daughters coming in at much later times, and
13 activity doesn't peak until after a million years.

14 So, you look at this and you say well, how
15 would I set a period of performance for low-level
16 waste? Well, if I have low-level waste that's like
17 the thick curve, the traditional commercial low-level
18 waste, I could argue that yes, maybe at 1,000 years,
19 or a few thousand years, you're pretty comfortable
20 that you've captured most of the risk. Whereas, for
21 something that has this long-lived behavior, and
22 ingrowth of some daughter products that tend to be
23 maybe more mobile than the parent, then you're really
24 stressing the system to say okay, what are the -- how
25 do I handle these impacts that may be occurring at

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1 very later times?

2 On the right hand, what I've done is --
3 the lefthand figure is log-log. The right-hand
4 figure is for radium-226 ingrowth, and it's linear-
5 linear, just to show you the differences in the curve.

6 So, the log-log curve may give you a different
7 perspective than when you look at the linear graph.

8 So, if we're talking about 10,000 years,
9 that's way down here at the very beginning of the
10 curves when you're talking about like radium-226
11 ingrowth. Next slide, please.

12 So, this is a figure that we generated in
13 the period of performance paper to try to communicate
14 some concepts about uncertainty. It's only conceptual
15 in nature. It's not quantitative, but it is trying to
16 talk about different sources of uncertainty, and have
17 you think about those as stakeholders.

18 So, we broadly classified the uncertainty
19 on three different types here. We have societal
20 uncertainty, which is technology scenarios,
21 activities, those sorts of things. We have natural
22 sources of uncertainty, which is, basically, the
23 behavior of your natural system and how it may evolve
24 over time. And then we have engineered components
25 that may be used.

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1 So, if we look at say, the engineered
2 components, what we're trying to convey is, well --
3 and this is based on our experience of looking --
4 reviewing performance assessments, and evaluating
5 complex decommissioning sites, and it's kind of a
6 synthesis of our experience, or how we generally
7 understand uncertainties.

8 And the relative uncertainty here is just
9 classified as small, medium, and large. And it
10 doesn't mean that the uncertainty is favorable or
11 unfavorable to the objective you may be trying to
12 achieve. It just means that it's large. Okay? So,
13 large means that it could influence the results in
14 either direction by a significant amount.

15 So, an engineering uncertainty, there's
16 uncertainty in the initial as-built conditions.
17 Engineers are good at designing things, but you have
18 to be careful that they have adequate quality
19 assurance and quality control, that they've built what
20 they intended to. And they have processes to verify
21 what they've built that they have intended to.

22 Once you get over that, okay, we have
23 built what we intended to, over the short time of tens
24 to maybe a few hundreds, depending on the engineered
25 system, we have an experience-base, and I'd say

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1 relatively well understood degradation mechanisms that
2 our uncertainty, or relative uncertainty, I think,
3 goes down to some extent. But as you extend out into
4 longer time frames, we maybe have some analogs for
5 some engineered systems, but we're really getting into
6 limited to no experience-base when you extend beyond
7 1,000 years, or many thousand years for how the
8 engineered systems may behave.

9 Eventually, when you don't have any more
10 credit for your engineered system, the uncertainty is
11 low. It's not impacting the results of the problem
12 any more. So, you have -- for something like
13 engineering, you have this kind of complex shape to
14 how the uncertainty may change over time.

15 The same thing goes for say natural
16 systems. Natural systems we have, I'd say, higher
17 uncertainty than engineered systems over our like
18 generation or lifetime time frames, because they're
19 more difficult to understand. They have inherent
20 variability in them. They're more difficult to
21 characterize. But the behavior over short periods of
22 time, and this is in a low-level waste disposal
23 context, is relatively stable.

24 But as you move out beyond 1,000 years,
25 especially tens of thousands of years, now you're

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1 talking about natural cycling of climate, landform
2 evolution, surface geological processes, uncertainties
3 start increasing, and may become very large at some
4 sites. And then when you go out to very long periods
5 of time, you're talking about extreme natural events,
6 mountain uplift, and volcanic activity, and all the
7 things of building continents, and even something like
8 say meteorite impact. That becomes a real risk, and a
9 real uncertainty when you go out to -- when you're
10 starting to talk about hundreds of thousands of years.

11 The one that we don't explicitly deal
12 with, or represent in most technical analyses,
13 including performance assessments, is the green curve
14 here with the technology scenarios and activities.
15 And I would submit that if you think about how things
16 have changed over time, that that can be a very large
17 and dramatic influence, a very large and dramatic
18 uncertainty. So, if you take something like radon,
19 radon was discovered about 100 years ago. And now,
20 when you buy a house it is required in some places,
21 but it isn't required everywhere, but you can have
22 your house tested, determine how much radon is there,
23 and have mitigation completed to try to limit the
24 impacts of radon in your home.

25 That, if you are trying to say well,

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1 what's the impact of radon to a future generation?
2 Well, it wasn't even identified 100 years ago, and how
3 big of a risk is it to people 200 years from now? If
4 you look at how the technology has changed over just
5 100 years with identifying it, mitigating it, it's
6 been a dramatic effect.

7 I think that you can't rely on how
8 technology is going to evolve, but this technology --
9 the impact of technology, and how that impacts life
10 is real. So, if you say well, technology may evolve -
11 - technology may become stagnant, or we may go through
12 a period where society decays, and technology
13 decreases. Well, then you're in a situation where the
14 relative impact from waste disposal starts being
15 affected by, or when you consider it to the magnitude
16 of the other things that are going on, it decreases in
17 significance. And I'll talk about that in a slide or
18 two here. Next slide, please.

19 So, if we look at one component of the
20 uncertainty, and how people thought about how to deal
21 with it, socio-economic considerations, the National
22 Academy of Public Administration recognized that
23 inter-generational decision making involves a number
24 of variables. And I've listed these variables here.

25 NRC hasn't formally adopted these

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1 variables, but in the Period of Performance paper, we
2 modified them slightly, and stated something that we
3 think is reasonable to consider for low-level waste.

4 These principles, some of them may seem
5 straightforward, but when you go to implement and
6 develop, say regulatory criteria, they're not at all
7 straightforward. So, take like Item 3. "Each
8 generation has a primary obligation to provide for the
9 needs of the living and succeeding generations, and
10 near-term concrete hazards have priority over long-
11 term hypothetical hazards."

12 Well, in low-level waste disposal, because
13 of uncertainty, I think we do very well with the near-
14 term concrete hazards. I'm not aware of health effects
15 that have happened to people from low-level waste
16 disposal. And the cost needed to deal with the long-
17 term hypothetical hazards can cost resources, whether
18 it's regulatory review, development of guidance,
19 licensee's cost for developing information and
20 assessing it can become much larger than what's needed
21 for the near-term concrete hazards. So, you have to
22 ask yourself, is that in alignment with this number 3
23 principle, or not?

24 And then there's also the Law of
25 Unintended Consequences can apply for these types of

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1 problems. So, some things that you may do in the near
2 term that benefit the near term, or that you may do to
3 try to mitigate something over the long term can have
4 an unintended consequence on a different or succeeding
5 generation.

6 So, the bottom line is that I think when
7 you take these principles, and you try to extrapolate
8 them, or interpolate them into a policy, it is not
9 straightforward, and there are complicated
10 considerations that come into play.

11 We also talked about discounting in our
12 paper, and how you may consider that, because NRC has
13 a policy expressed in, I think it's NUREG-1530, \$2,000
14 per person rem for looking at changes to regulatory
15 requirements.

16 If you include -- if you consider
17 discounting over very long periods of time for, say,
18 waste disposal, what that would mean is that you
19 should spend very little today to protect the future
20 generations. The opportunity cost of those resources
21 that you spend today, they're taken away from some
22 other action that can have a direct impact on society.

23 So, money is not free, and it's not unlimited, and
24 when you're talking about long-term impacts, you have
25 to think about well, how does this cost or burden that

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1 I'm imposing today translate into how a future
2 generation may want to use those resources?

3 We do acknowledge that discounting is
4 based on some unstated economic assumptions that may
5 not apply over very long periods of time. But, as I
6 talked about earlier, when you're in that situation
7 and you say well, we can have a period of time where
8 the discount rate goes negative for a long period of
9 time; well, society is having big problems if that
10 happens. And the risk that they're faced with -- a
11 risk that we're faced with today, saying trying to
12 manage low-level waste disposal can get swamped by
13 some of the other risks that society will be faced
14 with in that situation. So, there's kind of a natural
15 negative feedback built into a consideration of
16 discounting for waste disposal. Next slide, please.

17 So, options that we considered. We
18 considered four options, or five options, I'm sorry.
19 We started with no change from the current approach,
20 so that would be the period of performance is
21 undefined in the regulation. The second option we
22 considered was peak dose, whenever that may occur.
23 The third option that we had was a regulatory
24 precedent, and I'll describe that as two tiers. And
25 what that means is, two different parts to the

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1 evaluation that have different expectations or
2 criteria applied to them.

3 Now, I think you could maybe say that both
4 number one and number two are a one-tier approach, so
5 no change. You do a compliance period. You stop,
6 don't worry about what happens after the compliance
7 period. I'd say that's a one-tier analyses. You just
8 have one tier to it. Peak dose, same thing. It's just
9 the tier is a lot longer. The tier is, you include
10 everything in the evaluation.

11 The fourth tier, or the fourth option that
12 we developed was uncertainty-informed approach, which
13 we developed three tiers for. We call them a
14 compliance assessment and performance period. That we
15 were trying to align the analysis expectations with
16 the uncertainties in the problem.

17 And then the fifth option we considered
18 was an industrial metals approach, so that's kind of
19 what's done under say EPA with disposal of industrial
20 metals. Next slide, please.

21 Now, selection of period of performance is
22 fairly or very subjective, but we wanted to try to, at
23 least, be a little more objective about how we would
24 evaluate these options, and what we would recommend.
25 So, we developed some rating factors to try to rank

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1 the various options, and recommend one of them.

2 The rating factors that we developed were
3 protectiveness of public health and safety,
4 consistency with inter-generational principles,
5 consistency with current NRC policy, treatment of
6 uncertainty, and then facilitate regulatory decision
7 making. And those are -- the order of them is
8 somewhat significant. The protectiveness of public
9 health and safety is given higher weight than, say
10 facilitate regulatory decision making. Like I said
11 earlier, there's no reason that the decision has to be
12 easy, but we do need to make sure that we believe
13 public health and safety is provided. Next slide,
14 please.

15 So, the rating factors for the various
16 options, and how we assigned a value to them, or range
17 of values. Some of them we felt we couldn't justify
18 just a single value. So, if we take like the current
19 approach, Option 1, facilitate regulatory decision
20 making, that could be low to high depending on how you
21 define your compliance period. Some compliance
22 periods, if you set it very short, you could say well,
23 that facilitates my regulatory decision making,
24 because it may make the problems seem to be easier.
25 Or if I set it very, very long, I could introduce a

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1 lot of technical challenges that people may not have
2 information to deal with, and that could make
3 regulatory decision making more difficult.

4 (Background noise.)

5 DR. ESH: Please put your phone on mute if
6 you're connected through the teleconference.

7 Ultimately, we kind of classified all of
8 our options, and the option that we recommended was
9 Option 3. And we believe, as we've defined it, it's
10 medium to high. The treatment of uncertainty would be
11 low. If we chose regulatory precedent with no or
12 limiting consideration of the long-term impacts, but
13 we felt that as we -- in the form that we recommended
14 it, it's medium to high of all of our rating factors.

15 Next slide, please.

16 So, Option 3 is the regulatory precedent,
17 this two-tiered approach with the elements
18 specifically selected for the problem. And that's
19 where I'll talk about in a couple of slides here a
20 basis for how we've defined our period of performance.

21 We felt it provided the best balance
22 considering all the factors, and the stakeholders
23 views at the current time. We also talked about what -
24 - Option 4, the compliance assessment and performance
25 approach, or a three-tiered approach. And if we say

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1 right now we're completely flexible, and the period of
2 performance is undefined, and then we go to something
3 like an Option 4, which has three tiers, and you'd
4 have to specify the boundary of each tier, and the
5 limit for each tier, that's a big change. That's a
6 lot of detail that maybe we aren't ready for. But
7 we'll get your feedback on it, and hear from our
8 stakeholders.

9 These regulations are not static, they're
10 dynamic. And we adjust as we need to. And if we feel
11 like in say our comprehensive rulemaking activity, if
12 budgeted and implemented in the future, that there's -
13 - we had enough view from stakeholders to reexamine
14 say this aspect of the problem, we can reexamine it.
15 But right now, we're recommending Option 3, regulatory
16 precedent. Next slide, please.

17 So, the two tiers. The first tier is a
18 compliance period, and this is -- the language is the
19 language from the Period of Performance paper, which
20 differs from the regulatory text, because this was an
21 input to the rulemaking text development process.

22 The first tier is a compliance period of
23 no less than 20,000 years with a peak annual dose of
24 25 millirem TEDE. The second tier is okay, what do you
25 do with this after 20,000 year effects, if there are

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1 any? Well, what we recommend is a requirement to
2 perform a calculation of the peak annual dose that
3 occurs after 20,000 years as an indicator of long-term
4 performance, but no dose limit would apply to this
5 analyses. We also recommend a requirement to provide
6 analyses that demonstrate how the facility was
7 designed to mitigate long-term impacts.

8 This approach is in very strong agreement
9 with what was recommended by the ACNW (Advisory
10 Committee on Nuclear Waste) that expressed principles
11 of how you would go about setting a time of
12 compliance, or period of performance for low-level
13 waste disposal. And they were very concerned that you
14 were -- for the long-term impacts, and say things that
15 we're including in tier two, that it doesn't become a
16 de facto compliance period, because you're maybe
17 kidding yourself, and you're maybe -- could be
18 considered to be misleading for some of your
19 stakeholders if you're trying to argue that you have
20 proof of what the number is at those very long times.

21 The best you can probably do is say, here's what I
22 expect to happen, here are some alternatives, here are
23 the range of impacts that I can expect over those
24 times.

25 Decision maker gets that information, and

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1 decides okay, is this a good decision to make, or not?

2 And I think what we've expressed with our two-tier
3 approach, a second tier would provide transparency of
4 information. And, ultimately, we really want to
5 insure that stakeholders are given transparency of the
6 information if the long-term impacts apply in a
7 particular application.

8 As I said, most sites and most facilities
9 aren't going to be in this boat, but some of them may.

10 The ones that are in this boat, we want transparency
11 of information. And as I'll show on the next, let's
12 see, three, four slides from now, we're still
13 providing some flexibility.

14 We also made changes, as Andrew
15 highlighted, to the regulation to highlight
16 uncertainties associated with disposing of long-lived
17 waste. And the limitations on the disposal of those
18 materials may be needed to properly manage the
19 uncertainties.

20 The performance assessment should be used
21 to identify both, can I dispose of certain material,
22 and what are my limitations? So, the performance
23 assessment can identify what I can't take, and that's
24 an important input to the decision makers and the
25 stakeholders. And it may be that your performance

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1 assessment can be used to identify, I need to set some
2 limitations on what I can take. That would be an
3 appropriate use of a performance assessment,
4 especially for the long-term impacts. Next slide,
5 please.

6 So, what is the basis for our 20,000
7 years? Well, we looked at a number of different
8 things. One of the primary things we looked at is
9 stability. So, in Part 61, it says, "A cornerstone of
10 disposal is stability," and we agree with that
11 totally. Near-surface disposal, as you go out in
12 time, you start running into some very strong
13 stability issues. And they're much more challenging
14 than, say, for geologic disposal.

15 So, some of the discussion we had
16 internally is well, if we wanted to recommend the
17 longer value for, say, long-lived low-level waste, how
18 would that be -- how could you explain that for what's
19 done for, say, high-level waste, or WIPP, for
20 instance, the Waste Isolation Pilot Plant.

21 Well, in both of those cases, they looked
22 at geologic disposal, and they made the argument that
23 if those sites are stable for 10,000 years, they're
24 likely to be stable for much longer. So, a 10,000-
25 year period, if it's consistent with the waste

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1 characteristics, is sufficient for the geologic
2 disposal system.

3 Now, ultimately, as I stated, in Yucca
4 Mountain they ended up with a second phase to that
5 compliance period, and a higher dose limit. But at
6 WIPP, they have a 10,000-year, I'm not sure if they
7 call it a time of compliance, or evaluation period, or
8 what, but they have a 10,000-year assessment period.

9 For near-surface disposal where you start
10 dealing with natural cycling on the climate. So,
11 right now we're in a warm phase, interglacial. And
12 those interglacial periods have lasted from five to
13 twenty thousand years or so based on the history of
14 Paleo climate studies, and all sorts of information
15 that has been developed to try to understand how our
16 planet has changed over time.

17 A big part of that cycling of climate is
18 determined by planetary motion, so precession of the
19 earth, and rotation, and movement of the planets
20 around the sun, and there's a pretty strong like
21 100,000-year period that changes our climate, and then
22 a shorter period within that also affects the climate.

23 And right now, we're in the middle of the warm stage.

24 It started anywhere from 10,000 to 12,000 to 14,000
25 years ago, something like that.

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1 One of our concerns was that if we
2 specified a 10,000-year period of performance for low-
3 level waste, we'd be right in this transition period.

4 And that doesn't seem to make much sense. Either you
5 should go shorter, or you should go longer, but it
6 doesn't make much sense to be in this period -- that
7 you could be in this period of significant transition.

8 So, what we ultimately decided was to
9 include this climate cycling within the compliance
10 period, because that will encourage disposal of long-
11 lived waste at more stable sites. And, for us, the
12 regulation states very clearly stability is a
13 cornerstone of disposal.

14 So, we also considered -- next slide,
15 please. We also considered the characteristics of the
16 waste. So, if you remember back to the slides of the
17 waste characteristics, when we're dealing with
18 something like uranium and ingrowth of the daughters,
19 that peak risk, or peak concentration doesn't happen
20 until very long times. But if we go longer, it
21 captures more of it.

22 You can, potentially, make the argument,
23 or you can make the argument that when you're at
24 20,000 years, you're at least within an order of
25 magnitude of the waste characteristics for uranium.

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1 You have to consider loss from the system. It's not
2 just a matter of radiological accounting of where the
3 isotopes are, it's more complicated than that. But
4 you can argue that you're within an order of magnitude
5 for depleted uranium.

6 And what I would submit for you to think
7 about is, what are the order of magnitude effects that
8 you're going to be dealing with at tens or hundreds of
9 thousands of years? A one order of magnitude effect
10 maybe in the noise of some of the other things that
11 you have to consider. So, should you base your
12 decision for low-level waste disposal overall on one
13 type of waste that's going to go into that system with
14 one particular set of characteristics?

15 When I -- I always think back, for you
16 "Seinfeld" TV fans in this area, there was an episode
17 where the Kramer and Elaine characters both wanted a
18 bike. And they were arguing over whose bike it was,
19 so they went to Newman for the solution to this
20 argument over the bike. And his solution was to cut
21 the bike in half. And I hope that this approach that
22 we've come up is not cutting the bike in half, because
23 a half a bike is not much use to anybody. But we did
24 want to strike balance in this problem, and the waste
25 characteristics were only one part of that decision.

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1 So, a value of 20,000 years better
2 captures radionuclide transport characteristics, too,
3 compared to 10,000 years. And there is some
4 diminishing returns for longer periods. You start
5 getting into this increasing uncertainty, and although
6 I said uncertainty is not a reason to take action,
7 what I think that people are trying to convey when
8 they say the uncertainties are so large, are not that
9 the uncertainty of waste disposal is so large, but the
10 uncertainty of everything else that's going to happen
11 is enormous. So, how do you spend present dollars
12 today to try to manage that risk and uncertainty given
13 that context?

14 So, if we think back to say 1918 during
15 the flu pandemic, 3 percent of the world's population
16 died in 1918 from the flu pandemic. That's like one
17 in thirty, okay? The risk of you dying from the flu
18 in your lifetime is about one in sixty. The risk of
19 you dying in your lifetime from a fall is about one in
20 220. The risk of dying from excessive cold in your
21 lifetime is about one in 6,000. The risk of you dying
22 from 25 millirem for your lifetime is around the risk
23 of you dying from excessive cold, or from you dying in
24 a vehicle collision with a deer.

25 These risks that we're talking about over

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1 long-term, especially something like when you consider
2 a flu pandemic, or back during the Ice Ages, during
3 the Little Ice Age, some of the more northern
4 countries lost like 10-30 percent of their populations
5 due to starvation during that time. So, when we're
6 talking about 10,000, 20,000, or 100,000 years, the
7 risk context of low-level waste in terms of everything
8 else that's going on, I think you have to at least
9 consider it.

10 We, at NRC, are only about protecting
11 public health and safety from radiological impacts,
12 and I believe what we've come up with is going to do
13 that. But for those of you that are members of the
14 public and other stakeholders, and don't just have to
15 think in the box, I would ask you to try to think
16 outside of that box a little bit. Next slide, please.

17 So, when we looked at radionuclide
18 transport characteristics in the period of
19 performance, this chart looked at a range of depths
20 for sites, shallow, moderate, deep, and some different
21 climate conditions, and probably classified, okay, if
22 I wanted to change between, say, 10,000 and 20,000
23 years, or 20,000 and 50,000 years, how does it impact
24 my results? And what you see is that for strongly
25 absorbing radionuclides, they may be affected at one

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1 type of site, so the zirconium, thorium, cesium, only
2 at shallow human sites, or those where you would have
3 the highest transport would you expect that they're
4 going to be impacted by changing between 10,000,
5 20,000, and 50,000 years. Otherwise, they show up
6 after that period of time.

7 At the other end of the spectrum, you have
8 things that are more mobile, especially like
9 technetium, tritium, and chlorine. And I apologize,
10 in the Period of Performance paper I noticed when I
11 was preparing this presentation, these were put in the
12 wrong box of the table. They're down here in humid
13 deep, but I looked at it, and that was you test. If
14 you didn't catch that, you failed the test. So, I
15 looked at it and I was like that can't be right.
16 Right? Because you look at the other radionuclides,
17 and they're all in bands here, so you have plutonium,
18 actinium, cobalt, I forget what Pa is. You have a
19 group of radionuclides here that are generally
20 affected under more mobile conditions, so humid, semi-
21 arid, shallow, or maybe moderate and humid. And then
22 you have some that are affected at, say, shallow arid,
23 or humid deep, or semi-arid moderate, and then you
24 have a class of radionuclides that are affected by
25 moderate arid, and so forth, and so on. But it didn't

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1 make sense that these were down in this box. If they
2 were down in the deep humid box, they should have been
3 the whole way across the diagonal, and they weren't.
4 So, we'll correct that in the paper.

5 But the transport characteristics said,
6 okay, there is a benefit for us going longer, but that
7 benefit diminishes, and we described that. When we go
8 to 20,000 years, we have more confidence that we're
9 going to capture some of these moderately transporting
10 radionuclides. When we go to 50,000 years, you
11 capture a few more, but not a lot more. So, there's a
12 benefit, a big benefit to going -- or a moderate
13 benefit to going to 20,000 years, but limited
14 additional benefit to going to 50. Next slide,
15 please.

16 Now, something that I've spent a lot of
17 energy on, and tried to convey to people is this no
18 dose limit for the second-tier. And I think this is a
19 more important consideration, in my professional
20 opinion, than the boundary for the compliance period.

21 So, what do you do with these impacts over the long
22 term, and how you consider them?

23 We believe that this approach of not
24 specifying a dose limit for the second tier can better
25 place those in the proper context. So, when I was

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1 talking about your risk of things happening to you in
2 the context that this problem is in, it's a real world
3 context. It's not a hypothetical radiation-only
4 context, but it's a real world context.

5 You can place them in the proper context.

6 How we would do that, NRC, if we had a facility that
7 we were licensing, and it wasn't in an Agreement
8 State, is we would complete an environmental analysis
9 of the impacts for disposal, the disposal licensing
10 actions taking place, and we would evaluate those
11 longer term impacts in that context. In the Agreement
12 States, they would have to use their own processes.

13 The use of no dose limit for a second tier
14 we believe is better aligned with the long-term
15 decision making in other programs. So, if you think
16 about industrial metals, what do they do? They,
17 basically, dispose of industrial metals, but they
18 don't have an intruder requirement. They don't look
19 at the very long-term, how long are those facilities
20 going to last, and what are the risks that may be
21 generated from them?

22 I saw some papers by different researchers
23 that, basically, did intruder assessments of some of
24 those facilities at some later time, and they argued
25 that the risks approach one, not some fraction of 1E

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1 to the minus 4, or 1E to the minus 3, but those risks
2 can become very large. So, why are we treating
3 nuclear things different than non-nuclear things?

4 I think we have to ask that question, but
5 we have an approach, and policy, and procedure. And
6 this was a limited rulemaking, and I think within the
7 limited rulemaking, this is the best recommendation we
8 can do.

9 We do believe that when you do this tiered
10 approach, one of the main reasons for it is to better
11 align the impacts with the uncertainties. So, the
12 uncertainties at those later times may be large, and
13 we don't want people getting into the situation of
14 trying to argue that the result is 13.7, when that
15 isn't the argument that they should be making. The
16 argument they should be making is, I expect the result
17 to be X, the range of results could be Y, and here's
18 how my system has been designed to try to mitigate
19 those uncertainties. But there are a lot of things
20 that can go on at those longer times, and we can't
21 hope to be, necessarily, smart to have the high degree
22 of precision at those times that may be required at
23 the shorter times. So, we need to align the impacts
24 with the uncertainties. I think that's a smart thing to
25 do. Next slide, please.

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1 So, important for some of you, and maybe
2 most important is our guidance on the period of
3 performance, which you don't have yet, but you will
4 have in the fall. And what we've done in this area is,
5 we have developed what we would call risk-informed,
6 performance-based guidance on the period of
7 performance. And this would allow some flexibility,
8 because we're sensitive to okay, if I'm not taking
9 long-lived waste, or I'm only taking a little bit of
10 long-lived waste, why should I be considered with
11 climate change, and all the other things that might
12 affect my facility? That doesn't make much sense. Is
13 that a good use of resources? Is it gaining any
14 protection of people?

15 So, the flexibility that we're going to
16 recommend is to allow for short-lived waste, or for
17 low concentrations of long-lived waste, that you don't
18 have to do the complicated evaluation, or the more
19 rigorous calculations and evaluation that may come
20 into play. You can do some simplified things to argue
21 that your facility has bound the risks, or bound the
22 risks from the long-lived components.

23 And now the other thing that we've done
24 is, we would allow to go longer for high
25 concentrations of long-lived waste. We've heard this

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1 from our Agreement States during our rulemaking
2 process. So, the compatibility class of the
3 compliance period is C, is that right, Andy? Yes, C,
4 which allows somebody to go longer if they choose for
5 the compliance period in an Agreement State. But it
6 says up to 20,000 years, so you'd have this
7 flexibility for the short-lived waste, or low
8 concentrations of long-lived waste, but if you have
9 high concentrations of long-lived waste, you have to
10 do at least up to 20,000 years, and your Agreement
11 State could make that longer.

12 And in the guidance, we also have a
13 section on the expectations for the long-term
14 analysis, because we're going to have -- I know we're
15 going to have that question; well, what should I put
16 in there? How should I do it? What should I
17 evaluate? When am I done? So, we hope to have enough
18 information in there to answer those questions. Next
19 slide, please.

20 I think that's it. We'll have time to
21 discuss these this afternoon. There are some backup
22 slides that have a number of excerpts from various
23 ACNW letters and things. I think they're very
24 illuminating of where we started, and where we are
25 now. So, I tried to give you those so that you'd know

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1 the context of what we are working on. Thank you.

2 MR. SMITH: Okay. It's about 10:21 now,
3 so we'll take a 15-minute break.

4 (Whereupon, the proceedings went off the
5 record at 10:23 a.m., and went back on the record at
6 10:39 a.m.)

7 MR. SMITH: Okay, we've had some
8 stakeholders to come into the meeting after we
9 started, and also, we had some stakeholders come on to
10 the telephone.

11 We're going to go over a couple sort of
12 administrative ground rule issues that we talked about
13 earlier. First of all, those on the line, the
14 meeting is getting transcribed.

15 So, Kayla, did you need the names of all
16 of the stakeholders that are on the line?

17 If you can individually let us know who is
18 on the line, if you can speak loud and clear, if we
19 can't understand you, then we'll ask your name again.

20 MS. FORNASH: This is -- I guess I'll
21 start. This is Elizabeth Fornash from Department of
22 Energy and Environmental Management Office.

23 MR. SMITH: Thank you, Elizabeth.

24 Who else is on the line?

25 MR. LUNDBERG: Rusty Lundberg, with the

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1 Utah Division of Radiation Control.

2 MR. BONANNO: Jerry Bonanno, with the
3 Nuclear Energy Institute.

4 MR. SMITH: One moment, please.

5 Okay, thank you, Rusty, thank you.

6 MR. JANATI: Rich Janati, Pennsylvania
7 DEP.

8 MR. SMITH: Thank you.

9 Is there anyone else?

10 MR. KLEBE: Michael Klebe, State of
11 Illinois.

12 MR. SMITH: I'm sorry, can you repeat?

13 MR. SMITH: Michael Klebe, State of
14 Illinois.

15 MR. SMITH: Thank you, Michael.

16 Is there anyone else who dialed in?

17 (Pause.)

18 Going once --

19 MR. SEITZ: Are you asking who's dialed
20 in?

21 MR. SMITH: Yes, please.

22 MR. SEITZ: This is Roger Seitz from
23 Savannah River National Laboratory.

24 MR. SMITH: Thank you, Roger.

25 MS. WOODRUFF: And this is Liz Woodruff

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1 from the Snake River Alliance in Boise, Idaho.

2 MR. SMITH: Thank you, Liz.

3 MS. O'DELL: And this Maureen O'Dell
4 again.

5 MR. SMITH: Thank you, Maureen.

6 MR. SMITH: Also Danny Smith, DOE
7 headquarters support.

8 MR. SMITH: Thank you, Danny.

9 Is there anyone else who's dialed in?
10 We'd like to get your name to get it transcribed.

11 Thank you. We're going to continue with
12 the agenda. Just as a point of emphasis, the comments
13 that we're taking at this time would be feedback on
14 the draft proposed rule text. That's the only
15 comments we will take at this time.

16 After lunch, we'll take feedback
17 concerning the period of performance.

18 Before we start taking comments again,
19 we'd like to go over the ground rules. Of course, the
20 first ground rule is respect for those who are making
21 comments, who are responding to the comments. And
22 part of respect is to not have the sidebar
23 conversations be -- again, we're trying to transcribe.

24 We have those who have dialed in, and I
25 also have the webinar. We want to give everyone an

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1 opportunity to be heard by providing their comments,
2 and to get those comments captured.

3 Also, we have a mike -- we're going to
4 bring a mike around. So please wait for the mike
5 before you provide your comments, so, again, that we
6 can get it transcribed and those who are dialed in can
7 also hear your comments.

8 Cell phones, again, thank you, I didn't
9 hear any cell phones, though, but please keep them in
10 courtesy mode. If you went during the break and used
11 your cell phone, make sure it's in a courtesy mode,
12 i.e. either on vibrate or silent mode. We do have a
13 parking lot here that will capture information that we
14 may need to go back and address.

15 We're going to -- first, we have comment
16 cards here for personnel in the room who have given
17 comments. If there's anyone else who wanted to
18 provide a comment on the rule text, please give me
19 your comment card, and I'll call upon you.

20 So we're going to start here in the room,
21 and then we'll go to those who have dialed in.

22 The first comment will be from John
23 Greeves.

24 Oh, I'm sorry, John.

25 (Inaudible off-the-record comments.)

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1 MR. GREEVES: Well, first, thanks for
2 putting the meeting together. And I'm told that this
3 is about five minutes of commentary, so --

4 MR. SMITH: That's correct. We're going
5 to limit the comments to five minutes at this time to
6 give everyone an opportunity.

7 MR. GREEVES: Five minutes is not enough,
8 but that's okay with the other venues.

9 So, since I only have five minutes, let me
10 quickly say, you did a good job. 85 percent of what
11 you've done is really good, it's consistent with
12 comments that Jim Liebermann (phonetic), so I
13 congratulate you.

14 So don't take my rant on 15 percent to be
15 anything other than that 15 percent. 85 percent of
16 what the staff did, really did a good job. It's
17 about, you know, the margins, what things are
18 significant, some of which, Larry, you already said.
19 In fact, you're probably anticipating part of what I'm
20 going to say.

21 So, with five minutes, I've got three
22 comments, and they aren't necessarily in order of
23 importance.

24 The rule language in about three spots
25 could be improved if it would recognize that

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1 reasonably foreseeable, site-specific scenarios, they
2 aren't mentioned, and it's, having done this for over
3 30 years, it's very important to have this concept of
4 reasonable foreseeable scenarios. The Commission has
5 done in a number of places, I can't give you the
6 citations now. Maybe I will on the written format.

7 But there's three different --

8 (Inaudible off-the-record comments.)

9 PARTICIPANT: This is better. We can hear
10 now, thanks.

11 MR. GREEVES: Anyhow, well, you're going
12 to have to bear with me.

13 To be specific, Section 61.2 definitions,
14 you have to assume on your intruders, there's a
15 sentence that says about the intruders, and then
16 engage in activities. Well, in front of activities,
17 I'd submit you should put reasonable foreseeable
18 activities. So that's one spot.

19 Right below it, item three, is another
20 statement, inadvertent intruder engaging in
21 activities. It's very vague; it's not going to help
22 us. Engage in foreseeable activities, avoid unbounded
23 speculation on this.

24 And there was a third spot. They're going
25 to humor me. Other concepts, it talks about engages

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1 in activities that unknowingly expose the intruder --
2 well, again, reasonable foreseeable activities.

3 So, you'll get these in writing
4 eventually, so, but that's the first of three points I
5 want to make in five minutes.

6 The second point is a concept of, you're
7 requiring -- a number of places to do with performance
8 assessment, intruder analysis, it doesn't matter what
9 you call it, but I think that the concept of when you
10 do that, and demonstrate those performance objectives
11 are satisfied, that the disposal requirements that are
12 tied to the generic, non-site-specific classification
13 tables, they should be deferred to waste acceptance
14 criteria generated from this new performance
15 assessment.

16 You are ready to do that under legislation
17 from 31.16. You already do that at the West Valley
18 Demonstration Policy Act. These are items that the
19 Commission is already doing. So I would direct your
20 attention to that concept.

21 PARTICIPANT: Could you repeat that, John?
22 That point?

23 MR. GREEVES: That the rule requires, and
24 I agree, site-specific performance assessment and
25 intruder analysis, and if you demonstrate those

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1 performance objectives are satisfied, that the
2 disposal requirements tied to the tables, those tables
3 are generic. They're not site-specific. There's a
4 lot of debate about the tables, and you're going to do
5 further work on them.

6 In the meantime, if an Applicant and a
7 regulator review that performance assessment and find
8 it acceptable, then the resulting waste acceptance
9 criteria should be allowed to override those tables.
10 It's effectively what DOE does.

11 Larry, you understand what I'm saying.
12 So, that's the second point, and we can, in response,
13 talk about these.

14 The third point is the period of
15 performance. I know there's a session this afternoon,
16 but you said this is about the rule language.

17 And Dave, you did a great job, the paper
18 is really good. I just think you got the wrong
19 number.

20 The number you indicate in your paper,
21 it's a policy call. Truly, it really is a policy
22 call, and you give very good -- five options to
23 consider, how to make the call on what the number is,
24 and protectiveness, two of which are consistency,
25 treatment of uncertainty, facilitation of decision-

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1 making. These are the -- I align with those
2 principles.

3 You also acknowledge that selection of
4 20,000 years for a compliance period may create
5 confusion among some stakeholders.

6 Well, it's created more than confusion,
7 it's created a lot of consternation in some quadrants.
8 I'm not sure you're going to hear about it all here
9 today, maybe later, but you selected these evaluation
10 criteria, two which are consistency, and then somehow,
11 you selected 20,000 years, which is inconsistent with
12 what the Commission has done for decades.

13 So this is the third point there will be
14 more discussion of this afternoon. Larry invited us,
15 hey, if you don't like what we said, what would you
16 use?

17 And the answer to that is, I'd be
18 consistent with what the past practice has been, the
19 Commission has used 10,000 years in a number of
20 places. They've used 1,000 years.

21 I'll tell you which one is my preference.
22 Maybe I'll decide that by June 18th, but being
23 consistent with the past practice is what I
24 individually would recommend, not coming up with some
25 new number that nobody else has used and is going to

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1 create -- it can undermine some of the credibility out
2 there, coming up with these new numbers. So that's my
3 input, and we can talk more about that this afternoon.

4 MR. SMITH: Good. Thank you, John.

5 MR. GREEVES: Hopefully I kept that to
6 five minutes.

7 MR. SMITH: Somewhat. We gave you a
8 little -- but we had problems with the mike.

9 DR. LESLIE: Hey George, as you're picking
10 out the next person to speak, John brought up a good
11 point.

12 There is an opportunity to provide written
13 comments, and I think the deadline, Larry or Andrew,
14 is June 18th, and that's all mentioned in the Federal
15 Register Notice.

16 So don't feel like, even if we're keeping
17 you for five minutes, I know, John, you'll have a lot
18 to write in writing, but I just wanted to let everyone
19 else know on the line that there's an opportunity not
20 just only today, but to provide written comments.

21 Go ahead.

22 MR. SMITH: Okay, good. Thank you.

23 And also, we'd like to remind you, if
24 you've phoned in, please put your local bridge on
25 mute.

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1 We'll go to Thomas Magette.

2 MR. MAGETTE: Thank you. I'm Tom Magette.

3 I'm with Energy Solutions. It's a little difficult
4 to separate out the period of performance question and
5 comments on that from some of the other aspects of the
6 proposed rule, because I would presume that they drive
7 one another.

8 So I'll make a brief comment there, but
9 I'll try to reserve some of it for this afternoon,
10 because I certainly wouldn't want to pass up another
11 opportunity to comment.

12 I think 20,000 years is the wrong number
13 as well, and I think you gave, actually, David, some
14 justification for why it's the wrong number in some of
15 your discussion of uncertainty.

16 I would suggest that pseudo-certainty is
17 not an improvement on uncertainty, and presuming that
18 we can calculate things with some reliable level of
19 precision at that time frame, provide pseudo-
20 certainty, I agree with your comment that the
21 decision-making process doesn't have to be easy. I
22 agree with your comment that it's a policy question.
23 I agree that decision-makers should be provided with
24 information.

25 However, when we start boxing in what that

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1 information has to be and calculating numbers and
2 comparing them to dose standards, then we take
3 discretion away from the decision-maker.

4 And that, I believe, is a pseudo-
5 certainty, because I don't believe we can calculate
6 something that's that meaningful in that time period.

7 So, that would be my general comment about
8 that. I have some others, I'll save them.

9 Another comment I would make in regards to
10 the language regarding the inadvertent intruder, I
11 believe that you have taken a deterministic rule and
12 suggested changes under the umbrella of making it more
13 risk-informed, but my comment about the intruder would
14 be that it's even more deterministic and not at all
15 risk-informed.

16 It's determinism on steroids, requiring
17 the presence of an intruder at a site over the
18 compliance period, requiring an analysis of the
19 performance of barriers over that period is, I would
20 suggest, something that we can't really do, requiring
21 the uncertainty about the performance of those
22 barriers, I think the uncertainty about the
23 performance of any barrier over a 20,000 year time
24 period will simply swamp anything that we could say
25 about how that barrier performs.

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1 So, I don't think that that's risk-
2 informed decision-making.

3 It's also a change from something that the
4 Commission itself has previously directed in the LES
5 proceedings. NRC staff testified that the absence of
6 an intruder, a specific intruder at the Clive site
7 was, in fact, appropriate in their view.

8 And ASLB (Atomic Safety Licensing Board)
9 accepted that, and the Commission accepted that and
10 wrote an order where they explicitly accepted that,
11 not just glossed over it. So the Commission itself
12 has said that that is an okay conclusion.

13 Understand you're writing a rule, and
14 certainly this will go to the Commission for their
15 consideration, so it certainly is not unreasonable to
16 expect that they may choose to make a different
17 decision.

18 But it is worth nothing, I believe, that
19 it is a different decision and it contravenes existing
20 Commission policy. So I think that the intruder
21 question, the specificity of that language, is also
22 inappropriate.

23 (Inaudible off-the-record comments.)

24 Okay, well, I would like to make another
25 general comment about this, which is that I believe

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1 that this has become a uranium rule.

2 And that goes directly to a question you
3 asked towards the end of your presentation today that,
4 should one isotope drive an entire process, and I read
5 this as doing so.

6 I appreciate your comment that you made
7 about guidance regarding the POP, and if someone
8 chooses not to deal with some of these wastes, then
9 they will have the -- well, the opportunity not to
10 have to do the performance assessment and the intruder
11 analysis that are described in here.

12 But that's guidance, and if that is in
13 fact your intention, then the rule should say that,
14 because if I pick up the rule and I look at the
15 concepts in 61-7 and I look at the other requirements,
16 it doesn't tell me that anywhere.

17 So I don't believe that putting that in
18 guidance is sufficient, and I'll save the rest of my
19 comments.

20 MR. SMITH: Thank you, Tom.

21 Dan Shrum?

22 MR. SHRUM: Hi, my name is Dan Shrum with
23 Energy Solutions. I'll be very quick. My -- can I
24 save my time for later? That doesn't work, does it.

25 (Laughter.)

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1 I'm just kidding.

2 Two minor comments, well, to us, they're
3 not minor, but the words, and I know that you changed
4 them, but up to 20,000 years, that doesn't do us any
5 good, unless you're going to say when you don't have
6 to go up to -- or when you don't have to go to 20,000.

7
8 I'm not saying that 20,000 years is the
9 right number. We'll get to that after lunch. But up
10 to is -- I mean, those are -- those are core choices -
11 - go ahead.

12 DR. ESH: Just to clarify, it's peak
13 annual dose up to, so by defining it that way, it will
14 include whenever your peak occurs up to that 20,000-
15 year number.

16 MR. SHRUM: For that specific isotope, and
17 I understand that. So, I'm going to pick an isotope -
18 -

19 DR. ESH: It's not on an isotope-by-
20 isotope basis. It's just for all your isotopes in
21 your system.

22 MR. SMITH: And for those who've called
23 in, that's Dave Esh that's talking.

24 MR. SHRUM: Again, I see that in there,
25 but the "up to" is still going to be problematic,

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1 because the people who don't want to do the work that
2 we do are just going to say, it says 20,000 years.
3 So, that's just -- that's one of the issues.

4 Another issue is, although it's down the
5 road, I'm curious about how long we will have to
6 implement this new rule. I know you'll have to go
7 through your rule making, the states will have to
8 adopt it somehow, and just realize when you get to
9 that part of it, on implementation, these things take
10 a long time to do.

11 They take a long time to prepare, they
12 take a long time to review, they take a long time to
13 be approved, and you'll need to give additional
14 guidance, I believe, on what we do during the interim,
15 once this thing gets passed.

16 And the last issue is on the last page of
17 the rule, under Section 61.55, 55, I believe it was
18 Section 61.55 (a)(6). I'm not quite sure if some of
19 those got cut off.

20 And it just states that any waste
21 classified under the subparagraph must be analyzed in
22 the intruder assessment required by Section 61.42.
23 We're wondering, these are wastes that are not in the
24 table, and do we not have to do a performance
25 assessment also, or just an intruder assessment, if

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1 that's required?

2 And why was the performance assessment not
3 included? It's just not clear to us. I know we
4 haven't had a lot of time to look at this, but it
5 looks like we only have to do the intruder assessment.

6 MR. SMITH: Okay, thank you.

7 William Dornsife? Is it Dornsife? Thank
8 you.

9 MR. DORNIFE: I'm Bill Dornsife with
10 Waste Control Specialists, and my most burning comment
11 was the last thing that was mentioned, that this thing
12 was going to be compatibility C.

13 I mean, you guys are changing the
14 performance objectives, which were previously a
15 category one or whatever you call it now. So, you
16 know, does that mean people don't have to say 25
17 millirem effective equivalent dose?

18 DR. ESH: This is Dave Esh. I'll clarify
19 it for you. The -- it's broken into A and B now. A
20 is still the same compatibility class. B regarding
21 the period of performance is the compatibility C.

22 So you still have to do the performance
23 objective and the dose limit. You have flexibility to
24 be more restrictive on the period of performance part
25 of it.

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1 MR. DORNSIFE: Well, I guess I'd like to
2 see some justification. I have no problem with -- for
3 shorter-lived materials going shorter, and the rule
4 could say that.

5 But I'd like to see a justification of why
6 this shouldn't be highest-level compatibility, since
7 it is changing the performance objectives. It
8 assures, you know, the way it is now, you know,
9 category C, probably nobody will adopt it.

10 In protection of inadvertent intruders, I
11 don't see any justification of the 500 millirem. What
12 is the reason for choosing 500 millirem, other than
13 it's a carryover from the earlier Part 61 EIS?

14 I have no problem with the 20,000 year
15 performance period. The problem I have is when you
16 look for peaks beyond being undefined.

17 I mean, what if, you know, you see 100,000
18 years from now, or even 30,000 years from now, there's
19 a huge dose. There's, you know, 100-some REM.

20 And in fact, I played around with RESRAD a
21 little bit, looking at depleted uranium. And I guess
22 the RESRAD thing you had in your technical analysis
23 was useless without a cover on it. Who cares about
24 radon if you have a decent cover?

25 But if you start varying some of the

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1 parameters, you, in fact, get some huge doses, right
2 outside of 20,000 years from the water pathway at
3 certain sites.

4 So, you know, not having any statement of
5 what is acceptable or not, leaving it to society to
6 judge, is, to me, is going to create some problems.

7 And in our case, I mean, the 20,000 years,
8 the only thing that we see peak before 20,000 years is
9 chlorine-36. All the rest of it peaks well beyond
10 that. I mean, that's, you know, an example of a deep,
11 good site. You know, that's exactly what you see.

12 And I want to talk some more about
13 chlorine-36, because that is also a problem for future
14 consideration.

15 You also, in concept 6, you talk about
16 burial below 30 meters as being acceptable intruder
17 protection. Is that intended to replace the five
18 meters that's already in the rule? I mean, I don't
19 know where that came from.

20 PARTICIPANT: I can't hear anything.

21 MR. DORNSIFE: Okay. Well, anyway, I
22 mean, you know, and I guess there needs to be some
23 clarification. Whatever number we use, does that
24 include cover, or does that include waste as part of
25 that depth?

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1 MS. YADAV: Can you direct us to what
2 you're talking about? Because I think that's existing
3 text.

4 MR. DORNSIFE: Well, in C, in C-6, you
5 say, "more robust intruder barriers, such as burial
6 below 30 meters."

7 (Pause.)

8 Okay. That's just inconsistent.

9 MR. SMITH: Thank you.

10 MR. MCKENNEY: Hi. I'm Chris McKenney.
11 One point that I think we didn't clarify well enough
12 as far as this meeting was, a lot of the information
13 that, well, one that Bill has just talked about, along
14 with -- usually, when you normally see rule text or a
15 proposed rule, you see the statement --

16 PARTICIPANT: Will the commenter please
17 speak up?

18 MR. MCKENNEY: Sorry. I got closer to my
19 mouth.

20 PARTICIPANT: We can't hear anything.

21 MR. SMITH: He moved the mike closer to
22 his mouth. Thanks for the comment.

23 MR. MCKENNEY: Okay, this is Chris
24 McKenney from NRC. Is it, in this stage of a draft
25 proposed rule text, we don't have the statements of

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1 consideration that go with it which would define a lot
2 of the discussion on some of where some of these other
3 numbers came from, and some of the other discussions
4 of the basis.

5 But they are good comments, to make sure
6 that we do emphasize in the statements of
7 consideration or in guidance space. And so, continue
8 with those comments.

9 But yes, we did not provide statements of
10 consideration with this rule text, which does have a
11 little less information than what you'd normally see
12 in a proposed rule.

13 DR. LESLIE: Larry, did you have something
14 to add?

15 MR. CAMPER: Larry Camper. Well, I'd get
16 a clarifying question, and one new comment.

17 You talked about the 500 millirem number.
18 You're right that there's a historical basis, of
19 course, going back to the original environmental
20 impact statement for Part 61.

21 Accountability of intrusion was assumed to
22 be one, and that was the basis, really, for the 500
23 millirem as compared to today's public dose limit of
24 100 millirem.

25 Are you suggesting that the number is too

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1 high, or too low?

2 MR. DORNSIFE: No, I just didn't see a
3 justification. I mean, the 500 millirem was based on
4 the public dose limit at the time, so, if you're going
5 to be consistent, then you need to be fully
6 consistent.

7 MR. CAMPER: Thanks.

8 MR. SMITH: Thank you. The next comment
9 will come from Lisa Edwards.

10 DR. LESLIE: I'd just like to remind
11 everyone that this microphone, for the people on the
12 bridge line, has to be like this close, an inch away
13 or less.

14 Sorry, Lisa.

15 MS. EDWARDS: That's fine. Can we corral
16 the speaker?

17 I'm just kidding. Never mind.

18 First of all, I would like to echo John's
19 comments to the panel. This is an extremely complex
20 problem, and it takes a great deal of thought and
21 analysis.

22 There is no easy answer to any of these,
23 and I would like to acknowledge the work that you have
24 done to address that -- these very difficult concepts
25 in the proposed rule that you've produced.

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1 I want to bring attention to a couple of
2 items. The first one is application of the
3 performance assessment to all waste streams.

4 Other people have mentioned it, but I
5 think it bears repeating in that in my read of the
6 performance assessment or of the rule, the proposed
7 wording, it implies that this performance assessment
8 must be done for all waste streams.

9 And if you already foresee the need to
10 include kind of points of consideration or maybe there
11 could be additional language added that said something
12 along the lines of the performance assessment would be
13 required for those waste streams, dominated by
14 nuclides that have a half-life exceeding - et cetera.

15 But for typical waste streams that are not
16 dominated by such nuclides, it would not be required.

17 It could be performed, but it wouldn't necessarily be
18 required.

19 The second is, this is maybe a little bit
20 the scientist in me coming out, when we talk about
21 dose calculations, I get a little confused when we
22 extend out into a very long range time period.

23 To do a dose calculation, you need two
24 really important components to be known. The first
25 is, the activity, and the second is the dose pathway,

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1 which implies a receptor.

2 So when we get out past 1,000 years or
3 10,000 years or 20,000 years, you may know and be able
4 to calculate the activity and apply reasonable
5 assumptions on the concentration of that activity when
6 mixed with environmental factors or taking in
7 surrounding environmental factors.

8 Your ability to produce a defensible dose
9 pathway, however, comes into question. If you resort
10 to what I call the fencepost dose calculation, which
11 means your intruder or receptor is right there on the
12 site, 24/7, 365 days a year, and subject to the very
13 most restrictive or worst case scenario for exposure.

14 That is bounding.

15 But it is not realistic or credible, and
16 we are actually encountering this at nuclear power
17 plants today who are doing dose calculations and who
18 have previously relied upon fencepost calculations and
19 are now going back to refine those and make them more
20 accurate, because the results of those type of
21 calculations can, in fact, be misleading, bounding but
22 not accurate.

23 So I would challenge the group, what the
24 credibility in a risk-informed regulation are
25 requiring a dose calculation where you cannot

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1 reasonably identify a receptor is.

2 Am I already past five minutes?

3 MR. SMITH: You have about a minute left.

4 MS. EDWARDS: Oh. That was one and two,
5 so, three.

6 This goes to kind of the underlying
7 premise in our regulation. I think we've stated
8 pretty clearly that our desire is to have a risk-
9 informed regulation.

10 I am confused by a regulation that
11 introduces a probability of intrusion of one and the
12 probability of the worst-case intrusion of one being
13 used in a regulation that needs to be risk-informed.

14 There is no credit given that I can see
15 that the probability of intrusion and waste is not
16 one, and there is no kind of risk analysis associated
17 that I have found yet that is associated with, what is
18 the risk or the consequence from both dose and
19 security standpoint if disposal is not provided, a
20 pathway for disposal is not provided?

21 MR. SMITH: All right. Thank you, Lisa.

22 DR. LESLIE: And again, we'll remind folks
23 that we want to give everyone a chance to talk, and
24 there will be additional time for the people who have
25 already talked.

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1 MR. SMITH: Okay, we've exhausted all of
2 the cards within the facility.

3 We're going to find out if those on the
4 line would like to make comments also.

5 MS. WOODRUFF: Yes, this is Liz Woodruff
6 from the Snake River Alliance.

7 MR. SMITH: I'm sorry, can you repeat your
8 name again, please?

9 MS. WOODRUFF: Liz Woodruff from the Snake
10 River Alliance.

11 MR. SMITH: Okay. Thank you, Liz.

12 MS. WOODRUFF: First, thank you to the NRC
13 for providing this opportunity for stakeholders in
14 affected areas like Idaho to comment on this ruling,
15 which we appreciate the opportunity to have our voice
16 heard.

17 This issue is particularly of interest to
18 the Snake River Alliance and our members in Idaho,
19 because there is a proposal for an enrichment factory
20 that would produce depleted uranium, which is one of
21 the waste streams addressed in this language.

22 I'd just like to start by saying that I
23 think the very premise of the articulation of the new
24 rule is flawed and not adequate.

25 That's not to say that there hasn't been a

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1 very clear attempt to deal with some of those
2 inadequacies in the language, and I'll address that
3 below, but we believe that deep geological repository
4 is the best location for these waste streams, and that
5 especially in relation to depleted uranium, this rule
6 is simply inadequate in addressing the
7 characteristics, the long-lived characteristics of
8 that waste stream, and that that results in a rule
9 that is pretty confusing, and ends up giving some
10 vague language for pretty serious issues, and it just
11 kind of leaves us confused.

12 In the definitions in the Section 61.2
13 definitions, I think that there's a disconnect between
14 the long-lived aspects of the waste stream and the
15 conversation in number one about institutional
16 controls.

17 I think -- you know, it's pretty clear
18 that we can't assume institutional control for the
19 life span of depleted uranium in particular, and that
20 creates a disconnect between numeral 1 and the second
21 paragraph of numeral 3 in the definition section.

22 Then, moving on to the concept section, in
23 number 2, excuse me, let's see, yes, number 1, numeral
24 -- or excuse me, letter A, we don't believe that near-
25 surface is good enough. Again, we believe that a deep

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1 geological repository should be looked at.

2 And in number 2, ending with "in choosing
3 a disposal site, site characteristics should be
4 considered in terms of the indefinite future, taking
5 into account the radiological characteristics of the
6 waste and be evaluated for at least a 500-year time
7 frame," I would also, have other speakers have
8 mentioned, raise the question of why a 500-year time
9 frame?

10 This also applies to the paragraph
11 mentioned earlier by another gentleman about the
12 effective life of an intruder barrier. So why is the
13 500-year time frame used?

14 And I think it's real important here to
15 acknowledge the way the proposed language talks about
16 maximum concentrations being key.

17 I think that that's really good that
18 that's in there, but it does get back again to some of
19 the difficulties of containing the dangers around this
20 kind of waste when you talk about near-surface
21 disposal.

22 In the conversation about stability that
23 happens in C-2, I think it's real important and good
24 that the stability question is in here or it's raised
25 and mentioned.

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1 But again, I think that the long-lived
2 characteristics of this waste stream make a stability
3 assessment nearly impossible. And that gets back to
4 my first point, that deep geological repository should
5 have been looked at.

6 And then in the final -- in, on page 4,
7 the first paragraph ending with, "for long-lived waste
8 and certain radionuclides prone to migration, a
9 maximum disposal site inventory based on the
10 characteristics of the disposal site may be
11 established."

12 I think that that is really good language,
13 and I appreciate that it's there, although I think it
14 needs to be clearer what that means.

15 And let me look real quickly here. This
16 discussion of enhanced controls, I'm also glad that
17 that's in there, but I think that there need to be
18 examples of what those enhanced controls would look
19 like.

20 And in number seven, "the intruder
21 assessment must identify the intruder barriers and
22 examine the performance barriers. The intruder
23 assessment must also address the affects of
24 uncertainty on the performance of the barriers,"
25 again, I think that's good, but that's an

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1 impossibility at the sites that are being looked at
2 for near-surface disposal, and again, what I'm talking
3 about in terms of vague language.

4 MR. SMITH: Okay. All right. Thank you,
5 Liz.

6 MS. WOODRUFF: Yes, actually, I do want to
7 make one more point.

8 Real quickly, on Section 61.12, specific
9 technical information and the technical analyses
10 below, I think that this language about the
11 performance assessment of the site, identifying
12 characteristics of, I guess, in numeral A, I think
13 this explicitly should and will ultimately exclude
14 energy solutions, and that was talked about the DU
15 working group in Utah, the characteristics of that
16 site and the longer time frames.

17 And I'd like a lot more specific language
18 about what a decision would look like based on these
19 things. Thanks.

20 MR. SMITH: Okay. Thank you, Liz.

21 Do we have someone else with a comment on
22 the line?

23 Again, this is George Smith. I'm one of
24 the co-facilitators for the meeting, and we're
25 soliciting comments on the line now.

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1 And again, these comments are specific to
2 the rule text at this time.

3 If we don't have any more comments on the
4 line, then we can go back to -- is it Linda, do you
5 want to finish your -- I'm sorry, Lisa, I'm sorry.

6 DR. LESLIE: Yes, we just wanted to make
7 sure everyone -- we didn't know how many people we'd
8 have on the line.

9 MR. SMITH: Now, we have a little bit more
10 time, and we'll go for five minutes again, or three.
11 Five minutes.

12 MS. EDWARDS: This is kind of a new
13 concept that I'm going to put out for brainstorming
14 for your group to consider, and it's a follow-on to
15 what Bill Dornsife recently commented on just a few
16 minutes ago.

17 So we have in our intruder scenario
18 probability one of intrusion and a probability of
19 intrusion in the worst case of one, and no recognition
20 that the actuality of that is probably not a one.

21 So, when I try to kind of look back and
22 into other areas of how they deal with dose limits in
23 an accident type of scenario, what I came across was
24 two different documents.

25 The first one is EPA 400, which relates to

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1 the dose limits associated with the need to evacuate
2 people in a radiological emergency or under
3 radiological release conditions.

4 Tied to that, or related to that, is a
5 document that is under development. My understanding
6 is it's under development from FEMA, and it's a FEMA
7 REP document.

8 And it is related to, what are the dose
9 limits associated with returning evacuees to a
10 previously evacuated area. And they are different
11 than the 500 millirems.

12 The limits that are being considered in
13 that document that's being revised is 2 rem per year
14 in the first year, and then it drops to the 500
15 millirem in the second year, which also assumes
16 prolonged exposure over, you know, a lengthy period of
17 time up to 50 years.

18 And I wonder, if we pursue that line of
19 thought and try to apply it in this low-level waste
20 disposal scenario, if that influences the choice of
21 500 millirem per year as the limit in an intruder
22 scenario.

23 I think if we adopted a concept of -- or a
24 recognition that this is an accident, a possible
25 accident and not an actual accident, and tried to help

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1 weigh the limit associated with that with a higher
2 dose limit, it takes into account or maybe helps
3 balance a little bit some of the probability
4 assumptions that you've made, or that we've made
5 historically.

6 MR. SMITH: Is there anyone else?

7 MR. MAGETTE: Thank you. I have a few
8 other comments, and then I have a question.

9 The first one is in the new Section
10 61.7(c)(6), which is on the screen.

11 MR. SMITH: I just want to remind you now,
12 if you called in, to mute your phone line.

13 MR. MAGETTE: The phrase some waste may
14 require enhanced controls, I think that's terribly
15 vague.

16 But in all that section, it seems -- this
17 is, I think, similar to what John was saying, John
18 Greeves, the section seems to imply that there's the
19 use of a performance assessment and an intruder
20 analysis to make up for shortcomings that are inherent
21 in the tables as a result of having done a generic
22 evaluation.

23 So, there's a, if you will, a way for
24 there to be a higher standard to be met by something
25 that's not specified in the table, because by virtue

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1 of not having specified it, the components were not
2 sufficiently restrictive.

3 I would say that if you're going to do
4 that, you should take it a step further, and use that
5 to generate a site-specific lack.

6 If the generic tables have shortcomings
7 that make them insufficiently protective, in some
8 cases, it's equally true that they have shortcomings
9 that make them overly conservative in certain cases.

10 So I would suggest that there are two sides to the
11 question that is introduced in Section 61.7(c)(6).

12 The other comment I would make that the
13 definition of -- the addition of the term "long-lived
14 isotopes," which I think is part of the "uranium-
15 ification" of the rule, if you will, has possibly led,
16 or could lead, to an unintended consequence in that
17 there are other waste packages that we get that have
18 isotopes not listed in the tables that are long-lived,
19 for example, transuranics, actinides.

20 Obviously, low-level waste is defined by
21 what it is not as opposed to what it is. So those
22 isotopes can be present, as long as they're not in
23 sufficient quantity to make the waste true waste, but
24 they're there.

25 There's nothing that suggests that there's

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1 some sort of concentration, just a 10 percent activity
2 reduction of less than 10 percent, is not sufficient,
3 I don't think, to require an increased stability
4 requirement for the large majority of existing waste
5 that we accept.

6 So I think that definition is a
7 significant new requirement, and that's an unintended
8 consequence, so I offer that for your consideration.

9 The question I have has to do with the
10 language at the end of Section 61.7(a), this,
11 "alternate methods of disposal can be accepted."
12 That's kind of Section 61.58-ish.

13 Is that your intention, that this is
14 adding the flexibility that's currently invoked by
15 Section 61.58, now under Section 61.7? And if not,
16 what does it mean?

17 Thank you.

18 COURT REPORTER: Could you identify
19 yourself for the record, please?

20 MR. MAGETTE: I'm Tom Magette of Energy
21 Solutions.

22 MR. SMITH: Thanks, Tom, for your comment.

23 Any further comments? John?

24 MR. GREEVES: I'd like to second Bill
25 Dornsife's comment on the category for compatibility.

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1 That's a really important issue. I'm quite -- I
2 don't quite know what the word is, surprised, I'll pin
3 it down, surprised that you would consider the pre-
4 provision of 61-50-42 as anything but exact
5 compatibility.

6 There are real consequences in how you
7 address these performance objectives. These
8 performance objectives are addressed in legislation
9 for 31-16, and --

10 MR. SMITH: I'm sorry. If you've called
11 in, please place your bridge on mute, please.

12 Thank you, John.

13 MR. GREEVES: So I fully expected that it
14 would be exact compatibility, whatever the right
15 number is.

16 So, could you share with us what your
17 designation on compatibility of these language items
18 are before we have to comment on June 18th?

19 Because, especially these performance
20 objectives, these things really need to be exactly the
21 same across the board. And it's going to affect other
22 legislation that points at these performance
23 objectives, I see nothing that points to anything but
24 exact compatibility in the performance objectives.

25 So, again, I'm free to express mine and

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1 another to hold me back.

2 DR. LESLIE: John Greeves, thanks for your
3 comment.

4 MR. SMITH: Are there any more comments
5 here?

6 Again, we'd like to ask you to place your
7 phone on mute, please.

8 MR. DORNSIFE: This is Bill Dornsife with
9 Waste Control Specialists.

10 It appears to me, I think obviously, one
11 of the more important things in here is the 20,000
12 years and how you came up with it.

13 It appears to me to be an attempt to deal
14 somehow with the unique waste streams in one rule,
15 rather than maybe separate out how you do performance
16 assessments for, you know, the unique waste compared
17 to the normal waste. It seems like a lot of the
18 comments are kind of hitting at that issue.

19 10,000 years is certainly long enough for
20 one of the middle, low-level wastes, but 20,000 years,
21 is that long enough for depleted uranium?

22 I don't know if NRC's ever looked at the
23 toxicity, the relative toxicity of depleted uranium,
24 compared to high-level waste. It's pretty similar,
25 you know, after a certain amount of time.

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1 So, I mean, maybe it should be analyzed
2 like high-level waste, you know, in terms of having a
3 longer performance period.

4 I know that -- you know, I don't disagree
5 with your argument, you know, regarding society and
6 all the other things. But, you know, it is certainly
7 a special case, and probably should be handled
8 separately and have a lot more engineered -- or
9 engineered or natural features in terms of where it
10 gets disposed.

11 MR. SMITH: Thank you for your comment.

12 Lisa?

13 MS. EDWARDS: I think of some of what Bill
14 talked about gets at the crux of the matter. We know
15 what's being generated in the United States, and
16 presumably around the world. So it's out there, and
17 it's being stored someplace.

18 One of the questions behind this rule is,
19 can we dispose of it in a shallow land disposal
20 facility?

21 If the risk-informed technical data says
22 no, then let's put that data forward and say, it's not
23 suitable for near-surface disposal, and defend that
24 position, and then deal with that.

25 If it is suitable for near-surface

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1 disposal, then let's create a regulation that will
2 clearly outline the objectives so that they can be met
3 and demonstrated and not open the door to endless
4 objections that, in effect, result in non-
5 implementation of the rule.

6 It's a tough call. But if I'm reading
7 between the lines and your technical analysis has
8 reached a conclusion that it's not appropriate for
9 near surface disposal, then we have to have the
10 courage to stand up and say that and defend it.

11 If we haven't reached that conclusion,
12 then I think we need to respond to some of the
13 comments in the rule that I think what people are
14 seeing here is that this type of rule, you'll never be
15 able to get to the end point and successfully use the
16 rule for disposal of the waste in near-surface
17 disposal.

18 DR. LESLIE: Thank you, Lisa.

19 And Larry, you had a comment?

20 MR. CAMPER: Yes. Larry Camper.

21 Lisa, let me try to address your comment.

22 Very good comment, thank you.

23 When the staff was given the initial
24 assignment to address this question, there is a large
25 quantity of depleted uranium coming out of the LES

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1 here, the first question that the staff challenged
2 itself with was whether or not large quantities of
3 depleted uranium were suitable for near-surface
4 disposal.

5 That's where we started. That was the
6 right question and you're right on the mark.

7 What our analysis showed us, and we
8 articulated that, in SECY-08-0147, was that yes, it is
9 suitable for near-surface disposal, albeit under
10 certain conditions. For example, deeper disposal or
11 with a radon barrier, per our analysis, has not shown
12 that it was suitable for near-surface disposal. We
13 still had to go back to the Commission, and so we need
14 to look at this from a different angle.

15 So what you see now, I think that may be
16 causing some of what you refer to, is an attempt by
17 staff to address the point that it is suitable for
18 near-surface disposal, albeit under certain
19 conditions.

20 And you are right, and Dave Esh, Dr. Esh
21 made this point in his comments that, do not assume,
22 one should not assume that a site-specific performance
23 assessment will, in the final analysis, result in the
24 fact that unlimited quantities of depleted uranium can
25 be disposed of in any given site.

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1 The performance assessment will take you
2 where the science takes you for the performance of
3 that particular site.

4 But what we are trying to do is to
5 sprinkle into this particular rule-making initiative
6 the point that we made way back in '08 or '07, and
7 that analysis was that it is suitable, but albeit,
8 under certain conditions.

9 So I wanted to offer that clarification,
10 because you raise an extremely good point, and you
11 raise the very first point that challenged the status
12 back in 2008.

13 DR. LESLIE: Thank you, Larry.

14 MR. SMITH: Are there any -- we have one
15 more comment. One more comment?

16 MR. DORNSIFE: Bill Dornsife, Waste
17 Control Systems.

18 Maybe that discussion is a good way to
19 deal with this -- what happens after 20,000 years when
20 you're looking at peaks. Maybe that should be -- the
21 purpose of that should be to set inventory limits,
22 just like the guidance does now.

23 Now, I don't know what standard you want
24 to use for setting those inventory limits, but I think
25 that would be a very useful way to deal with that

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1 issue.

2 MR. SMITH: Thank you.

3 Is there anyone on the bridge line who
4 would like to leave a comment?

5 Lisa?

6 MS. EDWARDS: Lisa Edwards with EPRI.

7 Larry, kind of in response to the comments
8 -- the information you provided, so what I see, what
9 I'm a little concerned about is we have this unique
10 waste stream and depleted uranium where activity builds
11 in over time, which is different than most of the
12 commercial low-level waste that is generated, which is
13 really, per the vast majority of the waste, is at peak
14 activity at the post of disposal. It only decays,
15 more or less, with the majority of the radionuclides
16 from thereon.

17 And in an attempt to address the depleted
18 uranium issue, you proposed language that appears on
19 the surface it needs to be applied to all waste, and
20 there are additional burdens that are associated with
21 applying those requirements to all waste.

22 And those burdens aren't free. You know,
23 it costs a lot of money to dispose of low-level waste.

24 It affects the cost of our electricity, and people
25 out there care about that.

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1 So I want burdens that are necessary for
2 the disposal to be protective to be in place, whatever
3 they cost, but I don't want new burdens introduced
4 that are not necessary.

5 DR. LESLIE: Thank you, Lisa.

6 I think Dave had a comment.

7 DR. ESH: Yes. This is Dave Esh from NRC.

8 And I just want to add a clarification that -- as
9 Larry's exactly right.

10 It's not just concentration, but it's
11 quantity that can drive the risk. So, I find it hard
12 to say, categorically deny or ban a certain class of
13 material without bringing that idea into the
14 conversation, because a disposal site may, through the
15 analysis and decision-making process, you may
16 determine it can take some quantity of material, and
17 just because it's named a certain type of waste
18 doesn't mean that it can't safely be taken.

19 And what I think about is, you know, you
20 may have material that is contaminated with small
21 quantities of depleted uranium. Does that mean you
22 would say that you can't take that material?

23 And I don't think that's right. I think
24 if the risk is low, you should be able to take that
25 material.

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1 And then in terms of the issue of defining
2 what this applies to, we discussed that in detail. It
3 was a good comment, and we greatly appreciate your
4 feedback on that.

5 What I would ask for you to consider is,
6 you know, the reason why we're doing this rule-making
7 is we have a waste stream like depleted uranium that
8 was different from, in its characteristics, what was
9 anticipated.

10 Now, it's not the only waste stream that's
11 different than anticipated. Right now, we're
12 undergoing a reprocessing rulemaking that may generate
13 materials that may be different in quantity and
14 concentration than was anticipated back in the early
15 '80s.

16 Likewise, blended wastes are different
17 than what was envisioned when the Part 61 was done,
18 because it was assumed in the waste classification
19 tables that not all waste would be at the waste
20 classification limits.

21 Those are just three examples. But, so
22 when we talked about it internally, we said, we don't
23 see a good way to be smart enough and make this
24 comprehensive list of what this -- what these other
25 criteria or analysis should apply to.

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1 We'll just apply it to everything, and try
2 to provide some flexibility for those people that are
3 dealing with the 90 percent typical scenario that they
4 don't get into this extra burden that you talked
5 about.

6 We agree strongly also that the burdens
7 should only -- we have to be smart about it, and the
8 burdens should only be implied when warranted, and so
9 this process, hopefully, the regulatory criteria, and
10 we can get your feedback on it, the regulatory
11 criteria should define when you need that extra burden
12 and when you don't.

13 MR. SMITH: Thank you.

14 MR. MAGETTE: I think -- this is Tom
15 Magette with Energy Solutions.

16 I think that's a good point, David, and I
17 think within the NRC and outside the agency, a lot of
18 people looked at the generic notion of a unique waste
19 stream rule making as something that was an
20 improvement rather than a one-off constantly, I'm
21 beginning to wonder if maybe that is the case, because
22 two of the three that you mentioned, the blended waste
23 and the potential waste stream from reprocessing
24 likely are not going to pose the kind of challenges --
25 well, certainly, in one case, doesn't, and in the

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1 second case, could easily be limited so that it
2 doesn't.

3 But, you know, the reprocessing waste
4 stream that is likely to be low-level waste just by
5 virtue of a definition have been called high-level
6 waste, and so being able to capture them as low-level
7 waste is a wording problem.

8 Blended waste -- no single package of
9 blended waste poses a unique hazard. It's only if you
10 have lots of it in close proximity.

11 But here again, you can deal with that in
12 terms of a time frame with a much shorter time frame.

13 So it looks to me like we are looking at
14 least one unique stream that requires some level of
15 differentiation. And the more I read, the more I
16 listen, the more I think about this, the more I see
17 unintended consequences, potentially rising to the
18 level of a problem like what Lisa just addressed,
19 without repeating what she said.

20 MR. SMITH: Thank you. Would anyone
21 calling into the line like to make a comment?

22 Go ahead.

23 MR. DORNIFE: This is Bill Dornsife,
24 Waste Control Specialists.

25 You know, on the DU issue, one of the

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1 analogies that you may want to look at is the amount
2 of DU that's exempt from licensing.

3 Has NRC ever, you know, I mean, people can
4 literally do whatever they want with exempt material.

5 Now, luckily, most of the people that have
6 counterweights that are used in aircraft at least send
7 them to a RCRA facility for disposal of exempt
8 materials.

9 Now, but there's no limit on the amount of
10 that material that can be disposed of. I mean, should
11 there be? You know, I don't know. I mean, has NRC
12 ever looked at that? I mean, I can tell you, we
13 disposed of quite a bit of exempt DU at our RCRA
14 disposal facility.

15 MR. SMITH: Thank you.

16 Again, anyone calling into a line that
17 would like to make a comment?

18 Are there any more comments in the room?

19 Okay, good, thank you. We have an hour
20 allotted for lunch, so that will put us back here
21 about 12:45.

22 We'd ask everyone to return at that time
23 frame, and then we'll take comments on the period of
24 performance.

25 (Whereupon, the above-entitled matter went

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1 off the record at 11:43 a.m. and resumed at 1:02 p.m.)

2 DR. LESLIE: Good afternoon. This is
3 Brett Leslie, the current facilitator for the meeting
4 you've been attending. I want to welcome everyone
5 back and I understand that the people on the line are
6 really having difficulty hearing the commenters and
7 so not only are you going to have more time but we're
8 going to give you two options. You can come up and
9 sit exactly where Priya is sitting and speak into that
10 mic so long as you don't mind a hand on the shoulder
11 when you get to your 10-minute limit, or you can come
12 up and use the standing mic. Again we'll give you 10
13 minutes and if you don't mind us coming up and you'll
14 - we'll have more than enough time I think this
15 afternoon for everyone to do 10 minutes, go to the
16 phone line and then come back for more comments. But
17 these handheld mics, they literally almost have to be
18 on your lips and that's not the most hygienic and
19 certainly I don't think John Greeves appreciated me
20 trying to stuff this microphone in his mouth. So kind
21 of with that as a background, so even though we have
22 the ground rules saying that we're using microphones,
23 we're not going to try to use these handheld mics
24 except for me, I'll use one and you've got the whole
25 thing.

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1 A couple of things. I would appreciate
2 everyone's thoughtful input in the morning session.
3 And George is not taking the afternoon off but he's
4 going to be in the back helping me ensure people get
5 up here and identify who's going to be commenting.
6 Again, I'm going to go through the ground rules
7 because I can't stress it enough. There are people on
8 the bridge lines who are shuffling papers and having
9 conversations and we can hear them, everyone can hear
10 them. So if you're on a phone that doesn't have mute
11 stop working unfortunately, stop shuffling papers.
12 It's really distracting for us. And we'd like to have
13 respect for all participants both on the phone line
14 and here, and so we're trying to accommodate the
15 people on the phone by requesting the people here to
16 use better mics and so I'd just like to ask people on
17 the phone to kind of respect the people here who are
18 also trying to listen.

19 Stakeholder feedback. One of the things
20 that we did talk about at the very beginning is we
21 have meeting feedback forms. And so if you didn't
22 pick one up earlier and you want to comment they're
23 still out on the table. I have some here. We're also
24 using the speaker comment cards and I'll - the way
25 we'll run this afternoon's meeting is, again, we're

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1 going to be focused not so much on the rule language
2 but on the period of performance. And I'll start with
3 the people here in the room and then we'll go to the
4 people on the bridge. Before we get into the comment
5 period I want to ask the people on the bridge to one
6 by one identify themselves so I'm going to turn to the
7 bridge and ask who's on the line.

8 MS. O'DELL: Maureen O'Dell.

9 DR. LESLIE: Thank you, Maureen. Who
10 else? Is anyone else on the line?

11 MR. SEITZ: Roger Seitz.

12 MS. FORNASH: Elizabeth Fornash from DOE
13 EM.

14 DR. LESLIE: So I heard Roger Seitz and
15 someone from DOE.

16 MS. FORNASH: Elizabeth Fornash.

17 DR. LESLIE: Thank you, Elizabeth. Anyone
18 else on the bridge line?

19 MS. TREHAFANEL: Jean Trehafael, NRC.

20 DR. LESLIE: Okay, Jean. Anyone else?

21 MR. KLEBE: Michael Klebe, state of
22 Illinois.

23 DR. LESLIE: Okay, Michael. Thank you
24 very much. Anyone else on the line?

25 MR. JANATI: Rich Janati, Pennsylvania

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1 DEP.

2 DR. LESLIE: Is that Rich? Okay.

3 MR. JANATI: Yes.

4 DR. LESLIE: Anyone else?

5 MR. LUNDBERG: Rusty Lundberg, Utah.

6 DR. LESLIE: Thank you, Rusty. Anyone
7 else beyond the people that have already talked?

8 MR. SCHULTHEISZ: Dan Schultheisz, EPA.

9 DR. LESLIE: Dan, thanks. Last time for
10 people on the bridge, anyone else? Okay. So before
11 we get started I think it's worthwhile thinking back
12 to something that Larry said early on. Right now you
13 have out in front of you some draft regulatory
14 language and those documents are out there. There are
15 written comments. Due date is June 18th. But one of
16 the things Larry asked and I like the way he put it.
17 If not 20,000 years, what and why. So that's one of
18 the things that the staff really would like input on.
19 So again, especially this is important for the period
20 of performance discussion this afternoon. So I guess
21 I'm going to ask if there's someone who wants to go
22 first here in the room. Linda? And again, you can
23 either stand up or sit down and we'll let you know if
24 we can't hear you. Thank you, Linda. And don't
25 forget to identify yourself for the record.

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1 MS. SUTTORA: Okay. Can you hear me?
2 Okay. Linda Suttora, and I work for the Department of
3 Energy in the Office of Environmental Management. And
4 I also appreciate, like others, the opportunity to
5 comment on preliminary deliberations by the NRC staff
6 and for your public comment prior to the release of
7 the actual proposed regulations in the fall. And I do
8 welcome the opportunity to provide my thoughts at
9 today's meeting concerning the potential revisions for
10 10 CFR Part 61.

11 To begin, I note that my comments today do
12 not constitute the official DOE position on the
13 potential wording of rule changes. Instead what I'd
14 like to do today is share with you DOE's approach to
15 the same issues which we've developed and tested over
16 a series of decades. DOE's approach is set forth in
17 DOE Order 435.1 which is DOE's radioactive waste
18 management order because DOE is self-regulating for
19 radioactive waste. And the way DOE orders work is
20 that the order itself says go forth and conquer in the
21 manual. The DOE manual 435.1 actually provides the
22 requirements. So you'll see I might actually mention
23 DOE manual but actually they're essentially the same
24 thing and they're both required.

25 In addition to the order and the manual we

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1 also have guidance, and policies and practice. So
2 you'll - several of our things that we do right now
3 are not in the requirements but we do them because
4 over time we've discovered they're important to do.
5 And they're in one guidance document or another. And
6 we in fact are currently in the process of updating
7 our DOE order at the same time as 10 CFR 61 is being
8 revised and we would like - we thought that this was a
9 good opportunity to harmonize the regulations of our
10 two agencies to bring about a more consistent and
11 comprehensive national approach for regulating the
12 nation's low-level waste disposal.

13 In kind of a risk-informed approach we
14 agreed that a thorough and well-supported site-
15 specific understanding of a disposal facility is key
16 to assessing its safety. A performance assessment for
17 all waste management - I'm sorry, for all waste
18 streams to be disposed at a facility provides such an
19 understanding. As you may know, DOE assesses and
20 approves the use of DOE-owned low-level waste disposal
21 facilities at a number of its sites across the
22 country. The DOE process requires a site-specific
23 performance assessment. The department has developed
24 guidance and standard practice over many years as I
25 mentioned before and in terms of developing the

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1 bounding conditions and assumptions used in
2 performance assessments. The DOE practice falls well
3 within the range of approaches used currently in
4 commercial facilities licensed by NRC's agreement
5 states. So we have a number of key assumptions that
6 are consistent across what you're proposing in
7 preliminary deliberations that are consistent with the
8 way DOE does things, such as a time of compliance.
9 You're proposing a time of compliance a little bit
10 longer than we currently use. The comparison of the
11 projected facility performance against performance
12 objectives, for DOE we use a 1,000-year period
13 primarily in view of the uncertainties in long-term
14 projections and their hypothetical nature. However,
15 sensitivity and uncertainty analyses are conducted and
16 the projected level in time of a maximum dose, the
17 peak dose, is projected. This information enhances
18 the understanding of a disposal facility and can also
19 be useful in evaluating alternative disposal
20 facilities that are otherwise equal.

21 Another assumption that we incorporate is
22 point of compliance. The point of compliance normally
23 corresponds to the highest point of projected dose or
24 concentration beyond the buffer zone surrounding
25 waste. This buffer zone is often 100 meters but it

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1 may be more or less if justified by site-specific
2 conditions, yet it never extends beyond the boundary
3 of the land projected to be under permanent control by
4 DOE. Another assumption is compliance demonstration.

5 A performance assessment is a projection of
6 reasonable, reasonably foreseeable future events.
7 That's an important point, reasonably foreseeable
8 future events. Proof of compliance cannot be attained
9 in the normal sense of the word. We seek a reasonable
10 expectation of future compliance taking into account
11 the uncertainties inherent in projections over long
12 time periods. In addition, DOE's performance
13 assessments must include demonstrations that projected
14 releases of radionuclides to the environment will be
15 maintained as low as reasonably achievable, another
16 important point.

17 Inadvertent intruder assessments. We
18 analyze potential inadvertent human intrusion to
19 identify reasonable measures that can be implemented
20 to reduce or control the possible consequences. In
21 fact, NRC's preliminary proposed inadvertent intruder
22 dose limit is one of those areas which provides an
23 opportunity for a harmonized national approach.

24 Assessments regarding human activities,
25 another important point mentioned this morning.

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1 Projecting disposal facility performance and analyzing
2 potential inadvertent intrusion entail consideration
3 of the hypothetical future human, how they behave,
4 what technologies or medical sciences will be at their
5 disposal, and other societal factors are among the
6 greatest uncertainties in long-term performance
7 assessment. It's not reasonable or necessary to
8 consider the most extreme bounding scenario. Rather,
9 we consider a set of normal activities consistent with
10 current local practices and conditions. For example,
11 an example that is, Idaho site. When a well-digger
12 drills into the ground to reach groundwater they don't
13 - it's not unanticipated that they would hit rock so
14 their well-digging equipment can anticipate that it's
15 much stronger and they'll dig through. And if they
16 hit a cement monolith like DOE has left underground at
17 Idaho they will keep digging and so in our performance
18 assessment we actually analyze the scenario of a human
19 intruder digging through the cement monolith.
20 However, South Carolina has very sandy, loose soil.
21 Our intruder scenario does not anticipate that an
22 inadvertent intruder would dig through a cement
23 monolith it came across because current practices in
24 that state are to move to the side until you don't hit
25 rock. So those are the kinds of really site-specific

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1 natural, local current practices that we incorporate
2 into our performance assessments.

3 Another one is extrapolation to future
4 environmental conditions. Performance assessment
5 requires projections of natural processes and events.

6 Over very long periods of time there are hypothetical
7 events that may or may not occur or may be extremely
8 unlikely. It's DOE's intent to analyze the reasonably
9 expected behavior of a disposal system. Long-term
10 calculations are based on a projection of current site
11 conditions, including present rates of natural
12 processes, allowing for variation in the processes and
13 including episodic events such as flooding.

14 Another issue that we incorporate is the
15 treatment of the radon dose in our PAs. We consider
16 them separately. It's a normal radiological
17 protection practice, consider radon and its decay
18 products and air separately from the impact of other
19 radionuclides. DOE applies performance measures to
20 limit radon flux at the burial ground surface and to
21 limit air concentrations offsite.

22 Yet another assumption we make is for
23 unique waste streams. We take a performance-based
24 approach. We conduct what we call special analyses.
25 For those wastes that were not anticipated when the

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1 original performance assessment was written for that
2 specific disposal facility. DOE analyzes the unique
3 waste stream's radioactive properties against the
4 disposal facility's waste acceptance criteria and the
5 bounding analyses provided in the facility's
6 performance assessment to calculate whether placing
7 that specific unique waste stream would impact the
8 performance objectives of the performance assessment.

9 We dispose of unique waste streams in facilities
10 where there is no identified impact to the performance
11 objectives.

12 And finally, and this is another issue
13 that we think should be incorporated into Part 61 when
14 it is revised, is the thought of performance
15 assessment maintenance. DOE considers a performance
16 assessment to be a living document. Each performance
17 assessment includes a section describing research to
18 be conducted over the course of the next year and out-
19 years, and results of those research projects are used
20 in assessing the continuing validity of assumptions in
21 the performance assessment. We conduct an annual view
22 of the performance assessment to determine whether any
23 new information that has been developed over the past
24 year is significant enough to question the validity of
25 the current conditions and conclusions of the current

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1 performance assessment. If there is a question, a
2 revision to the performance assessment is performed
3 and it is treated almost as a brand new performance
4 assessment. It goes through the rigor and review of
5 the DOE system for performance assessments. There are
6 other triggers. It could, if we redesign facility
7 disposal cells we can recognize that the current
8 assumptions that were in the current performance
9 assessment aren't valid anymore so we need to revise
10 the performance assessment. And there's several other
11 things, maybe site groundwater systems are better
12 understood and we recognize that the PA doesn't work
13 anymore. So we revise the performance assessment and
14 we redo the entire analyses. And a subset of the
15 performance objectives could - that we would just make
16 sure that the performance objectives were never
17 compromised.

18 Once the performance assessment is
19 approved at the site level, this is another important
20 point is the level of rigor at DOE. We start with the
21 site produces it. Other folks on the site do a peer
22 review of that. Once the peer review is complete at
23 the DOE site it goes to the headquarters organization
24 that is responsible for doing a national expert,
25 technical expert review and we bring experts from

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1 other DOE site, from industry and from academia to
2 conduct an independent review prior to management
3 approval. So the revisions to existing performance
4 assessments trigger the same level as the initial
5 performance assessment. So again I thank you, that's
6 all I had to say. I appreciate being given the
7 opportunity to speak today and I hope you consider the
8 descriptions of the DOE processes helpful during the
9 deliberations on your revisions of 10 CFR Part 61.

10 DR. LESLIE: Thank you, Linda. Was that
11 better for the people on the bridge?

12 PARTICIPANT: Absolutely.

13 DR. LESLIE: Okay. So we'll keep that in
14 mind. One comment on the agenda which I didn't talk
15 about. Right now it's just slated for one long public
16 comment period. I'm thinking that we might be done by
17 2:30 so if we're not done by 2:30 that's when we'll
18 take a break. So we'll stay as long as people have
19 comments because we need to hear what you have to say.

20 Were there other people here in the room that wanted
21 to make a comment? If you could raise your hand and
22 then I'll. Lisa, do you want to? Lisa, I'll give you
23 a choice. You can have it right next to your lips,
24 sit at the table or stand up. And we'll give you 10
25 minutes. Thank you.

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1 MS. EDWARDS: I appreciated your comment.
2 I'd like to be able to ask you questions. How do you
3 think that might apply for specific waste streams like
4 the depleted uranium. But I do have a few general
5 comments. In slide 7 in your presentation, Dave, in
6 David Esh's presentation there's kind of a diagram
7 there that shows the various activity levels that
8 remain after a certain period of time. In general we
9 proposed a 20,000-year performance assessment period,
10 but when I look at the waste characteristics slide in
11 slide 7, after year 1,000 until you get out to close
12 to it looks to me 50,000 or 60,000 years I don't see
13 that there's a substantial difference between 1,000
14 and 20,000 and the activity that is present in the
15 site for either the depleted uranium waste stream or
16 the lower activity - or shorter lived half-life waste.
17 And for that reason I would propose consideration for
18 1,000 years instead of the 20,000 and that would also
19 harmonize more closely with what the DOE has in place
20 in their regulations which I think whenever we develop
21 something that there's more consistency between how
22 those same types of waste are treated by different
23 organizations it removes some of the confusion that
24 gets caused in the public sector.

25 Second, I want to just respond, David, to

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1 a comment you made about risk analysis that compared
2 the risk of death from 25mrem per year to the risk of
3 death from a deer or hitting a deer. With all due
4 respect to that comparison, I don't find that a valid
5 comparison. I know of many people who have died from
6 hitting animals with their vehicles and if we go to
7 animals instead of just deer I have an aunt that died
8 from hitting a car - I mean, from hitting a cow. I
9 know of no evidence that suggests that we know of any
10 deaths ever from 25mrem of exposure and I think that
11 the comparison that you laid out is a partial basis
12 for a longer term look. From a performance analysis
13 was partially based upon that and I think it was
14 misleading.

15 I do think that if you're going to require
16 a dose calculation for peak dose no matter what year
17 it occurs and to be performed then I think you need to
18 provide a context for the dose pathway assumptions.
19 In other words, I'm going to reiterate some things
20 that we talked about on the break. But for the
21 record, when people are doing dose calculations they
22 need to have a receptor pathway. And if you don't
23 provide context of reasonable assumptions to include
24 in those dose receptor pathways and you put it in a
25 time frame that is so far out that you really have no

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1 reasonable basis for prediction of behavior or use of
2 the land 10,000 or 20,000 years from now, the only
3 thing you can do is assume the worst case scenario.

4 And when you look at - you're shaking your
5 head no. I would challenge that our practices that
6 are currently used within the industry establish
7 pretty clearly that unless you have a strong basis to
8 support something less conservative than the worst
9 case scenario, okay, something that is more
10 realistically based, you have to have a strong
11 technical basis or you by default revert to the worst
12 case scenario.

13 So for instance, in a particular dose
14 pathway surrounding a nuclear power plant, if you have
15 a garden within the dose pathway for that plant you
16 will assume worst case 100 percent consumption of the
17 vegetables from that garden in your dose pathway. And
18 if you want to use something less than that then you
19 must provide a technical basis of why something less
20 than that is reasonable.

21 In most cases that data can be gathered,
22 but it can be burdensome to gather the data and have
23 it be substantive enough to be defensible. So it goes
24 into more detailed communication with those landowners
25 to establish real land use criteria. It's done

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1 realtime and it's updated typically quite frequently,
2 as often as once a year. So when you look at a dose
3 pathway that's 1,000 or 10,000 or 20,000 years away I
4 don't see a clear pathway defining a realistic
5 scenario for a dose pathway which means you'll revert
6 to worst case scenarios. And when you combine that
7 with already assuming a probability of 1 of intrusion.

8 Did I say that before? That a probability of 1 of
9 intrusion is hard to believe? Two, that the
10 probability of intrusion at 100 years and one day is
11 1, and three, that you add in you're going to assume
12 the worst case scenario. We're moving a long ways
13 away from being risk-informed or realistic and
14 credible in the scenarios that we're producing.
15 That's all I'm going to say on that because I think
16 I've maybe driven that point home more than once now,
17 but I think it is very important.

18 The next point that I'd like to make is
19 that there were some references about it's important
20 to consider our social responsibility to future
21 generations, and that in order to do that we need to
22 look out to 10,000 or 20,000 years. And that I think
23 some of the results may land us in a place where we
24 orphan waste streams. And I would offer for the
25 group's consideration that my perspective on

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1 responsibility to the future generations is slightly
2 different. I think the responsibility for future
3 generations is responded to most effectively by not
4 orphaning waste, providing a regulatory structure for
5 responsible and safe disposal of waste, and not orphan
6 any waste streams. Because 10,000 or 20,000 years
7 from now the waste we've generated is going to be
8 somewhere and the question is is do you provide a
9 better environment for future generations if that
10 waste is disposed of in a centralized and regulated
11 disposal facility or if you leave it orphaned out in
12 somewhere in the public. History has shown us that
13 the events that we've had have come not associated
14 with actual disposal of waste. It has come in
15 situations where waste has been abandoned. And I
16 think it is reasonable to draw a corollary to that
17 that again, whatever limitations we may have in
18 understanding what's going to happen 10,000 or 20,000
19 years now at a particular disposal site, it's at least
20 as good and probably better than the scenarios you
21 would imagine 10,000 or 20,000 years from now with
22 orphan waste streams.

23 And finally, in the DU - original concept
24 behind the DU rulemaking, my understanding was that it
25 was a fairly limited scope rulemaking. What I've seen

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1 put in the wording is that this is waste stream
2 neutral which really implies a more or less
3 comprehensive revision to Part 61 which includes new
4 performance objectives and at least from the current
5 wording could be interpreted as applying to all waste
6 streams. And as such, I think that there is a
7 requirement for a NEPA assessment or EIS to be
8 performed before such regulation goes into place. And
9 I just want clarification to understand that that is
10 the expectation that a NEPA assessment or what I call
11 an EIS would be performed before the rule is actually
12 finalized.

13 DR. LESLIE: Great question, Lisa. Are
14 you done?

15 MS. EDWARDS: I am.

16 MR. MCKENNEY: This is Chris McKenney.
17 I'm chief, Performance Assessment Branch for NRC.
18 First on the NEPA analysis. There is a NEPA analysis
19 associated with the rule. Start over. Chris
20 McKenney, Performance Assessments Branch of the
21 Nuclear Regulatory Commission. The - on the NEPA
22 question there will be a NEPA analysis with the
23 proposed rule. Again, since it's preliminary, much
24 like the statements of consideration every rule does
25 go through a NEPA analysis. At this time we're

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1 currently evaluating it through the steps of it did
2 not require to start out with an environmental impact.

3 So we evaluate through that system, but we are doing
4 an environmental assessment on the rule. The - yes,
5 there's a two-step process. Some things require large
6 environmental impact statements AZimmediately; others
7 go through an assessment that says do you do an
8 environmental assessment. Right. Basically there's a
9 way to check and see how big does your environmental
10 assessment have to be.

11 The - on the first part is is that when
12 you're talking about receptors and stuff like that, if
13 you look at our current guidance in the area of both
14 low-level waste, high-level waste - actually not both,
15 there's three so it's several - and in decommissioning
16 we look at average them as a critical group, we look
17 at reasonable land uses in our guidance space which is
18 one of the reasons why John Greeves brought up
19 previously that he thought that to strengthen that
20 would be to bring that into the text language
21 actually. But we do not have as a first cut a person
22 standing sucking up leachate and that sort of thing.
23 Also, in our - similar to low-level waste reviews
24 under our authorities under the National Defense or
25 the Ronald Reagan Defense Act 3116 which we do some

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1 monitoring of DOE activities we have definitely
2 explored with that where we don't, again, make worst
3 case assumptions for assessments of receptors during
4 that entire analysis time period.

5 MS. EDWARDS: For intruders.

6 MR. MCKENNEY: Actually for both, for both
7 - as far as a release from the facility or for the
8 intruder.

9 MS. EDWARDS: How could an intruder be in
10 -

11 DR. LESLIE: Because we're having - could
12 you repeat your question, Lisa?

13 MS. EDWARDS: How is an intruder dose
14 pathway anything less than worst case? You assume he
15 drills down and encounters the waste and then - with
16 the things that I've seen he stays with that waste
17 24/7 for the whole year.

18 MR. MCKENNEY: No, he doesn't. He - I'm
19 saying that for his activities and other things like
20 that we don't assume worst case. He doesn't sit on
21 the waste, he doesn't do that 24/7. You don't have to
22 go to that level of assumption of receptor activities.
23 And so the - it's just not that worst - it's not the
24 worst, worst, worst of everything in the assessments.
25 You may be - and from one vision correct is a

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1 statement that we do assume that to look at what would
2 happen if an intruder happened at any time after
3 institution of controls could be relied on, but beyond
4 that. Our receptor of what human activities are in
5 the future are largely based off of what are
6 reasonable activities in the local area today.

7 DR. LESLIE: Thanks for going up to the
8 first mic and answering that question.

9 DR. ESH: So Brett, can I add a couple of
10 things?

11 DR. LESLIE: Sure. Absolutely.

12 DR. ESH: This is Dave Esh, NRC. As Chris
13 indicated, defining the receptors and the
14 characteristics of those receptors, we aren't assuming
15 the worst case for all their behavior characteristics,
16 consumption parameters, et cetera. So if they're
17 envisioned to have a garden and grow vegetables,
18 they'll have a local fraction and a non-local
19 fraction, or if they're using water they may have some
20 water from a local source and they may consume bottled
21 water and other products that they get some of their
22 fluids from. They'll have an onsite occupancy time
23 and an offsite occupancy time where they're
24 essentially getting no dose. So in the dose estimates
25 that we do in waste disposal and decommissioning and

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1 the types of programs Chris mentioned, it's not the
2 worst case person you can envision.

3 We do generally believe that you need to
4 consider the characteristics of the intruder and the
5 characteristics of waste in defining your intruder in
6 the intruder scenario, but the probability is not 1.
7 The probability is 1 only if you were to apply the
8 same dose limits to the intruder as you are to a
9 member of the public. We are recommending in here and
10 in the EIS that was originally done for Part 61, apply
11 a 500mrem dose limit; that implies roughly a 5 percent
12 probability of that intruder scenario happening by the
13 difference in the dose limits. So consider that
14 whenever you're thinking about intruders and the
15 likelihood of the intruders, et cetera. We
16 acknowledge that the intruder calculation is more
17 dependent on the behavior of people and what they may
18 be doing sometime in the future which is more
19 difficult to define.

20 It's hard to define exactly what people
21 are going to be doing and when they're going to be
22 doing it, and so we err on a reasonably conservative
23 approach for what we believe. Now if you think about
24 right here where we're sitting and what was done here
25 200 years ago and 400 years ago, when we're talking

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1 hundreds of years or thousands of years, the land use
2 today is markedly different than the land use was 200
3 or 400 years ago. So if you're putting a disposal
4 facility in someplace, one of our criteria are that
5 you choose a low population area and you choose an
6 area that has limited natural resources. We hope
7 those things combined and the state ownership, federal
8 ownership of a disposal facility; all those things
9 combined contribute to greatly reducing the likelihood
10 that this ever happens. But we can't ensure that it
11 won't happen so we go through a regulatory process of
12 trying to assess what happens if this unexpected or
13 unlikely thing happens, this intruder scenario, and we
14 apply a higher dose limit for it. That's the context
15 for kind of the analysis under Section 61.42.

16 Regarding the slide 7 and the waste
17 characteristics, I should have said this during my
18 presentation but of course we have the log-log plot on
19 the left and linear-linear on the right. They have
20 different characteristics. And also, the risks that
21 you get out of these calculations are not necessarily
22 determined by the bulk activity. The risk can be
23 driven by, say you have iodine-129 in the disposal
24 facility. It's not going to show up as moving these
25 activity curves anywhere, but that could be the driver

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1 of the risk. So in performance assessments you're
2 looking at the very few radionuclides and they have
3 mobility and exit the facility, you're not seeing the
4 risk from the bulk of the activity. So I don't want
5 people to misinterpret the waste characteristic plot
6 is what I'm saying. That represents the total
7 activity in the facility, but the bulk of that
8 activity may never cause risk. So when you start
9 talking about risk and frameworks for analysis and
10 those sorts of things, the waste characteristic charts
11 can be misleading.

12 DR. LESLIE: Thanks for the clarification.

13 Lisa, thanks for your comments. Bill and then John.

14 Again, Bill you can sit down if you feel more
15 comfortable sitting down or standing up. And again,
16 10 minutes thereabouts.

17 MR. DORNSIFE: I just want to elaborate on
18 some of the points I made this morning regarding the
19 20,000-year performance time. I think it's a time
20 that's trying to be all things to all waste streams
21 and I don't think it applies to all waste streams. I
22 mean, I think 95 percent of the waste streams or maybe
23 even more, a 1,000-year performance period is quite
24 satisfactory. Now, that doesn't mean you shouldn't be
25 looking at peaks beyond that and what you do with

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1 those peaks I think primarily is to establish possibly
2 inventory limits where you judge that a peak is just
3 so high that you know even though it's remotely
4 possible and we don't understand what might be going
5 on at that time it just makes good societal sense to
6 do that.

7 Now in Texas we have a 1,000-year
8 performance time but we have to look at peaks forever
9 and our regulator applies the 25mrem dose in terms of
10 establishing inventory limits. And not only that, but
11 when they did their performance they assumed worst
12 case, you know, when they look at sensitivity studies
13 and parameters they assumed worst case. Where are
14 those parameters? So just to give you an example of
15 how one regulator approaches that. So you know, I
16 think you know there needs to be some uniformity in
17 how a lot of these things get implemented. I don't -
18 certainly you know in our case it's certainly very
19 conservative. From the standpoint of reality it just
20 doesn't make sense.

21 So I think having said that, you know, you
22 probably need to look at the two issues differently.
23 You need to look at the long-lived radionuclides
24 differently than you look at the 98 percent of the
25 other waste streams because they do create a different

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1 problem. Like I said previously you know, if you look
2 at the toxicity in water of depleted uranium after
3 10,000 - 20,000 years, it's no different than high-
4 level waste. I'm not saying that means it needs to be
5 disposed of in a geological repository, but you need
6 to look at it differently. You need to you know maybe
7 do a longer-term performance assessment. You may look
8 at some of the technical requirements for disposal of
9 that unique waste stream. You know, it has to be a
10 lot deeper, it has to have some specific type of
11 engineered barriers. You know, what kind of technical
12 additional redundancy might indeed provide that level
13 of assurance just like it does for high-level waste.

14 And I think going on - the next issue
15 would be the intruder issue. I mean I don't disagree
16 with the way you all imply your intruder scenario. I
17 think your discussion, Dave, I think made a lot of
18 sense, particularly - and I like the clarification of
19 why you're using 500 millirem. I just didn't see
20 anywhere. That's a good justification. But I guess,
21 and this may sound off the wall, but has NRC ever
22 considered deliberate intrusion? I mean, I could
23 probably reasonably expect that it's much more
24 probable a hundred years from now when we have scarce
25 resources that somebody's going to know there's a huge

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1 chunk of metal down there, very high-quality metal,
2 and they're going to want it. That probably has a
3 higher probability than inadvertent intrusion. Now,
4 you know, if that person who deliberately intrudes
5 isn't properly controlled and there isn't knowledge
6 he's doing that, just hold the ball game for that
7 waste site. He goes in there and excavates a steam
8 generator.

9 DR. ESH: And just for clarification,
10 Bill, this is Dave Esh, NRC. In the original Part 61
11 the Commission basically said - I'll paraphrase, you
12 can look at the Part 61 - that we don't protect or we
13 aren't going to try to develop criteria for the
14 advertent intruder. So somebody who deliberately is
15 digging into a waste disposal facility and isn't
16 supposed to be digging into a waste disposal facility,
17 that's not something that we can speculate on exactly
18 when, where, how it'll happen, nor do we have an
19 obligation to try to develop criteria for that.

20 MR. DORNIFE: I could make a very good
21 argument that that's a higher probability, not only
22 for low-level but also for high-level, for spent fuel.

23 I think that when you look at changes in site
24 characteristics, you know, for this - and I like the
25 idea very much of requiring a performance assessment

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1 not only for you know the public but also for
2 intruders. I think that's - a site-specific
3 performance assessment is extremely, extremely useful
4 and needs to be done for any site or if you're making
5 changes to waste streams that you intend to dispose
6 of. And in fact, Linda, your idea of a performance
7 assessment maintenance plan, we have a requirement to
8 do that on our license. We had to submit our
9 performance assessment maintenance plan which includes
10 a yearly update of that performance assessment which
11 allows us not only to look at new information that we
12 have on site characteristics, but it also allows us to
13 consider getting authority for new waste streams and
14 determining that the waste streams we have disposed of
15 based on the real data, the real inventory is in fact
16 fine which brings me to another point and that is
17 chlorine-36.

18 In our performance assessment, chlorine-36
19 by far and away is the most significant radionuclide
20 in our performance assessment. It's still less than -
21 well less than a millirem in terms of impact and the
22 peak is somewhere around 15,000 years, but it's the
23 highest dose and it's also the only radionuclide that
24 peaks before 20,000 years. But the data that we were
25 required to use to come up with that chlorine-36 waste

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1 stream as best as we can determine went all the way
2 back to the Part 61 EIS and it included some guidance
3 that NRC put out. So that waste stream is so inflated
4 that it doesn't have any reality to it. Now the
5 problem is because it's not a class-defining
6 radionuclide nobody looks for it. People only look in
7 detail for those - or spend a lot of effort looking
8 for those radionuclides that are class-defining. So I
9 think, you're going to see on an arid site, you know,
10 deep arid site chlorine is going to be the bad actor.

11
12 Now what we've done and we have - hasn't
13 been approved yet, but we suggested or we proposed
14 using actual reactor chemistry, you know, what is the
15 allowable ppm of chlorine in your reactor coolant
16 system and then calculating you know what a maximum
17 inventory in resin could be because that's primarily
18 where it shows up. But absent that, I mean there's no
19 good way to get data because most data manifests say
20 there's zero chlorine-36. Let's see.

21 I think that's - oh one more thing real
22 quickly. I did, by the way, notice I skimmed through
23 the technical thing and that table didn't make any
24 sense to me either. I wasn't sure why but it didn't
25 look good. So you can - I passed the test. You had

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1 said when you were looking at the second tier where
2 there's no dose limit that NRC would do an EA to come
3 up with, you know, some criteria of what you did in
4 terms of that. I mean, I'm not sure what you meant.
5 What would be the scope of that EA, what would you
6 look for?

7 DR. ESH: It wouldn't necessarily be an
8 EA. It would be an environmental analyses which could
9 be an EA or an EIA if that's appropriate.

10 MR. DORNSIFE: Okay.

11 DR. ESH: But it would look at the impacts
12 that you may see at those later times just like any
13 impacts that are generated from an action and assess
14 them how they're done in the EA/EIS process. So it
15 wouldn't be anything new or unique, but it would put
16 the radiological impacts from disposal at those later
17 times in the same context as other types of impacts
18 that you evaluate in that process.

19 DR. LESLIE: Thanks for clarifying.

20 MR. DORNSIFE: And like I said before,
21 David, that RESRAD thing you have in the technical
22 paper just - that doesn't make any sense. I mean,
23 looking at a disposal cell with no cover on it. There
24 could be some very significant groundwater issues for
25 certain parameters that occur right in that time

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1 frame.

2 DR. LESLIE: Thank you very much, Bill.
3 John, do you want to take a crack at this? Again, you
4 can sit up or stand down. I mean stand up or sit
5 down.

6 MR. GREEVES: Let me comment. This is one
7 of the best sessions that I've been to in a long time.
8 There's actually real dialogue going on here. We
9 talked about a lot this morning and this afternoon and
10 I just want to - we're supposed to be talking about
11 the compliance period so I'll get to that, but -

12 (Laughter)

13 MR. GREEVES: - there's linkage and to do
14 compliance you've got to know what the scenario is.
15 All of us have said that. So I'm hoping based on
16 remarks made this morning and this afternoon by the
17 Department of Energy that the staff sees there's a lot
18 of folks looking for this reasonably foreseeable
19 language in the rule. Don't - it's not going to work
20 in guidance. You've got to give this in the rule.
21 You need that in there. Chris McKenney stood up and
22 said that's what we're doing under 31.16. I'm very
23 familiar with that and the comment. I would agree,
24 the staff has looked at realistic scenarios for the
25 most part including the uncertainties and all the

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1 parameters. So I urge you to pay attention to what
2 DOE said, other stakeholders, and I would look forward
3 to the next language to include reasonably foreseeable
4 intruder scenarios.

5 The comment also is - I made this morning
6 about using the PA to derive a waste acceptance
7 criteria. Bill said it about Texas. They have a
8 provision in there. We have to update that
9 performance assessment and if there were inventory
10 limits we're smarter now, we adjust, let something in
11 the rule account for that. That waste acceptance
12 criteria derived from the PA is what we're - more what
13 you do in a site-specific way. It was interesting
14 listening to DOE. And both approaches use a two-tier
15 approach. I'm not sure whether everybody in the room
16 understands that, but there is a two-tiered approach
17 that you provided. DOE uses it. I would invite NRC
18 and DOE to get together on what is the period of
19 performance. They have a different number, you
20 practice a different number, you now have a new
21 number, 20,000 years and I see that as unsettling and
22 I would ask both of the agencies to come together and
23 look at what a period of performance for tier one is
24 and seek alignment on that. I think it's just
25 disruptive to have federal agencies in different

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1 places on that.

2 One of the reasons that I would urge you
3 to do that is there are consequences in moving this
4 thing around. DOE has a large number of sites they've
5 already analyzed and made commitments to their public
6 on based on their approach. Whatever you do with this
7 number in Part 61 there's at least six old sites out
8 there somebody's going to start raising questions
9 about and 31.16 effort points to these performance
10 objectives so there's a lot riding on, and there are I
11 think consequences in changing the - what you've used
12 in the past to some new number like 20,000 years.

13 I sort of have the microphone. I would
14 speak to the agreement states. I know a little, only
15 a little bit about they requested a meeting in the
16 fall time frame to understand these issues. I would
17 urge any agreement state to get on the record before
18 the fall because the NRC staff's agenda has them
19 putting out a proposed rulemaking in the fall. So if
20 you've got a view on these issues, whether it be the
21 reasonably foreseeable scenarios, the period of
22 compliance, the intruder analysis approach, I think
23 it's, just like DOE came forward this morning and said
24 what they've had on this, I'd like to hear what the
25 agreement states' recommendations are before the fall.

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1 Because it might color my own opinions, so anything
2 you could do to accelerate that I think would be in
3 order. Don't want to take a lot more time, give the
4 podium back up to others who want to add to this. But
5 again, thanks for conducting this session. I think
6 it's been quite useful.

7 DR. LESLIE: Thank you, John. Tom?
8 Continuing the trend of standing up for your point.

9 MR. MAGETTE: Thank you, I'm Tom Magette
10 with Energy Solutions. I certainly agree with what
11 John said about the quality of the exchange here and I
12 appreciate the opportunity to be a part of this. I
13 would like to start with a couple of general comments,
14 the first of which is I'm having a hard time seeing
15 the linkage between the language in the SRM for SECY
16 08-0147 and the SRM for the blending to this
17 rulemaking package. Now, I didn't really expect I
18 would see nothing more than a new paragraph
19 61.55(a)(9), thou shalt do a performance assessment,
20 especially since as Dave had pointed out, you know, we
21 ask for things like period of performance and intruder
22 doses and updates to the performance objectives, dose
23 methodology. So I knew it would be more than that but
24 this is more than I thought I might see and frankly I
25 am wondering what exactly more you might have to do to

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1 this to have something that constitutes the
2 comprehensive revision of Part 61 as Larry likes to
3 talk about. And I would suggest that the comment John
4 made and I made this morning about Section 61.7(c)(6),
5 if you in fact looked at not just imposing additional
6 requirements for what's done in the tables based on
7 the generic assessment as insufficient, but expanded
8 that on the other end to deriving site-specific WAC
9 that if appropriate would even trump the tables,
10 what's left to do. And I note from your own report
11 looking at the options for comprehensive revision of
12 Part 61 a large percentage of that effort is devoted
13 to a big EIS that would replicate the waste stream
14 analysis that was done 30 years ago. One might
15 suggest that that's not something you ought to have to
16 do if you're going to go to risk assess - a risk-
17 informed performance assessment base. Why regenerate
18 that huge volume of information, to what end? I'm not
19 saying you wouldn't need an EIS, but I do think that's
20 five or six FTEs that you could chop out and move on.

21 So that's one comment. I think you're pretty close
22 to a comprehensive revision and taking another step
23 would get you there, and then you could save an entire
24 rulemaking, always a good thing.

25 Second, as to compatibility criteria,

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1 there are as I recall in your guidance criteria for
2 compatibility, for selecting them. There's this
3 thing, trans-boundary impacts. If you're going to
4 have multiple waste disposal sites open how can you
5 leave it and be consistent with your own agreement
6 state guidelines to a variety of states to select what
7 a performance objective is? I don't see how you can
8 do that. So it's been suggested that that's not
9 right. I don't see how you would even properly
10 interpret your own guidance and get compatibility
11 criteria in a (c) for those (b) paragraphs. And I
12 would urge you to go back and look at that again
13 because I don't think that's appropriate.

14 As to the time frame, I don't think 20,000
15 years is right as I said earlier. I think we should
16 have some perspective here so I refer you to a slide
17 prepared by one Dr. David Esh for the DU meetings.
18 You can't see it back there but the last thing on here
19 is 10,000 years out. So that's one perspective that
20 we have is that we haven't certainly established any
21 basis for a scientific analysis that goes out further
22 than that, at least I haven't seen it. I find it
23 interesting that here again you've called this the
24 regulatory precedent option that's not like any
25 precedent I'm aware of. In fact, it's probably more

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1 like the number four in my view. But I also think
2 that in your report you have the phrase "Just because
3 a calculation can be performed or computer model
4 parameters can be set to estimate results for longer
5 periods of time does not necessarily mean that the
6 results of the calculations have meaning." That's in
7 your option 2 but I think it applies to 20,000 years.

8 I think it applies earlier in time. I think you
9 would see the same thing if you looked at what the NAS
10 said about Yucca Mountain. Specifically posed a
11 question by Congress about the meaning of scientific
12 analyses beyond 10,000 years they said we can't do it.
13 It can't be done. So there are lots of precedents
14 hanging around 10,000 years. John talked about that.

15
16 I won't go to it anymore other than to
17 make a couple of points that I don't really think
18 you've established a technical basis. I understand
19 the technical concept, the Ice Age and climate
20 changes. I don't think you've made a justifiable
21 correlation between 20,000 years and that approach. I
22 think it's a big rounded off number. But I think most
23 importantly what it does is it skews other analyses
24 and it ties the decision-maker's hands. I briefly
25 touched on that this morning. But the idea that you

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1 want to analyze what you can effectively and not hide
2 from the uncertainty or ignore it. I think David,
3 you're right about human decision-making. We wouldn't
4 ignore uncertainty, we'd probably be more
5 conservative. But what we've I think done is when you
6 take a number that's so far out in time and you crank
7 out a number and you compare it with a performance
8 objective, then you're telling the decision-maker what
9 the answer is. You're not saying here's a range of
10 unknown and here's a range of what might happen in
11 that unknown time period that you should consider.
12 Like the same arguments that revolve around the peak
13 dose consideration whenever that might occur. I would
14 suggest should be pulled back in time and that they're
15 more appropriate in certainly no more than 10,000
16 years if even that. So I think that also has driven
17 things like the intruder. I mean, the language about
18 an intruder must occupy the site. That's new. You
19 don't say an intruder must occupy it. If you say I
20 have to justify an intruder barrier for 20,000 years,
21 analyze the uncertainty of that, then you start - I
22 think you start driving back to how you're requiring
23 an intruder to occupy because it becomes impossible
24 for us to make those calculations with any
25 reliability. So I think Lisa' right. I think there's

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1 a huge over-conservatism. But those are linked. One
2 I believe drives the other. You're driven to a more
3 conservative intruder approach because of what you
4 can't say that you can eliminate if you're looking out
5 20,000 years. So here again, you're locking that into
6 - for a performance objective dose comparison as
7 opposed to in some sort of realm of decision-making
8 which a decision-maker would have to consider but
9 wouldn't be tied into.

10 Finally, you've asked if we don't like
11 what you've proposed to give you what we do like. So
12 what I will say to that is I like what DOE is doing.
13 I think that the basis allows for consideration of
14 these more extreme time frames and I think that that's
15 a sound approach. You asked in your comment
16 solicitation on the update to the concentration
17 averaging BTP, what we thought about aligning multiple
18 government organization approaches. I said in my
19 letter that you might not achieve much by doing that
20 and it's not necessarily an objective in and of
21 itself. But in this case, if you think about the
22 waste stream that we're most concerned with where is
23 it coming from? It's coming from DOE. They own it
24 all, all. Even if LES or AREVA or somebody else
25 builds a new facility and produces it on the private

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1 scale, the USEC Privatization Act still says they can
2 just give it to DOE. It's DOE's waste. DOE's got a
3 system that they apply at multiple sites where they
4 dispose of waste streams like what we're talking about
5 here more than anybody else ever has. So I think
6 that's another reason to rely on their model.
7 Decision-making flexibility, appropriate consideration
8 of extreme time frames and a prime understanding of
9 the generator of this waste stream. Thank you.

10 DR. LESLIE: Thank you very much, Tom. Is
11 there anyone else who wanted to make comments here in
12 Rockville? When you come up make sure you introduce
13 yourself, especially since I've forgotten your name.
14 Actually before you get started, again there's someone
15 who's rattling paper and rattling their speak on the
16 line. If you could stop rattling or put yourself on
17 mute our next speaker would really like that.

18 MR. SHRUM: Thank you. It sounds like
19 this. My name is Dan Shrum, I'm with Energy
20 Solutions, and I too would like to thank - I'm very
21 grateful for the opportunity to speak on this topic
22 and it's nice to be able to do it in this forum. We
23 very much appreciate that. I'm going to speak
24 specifically on the time frame and I'm going to try to
25 answer the question if not 20,000 years, what is the

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1 number and why. And I'm going to address that
2 backwards. I'm going to say why we didn't select
3 20,000 when we went through the same process. And
4 that may help to understand why we don't think 20,000
5 is the correct number.

6 We've been participating in this for quite
7 awhile now and after the SECY paper was written we
8 knew that we had work to do. We knew that we were
9 going to have to prepare a new performance assessment
10 for our client facility. We didn't you know shirk
11 from that, we knew we had to do something. So we
12 looked at past guidance, we looked at past things that
13 had been done by the NRC and we looked at the EIS for
14 Part 61 and there was a number in there. We looked at
15 the NUREG documents and there was a number in there.
16 We attended the discussions on depleted uranium, the
17 round table discussions, and I disagree with what the
18 conclusion in the analysis here came up with. We
19 thought we were kind of zoning in, coming in to a
20 number of about 10,000 years. It seemed like the
21 right number. Then as I was reading through the
22 paper, was looking at your five decisions, you know,
23 the five decision bullets that's on page 21 and John
24 has talked about this before. There was these five
25 decisions and that's where option 3 was decided.

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1 Using those decision criteria option 3 was decided.
2 But then those options, those tools weren't used in my
3 opinion when the 20,000 was decided. It went away.
4 As I read through the paper and got to the final
5 number it reminded me when I was much, much younger
6 watching The Empire Strikes Back and we found out that
7 yes indeed, Darth Vader is Luke's father. That was a
8 real shock. I wasn't expecting that. You know, in
9 hindsight it seems kind of funny, everybody makes fun
10 of it now. Everybody, you know, there's other shows,
11 that shows up in other movies. But as I read this I'm
12 like well where did that come from. I don't remember
13 discussing 20,000 anywhere or seeing that number
14 before. So then I went through the justification for
15 the 20,000 and I understand the principle. I don't
16 know that I agree with how we're going to be able to
17 get there.

18 We have invested quite a bit of
19 significant resources in modeling our facility to
20 10,000 years. As it clearly indicates in the paper
21 that doesn't mean we can't change the number and crank
22 it again, that's easy to do. But what does it mean?
23 We thought it was a stretch with the 10,000,
24 especially with, you know, we know our site very well,
25 it's been very well characterized but it's a stretch

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1 to go out 10,000 years. So now we're going to look at
2 ice ages. And it's not just the 20,000-year number
3 that's an issue, it's based off of ice ages and
4 significant climate changes. Will we be able to
5 incorporate the significant socioeconomic impacts of
6 those ice ages as we do our analysis? Will that be
7 fair? This is not, we've looked in the past, a
8 reasonable scenario. This is a game-changer. Life
9 will be different as we know it. Will we be able to
10 take credit for that? That's not clear in the paper
11 and I think that'll have to be fleshed out if we have
12 to stick with the 20,000-year time frame.

13 So I'm a geologist by training. As I look
14 at these charts I don't see a big difference between
15 10 and 20 as far as the dose is concerned. I do see a
16 significant difference in understanding what's
17 happening at 10,000 and 20,000 years. That's the
18 issue. We have been going down this pathway and I
19 trust Larry that Larry's telling us that this is a -
20 we have a pathway, we're following this pathway.
21 You're true to your word. We're going to go through
22 this process. But we thought we were going to be able
23 to have this discussion when our performance
24 assessment was completed which is just a few weeks
25 away, actually two weeks away, in that discussion of

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1 the significant decisions on after 10,000 years
2 because that's where the - that's where the discussion
3 is really going to be had, not getting up to that
4 point. It's what risks are we as a society going to
5 be willing to accept. We just thought we were going
6 to have that discussion at 10,000 years as opposed to
7 20. So I know I beat that into the ground enough but
8 I just had to get the Darth Vader reference in there.

9 Lisa talked about the intruder assessment
10 and we must assume that the intruder will have access
11 to the waste. In the concepts section - Section
12 61.7(c)(7) - I'll just read the tail end of it. So
13 the assessment can employ similar methodology to that
14 used for performance assessment, but the intruder
15 assessment must assume that an inadvertent intruder
16 occupies a disposal site after closure and engages in
17 activities that unknowingly expose the intruder to
18 radiation from the waste. Another assumption that we
19 have always made is gauging a probability of whether
20 or not we will have a realistic intruder or an
21 inadvertent intruder at our site. This changes that
22 probability to 1. We now have to assume that
23 somebody's there. We don't believe that that's
24 realistic. We don't believe that that's realistic
25 because as Dave mentioned earlier one of the primary

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1 safety measures is siting a facility. That has to be
2 taken in consideration. We want isolation. Isolation
3 means that this probability is much, much lower as
4 opposed to a probability of 1. So this - I believe
5 this is what Lisa's talking about, this is what we're
6 referring to. Right now it looks like we have to
7 assume, we have to assume somebody's coming in contact
8 with the waste. But it's at year 100 and one day.
9 And that's kind of - that's different than the way
10 we've approached it in the past. Anyway, again thanks
11 for the opportunity to discuss this important topic
12 and that's all I have.

13 DR. LESLIE: Thank you very much. Anyone
14 else here in Rockville who'd like to comment at this
15 time? Hold on. Bill Dornsife has a question.

16 MR. DORNSIFE: When NRC was developing
17 this draft regulation, did you give any thought to
18 well, if we were the regulator this is what we would
19 require. For example, when you say you know future
20 climates, does that mean double the rainfall? What
21 does that mean? I mean, have you put yourself as the
22 regulator of how you would implement these things?

23 DR. ESH: This is Dave Esh, NRC. We are
24 developing a guidance document that will contain much
25 of what we believe would answer that question. In the

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1 specific area of climate change as I said in my
2 presentation when you're going to dispose of long-
3 lived waste, and high concentrations and large
4 quantities of long-lived waste you're going to be
5 facing additional technical challenges. There's no
6 way around that. I don't see how we can say a
7 cornerstone of our whole process is stability and then
8 we shortchange it just because somebody has lots of
9 long-lived waste. We need to make criteria that you
10 can go through the process and try to determine
11 whether you can meet those criteria or not and I agree
12 completely and I tried to emphasize in my presentation
13 I think the correct way to use the various assessments
14 is to identify when you may need to set limitations
15 for your specific site. DOE does this all the time
16 for their facilities, that's the way they operate,
17 it's this waste acceptance criteria idea. I think
18 there's a lot of merit to that if you're doing good
19 technical analysis to support those limits that you
20 develop. So that's kind of my answer to your
21 question. We are developing a guidance document that
22 expressed what we think should be part of the
23 analyses, whether it's climate change or other long-
24 term considerations or intruder assessment.

25 We - I think this idea about the intruder

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1 assessment language that I'll have to look at it
2 closely to see if I agree with your - the
3 interpretations we've heard here. But our expectation
4 is not that you have to assume somebody's building a
5 house and they're digging into the waste. The
6 language that says you occupy the site means that it
7 is - does not appear to be credible to argue over very
8 long time periods that nobody accesses the site. That
9 doesn't mean they build a house. They may hike on it
10 or ride ATVs or whatever the local practices are. But
11 as you go out in longer and longer time frames it
12 becomes much harder to argue what the local practices
13 are going to be. In that case you have to do
14 something that's reasonably conservative. Not
15 necessarily, you know, the most speculative
16 hypothetical bounding case you can develop, but
17 something that's reasonable. In today's practices
18 people build houses, people put in wells, they take
19 activity like that. I think it's reasonable at very
20 long times to apply those sorts of scenarios through
21 your system and see what the risks may be. You can
22 bring all sorts of arguments into play as to the
23 credibility of the scenarios, but we - it is almost
24 intractable to define what the probability of those
25 human behavior scenarios are at very long times. And

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1 I think the regulatory construct that we develop is
2 trying to work with that. But it might not be clear
3 from - it might not be clear from the language that we
4 have right now. So we'll take a look at it.

5 DR. LESLIE: Hold on, Bill. Yes. Tom and
6 Lisa. Is it a question or a comment?

7 MS. EDWARDS: It's a question.

8 DR. LESLIE: Okay, go ahead.

9 MS. EDWARDS: In the EIS for Part 61
10 there's two scenarios clearly outlined that have
11 residential and agricultural, both scenarios,
12 intruders, that involve excavation of large amounts of
13 soil and assumptions associated with the amount of
14 vegetables that are eaten from the garden and from how
15 the soil is spread around and where they grow the
16 food, et cetera. Are you saying that those
17 assumptions may be disregarded in developing a site-
18 specific intruder scenario?

19 DR. ESH: I think what I'm saying is that
20 our guidance in say decommissioning and in NUREG-1854
21 that we apply to waste determinations has been - it's
22 been developed more recently than say the EIS for Part
23 61. In those guidance documents we talk about over,
24 you know, short to intermediate time frames there's
25 some validity to considering local land practices and

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1 scenarios in developing your assessment. When you get
2 to very long time frames that could potentially apply
3 for large quantities of concentrated waste it becomes
4 much more difficult to argue that you know what the
5 scenarios may be. So for long-lived waste you may use
6 some sort of scenario like that. For typical waste I
7 think there's a lot of validity, you know, if you have
8 cobalt-60 or other short-lived materials, there's a
9 lot of validity to arguing for alternate land uses and
10 what they may be and what the risks may be. But
11 that's - it'll be in our guidance, we have a whole
12 section on intruder analysis including defining the
13 overall scenario. Chris Grossman, raise your hand
14 there. He's a couple seats away from you. He's the
15 author of that section and I think it provides a lot
16 of detail, so.

17 DR. LESLIE: Dave, thanks. Before we get
18 to you, Tom, there's actually one kind of clarifying
19 question that I have for the staff committee. Priya,
20 when you made your presentation you talked about kind
21 of the timeline for the proposed rule in the guidance.
22 Are those planned to be provided at the same time to
23 the public? Again, speak into the.

24 MS. YADAV: Yes, they will be - they'll be
25 issued approximately the same time. They'll be issued

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1 under separate Federal Register notices and have
2 separate comment periods, but it'll be around the same
3 time. They have to get approved by the Commission
4 before we can issue them.

5 DR. LESLIE: Sure. Okay. I just wanted
6 to make sure that what Dave is talking about is what's
7 being developed now. That will go out, as Priya said,
8 close to the time of the proposed rule. Go ahead,
9 Tom. You had a clarifying question or?

10 MR. MAGETTE: This is Tom Magette with
11 Energy Solutions. A couple of comments. What you
12 just said in response to Lisa, David, and also your
13 comment just before that, I agree with that, that's
14 kind of really my point is that I'm not sure that what
15 you're attempting to accomplish isn't that
16 sufficiently accurately reflected in the words, in the
17 draft proposed rulemaking language. That was my first
18 comment. What I hear you say you're after is not what
19 I interpret as what I read and so that's one comment.

20 And of course the related thought is there were some
21 comments this morning about guidance that may come
22 out. You have to be real careful where you draw that
23 line. I'm not looking to get a new rule but some
24 clarifying words in guidance might not be adequately
25 helpful.

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1 And my second comment goes to this notion
2 of the period of performance because I also agree with
3 what you were saying. As you go further out in time
4 it becomes very difficult to make projections about
5 the site. Maybe Utah will look like Hawaii in 20,000
6 years. I'll be surprised but I - basically from
7 everything I can read from everybody that's ever
8 written on the topic, including the National Academy
9 Study (NAS) for a geologic disposal, they said we
10 can't say. Even for geologic disposal. We have no
11 confidence in any sort of analytical prediction.
12 None. Can't be done. But because of the uncertainty,
13 because something could happen we should have some
14 idea of what that means. It goes to the comment we're
15 making. But that's why I say that should not be in a
16 compliance context. It's not looking at what might
17 happen, it's not making a very conservative assumption
18 saying okay, let's just assume the worst. What
19 happens if it's the worst. And because the - what
20 happens if it is the worst? What if it's Lisa's 2rem
21 number and the decision-maker says that's the worst?
22 That's not so bad. In some sort of context in a -
23 outside of a compliance time zone that could be a
24 perfectly acceptable outcome. Not in the compliance
25 time zone. That's what I mean by having the decision-

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1 maker's hands tied. So I agree, as you push out in
2 time you strip away that latitude. When you put it in
3 the compliance box I think you create a problem that's
4 not sound regulation, those regulations.

5 DR. ESH: Just to clarify, are you saying
6 the NAS Study is the one that you're referencing?

7 MR. MAGETTE: One of the ones I've
8 referenced is the NAS technical basis for Yucca
9 Mountain. I think that's been -

10 DR. ESH: Because my interpretation of
11 that is they said there's no basis to stop the
12 calculation at 10,000 years, that in fact you should
13 go to the period of geologic stability which they
14 interpreted as basically being a million years. And
15 that's why EPA's standard and NRC's standards for Part
16 63 go to a million years.

17 MR. MAGETTE: They go in two tiers.

18 DR. ESH: In two tiers but it's both the
19 compliance period. There's no distinguishing that
20 there's something different in the 10,000 to a million
21 year time frame than there is in the year zero to year
22 10,000 time frame.

23 DR. LESLIE: Okay. Bill's been patient so
24 George, can you give Bill Dornsife? And then I'll get
25 to John Greeves.

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1 MR. DORNSIFE: Just a quick comment on the
2 concept that I mentioned and you're talking about
3 using looking further out to establish inventory
4 limits. I think you want to make it clear in the
5 guidance that you don't want to get into the kind of
6 trap that we're in in Texas where not only have you
7 gone way out where things get very uncertain you know
8 in terms of society, but now you're using the same
9 dose limit and you're using the worst case you know
10 data from a sensitivity study to come up with that
11 inventory. I mean, that's just not reasonable. I
12 mean, there has to be some consideration given to
13 considering you know that when you go out beyond
14 20,000 years or whatever the time frame you choose
15 that you can't make those conservative assumptions
16 anymore.

17 DR. LESLIE: Thanks, Bill. John?

18 MR. GREEVES: On the same thread, I'll
19 just comment on. Chris, you're writing that section,
20 that's good. The comment is this isn't the first time
21 people have discussed this dilemma of how to treat
22 scenarios way out in time. The two examples that we
23 do have that I urge you consider are Yucca Mountain
24 and the WIPP program. And in Yucca Mountain's case
25 they have a fairly specific scenario defined for that

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1 site-specific location. They I think had wisdom in
2 not having unbridled speculation about the way things
3 could look. They specified a certain scenario process
4 there. So I call that a stylized scenario. Different
5 unit there.

6 I think WIPP did the same thing. I'm less
7 familiar with it, but I think WIPP didn't say hey,
8 we're going to look at all these tremendous amount of
9 scenarios after 10,000 years. We're going to at least
10 look at one which is an intruder that will allow a
11 water well to go through and create some leakage. So
12 as you go through the rulemaking and the guidance that
13 Chris is working on, I think those are two metrics
14 you're going to have to justify departing from the
15 stylized approach. Other than that you just make the
16 life of an applicant and even a regulator very
17 difficult to implement unless you go that way. Just
18 it's an observation.

19 DR. LESLIE: Thanks for your observation.

20 MR. GREEVES: Well, if you've got a
21 response that would be good too.

22 DR. LESLIE: Well, for - I want to -
23 people are warm and I want to give a chance to people
24 on the phone. And we'll come back for any follow-up
25 questions and more comments here in Rockville. So is

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1 there anyone on the phone right now that has comments
2 on the period of performance? If you could identify
3 yourself. Is the bridge line still alive?

4 MR. KLEBE: Yes, this is Michael Klebe
5 from the state of Illinois. I have a couple of
6 comments, couple of questions, and I apologize if they
7 have been - or if they are duplicative of some of the
8 ones that other people have made because this
9 afternoon it was still a little bit hard to hear some
10 of the - your commenters.

11 I think one of the first questions I'd
12 like to ask is from a regulatory perspective has the
13 NRC ever prescribed a standard in a rule but then
14 issued guidance that allows a lower standard? And
15 this goes back to the discussion I think during Dr.
16 Esh's presentation where in using the 20,000-year
17 period of performance that for sites that don't have
18 the high quantities or concentrations of uranium or
19 depleted uranium that they could then have a shorter
20 period of performance. So my question is has the NRC
21 ever issued a regulatory standard and then turned
22 around and issued guidance that allowed a lower
23 standard.

24 DR. LESLIE: Okay, this is Brett Leslie
25 and we'll have Chris McKenney address your question.

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1 MR. MCKENNEY: This is Chris McKenney,
2 NRC. Actually in the decommissioning rule that's
3 exactly what occurs. In the decommissioning rule the
4 dose limit is a peak up to 20,000 - up to 10,000 years
5 - sorry, revert back. Peak up to 1,000 years. But
6 while specifically for like building surfaces the
7 guidance is for a 70-year life for the building and to
8 look at building surfaces. We don't look at an
9 analysis over the entire thousand years for activities
10 left on building surfaces. And in fact, that we focus
11 the analysis, even though it's a 1,000-year analysis,
12 we focus for quite a few radionuclides on just the
13 first few years like ground contamination of cesium,
14 cobalt-60, things that will decay relatively quickly
15 over the first few decades rather than needing to
16 perform the analysis or focus on the later time
17 periods. So that is not really a new concept from
18 what is already consistent in the regulations since
19 1997. And the rules - the regulations and guidance
20 together and since 1997.

21 DR. LESLIE: Thank you, Chris. I hope
22 that answered the person's.

23 MR. KLEBE: From my perspective it seems
24 more appropriate to - a shorter period of performance
25 - and I'll get into why here in a minute - and then

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1 have some guidance that says if you have certain waste
2 streams or certain waste characteristics that you then
3 need to go out for a longer period of performance.
4 There are a slug of existing low-level radioactive
5 waste disposal facilities and most of them I'm not
6 aware have accepted large quantities of higher
7 concentrations of uranium or depleted uranium up until
8 now. I mean, if you take a look at the closed sites
9 of West Valley, you know, Beatty, Nevada, Maxey Flats,
10 Kentucky, Sheffield, Illinois, to my knowledge they
11 haven't received large quantities of uranium. And in
12 the operating sites of Barnwell and Richland I'm not
13 aware that they're receiving it either. So to me it
14 seems like historically and based upon your waste
15 characteristics chart that, you know, for most
16 commercial low-level radioactive waste the period of
17 concern really ends at about a thousand years and that
18 your regulation ought to be written towards that with
19 some statement that if you are accepting waste that
20 have you know substantial in-growth of daughter
21 products and will increase in radioactivity over long
22 periods of time that then your period of performance
23 needs to go out farther.

24 The whole idea of a secondary period that
25 has no dose limit, you know, while I can find that may

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1 have some value I'm immediately questioning what's the
2 point. If you don't have a regulatory standard that
3 it has to meet past that period of performance how are
4 you decision-makers going to put that into
5 perspective? How is the public going to respond to
6 it? The public is going to say well okay, you're
7 going to take this out to 20,000 years and then oh, by
8 the way, for the next you know gazillion millennia
9 there is no regulatory limit. I think that's hard to
10 justify.

11 And then with respect of the period of
12 compliance for 20,000 years to start to catch climate
13 extremes as in glaciation which is what your
14 discussion in the document Technical Analysis
15 Supporting Definition of Period of Performance for
16 Low-Level Waste Disposal, beginning on page 25 and
17 continuing on for a couple of pages that's what it
18 appears the 20,000 years is meant to capture. Then
19 you know, for normal low-level radioactive waste the -
20 the potential for glaciation at a low-level
21 radioactive waste disposal facility pales by
22 comparison with the glaciation of thousands of square
23 miles of civilization. You know, if you were to have
24 a mid-continent, northern mid-continent disposal
25 facility subject to glaciation well there are, you

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1 know, lots of areas of municipal development, i.e.,
2 Chicago, Milwaukee, all those other you know
3 communities that would you know seem to me to have
4 more of a long-lasting or a more greater health impact
5 than waste that has already been decayed away. And it
6 seems to me that if the intent is to physically
7 preserve an intact waste disposal facility in the
8 northern mid-continent region to survive glaciation
9 then that seems to me that you're going to force
10 disposal in that region to be a geologic type
11 disposal, something that's not going to be subject to
12 glaciation.

13 DR. LESLIE: Okay. Kind of a housekeeping
14 point and I hope that was the end of your comment or
15 do you have more?

16 MR. KLEBE: I guess it would sort of
17 depend upon if you had any response. Most of the
18 people there know I can go on forever.

19 DR. LESLIE: Oh, okay.

20 MR. KLEBE: - but I can come close.

21 DR. LESLIE: Okay. Twenty thousand years'
22 worth? No, just kidding. Kind of a point of
23 housekeeping. Right now we're coming up to 2:30. We
24 can run this two ways. What's happened here in
25 Rockville is it's a sauna. People's ties, jackets,

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1 brows are - and faces are quite red and wet, and they
2 just turned down the heat. So I think the people here
3 probably want to take a 10-minute break and we'll
4 reconvene. Pardon? Okay. Okay. We have one comment
5 from our Office of General Counsel here and then we're
6 going to go on a 10-minute break. We'll come back,
7 continue with the people on the bridge and then we'll
8 make sure that everyone's comments have been provided
9 for the people on the bridge. And if they're
10 clarifying questions that the staff need to respond to
11 then we'll do that. But again, kind of a reminder,
12 the staff today are primarily in the listening phase
13 and what they're trying to do is only provide answers
14 to clarifying questions, where there's something
15 unclear in what was presented. So again, rather than
16 - it's not a round table, it's not a discussion,
17 they're in a listening mode. So Lisa?

18 MS. LONDON: Yes, I just wanted to answer
19 one quick question that came up. I forget the
20 gentleman's name had asked something to the effect of
21 can something set out in guidance actually supersede
22 that which is in a regulation and the answer to that
23 is quite simply no. No, it cannot. And I would like
24 to reinforce what Brett just said which is that we are
25 in a listening mode, we can provide you facts that are

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1 already publicly available and that's the extent of
2 what we're doing today. We are in a listening mode.
3 Thank you.

4 DR. ESH: I think that was Mike from
5 Illinois, is the last speaker that said that, Lisa.
6 And what I was going to reply was I wasn't implying or
7 meant to imply in my presentation or in the discussion
8 on that topic that you could do a shorter compliance
9 period. The compliance period is what it is in the
10 regulation when the regulation is finalized. For a
11 site that has say short-lived waste or low
12 concentrations of long-lived waste you can do a more
13 simplified analyses that turns the crank out to 20,000
14 years to justify that your risks have been
15 appropriately managed. But it doesn't change the
16 number that's in the regulation. So it allows you -
17 it's basically a level of detail question and in risk-
18 informed performance-based regulation that's exactly
19 how it works. You should have high level of detail
20 and comprehensive information when the risks are high.
21 You can have simplified information and lower level
22 of detail when the risks are low. So that was the
23 concept. Mike, I hope that answered your question.

24 DR. LESLIE: Okay, Dave, thanks for that
25 clarification. We're going to go ahead and take a 10-

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1 minute break.

2 (Whereupon, the above-entitled matter went
3 off the record at 2:33 p.m. and resumed at 2:46 p.m.)

4 DR. LESLIE: Okay. I think we have most
5 of the people who were interested and active
6 participants. And for those of you who were late, I
7 made a joke about 10,000 and 20,000 years, and 10 and
8 20 minutes, but it didn't get much laugh. It fell
9 flat.

10 So this is, again, Brett Leslie. I am the
11 Facilitator for this meeting, and with George Smith.

12 What I want to lay out is kind of what
13 else we still need to do. I'm going to start with the
14 people on the phone to see if they have more comments,
15 and then we will -- when we are done with the people
16 on the phone, we will come back here. If there are no
17 more comments, I think Larry has some kind of wrap-up
18 comments that he will want to present, and then we
19 will be done with the meeting.

20 So I'll turn to people on the phone. Is
21 there anyone else who has a clarifying question for
22 the staff? And if it's a clarifying question, you
23 know, on something they have presented, they will be
24 able to provide an answer. But they are not going to
25 be defending what they've done.

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1 Again, kind of a reminder of Larry's good
2 comments was if not 20,000 years, what and why? And
3 so anyone on the phone have comments?

4 MS. JENKINS: Yes. This is Susan Jenkins
5 with the State of South Carolina.

6 DR. LESLIE: Go ahead, Susan.

7 MS. JENKINS: I have a question about the
8 -- basically, the purpose and scope of Part 61 and how
9 it may apply to these new proposed -- or if they end
10 up being proposed revisions to that part. In 1982,
11 when Part 61 was first promulgated, we adopted that of
12 course in South Carolina. That was in 1986.

13 And there is a statement in that first
14 paragraph that says, "Applicability of the
15 requirements in this part for waste disposal
16 facilities in effect on the effective date of this
17 rule will be determined on a case-by-case basis, and
18 implemented through terms and conditions of the
19 license or by orders issued by" -- I guess it would be
20 the Commission or, you know, the Agreement State.

21 So the question is regarding this overall
22 purpose and scope of Part 61, and how would you see
23 that applying to an existing facility?

24 DR. LESLIE: This is Brett Leslie. We're
25 going to get someone to try to address that from the

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1 NRC staff. Please identify yourself, too.

2 MR. CAMPBELL: This is Tison Campbell with
3 the Office of the General Counsel. I don't think we
4 can give you a general answer to your question. I
5 think, as you noted, it would depend on the facility
6 and the Agreement State and how they decided to
7 implement Part 61. So that's something you, as an
8 Agreement State, would have to look at when you go to
9 adopt these regulations after they are adopted by the
10 NRC.

11 DR. LESLIE: Susan, I don't know if
12 that --

13 MS. JENKINS: Okay. Well, I guess the
14 question is, would that first paragraph be revised --

15 MR. CAMPBELL: I don't believe the staff
16 is --

17 MS. JENKINS: -- to remove that sentence?

18 MR. CAMPBELL: -- planning to propose
19 revisions to that paragraph at this time.

20 MS. JENKINS: Okay. Thank you.

21 DR. LESLIE: Thank you, Tison.

22 Anyone else on the line have --

23 MR. SEITZ: Roger Seitz.

24 DR. LESLIE: Go ahead, Roger.

25 MR. SEITZ: Oh, I was just checking in. I

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1 just dialed in.

2 DR. LESLIE: Oh, okay.

3 (Laughter.)

4 That's good. You're on the record now.

5 Anyone else have a comment on the bridge
6 line?

7 (No response.)

8 Okay. I'll check one more time before we
9 wrap up the meeting. I'll give people a second or
10 third chance here. Anyone else in the building here
11 in Rockville have a comment that hasn't been addressed
12 yet or -- John? You'll need to hold it close to your
13 mouth.

14 MR. GREEVES: I don't know whether you've
15 been taking parking lot items or not. It's blank
16 right now. But I would say there is a parking lot
17 item of -- what is the compatibility criteria? I'd
18 like to ask that you share that with us before our
19 comments are given, so that it would help reflect the
20 feedback to you.

21 And then, second, it is really a caution.
22 You talked about the guidance being done in the same
23 timeframe as the rule. And this whole question, which
24 we spent a lot of time on this afternoon, about 20,000
25 years, I don't know how you are going to develop the

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1 guidance without knowing the answer of what the
2 performance period is.

3 So I don't know of a way to do that, but
4 if you think of it let us know what it is. Once you
5 write that into guidance, it becomes fixed, so --
6 anyhow, just a caution about how to handle the 20,000
7 ECM guidance phase, when it really doesn't get set
8 right.

9 DR. LESLIE: Thanks, John. Andy?

10 MR. CARRERA: Hi. This is Andy Carrera,
11 NRC. This topic of compatibility categorization has
12 come up a couple of times, and I just want to
13 reiterate that it is in a preliminary state. The
14 working group has predetermined -- preliminarily
15 determined the compatibility categorization.

16 However, it has not been vetted through
17 the Agreement State. There is a process for that. It
18 has not been vetted through the standing committee on
19 compatibility, which members of the -- at NRC, we
20 would look through what we have proposed and provide
21 feedback on whether we are close or not.

22 So it has not gone through that.
23 Therefore, we cannot provide it to anyone else yet at
24 this time.

25 DR. LESLIE: Thank you. Priya?

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1 MS. YADAV: Just to add one more thing to
2 that, to what Andy mentioned. We have an Agreement
3 State representative on our working group, and we meet
4 every week and we have talked about the compatibility
5 categories for several weeks now. And so we had been
6 getting the Agreement State perspective, and that
7 actually fed into this -- what the Part B that I guess
8 John and Tom brought up.

9 Part of the reason why we have
10 preliminarily noted that as Category C is based on
11 some comments we got from our Agreement State
12 representative. So hearing your comments today, we
13 will obviously go through the process and look at the
14 compatibility categories again. But that is just kind
15 of some feedback that we have Agreement State input
16 into our compatibility categories.

17 DR. LESLIE: Okay. Any other final
18 comments? Oh, we've got another hand. Right behind
19 you, George.

20 MS. EDWARDS: Okay. I think as a horse it
21 isn't quite dead yet. I want to go back to those
22 projections at 10,000 or 20,000 years. This is what I
23 would say. When you ask someone to do a dose
24 projection that far out, you are asking them to
25 produce a number with such great uncertainty that it

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1 is a meaningless number.

2 If I told you a thousand years from now we
3 are going to get an inch of rain on a day a thousand
4 years from now, plus or minus -- well, plus five
5 inches, minus one inch, but I said, okay, I did my
6 little calculation, I made these assumptions, it's one
7 inch plus or minus one inch. It's a meaningless
8 number. It means I really don't know what the dose
9 will be.

10 You know a little more than that, because
11 you have the source term which you can calculate.
12 What you don't have is any reasonable assumptions you
13 can supply for a dose pathway. You are asking people
14 to produce a number that has huge uncertainties and
15 is, therefore, meaningless. But once that number is
16 produced, it will be treated as a real number and a
17 valid number.

18 And I think that there is danger in that
19 and it implies a level of knowledge that we do not
20 have.

21 DR. LESLIE: Thank you, Lisa.

22 All right. I don't see any hands raised
23 or people standing up or otherwise identifying that
24 they have comments.

25 I will drum up one last time for the

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1 people on the bridge line. Any last comments from
2 those on the bridge?

3 (No response.)

4 All right. I think Larry has a few
5 closing comments, and after he's done I'll close out
6 the meeting.

7 MR. CAMPER: Thank you, Brett. What I
8 plan to do is when we get through these things -- many
9 of you have been to this -- I try to capture, you
10 know, moments that cause me to stop and think. And
11 what I'll try to do is identify some things I heard
12 along the way.

13 But let me reiterate before I do that what
14 I said this morning. This is indeed an opportunity
15 for staff to listen, and that's what we're here to do.

16 I indicated that this discussion today might result
17 in significant changes, and it may. We have a lot to
18 think about. We've got to go back and review the
19 transcripts, talk about that, and so forth.

20 So I guess my first point would be is that
21 we have listened. We have heard everything you have
22 had to say. We will do a thorough analysis, and so
23 forth.

24 I think that much of the commentary that I
25 have heard today really comes back to the challenge,

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1 as I said this morning, associated with this unique
2 isotope and form called depleted uranium. It is
3 indeed a challenge. In fact, I think I could make a
4 fair argument that it is among, if not the most
5 challenging things that we have to deal with in waste
6 management at this point in time.

7 I would echo what John Greeves said, a lot
8 of good comments, a lot of good dialogue. This is
9 what we wanted. We wanted a lot of input. We wanted
10 to hopefully along the way just provide clarifications
11 as things come up. We hope that we've done that, and
12 throughout we've shown you that we are listening.

13 Let me kind of go through just a few, you
14 know, things that I have heard repeatedly or kind of
15 give one pause. And I'll start from the back and go
16 to the front, because some of them repeat themselves
17 many times, and that way we don't have to go through
18 that but once.

19 Clearly, this question of using realistic
20 scenarios and trying to define assumptions that take
21 you out to a period of 20,000 years, repeatedly this
22 was brought up as a huge challenge and a great degree
23 of concern.

24 There was a comment made by one of the
25 individuals on the line toward the end. First, there

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1 was this question that was asked about, you know, what
2 can you do in guidance, or undo in guidance what you
3 have already done in a rule, and can you do that?
4 And, of course, Lisa made a great clarification from
5 the Office of General Counsel. And we have cited some
6 examples where we have tried in guidance to clarify
7 certain things.

8 But what I found most interesting about
9 that particular point in the discussion was basically
10 the listener suggested that maybe we ought to be using
11 a reverse approach. We built this thing all around
12 depleted uranium, and we've defined the 25,000-year --
13 or, excuse me, the 20,000-year period -- let's not
14 make it longer.

15 (Laughter.)

16 The 20,000-year period of compliance would
17 in fact, one could argue, given that 90 percent, if
18 not 95 percent, of all the radionuclides to be
19 disposed of are decaying much sooner than that, and a
20 thousand years gets you there, certainly a couple
21 thousand years gets you there.

22 Maybe what we really ought to be doing is
23 building it all around the majority of the
24 radionuclides to be disposed, and we are going to
25 consider all radionuclides and not just depleted

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1 uranium, but handle depleted uranium as truly the
2 outlier that has a specific consideration. And so
3 doing it in reverse, if you will, for lack of a better
4 way to put it.

5 There was a point made that along the way
6 we thought we had an agreement on 10,000 years during
7 the public meetings. I certainly, from my
8 perspective, can understand that, because in both
9 public meetings I cited the language from NUREG-1573
10 that talked about 10,000 years, and in citing longer-
11 lived radionuclides in environmental assessment space.

12 So certainly I can understand why one would have
13 gotten that impression, but, of course, we have
14 continued to work the issue.

15 There is a fair amount of interest in what
16 DOE is doing and the notion that there should be
17 perhaps more harmonization between what it is that DOE
18 is doing and what it is that we are trying to do in
19 this particular rulemaking initiative.

20 Some concern was brought up, again, about
21 the fact that SECY-08-0147, the SRM, and that blending
22 has been brought to bear on this, and how does that
23 all now fit into this package, given that blending --
24 the blended material really has very little, if
25 anything, to do with the problems associated with

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1 disposal of depleted uranium.

2 Certainly, the idea, again, that DOE and
3 NRC should confer regarding a period of performance
4 was put forth.

5 A lot of discussion about this probability
6 of intrusion being at one, that it occurs at 101
7 years, and that even under those arguably conservative
8 and deterministic approaches we are using a worst-case
9 scenario on top of that. And so a lot of concern was
10 expressed about that along the way.

11 DOE offered a lot of comments, many of
12 which had to do more broadly with Part 61 at large and
13 the look that we are taking at Part 61 at large, well
14 beyond what we are discussing here today of course.

15 Unintended consequences, that came up
16 multiple times -- unintended consequences. And at
17 several times different concerns were particularly
18 enunciated about unintended consequences, but
19 certainly there was a great deal of concern about
20 that.

21 This morning we had a discussion -- Dave
22 was talking -- Dave Esh was talking about reprocessing
23 in his presentation and reprocessing came up later in
24 the discussion. I do want to draw one clarification
25 on that point. The Commission has not decided yet

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1 whether it is going to do a rulemaking on
2 reprocessing.

3 The Commission has -- the staff has
4 undertaken a gap analysis. We are working on
5 environmental analyses. But if the Commission does
6 decide to do a rulemaking on reprocessing, clearly its
7 timeline appears to have moved out into the future as
8 well. Just a minor clarification on that point.

9 And, again, this notion that, you know,
10 you are applying this to all waste. And it seemed
11 kind of interesting -- there has been a school of
12 thought that says, you know, you should capture all
13 radionuclides within this rulemaking. But having done
14 that, while that is a good thing, the notion of 20,000
15 years, and so forth, may have had an unintended
16 consequence, which I cited earlier.

17 Compatibility -- what is the level of
18 compatibility to be assigned? I know of no rulemaking
19 where the issue of compatibility doesn't become an
20 issue. Through the Agreement States, I would like to
21 see a lesser assignment of compatibility because they
22 prefer to have as much flexibility as possible.

23 In this case, we do have a representative
24 on the working group from the State of Texas. The
25 State of Texas has already taken certain actions in

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1 its regulatory process around the timeline for
2 evaluation, so it is certainly understandable that
3 Texas would want flexibility.

4 It was pointed out that we do have a
5 rather rigorous process that we go through, as
6 compatibility is assigned. Yes, we have, from the
7 working group, some thoughts at this point about
8 assignment.

9 We did discuss Level C for this particular
10 issue, but it's not a done deal yet, although, John,
11 your point is well made in terms of the public wanting
12 to understand what would be the level of compatibility
13 to be assigned. That will be determined by the time
14 we come up with a proposed rule per our process.

15 There was a fair amount of commentary
16 about the dose at 500 millirem, and, again, linking it
17 back to this probability of one. And certain other
18 regulatory activities were cited that are taking place
19 with FEMA or EPA that, you know, result in different
20 numbers. And, therefore, the question of whether 500
21 millirem is the right number was challenged somewhat.

22 Repeatedly we heard that 20,000 years, of
23 course, is a new number. Therefore, it is not
24 consistent with what has transpired previously, and,
25 therefore, that raises some concerns about

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1 credibility, and why have you opted for this new
2 number, even though Dr. Esh, in his presentation,
3 tried to explain why we settled on that number. I
4 think there is still a fair amount of concern about
5 the fact that it is a new number, and it is not
6 consistent with what has been used elsewhere and in
7 the past.

8 Very early in our discussion, the notion
9 of disposal at greater than 30 meters was raised as an
10 issue, and we quickly pointed out that, yes, we agree
11 that is a problem, to use that as an example.

12 So just notes that I jotted down along the
13 way, and there are others as well. But those are
14 ones that came across repeatedly or loudly, with care
15 and emphasis. So we have a lot of work to do, and I
16 think that, speaking on behalf of the staff, we
17 appreciate all of the input. We will go back and
18 digest thoroughly what we've heard.

19 I want to close by thanking the staff
20 again for their hard work, Casey for helping us out,
21 and Antoinette who is outside helping us out. Our
22 facilitators, of course, you did a great job,
23 gentlemen. We thank you. And especially all of you
24 for taking the time and having the interest and
25 providing some extremely interesting comments.

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1 We thank you.

2 DR. LESLIE: Thank you, Larry, for your
3 closing comments.

4 A few last bits of housekeeping. I
5 definitely want to echo Larry's comments on people
6 being able to primarily follow the ground rules and
7 really respect the participants. I think your
8 flexibility in not using the hand mic in the afternoon
9 was only paid back by having the room too hot.

10 (Laughter.)

11 Which gets me to those participants here
12 in Rockville. If you do have complaints about what
13 George and I did today, or what Larry did to you
14 today, you can always fill out the meeting --

15 (Laughter.)

16 -- public feedback form. So I guess with
17 that, again, thanks everyone for your participation.
18 It has been great to see you all.

19 And for the people on the bridge, thank
20 you for your participation as well. It has been quite
21 enlightening.

22 Thank you. And this meeting is adjourned.

23 (Whereupon, at 3:06 p.m., the proceedings in the
24 foregoing matter were adjourned.)

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This is to certify that the attached proceedings
before the United States Nuclear Regulatory Commission
in the matter of: Proposed rule revisions

Name of Proceeding: 10 CFR Part 61

Public Hearing

Docket Number: (n/a)

Location: Rockville, Maryland

were held as herein appears, and that this is the
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